VISHAY

VISHAY INTERTECHNOLOGY, INC.

INTERACTIVE
data book

SMALL SIGNAL DIODES

VISHAY SEMICONDUCTORS

VHN-DB1102-0407

Notes:

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   a) Click on the Vishay logo on any datasheet to go to the Contents page for that section. Click on the Vishay logo on any Contents page to go to the main Table of Contents page.
   b) Click on the products within the Table of Contents to go directly to the datasheet.
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One of the World's Largest Manufacturers of
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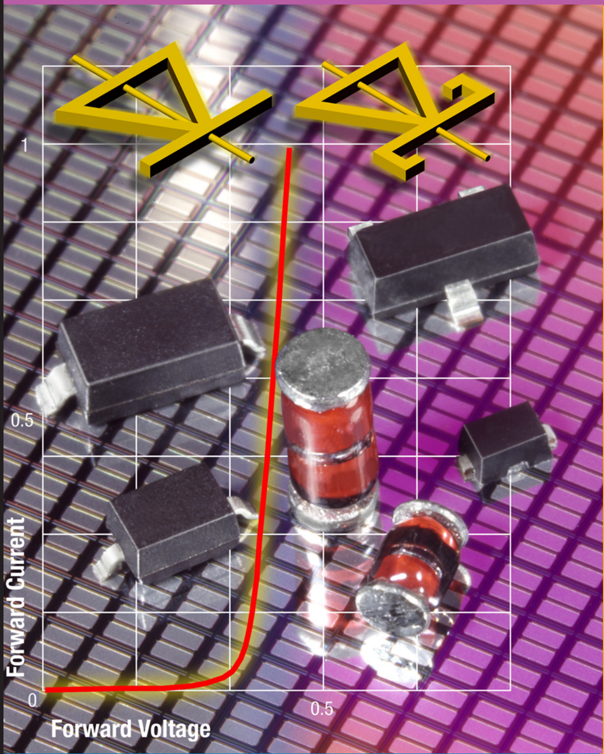
VISHAY INTERTECHNOLOGY, INC.

DATA BOOK



Small Signal Diodes

Switching Diodes

Schottky Diodes

RF Schottky Diodes

Band Switching Diodes

PIN Diodes

Varicap Diodes

www.vishay.com

VISHAY INTERTECHNOLOGY, INC.

DISCRETE SEMICONDUCTORS	**RECTIFIERS**	Schottky (single, dual)
		Standard, Fast and Ultra-Fast Recovery (single, dual)
		Clamper/Damper
		Bridge
		Superectifier®
		Sinterglass Avalanche Diodes
	SMALL-SIGNAL DIODES	Schottky and Switching (single, dual)
		Tuner/Capacitance (single, dual)
		Bandswitching
		PIN
	ZENER & SUPPRESSOR DIODES	Zener Diodes (single, dual)
		TVS (TransZorb®, Automotive, ESD, Arrays)
	MOSFETs	Power MOSFETs
		JFETs
	RF TRANSISTORS	Bipolar Transistors (AF and RF)
		Dual Gate MOSFETs
		MOSMICs®
	OPTOELECTRONICS	IR Emitters, Detectors and IR Receiver Modules
		Opto Couplers and Solid State Relays
		Optical Sensors
		LEDs and 7 Segment Displays
		Infrared Data Transceiver Modules
		Custom products
	ICs	Power ICs
		Analog Switches
PASSIVE COMPONENTS	**CAPACITORS**	Tantalum Capacitors
		Solid Tantalum Capacitors
		Wet Tantalum Capacitors
		Ceramic Capacitors
		Multilayer Chip Capacitors
		Disc Capacitors
		Film Capacitors
		Power Capacitors
		Heavy Current Capacitors
		Aluminum Capacitors
		Silicon RF Capacitors
	RESISTIVE PRODUCTS	Foil Resistors
		Film Resistors
		Thin Film Resistors
		Thick Film Resistors
		Metal Oxide Film Resistors
		Carbon Film Resistors
		Wirewound Resistors
		Variable Resistors
		Cermet Variable Resistors
		Wirewound Variable Resistors
		Conductive Plastic Variable Resistors
		Networks/Arrays
		Non-Linear Resistors
		NTC Thermistors
		PTC Thermistors
		Varistors
	MAGNETICS	Inductors
		Transformers
INTEGRATED MODULES	**DC/DC CONVERTERS**	
STRAIN SENSORS AND TRANSDUCERS	**STRAIN GAGES AND INSTRUMENTS**	
	PHOTOSTRESS® INSTRUMENTS	
	TRANSDUCERS	Load Cells
		Weighing Systems

ONE OF THE WORLD'S LARGEST MANUFACTURERS OF DISCRETE SEMICONDUCTORS AND PASSIVE COMPONENTS

Small-Signal Diodes

Databook

2004

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Datasheets

Packages

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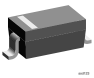
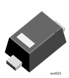
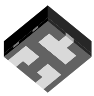
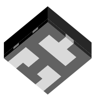
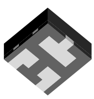
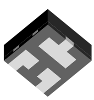
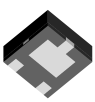
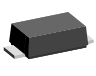
Glossary

Selector Guides

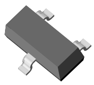
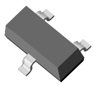
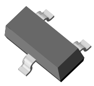
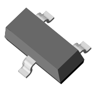
Small-Signal Schottky Diodes

	Part Number	$V_{R\,max}$	$I_{F\,max}$	$V_{F\,max}$	@ I_F	$P_{tot\,max}$	$t_{rr\,max}$	Page
		[V]	[mA]	[V]	[mA]	[mW]	[ns]	
SOD-123, Single Diode								
	BAT17W	4	30	0.6	10	150	-	301
	BAT42W	30	200	1	200	200	5	313
	BAT43W	30	200	1	200	200	5	313
	BAT46W	100	150	1	250	150	-	321
	BAT54W	30	200	0.32	1	150	5	337
	MBR0520L	20	500	0.385	500	480	-	475
	MBR0530	30	500	0.43	500	480	-	479
	MBR0540	40	500	0.51	500	480	-	481
	SD101AW	60	30	0.41	1	400	1	529
	SD101BW	50	30	0.4	1	400	1	529
	SD101CW	40	30	0.39	1	400	1	529
	SD103AW	40	200	0.37	20	400	10	541
	SD103BW	30	200	0.37	20	400	10	541
	SD103CW	20	200	0.37	20	400	10	541
SOD-323, Single Diode								
	BAS170WS	70	70	1	15	150	-	271
	BAT17WS	4	30	0.6	10	150	-	303
	BAT54WS	30	200	0.32	1	150	5	341
	SD0230LWS	30	200	0.35	15	150		557
	SD101AWS	60	30	0.41	1	150		533
	SD101BWS	50	30	0.40	1	150		533
	SD101CWS	40	30	0.39	1	150		533
	SD103AWS	40	200	0.37	20	150	10	545
	SD103BWS	30	200	0.37	20	150	10	545
	SD103CWS	20	200	0.37	20	150	10	545
	SD104AWS	20	30	0.6	10	150	-	549
	SD104BWS	15	30	0.58	10	150	-	549
	SD104CWS	10	30	0.565	10	150	-	549
	SD106WS	30	200	0.55	200	250	-	553
	SD107WS	30	100	0.55	50	250	-	555
SOD-523, Single Diode								
	BAS40-02V	40	200	0.38	1	200	5	249
	BAS70-02V	70	200	0.41	1	200	5	255
	BAS520-02V	30	200	0.32	1	200		293
	BAS581-02V	30	200	0.32	1	230	5	295
	BAT54-02V	30	200	0.32	1	230	5	331

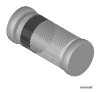
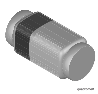
Small-Signal Schottky Diodes (continued)

	Part Number	$V_{R\ max}$	$I_{F\ max}$	$V_{F\ max}$	@ I_F	$P_{tot\ max}$	$t_{rr\ max}$	Page
		[V]	[mA]	[V]	[mA]	[mW]	[ns]	
LLP75-3B, Dual Common Anode								
	BAS70-06-HT3	70	200	0.41	1	200	5	257
	BAT54A-HT3	30	200	0.32	1	200	5	335
LLP75-3B, Dual Common Cathode								
	BAS70-05-HT3	70	200	0.41	1	200	5	257
	BAT54C-HT3	30	200	0.32	1	200	5	335
LLP75-3B, Dual Serial								
	BAS40-04-HT3	40	200	0.38	1	200	5	251
	BAS40-05-HT3	40	200	0.38	1	200	5	251
	BAS40-06-HT3	40	200	0.38	1	200	5	251
	BAS70-04-HT3	70	200	0.41	1	200	5	257
	BAT54S-HT3	30	200	0.32	1	200	5	335
LLP75-3B, Single Diode								
	BAS40-HT3	40	200	0.38	1	200	5	251
	BAS70-HT3	70	200	0.41	1	200	5	257
	BAT54-HT3	30	200	0.32	1	200	5	335
LLP75-3A, Single Diode								
	SD0520-HT3	20	500	0.385	500	-	-	559
SMF, Single Diode								
	SL02	20	1100	0.42	1100	550		563
	SL03	30	1100	0.45	1100	550		563
	SL04	40	1100	0.53	1100	550		563

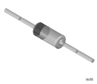
Small-Signal Schottky Diodes (continued)

	Part Number	$V_{R\ max}$	$I_{F\ max}$	$V_{F\ max}$	@ I_F	$P_{tot\ max}$	$t_{rr\ max}$	Page
		[V]	[mA]	[V]	[mA]	[mW]	[ns]	
SOT-23, Dual Common Anode								
	BAS40-06	40	200	0.38	1	200	5	247
	BAS70-06	70	200	0.41	1	200	5	253
	BAT54A	30	200	0.32	1	200	5	327
SOT-23, Dual Common Cathode								
	BAS40-05	40	200	0.38	1	200	5	247
	BAS70-05	70	200	0.41	1	200	5	253
	BAT54C	30	200	0.32	1	200	5	327
SOT-23, Dual Serial								
	BAS40-04	40	200	0.38	1	200	5	247
	BAS70-04	70	200	0.41	1	200	5	253
	BAT17DS	4	30	0.6	10	150	-	299
	BAT54S	30	200	0.32	1	200	5	327
	SD0520LS	20	500	0.4	50	200	-	561
SOT-23, Single Diode								
	BAS40	40	200	0.38	1	200	5	247
	BAS70	70	200	0.41	1	200	5	253
	BAT17	4	30	0.6	10	150	-	299
	BAT54	30	200	0.32	1	200	5	327
MicroMELF, Single Diode								
	BAS381	40	30	0.41	1	300	-	281
	BAS382	50	30	0.41	1	300	-	281
	BAS383	60	30	0.41	1	300	-	281
	BAS385	30	200	0.4	10	300	-	285
	BAS386	50	200	0.45	10	300	-	289
	MCL101A	60	30	0.41	1	300	-	485
	MCL101B	50	30	0.4	1	300	-	485
	MCL101C	40	30	0.39	1	300	-	485
	MCL103A	40	200	0.37	20	400	10	489
	MCL103B	30	200	0.37	20	400	10	489
	MCL103C	20	200	0.37	20	400	10	489

Small-Signal Schottky Diodes (continued)

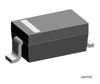
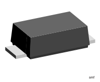
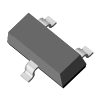
	Part Number	$V_{R\,max}$	$I_{F\,max}$	$V_{F\,max}$	@ I_F	$P_{tot\,max}$	$t_{rr\,max}$	Page
		[V]	[mA]	[V]	[mA]	[mW]	[ns]	
MiniMELF SOD-80, Single Diode								
	BAS81	40	30	0.41	1	280	-	259
	BAS82	50	30	0.41	1	280	-	259
	BAS83	60	30	0.41	1	280	-	259
	BAS85	30	200	0.4	10	230	-	263
	BAS86	50	200	0.45	10	330	-	267
	LL41	100	100	0.45	1	400	5	427
	LL42	30	200	0.4	10	200	5	429
	LL43	30	200	0.45	15	200	5	429
	LL46	100	150	0.45	10	200	-	431
	LL48	40	350	0.4	10	330	-	433
	LL101A	60	30	0.41	1	400	1	435
	LL101B	50	30	0.4	1	400	1	435
	LL101C	40	30	0.39	1	400	1	435
	LL103A	40	200	0.37	20	400	10	439
	LL103B	30	200	0.37	20	400	10	439
	LL103C	20	200	0.37	20	400	10	439
	LL5711	70	30	0.41	1	400	1	453
	LL6263	60	30	0.41	1	400	1	453
QuadroMELF SOD-80, Single Diode								
	BAS281	40	30	0.41	1	280	-	273
	BAS282	50	30	0.41	1	280	-	273
	BAS283	60	30	0.41	1	280	-	273
	BAS285	30	200	0.4	10	230	-	277
	BAS286	50	200	0.45	10	330	-	279
	LS101A	60	30	0.41	1	310		455
	LS101B	50	30	0.4	1	310		455
	LS101C	40	30	0.39	1	310		455
	LS103A	40	200	0.37	20	400		459
	LS103B	30	200	0.37	20	400		459
	LS103C	20	200	0.37	20	400		459

Small-Signal Schottky Diodes (continued)

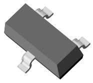
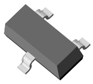
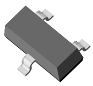
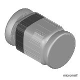
	Part Number	$V_{R\ max}$	$I_{F\ max}$	$V_{F\ max}$	@ I_F	$P_{tot\ max}$	$t_{rr\ max}$	Page
		[V]	[mA]	[V]	[mA]	[mW]	[ns]	
DO-35, Single Diode								
	1N5711	70	30	0.41	1	400	1	103
	1N6263	60	30	0.41	1	400	1	103
	BAT41	100	100	0.45	1	400	5	305
	BAT42	30	200	0.4	10	200	5	309
	BAT43	30	200	0.4	10	200	5	309
	BAT46	100	150	0.45	10	150	-	317
	BAT48	40	350	0.4	10	330	-	323
	BAT81S	40	30	1	15	310		345
	BAT82S	50	30	1	15	310		345
	BAT83S	60	30	1	15	310		345
	BAT85	30	200	0.4	10	200	5	347
	BAT85S	30	200	0.4	10	280	-	351
	BAT86	50	200	0.45	10	200	5	353
	SD101A	60	30	0.41	1	400	1	525
	SD101B	50	30	0.4	1	400	1	525
	SD101C	40	30	0.39	1	400	1	525
	SD103A	40	200	0.37	20	400	10	537
	SD103B	30	200	0.37	20	400	10	537
	SD103C	20	200	0.37	20	400	10	537

Selector Guides

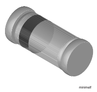
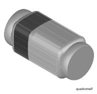
Small-Signal Switching Diodes

	Part Number	V_{RRM}	I_{FRM}	$I_{R\ max}$	@ V_R	$V_{F\ max}$	@ I_F	$t_{rr\ max}$	@ I_F	@ I_R	@ i_R	Page
		[V]	[mA]	[µA]	[V]	[V]	[mA]	[ns]	[mA]	[mA]	[mA]	
SOD-123, Single Diode												
	1N4148W	100	500	5	75	1	10	4	10	10	1	75
	1N4150W	50	-	0.1	50	1	200	4	10	10	-	85
	1N4151W	75	500	0.05	50	1	50	4	10	10	-	89
	1N4448W	100	500	5	75	1	10	4	10	10	-	99
	BAS16D	100	-	1	75	1	50	6	10	10	1	231
	BAV19W	120	625	0.1	100	1	100	50	30	30	3	361
	BAV20W	200	625	0.1	150	1	100	50	30	30	3	361
	BAV21W	250	625	0.1	200	1	100	50	30	30	3	361
	GSD2004W	300	625	0.1	240	1	100	50	30	30	3	415
SOD-323, Single Diode												
	1N4148WS	100	350	5	75	1	10	4	10	10	1	79
	1N4151WS	75	500	0.05	50	1	50	4	10	10	-	93
	BAS16WS	100	-	1	75	1	50	6	10	10	1	235
	BAV19WS	120	625	0.1	100	1	100	50	30	30	3	365
	BAV20WS	200	625	0.1	150	1	100	50	30	30	3	365
	BAV21WS	250	625	0.1	200	1	100	50	30	30	3	365
	GSD2004WS	300	625	0.1	240	1	100	50	30	30	3	417
SMF, Single Diode [*) IF (AV) @ 65 °C]												
	ES07B	100	500*)	10	100	0.98	1000	25	500	1000	250	405
	ES07D	200	500*)	50	200	0.98	1000	25	500	1000	250	405
	RS07B	100	500*)	10	100	1.15	700	150	500	1000	250	513
	RS07D	200	500*)	10	200	1.15	700	150	500	1000	250	513
	RS07G	400	500*)	10	400	1.15	700	150	500	1000	250	513
	RS07J	600	500*)	10	600	1.15	700	250	500	1000	250	513
	S07B	100	700*)	10	100	1.1	1000	1800	500	1000	250	517
	S07D	200	700*)	10	200	1.1	1000	1800	500	1000	250	517
	S07G	400	700*)	10	400	1.1	1000	1800	500	1000	250	517
	S07J	600	700*)	10	600	1.1	1000	1800	500	1000	250	517
	S07M	1000	700*)	10	1000	1.1	1000	1800	500	1000	250	517
SOT-23, Dual Common Anode												
	BAW56	70	450	5.0	75	1	50	6	10	10	1	389
	GSD2004A	300	625	0.1	240	1	100	50	30	30	3	409

Small-Signal Switching Diodes (continued)

	Part Number	V_{RRM}	I_{FRM}	$I_{R\ max}$	@ V_R	$V_{F\ max}$	@ I_F	$t_{rr\ max}$	@ I_F	@ I_R	@ i_R	Page
		[V]	[mA]	[µA]	[V]	[V]	[mA]	[ns]	[mA]	[mA]	[mA]	
SOT-23, Dual Common Cathode												
	BAV70	70	450	5.0	75	1	50	6	10	10	1	369
SOT-23, Dual Serial												
	BAS31	110	600	0.1	90	1	200	50	30	30	3	243
	BAV99	70	450	2.5	70	1.0	50	6	10	10	-	371
	GSD2004S	300	625	0.1	240	1	100	50	30	30	3	413
	MMBD7000	100	500	0.1	50	1.1	100	4	10	10	1	511
SOT-23, Single Diode												
	BAL99	70	-	2.5	70	1.0	50	6	10	10	1	143
	BAS16	75	-	1.0	75	1.0	50	6	10	10	1	229
	BAS19	120	-	0.1	100	1.0	100	50	10	10	1	239
	BAS20	200	-	0.1	150	1.0	100	50	10	10	1	239
	BAS21	250	-	0.1	200	1.0	100	50	10	10	1	239
	IMBD4148	100	500	2.5	70	1	10	4	10	10	-	419
	IMBD4448	100	500	2.5	70	1	10	4	10	10	-	423
	MMBD914	100	-	5	75	1	10	4	10	10	1	505
	MMBD6050	70	500	0.1	50	1.1	100	4	10	10	1	507
MicroMELF, Single Diode												
	BAQ333	40	200	0.003	30	1	100	-	-	-	-	149
	BAQ334	70	200	0.003	60	1	100	-	-	-	-	149
	BAQ335	140	200	0.003	125	1	100	-	-	-	-	149
	BAV300	60	625	0.1	50	1	100	50	30	-	-	383
	BAV301	120	625	0.1	100	1	100	50	30	-	-	383
	BAV302	200	625	0.1	150	1	100	50	30	-	-	383
	BAV303	250	625	0.1	200	1	100	50	30	-	-	383
	MCL4148	100	450	5	75	1	50	8	10	10	1	493
	MCL4448	100	450	5	75	1	100	8	10	10	1	493
	MCL4151	75	450	0.05	50	1	50	4	10	10	1	497
	MCL4154	35	450	0.1	25	1	30	4	10	10	1	501

Small-Signal Switching Diodes (continued)

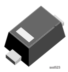
	Part Number	V_{RRM}	I_{FRM}	$I_{R\ max}$	@ V_R	$V_{F\ max}$	@ I_F	$t_{rr\ max}$	@ I_F	@ I_R	@ i_R	Page
		[V]	[mA]	[µA]	[V]	[V]	[mA]	[ns]	[mA]	[mA]	[mA]	
MiniMELF SOD-80, Single Diode												
	BA604	80	450	1	50	1.1	50	20	10	10	1	113
	BAQ33	40	200	0.003	30	1	100	-	-	-	-	145
	BAQ34	70	200	0.003	60	1	100	-	-	-	-	145
	BAQ35	140	200	0.003	125	1	100	-	-	-	-	145
	BAV100	60	625	0.1	50	1	100	50	30	30	3	375
	BAV101	120	625	0.1	100	1	100	50	30	30	3	375
	BAV102	200	625	0.1	150	1	100	50	30	30	3	375
	BAV103	250	625	0.1	200	1	100	50	30	30	3	375
	LL4148	100	450	5	75	1	50	8	10	10	1	443
	LL4448	100	450	5	75	1	100	8	10	10	1	443
	LL4150	50	600	0.1	50	1	200	4	10	10	1	447
	LL4151	75	500	0.05	50	1	50	4	10	10	1	449
	LL4154	35	450	0.1	25	1	30	4	10	10	1	451
QuadroMELF SOD-80, Single Diode												
	BAQ133	40	200	0.003	30	1	100	-	-	-	-	147
	BAQ134	70	200	0.003	60	1	100	-	-	-	-	147
	BAQ135	140	200	0.003	125	1	100	-	-	-	-	147
	BAV200	60	625	0.1	50	1	100	50	30	30	3	379
	BAV201	120	625	0.1	100	1	100	50	30	30	3	379
	BAV202	200	625	0.1	150	1	100	50	30	30	3	379
	BAV203	250	625	0.1	200	1	100	50	30	30	3	379
	LS4148	100	450	5	75	1	50	8	10	10	1	465
	LS4448	100	450	5	75	1	100	8	10	10	1	465
	LS4150	50	600	0.1	50	1	200	4	10	10	1	469
	LS4151	75	500	0.05	50	1	50	4	10	10	1	471
	LS4154	35	500	0.1	25	1	30	4	10	10	1	473
	LS485S	200	-	0.025	10	1.1	10	-	-	-	-	463

Small-Signal Switching Diodes (continued)

	Part Number	V_{RRM}	I_{FRM}	$I_{R\ max}$	@ V_R	$V_{F\ max}$	@ I_F	$t_{rr\ max}$	@ I_F	@ I_R	@ i_R	Page
		[V]	[mA]	[µA]	[V]	[V]	[mA]	[ns]	[mA]	[mA]	[mA]	
DO-35, Single Diode												
	1N914	75	-	5	75	1	10	4	10	1	-	107
	1N4148	100	450	5	75	1	100	8	10	10	1	73
	1N4448	100	450	5	75	1	10	8	10	10	1	73
	1N4150	50	600	0.1	50	1	200	4	10	10	1	83
	1N4151	75	450	0.05	50	1	50	4	10	10	1	87
	1N4154	35	450	0.1	25	1	30	4	10	10	1	97
	BAV17	25	625	0.1	20	1	100	50	30	30	3	357
	BAV18	60	625	0.1	50	1	100	50	30	30	3	357
	BAV19	120	625	0.1	100	1	100	50	30	30	3	357
	BAV20	200	625	0.1	150	1	100	50	30	30	3	357
	BAV21	250	625	0.1	200	1	100	50	30	30	3	357
	BAS33	40	200	0.1	30	1	100	-	-	-	-	245
	BAS34	70	200	0.1	60	1	100	-	-	-	-	245
	BAW27	75	600	0.1	60	1	200	6	10	10	1	387
	BAW75	35	450	0.1	25	1	30	4	10	10	1	391
	BAW76	75	450	0.1	50	1	100	4	10	10	1	393
	BAY80	150	625	0.1	120	1	100	50	30	30	3	395
	BAY135	140	450	0.003	125	1	100	-	-	-	-	397

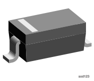
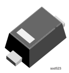
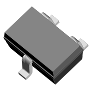
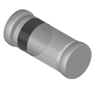
Selector Guides

RF Schottky Diodes

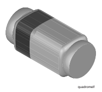
	Part Number	$V_{R\,max}$	$I_{F\,max}$	$V_{F\,max}$	@ I_F	$r_{f\,max}$ @100 MHz	@I_F	$C_{D\,max}$ @ 1 MHz	@V_R	Page
		[V]	[mA]	[V]	[mA]	[Ω]	[mA]	[pF]	[V]	
SOD-523, Single Diode										
	BAT15V-02V	4	100	0.32	1	5.5	10	0.35	0	297

Selector Guides

Band-Switching Diodes

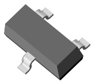
	Part Number	$V_{R\,max}$	$C_{D1\,max}$	@ V_R	$C_{D2\,max}$	@ V_R	$r_{f1\,max}$	@ I_F	$r_{f2\,max}$	@ I_F	Page
		[V]	[pF]	[V]	[pF]	[V]	[Ω]	[mA]	[Ω]	[mA]	
SOD-123, Single Diode											
	BA782	35	1.5	1	1.25	3	0.7	3	0.5	10	123
	BA783	35	1.5	1	1.2	3	1.2	3	0.9	10	123
SOD-323, Single Diode											
	BA782S	35	1.5	1	1.25	3	0.7	3	0.5	10	125
	BA783S	35	1.5	1	1.2	3	1.2	3	0.9	10	125
SOD-523, Single Diode											
	BA892V-02V	35	100	1.1	100	0.02	20	1.1	1	0.5	127
SOT-323, Single Diode											
	BA892V-04W	35	100	1.1	100	0.02	20	1.1	1	0.5	131
MicroMELF, Single Diode											
	BA1282	35	1.5	1	1.25	3	0.7	3	0.5	10	141
	BA1283	35	1.5	1	1.2	3	1.2	3	0.9	10	141
MiniMELF SOD-80, Single Diode											
	BA682	35	1.5	1	1.25	3	0.7	3	0.5	10	117
	BA683	35	1.5	1	1.2	3	1.2	3	0.9	10	117

Band-Switching Diodes (continued)

	Part Number	$V_{R\ max}$	$C_{D1\ max}$	@ V_R	$C_{D2\ max}$	@ V_R	$r_{f1\ max}$	@ I_F	$r_{f2\ max}$	@ I_F	Page
		[V]	[pF]	[V]	[pF]	[V]	[Ω]	[mA]	[Ω]	[mA]	
QuadroMELF SOD-80, Single Diode											
	BA982	35	1.5	1	1.25	3	0.7	3	0.5	10	139
	BA983	35	1.5	1	1.2	3	1.2	3	0.9	10	139
DO-35, Single Diode											
	BA282	35	1.5	1	1.25	3	0.7	3	0.5	10	109
	BA283	35	1.5	1	1.2	3	1.2	3	0.9	10	109

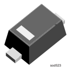
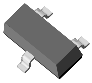
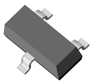
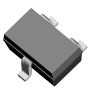
Selector Guides

Capacitance Diodes

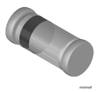
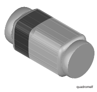
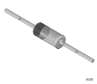
	Part Number	V_{RRM}	C_{Dmin} / C_{Dmax}	@V_R	Ratio (C_{D1} / C_{D2})	@ V_{R1} / V_{R2}	$r_{S\ max}$	Q_{min}	@ f	@ C_D	Page
		[V]	[pF]	[V]	min/max	[V]	[Ohm]		[MHz]	[pF]	
SOT-23, Dual Diodes											
	BB804-0	20	42 / 43.5	2	1.65 / 1.75	2 / 8	0.4	100	100	38	399
	BB804-1	20	43 / 44.5	2	1.65 / 1.75	2 / 8	0.4	100	100	38	399
	BB804-2	20	44 / 45.5	2	1.65 / 1.75	2 / 8	0.4	100	100	38	399
	BB804-3	20	45 / 46.5	2	1.65 / 1.75	2 / 8	0.4	100	100	38	399
	BB804-4	20	46 / 47.5	2	1.65 / 1.75	2 / 8	0.4	100	100	38	399
	BB814	20	43 / 46	2	2.05 / 2.25	2 / 8	0.5	-	-	-	401
	BB814-1	20	43 / 45	2	2.05 / 2.25	2 / 8	0.5	-	-	-	401
	BB814-2	20	44.5 / 46	2	2.05 / 2.25	2 / 8	0.5	-	-	-	401
	BB824	20	42.5 / 45.0	2	2.25 / 2.45	2 / 8	0.5	-	-	-	403
	BB824-2	20	42.3 / 43.0	2	2.25 / 2.45	2 / 8	0.5	-	-	-	403
	BB824-3	20	43.7 / 45.0	2	2.25 / 2.45	2 / 8	0.5	-	-	-	403

Selector Guides

PIN Diodes

	Part Number	V_R max	$I_{F\,max}$	V_F max	@ I_F	$I_{R\,max}$	@ V_R	C_D max	@ f	$r_{f\,max}$	@ I_F	$Z_{r\ min}$	@ V_R	@ f	Page
		[V]	[mA]	[V]	[mA]	[µA]	[V]	[pF]	[MHz]	[Ω]	[mA]	[kΩ]	[V]	[MHz]	
SOD-523, Single Diode															
	BAR63V-02V	50	100	1.2	100	0.01	35	0.3	1	2	5	-	-	-	153
	BAR64V-02V	100	100	1.1	50	0.05	50	0.35	1	3.8	10	-	-	-	189
	BAR65V-02V	30	100	1.1	100	0.02	20	0.8	1	0.9	10	-	-	-	225
SOT-23, Dual Diodes															
	BA779-2	30	50	1	20	0.05	30	0.5	100	50	1.5	5	0	100	121
	S392D	30	50	1	20	0.05	30	0.5	100	40 to 60	1.5	5	0	100	523
SOT-23, Single Diode															
	BA779	30	50	1	20	0.05	30	0.5	100	50	1.5	5	0	100	119
	BA779S	30	50	1	20	0.05	30	0.5	100	50	1.5	9	0	100	119
	BAR63V-03	50	100	1.2	100	0.01	35	0.3	1	2	5	-	-	-	157
	BAR63V-04	50	100	1.2	100	0.01	35	0.3	1	2	5	-	-	-	165
	BAR63V-05	50	100	1.2	100	0.01	35	0.3	1	2	5	-	-	-	173
	BAR63V-06	50	100	1.2	100	0.01	35	0.3	1	2	5	-	-	-	181
	BAR64V-03	100	100	1.1	50	0.05	50	0.35	1	3.8	10	-	-	-	193
	BAR64V-04	100	100	1.1	50	0.05	50	0.35	1	3.8	10	-	-	-	201
	BAR64V-05	100	100	1.1	50	0.05	50	0.35	1	3.8	10	-	-	-	209
	BAR64V-06	100	100	1.1	50	0.05	50	0.35	1	3.8	10	-	-	-	217
SOT-323, Single Diode															
	BAR63V-03W	50	100	1.2	100	0.01	35	0.3	1	2	5	-	-	-	161
	BAR63V-04W	50	100	1.2	100	0.01	35	0.3	1	2	5	-	-	-	169
	BAR63V-05W	50	100	1.2	100	0.01	35	0.3	1	2	5	-	-	-	177
	BAR63V-06W	50	100	1.2	100	0.01	35	0.3	1	2	5	-	-	-	185
	BAR64V-03W	100	100	1.1	50	0.05	50	0.35	1	3.8	10	-	-	-	197
	BAR64V-04W	100	100	1.1	50	0.05	50	0.35	1	3.8	10	-	-	-	205
	BAR64V-05W	100	100	1.1	50	0.05	50	0.35	1	3.8	10	-	-	-	213
	BAR64V-06W	100	100	1.1	50	0.05	50	0.35	1	3.8	10	-	-	-	221

PIN Diodes (continued)

	Part Number	V_R max	$I_{F\ max}$	V_F max	@ I_F	$I_{R\ max}$	@ V_R	C_D max	@ f	$r_{f\ max}$	@ I_F	$Z_{r\ min}$	@ V_R	@ f	Page
		[V]	[mA]	[V]	[mA]	[µA]	[V]	[pF]	[MHz]	[Ω]	[mA]	[kΩ]	[V]	[MHz]	
MiniMELF SOD-80, Single Diode															
	BA679	30	50	1	20	0.05	30	0.5	100	50	1.5	5	0	100	115
	BA679S	30	50	1	20	0.05	30	0.5	100	50	1.5	9	0	100	115
	S391D	30	50	1	20	0.05	30	0.5	100	40 to 60	1.5	5	0	100	521
QuadroMELF SOD-80, Single Diode															
	BA979	30	50	1	20	0.05	30	0.5	100	50	1.5	5	0	100	135
	BA979S	30	50	1	20	0.05	30	0.5	100	50	1.5	9	0	100	135
	BA980	30	50	1	20	0.05	30	0.5	100	40 to 60	1.5	5	0	100	137
DO-35, Single Diode															
	BA479G	30	50	1	20	0.05	30	0.5	100	50	1.5	5	0	100	111
	BA479S	30	50	1	20	0.05	30	0.5	100	50	1.5	9	0	100	111

Selector Guides

General Information

Datasheets

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Application Notes

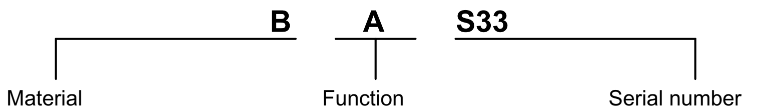
Glossary

Conventions Used in Presenting Technical Data

Nomenclature for Semiconductor Devices According to Pro Electron

The part number of a semiconductor device consists of two letters followed by a serial number.

For example:



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The **first letter** indicates the material used for the active part of the device.

A GERMANIUM
(Materials with a bandgap 0.6–1.0 eV) [1]

B SILICON
(Materials with a bandgap 1.0–1.3 eV) [1]

C GALLIUM-ARSENIDE
(Materials with a bandgap > 1.3 eV) [1]

R COMPOUND MATERIALS
(For example Cadmium-Sulfide)

The **second letter** indicates the circuit function.

A DIODE: detection, switching or mixer
B DIODE: variable capacitance
C TRANSISTOR: low power, audio frequency
D TRANSISTOR: power, audio frequency
E DIODE: tunnel
F TRANSISTOR: low power, high frequency
G DIODE: oscillator and miscellaneous
H DIODE: magnetic sensitive
K HALL EFFECT DEVICE:
in an open magnetic circuit
L TRANSISTOR: power, high frequency
M HALL EFFECT DEVICE:
in a closed magnetic circuit
N PHOTO COUPLER
P DIODE: radiation sensitive
Q DIODE: radiation generating
R THYRISTOR: low power
S TRANSISTOR: low power, switching
T THYRISTOR: power
U TRANSISTOR: power, switching
X DIODE:
multiplier, e.g., Varicap, step recovery
Y DIODE: rectifying, booster
Z DIODE: voltage reference or voltage regulator, transient suppressor diode

The **serial number** consists of:

- A four digit number from 100 to 9999 for devices primarily intended for consumer equipment.
- One letter (Z, Y, X, etc.) and a three-digit number from 10 to 999 for devices primarily intended for professional equipment.

A version letter can be used to indicate a deviation of a single characteristic, either electrical or mechanical. This letter does not have a fixed meaning. The only exception is the use of the letter R, indicating reversed voltage (e.g., collector to case).

[1] The materials mentioned are examples

Polarity Conventions

The voltage direction is given

- by an arrow which points out from the measuring point to the reference point or
- by a two letter subscript, where the first letter is the measuring point and the second letter is the reference point.

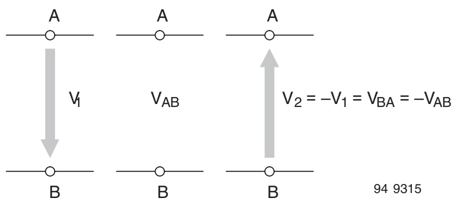

Figure 1.

The numerical value of the voltage is positive if the potential at the arrow tail is higher than at the arrow head; i.e., the potential difference from the measuring point (A) to the reference point (B) is positive.

The numerical value of the voltage is negative if the potential at the arrow head is higher than the tail; i.e., the potential difference from the measuring point to the reference point is negative.

In the case of alternating voltages, once the voltage direction is selected, it is maintained throughout. The alternating character of the quantity is given with the time dependent change in sign of its numerical values.

Figure 2.

The numerical value of the current is positive if the charge of the carriers moving in the direction of the arrow is positive (conventional current direction), or if the charge of the carriers moving against this direction is negative. The numerical value of the current is negative, if the charge of the carriers moving in the direction of the arrow is negative, or if the charge of the carriers moving against this direction is positive.

The general rules stated above are also valid for alternating quantities. Once the direction is selected, it is maintained throughout. The alternating character of the quantity is given with the time-dependent change in sign of its numerical values.

Polarity conventions for diodes

Here, the direction of arrows is selected in such a way that the numerical values of currents and voltages are positive both for forward (F or f) and reverse (R or r) directions.

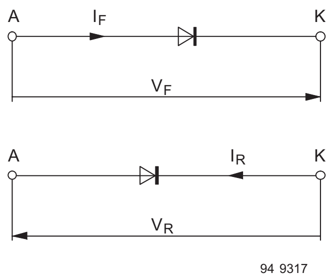

Figure 3.

Assembly Instructions

General

Semiconductor devices can be mounted in any position. The terminal length may be bent at a distance greater than 1.5 mm from the case provided no mechanical force has an effect on the case.

If the device is to be mounted near heat generating components, consideration must be given to the resultant increase in ambient temperature.

Soldering Instructions

Leaded Devices

Protection against overheating is essential when a device is being soldered. It is recommended, therefore, that connection terminals are left as long as possible, are soldered at the tip only, and that any heat generated is quickly conducted away. The time during which the specified maximum permissible device junction temperature is exceeded during the soldering operation should be as short as possible, (i.e., for silicon, 260 °C for 5 seconds.

Avoid any force on the body or leads during or just after soldering.

Do not correct the position of an already soldered device by pushing, pulling or twisting the body. Prevent fast cooling after soldering.

The maximum soldering temperatures are shown in table 1.

	Iron Soldering			Dip or Flow Soldering			
	Iron Temperature	Soldering Distance from the Case	Maximum Allowable Soldering Time	Soldering Temperature	Soldering Distance from the Case		Maximum Allowable Soldering Time
					Vertical	Horizontal	
Glass case	≤ 260 °C	1.5 to 5 mm	5 s	≤ 260 °C	> 1.5 mm	> 5 mm	5 s
	≤ 260 °C	> 5 mm	10 s				
	260 to 400 °C	> 5 mm	5 s				
Plastic case	≤ 260 °C	2 to 5 mm	3 s	≤ 260 °C	> 1.5 mm	> 5 mm	3 s
	≤ 260 °C	> 5 mm	5 s				
23 A 3 DIN41869 (SOT23)	≤ 250 °C	–	10 s	≤ 250 °C	–	–	10 s

Table 1: Maximum soldering temperatures

Surface Mounted Devices

Surface mounted devices (SMD) are components which are mounted directly on the surface of a printed circuit board without having to drill holes. In addition, these components can be completely submerged in solder bath (overhead soldering). The SMD technology offers the following main advantages:

- Higher packing density (miniaturization)
- Reduction of the component mounting costs fully automatic mounting

a) Gluing

In the case of flow or drag soldering, the components must be glued to the printed circuit board. The adhesive used for this purpose must be electrically neutral and must not react chemically with the materials of the printed circuit board or the components. The adhesive must not negatively affect subsequent soldering. After mounting, the adhesive must be hardened. The ultraviolet and/or thermal radiation commonly used for hardening is uncritical for our components. In the case of other soldering methods, gluing can be omitted if the flux or the solder paste provides sufficient adhesion of the components to the printed circuit board.

b) Soldering

The pins of Vishay components are already tinned.

Dip soldering, flow soldering, reflow soldering, and vapor phase soldering are permissible.

The maximum temperature of 260 °C over a period 5 s must not be exceeded during soldering.

No aggressive fluxes may be used.

A soldering iron should be used only in exceptional cases (repairs, etc.). A temperature regulated miniature soldering iron must be used, and care should be taken to avoid touching the component with the tip of the soldering iron.

For optoelectronic semiconductor components, the maximum soldering temperature is 240 °C for 5 s.

c) Cooling

Cooling of the components with a fan after soldering is permissible.

d) Cleaning

If cleaning is necessary after soldering, it is recommended to wash with water which contains a detergent free of deposits.

Important layout notes

If components are to be arranged in rows, then separate soldering surfaces must be provided for each component. If this is not carried out, a block of solder forms between the components during soldering, and a rigid connection result. This can cause breakage or cracks in the component as the result of the slightest bending of the board, and thus lead to failures. If it is necessary to solder a wire (standard conductor, etc.) to the board, a separate soldering surface must be provided in order to avoid excessive heating of the components during soldering with a soldering iron.

Heat Removal

To keep the thermal equilibrium, the heat generated in the semiconductor junction(s) must be removed. In the case of low-power devices, the natural heat conductive path between the case and surrounding air is usually adequate for this purpose. However, in the case of medium-power devices, heat radiation may have to be improved by the use of star- or flag-shaped heat dissipaters, which increase the heat radiating surface.

Finally, in the case of high-power devices, special heat sinks must be provided, the cooling effect of which can be increased further by the use of special coolants or air blowers.

The heat generated in the junction is conveyed to the case or header by conduction rather than convection. A measure of the effectiveness of heat conduction is the inner thermal resistance or thermal resistance junction case, R_{thJC}, the value of which is governed by the construction of the device.

Any heat transfer from the case to the surrounding air involves radiation convection and conduction. The effectiveness of transfer is expressed in terms of an R_{thCA}-value, i.e., the external or case-ambient thermal resistance. The total thermal resistance between junction and ambient is consequently

$$R_{thJA} = R_{thJC} + R_{thCA}.$$

The total maximum power, $P_{tot\ max}$, of a semiconductor device can be expressed as follows

$$P_{tot\ max} = \frac{T_{jmax} - T_{amb}}{R_{thJA}} = \frac{T_{max} - T_{amb}}{R_{thJA} + R_{thCA}}$$

where

T_{jmax} is the maximum junction temperature,

T_{amb} is the highest ambient temperature likely to be reached under the most unfavorable conditions,

R_{thJA} is the thermal resistance between junction and ambient. For diodes with axial leads, it is measured with a heat sink at a specified distance from the case,

R_{thJC} is the thermal resistance between junction and case,

R_{thCA} is the thermal resistance between case and ambient.

Its value is cooling dependent. When using a heat sink, it can be influenced through thermal contact between the case and heat sink, thermal distribution in the heat sink and heat transfer to the surroundings.

Therefore, the maximum permissible total power dissipation for a given semiconductor device can be influenced only by changing T_{amb} and R_{thCA}. The value of R_{thCA} can be obtained either from the data of heat sink suppliers or through direct measurements.

Heat due to energy losses is mainly conducted with power diodes without cooling pins through the connecting leads and hence the pc board.

Figure 1 shows the thermal resistance plotted as a function of edge length. The values are valid with a heat source in the middle of the plate, resting air and vertical position. With horizontal position, thermal resistance increases approximately by 15 to 20 %.

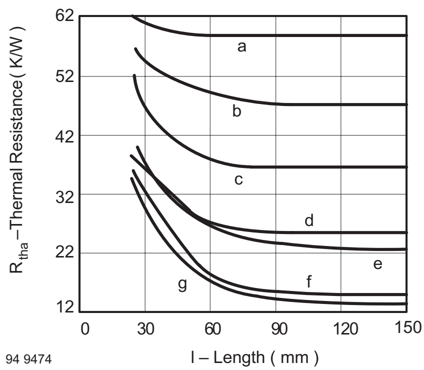

Figure 1.

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Rev. 1.2, 14-May-04

Pertinax boards 1.5 mm thick

a: Pertinax non-metallized

b: Pertinax with 35 mm copper metallization on one side; heat source fitted to non-metallized side

c: Pertinax with 70 mm copper metallization on one side; heat source fitted to non-metallized side

d: Pertinax with 35 mm copper metallization on one side; heat source fitted to metallized side

e: Pertinax with 35 mm copper metallization on both sides

f: Pertinax with 70 mm copper metallization on one side; heat source fitted to metallized side

g: Pertinax with 70 mm copper metallization on both sides

R_{tha}: Thermal resistance of boards

l: Edge length

When using cooling plates as heat sinks without optimum performance, the following approach is acceptable.

The curves shown in figures 2 and 3 are given for thermal resistance, R_{thCA}, by using square plates of aluminium with edge length **a** but with different thicknesses.

The device case should be mounted directly on the cooling plate.

The edge length **a** derived from figures 2 and 3 for a given R_{thCA} value must be multiplied with α and β:

$a' = a \times \beta \times \alpha$

where

α = 1.00 for vertical arrangement

α = 1.15 for horizontal arrangement

β = 1.00 for bright surface

β = 0.85 for dull black surface

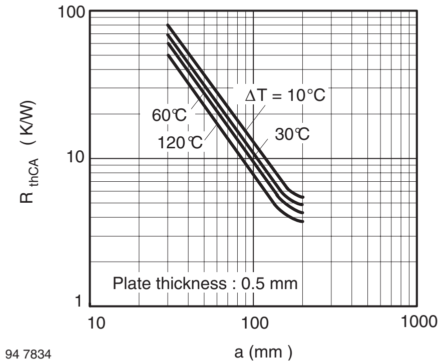


Figure 2.

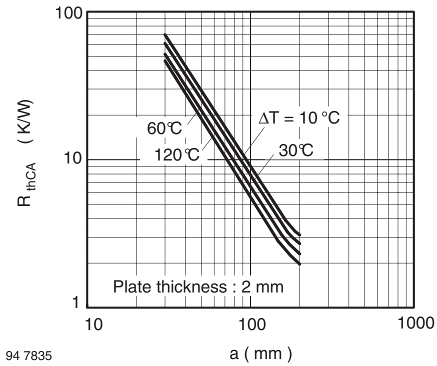


Figure 3.

Physical Explanation

General Terminology

Semiconductor diodes are used as rectifiers, switchers, Varicaps and voltage stabilizers (see chapter 'Voltage Regulator and Z-diodes').

Semiconductor diodes are two-terminal solid-state devices having asymmetrical voltage-current characteristics. Unless otherwise stated, this means a device has single pn-junction corresponding to the characteristics shown in figure 1.

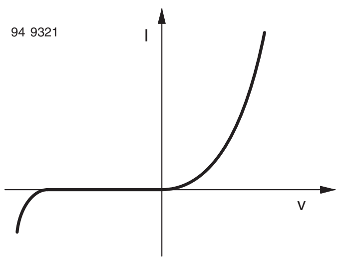


Figure 1.

An application of the voltage current curve is given by

$$I = I_S\left(\exp\frac{V}{V_T} - 1\right)$$

where

I_S = saturation current

$$V_T = \frac{k \times T}{q} = \text{temperature potential}$$

If the diode is forward-biased (anode positive with respect to cathode), its forward current ($I = I_F$) increases rapidly with increasing voltage. That is, its resistance becomes very low.

If the diode is reverse-biased (anode negative with respect to cathode), its reverse current ($-I = I_R$) is extremely low. This is only valid until the breakdown voltage $V_{(BR)}$ has been reached. When the reverse voltage is slightly higher than the breakdown voltage, a sharp rise in reverse current results.

Bulk resistance
Resistance of the bulk material between junction and the diode terminals.

Parallel resistance, r_P
Diode resistance resulting from HF rectification which acts as a damping resistance to the pre-tuned demodulation circuit.

Diode capacitance, C_D
Total capacitance between the diode terminals due to case, junction and parasitic capacitances.

Breakdown voltage, $V_{(BR)}$
Reverse voltage at which a small increase in voltage results in a sharp rise of reverse current. It is given in the technical data sheet for a specified current.

Forward voltage, V_F
The voltage across the diode terminals which results from the flow of current in the forward direction.

Forward current, I_F
The current flowing through the diode in the direction of lower resistance.

Forward resistance, r_F
The quotient of dc forward voltage across the diode and the corresponding dc forward current.

Forward resistance, differential r_f
The differential resistance measured between the terminals of a diode under specified conditions of measurement, i.e., for small-signal ac voltages or currents at a point of forward direction V-I characteristic.

Case capacitance, C_{case}
Capacitance of a case without a semiconductor crystal.

Integration time, t_{av}
With certain limitations, absolute maximum ratings given in technical data sheets may be exceeded for a short time. The mean value of current or voltage is decisive over a specified time interval termed integration time. These mean values over time interval, t_{av}, should not exceed the absolute maximum ratings.

Average rectified output current, I_{FAV}
The average value of the forward current when using the diode as a rectifier. The maximum allowable average rectified output current depends on the peak value of the applied reverse voltage during the time interval at which no current is flowing. In the absolute maximum ratings, one or both of the following are given:

- The maximum permissible average rectified output current for zero diode voltage (reverse)

- The maximum permissible average rectified output current for the maximum value of U_{RRM} during the time interval at which no current is flowing.

Note:

I_{FAV} decreases with an increasing value of the reverse voltage during the interval of no current flow.

Rectification efficiency, η_r

The ratio of the dc load voltage to the peak input voltage of an RF rectifier.

Reverse recovery time, t_{rr}

The time required for the current to reach a specified reverse current, i_R, after instantaneous switching from a specified forward condition (I_F) to a specified reverse bias condition (I_R).

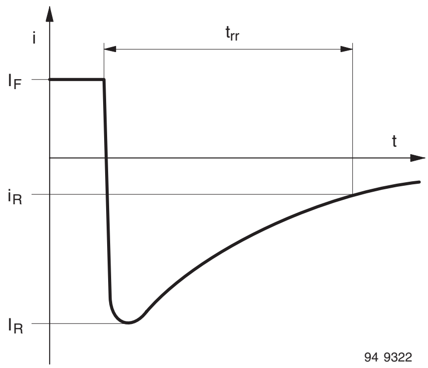


Figure 2.

Series resistance, r_s

The total value of resistance representing the bulk, contact and lead resistance of a diode given in the equivalent circuit diagram of variable Varicaps.

Junction capacitance, C_j

Capacitance due to a pn junction of a diode which decreases with increasing reverse voltage.

Reverse voltage, V_R

The voltage drop which results from the flow of reverse current (through the semiconductor diode).

Reverse current, I_R (leakage current)

The current which flows when reverse bias is applied to a semiconductor junction.

Reverse resistance, R_R

The quotient of the dc reverse voltage across a diode and the corresponding dc reverse current.

Reverse resistance, differential, r_r

The differential resistance measured between the terminals of a diode under specified condition of measurement i.e., for small-signal (ac) voltage or currents at a point of reverse-voltage direction V-I characteristic.

Peak forward current, I_{FRM}

The maximum forward current with sine-wave operation, f ≥ 25 Hz, or pulse operation, f ≥ 25 Hz, having a duty cycle $t_P/T \leq 0.5$.

Peak reverse voltage, V_{RRM}

The maximum reverse voltage having an operating frequency f ≥ 25 Hz for sine-wave as well as pulse operation.

Peak surge forward current, I_{FSM}

The maximum permissible surge current in a forward direction having a specified waveform with a short specified time interval (10 ms) unless otherwise specified. It is not an operating value. During frequent repetitions, there is a possibility of change in the device's characteristic.

Peak surge reverse voltage, V_{RSM}

The maximum permissible surge voltage applied in a reverse direction. It is not an operating value. During frequent repetitions, there is a possibility of change in the device's characteristic.

Power dissipation, P_V

An electrical power converted into heat. Unless otherwise specified, this value is given in the data sheets under absolute maximum ratings, with T_{amb} = 25 °C at a specified distance from the case (both ends).

Forward recovery time, t_{fr}

The time required for the voltage to reach a specified value after instantaneous switching from zero or a specified reverse voltage to a specified forward biased condition.

This recovery time is especially noticeable when higher currents are to be switched within a short time. The reason is that the forward resistance during the turn-on time could be higher than the dc current (inductive behavior). This can result in the destruction of a diode because of high instantaneous power loss if constant current control is used.

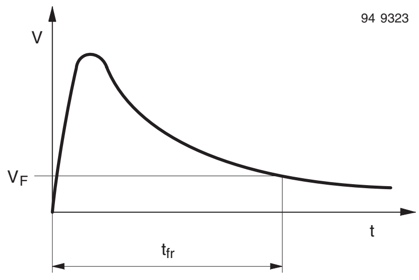


Figure 3.

Voltage Regulator Diodes and Z-diodes

A voltage regulator diode is a diode which develops an essentially constant voltage across its terminals throughout a specified current range.

Special reverse-biased diodes known as Z-diodes and certain forward-biased silicon diodes can be used as voltage regulator diodes.

Z-diodes are silicon diodes which result from a specified applied reverse voltage onward in a rapid increase of reverse current avalanche or Z-breakdown voltage. These diodes are operated permanently in this breakdown region.

Due to the sharp rise of the reverse current the corresponding breakdown voltage is nearly constant.

Z-diodes are used for voltages above 2.4 V. If lower operating voltages are needed, the above mentioned forward-biased silicon diodes can be used.

Operating or working voltage, in the breakdown region, V_Z

Voltage across the terminals of a Z-diode for a specified value of reverse current in the breakdown region.

Operating or working current in the breakdown region, I_Z

Reverse current flowing in an allowable area of the breakdown region of a Z-diode.

Differential resistance in the breakdown region, r_Z

Differential quotient between operating voltage and operating current for a specified working current.

$$r_Z = \frac{dV_Z}{dI_Z}$$

This value is the sum of inherent (r_Z) and thermal differential (r_{zj}) resistances.

$r_Z = r_{zj} + r_{zth}$

Inherent differential resistance, r_{zj}, in the breakdown region

This value is a part of the total differential resistance of a Z-diode in the breakdown region. It is responsible for short-time load change and constant junction temperature.

$$r_{zj} = \left(\frac{\delta V_Z}{\delta I_Z}\right) T_j = \text{constant}$$

It is valid for the case where the frequency of load changes is so high that the junction temperature does not change.

Thermal differential resistance, r_{zth}, in the breakdown region

The thermal differential resistance is a result of the thermal characteristics of the diode. This should be considered together with inherent differential resistance, r_{zj}.

$$r_{zth} = \frac{dT_j}{dI_Z} \times \left(\frac{\delta V_Z}{\delta T_j}\right) I_Z = \text{constant}$$
$$= U_Z^2 \times R_{thJA} \times TK_{VZ}$$

Measuring current, I_Z

The value given in technical data serves as a measuring condition for the operating voltage, V_Z, inherent differential resistance, r_{zj}, and the temperature coefficient of the operating voltage, T_{KVZ}.

Temperature coefficient, T_{KVZ}

This characteristic gives the temperature dependence of the operating voltage for a specified operating current such as

$$TK_{VZ} = \frac{1}{V_Z} \times \frac{dV_Z}{dt}$$

The unit of measurement used is either %/ °C or 10^{-4}/ °C

Z-voltage, V_Z

See operating or working voltage

Z–current, I_Z

See operating or working current

Z-resistance, r_Z

See differential resistance

Varicap Diodes

Varicap diodes are used in different circuits, such as tuning, AFC, frequency multiplier, modulation, couple element in filters with controlled bandwidth, parametric amplification, switching in the VHF- and microwave regions, etc. In all these applications, the basic variation of junction capacitance with reverse voltage has been investigated.

A simplified equivalent circuit of an encapsulated Varicap diode is shown in figure 4.

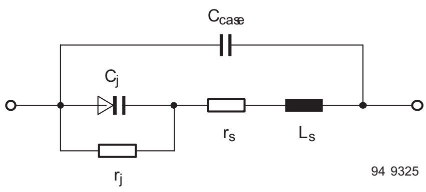


Figure 4.

C_{case} = Case capacitance
C_j = Junction capacitance
r_s = Series resistance
L_s = Series inductance
r_j = Junction resistance

In the case of silicon (Varicap) diodes, the junction resistance, r_j, is very high at zero or negative (reverse) bias. At high resonant frequency, C_{case} can be neglected and the equivalent circuit is the one shown in figure 5.

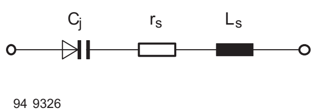


Figure 5.

Junction capacitance C_j can be calculated as follows:

$$C_j = \frac{C_{jo}}{\left(\frac{1 + V_R}{V_D}\right)^n}$$

C_{jo} = Junction capacitance at zero bias ($V_R = 0$)
V_D = Diffusion voltage, 0.7 V for silicon
n = The exponent n has different values according to the technology used, such as:
n = 0.33-diffused diode with linear technology
n = 0.5-abrupt pn junction, planar epitaxial technology
n ≥ 0.75-diode with retrograded junction

Retrograded junction diodes (n ≥ 0.75) are capable of very large capacitance deviation and are therefore suitable for tuning with large frequency range (i.e., BB205 for VHF). For these diodes, n is a function of reverse voltage, i.e., n = f(V_R). The quality, Q, of the Varicap is an important factor and can be calculated as follows:

$$Q = \frac{1}{2\pi \times f \times C_j \times r_S}$$

The series resistance, r_s, decreases with the increasing applied bias. It is also frequency dependent. The non-linearity of a capacitance characteristic results in a signal distortion or deformation due to the ratio of a signal amplitude to the applied bias.

In push-pull arrangements one can further minimize the distortion even with a larger range of signal.

Because the signal modulates the diode in counter phase, the capacitance changes. The diode is now almost compensated.

The temperature coefficient of the junction capacitance is approximately 3×10^{-4}/°C with V_R = 3 V. It is a result of a change of –2 mV/°C in diffusion voltage, V_D. The temperature coefficient of the junction capacitance decreases with increasing reverse voltage.

The junction resistance, r_j, decreases 6 % and the series resistance, r_s, decreases approximately 1 % with an increase in the junction temperature of 1°C.

PIN Diodes

PIN stands for p-intrinsic-n. In this type of diode, a heavily doped p region and a heavily doped n region are separated by a layer of high resistivity material which is nearly intrinsic (I), as shown in figure 6. Under reverse bias, the PIN diode has a very high impedance (at microwave frequencies), whereas at moderate forward current it has a very low impedance.

This permits the use of the PIN diode as a low-loss switch with small self capacitance.

The RF resistance of the diode can be varied continuously from large to small values by changing the diode bias. The PIN diode can therefore be used more advantageously as an HF attenuator in a π or T–circuit.

Typical examples are: VHF-band switch diode BA282, BA682 and attenuator diode BA479G and BA679.

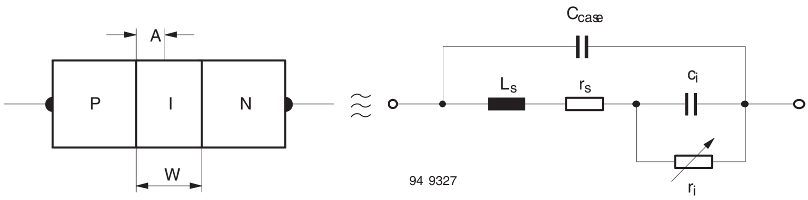


Figure 6.

W = Width of the I-Zone

A = Space charge carrier area

L_S = Total series inductance

r_s = Total resistance of the p and n layers and any resistance associated with the contacts of these

c_i = Layers r_i and represent the resistance and capacitance of the portion of the I-layer exclusive of the swept-out region.

Taping of Diodes

Axial Lead Components

Diodes and rectifiers with axial leads are normally delivered in taped form according to IEC 286-1 (see figure 1). The cathode side is designated by a colored tape. Taped devices are normally delivered in ammo-boxes (Ammopack). Delivery on reels is available on request.

Diodes in DO-35 packages are also available with 26 mm tapewidth and radial taped.

For details please contact factory.

Quantities per box dimensions
264 (L) x 146 (H) x 73 (W)

Package	Available Packaging		
	10´´ tape & reel	14´´ tape & reel	Ammo Pack #1
	Quantity / Reel	Quantity / Reel	Quantity / Box
DO-35		10.000	10.000

Taping Specifications DO-35 Package

Description	Symbol	Specification (mm)
Component Pitch	A	5.0 ± 0.5
Devices with diameter	d	< 4.5
Component Pitch	A'	10 ± 0.5
Devices with diameter	d'	> 4.5
Inside Tape Spacing	B	52 + 2 mm - 1 mm
Lead to Lead Eccentricity	ID1-D2I	1.4 max
Lead Extension	K	0
Lead Bending	M	1.2 max
Cumulative Pitch	P	2.0 per 10 pitch
Exposed Adhesive	S	0.8 max
Tape Width	T	6.0 ± 0.4
Tape Leader	Beginning and end of reel or ammo pack.	300.0 min
Empty Spaces	Consecutive missing components not allowed	< 0.1 %
Polarity Marking	All polarized components shall be oriented in the same direction. The cathode tape shall be colored, and anode tape shall be white or light beige.	

Allowable deviation above 10 taped steps ± 2 mm

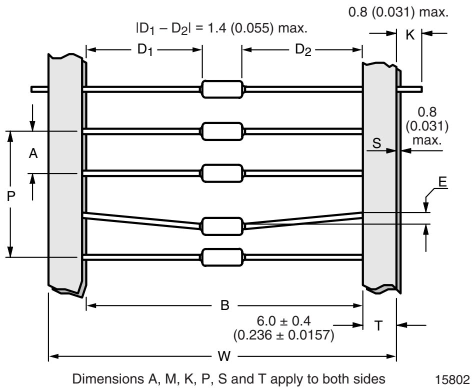


Figure 1.

Ammopack #1 Specification DO-35 Package

Description	Symbol	Specification	
		Inches	Millimeters
Length	A	10.25 ± 0.2	260 ± 5.0
Width	B	2.75 ± 0.2	70 ± 5.0
Height	C	5.75 ± 0.65	146 ± 16.0

Material: corrugated board (neutral)

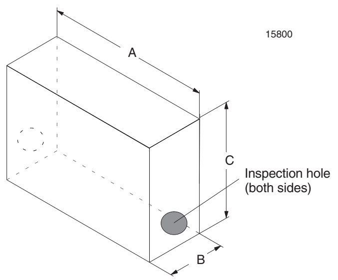


Figure 2.

Reel Specification DO-35 Package

Description	Symbol	Reel Size 14“
Arbor Hole Diameter	D_0	30 ± 1 mm
Core Diameter	D_1	80 ± 1 mm
Reel Diameter	D_2	355 mm
Drive Hole Diameter	D_3	8 ± 0.5 mm
Reel Width	W_1	73 mm
Drive / Arbor Hole Spacing	W_2	26 ± 0.5 mm
Core Material		Carton
Reel Material		Carton

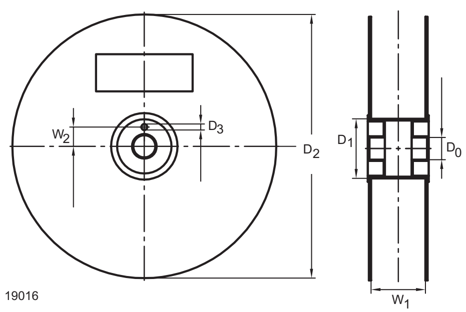


Figure 3.

Tape and Reel Surface-Mounted Devices (SMDs)

SMDs are normally delivered taped on blister tape and reeled according to IEC 286–3. The mounting side of the component is oriented to the bottom side of the tape. For components with two terminations, the cathode side is oriented to the sprocket hole. For components in SOT-23 package, the side from which one single termination emerges is oriented to the sprocket hole. Components can be delivered either on 180 mm or on 330 mm reels. For quantities per reel, see below.

Case Type	Suffix	Quantity	Reel Size in mm (Diameter)	Tape Width in mm
DO-214AC	TR TR3	1500 6000	180 330	12 12
LLP75-3A	GS08 GS18	3000 10000	180 330	8 8
LLP75-3B	GS08 GS18	3000 10000	180 330	8 8
MicroMELF	TR TR3	2500 10000	180 330	8 8
MiniMELF SOD-80	GS08 GS18	2500 10000	180 330	8 8
QuadroMELF SOD-80	GS08 SG18	2500 10000	180 330	8 8
SMF (DO-219AB)	GS08 GS18	3000 10000	180 330	8 8
SO-8	GS18	2500	330	8
SOD-123	GS08 GS18	3000 10000	180 330	8 8
SOD-323	GS08 GS18	3000 10000	180 330	8 8
SOD-523	GS08	3000	180	8
SOT-23	GS08 GS18	3000 10000	180 330	8 8
SOT-323	GS08 GS18	3000 10000	180 330	8 8
SOT-490	GS08	3000	180	8

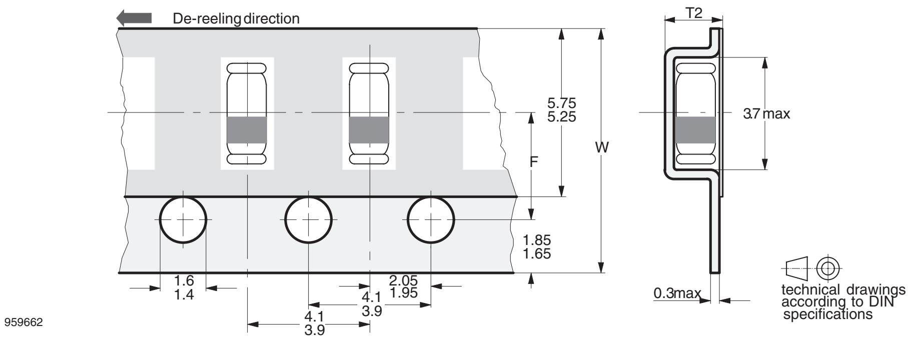


Figure 4.

Packages / Devices	Dimensions (mm)			
	W	F	T2	B
MiniMELF, SOD-80 MicroMELF, SOD-80 QuadroMELF, SOD-123, SOD-323, SOT-23, SOT-323	8 ± 0.3	3.5 ± 0.05	2.5 mm max.	8.4 to 10.4

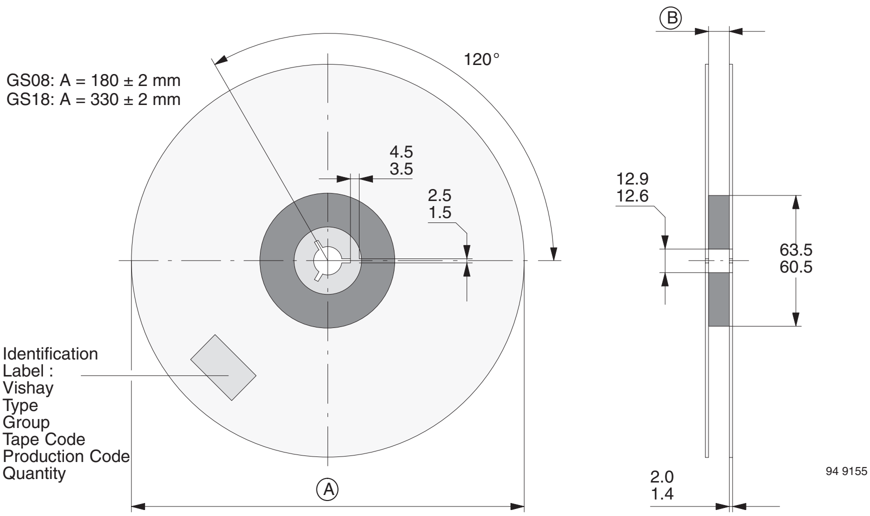


Figure 5.

Missing devices

A maximum of 0.5 % of the total number of components per reel may be missing – exclusively at the beginning and at the end of the reel. A maximum of three consecutive components may be missing, provided this gap is followed by six consecutive components (see figure 6).

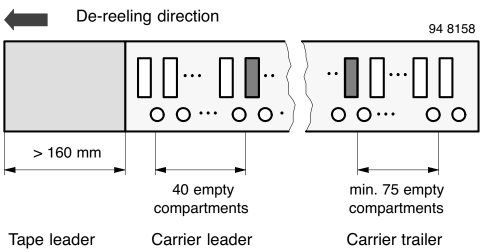


Figure 6.

Labelling

18916

Figure 7. Labelling of taping reel

18917

Figure 8. Labelling of carton box

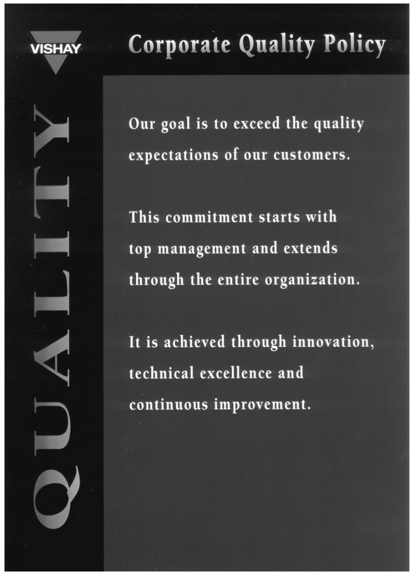
Quality Information

Vishay Semiconductors' Continuous Improvement Activities

- Quality training for ALL personnel including production, development, marketing and sales departments
- Zero defect mindset
- Permanent quality improvement process
- Total Quality Management (TQM)
- Vishay Semiconductors' Quality Policy established by the Management Board
- Quality system certified per ISO 9001: 2000
- Quality system certified per ISO/TS 16949: 2002
- Environmental System certified per ISO14001
- Work Safety system certified per OHSAS18001

Vishay Semiconductors' Tools for Continuous Improvement

- Vishay Semiconductors follows the Rules of the EFQM - Quality - Management system
- Vishay Semiconductors qualifies materials, processes and process changes
- Vishay Semiconductors uses Process FMEA (Failure Mode and Effects Analysis) for all processes. Process and machine capability as well as Gauge R&R (Repeatability & Reproducibility) are proven
- Vishay Semiconductors internal qualifications correspond to IEC68-2, MIL STD 750 and AEC-Q101
- Vishay Semiconductors periodically requalifies device types (Long Term Monitoring).
- Vishay Semiconductors uses SPC for significant production parameters. SPC is performed by trained operators.
- Vishay Semiconductors' 2 x 100 % testing of final products.
- Vishay Semiconductors' lot release is carried out via sampling.
  Sampling acceptance criterion is always c = 0.



16966

Create First-Class Quality, On-Time Delivery, And Satisfy Customers' Requirements


Within a certification audit the
Vishay Semiconductor (Austria) Ges.m.b.H

VISHAY

at the location A-4840 Vöcklabruck, has proved that according to the international standard DIN EN ISO 14001, an environmental management system has been established, an environmental policy was published, and management system audits are performed on a regular basis.

Certificate

No. u-12402-0

for an environmental management system according to

Berlin, November 6th, 2001

ISO 14001
Issue October 1996

This certificate is held since 1998 and is valid until November 2004.

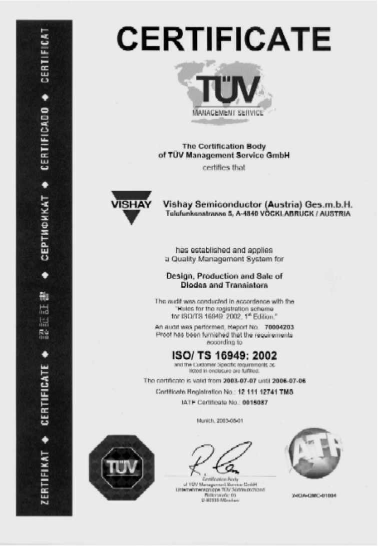
Dr.-Ing. Jan Uwe Lieback
Environmental expert D-V-0026

GUT
DAU D-V-0213

Dipl.-Phys. Andreas Lemke
Head Certification office

18587

Figure 1. Vishay Semiconductor Ges.m.b.H, A-Voecklabruck
ISO 14001 : 1996


CERTIFICATE

TÜV
MANAGEMENT SERVICE

The Certification Body
of TÜV Management Service GmbH
certifies that

Vishay Semiconductor (Austria) Ges.m.b.H.
Telefunkenstrasse 5, A-4840 VÖCKLABRUCK / AUSTRIA

has established and applies
a Quality Management System for

Design, Production and Sale of
Diodes and Transistors

An audit was performed, Report No. 70004203
ISO/ TS 16949: 2002

The certificate is valid from 2003-07-07 until 2006-07-06
Certificate Registration No.: 12 111 12741 TMS

18586

Figure 3. Vishay Semiconductor Ges.m.b.H, A-Voecklabruck
ISO TS 16949 : 2002


CERTIFICATE

TÜV
MANAGEMENT SERVICE

The Certification Body
of TÜV Management Service GmbH

certifies that

Vishay Semiconductor (Austria) Ges.m.b.H.
Telefunkenstrasse 5, A-4840 VÖCKLABRUCK / AUSTRIA

has established and applies
a Quality Management System for

Design, Production and Sale of
Diodes and Transistors

An audit was performed, Report No. 70004203
Proof has been furnished that the requirements
according to
ISO 9001: 2000
are fulfilled. The certificate is valid until 2006-07-06
Certificate Registration No. 12 100 12741 TMS
Munich, 2003-08-01

TGA-ZM-07-02

18771

Figure 2. Vishay Semiconductor Ges.m.b.H, A-Voecklabruck
ISO 9001 : 2000


TÜV Rheinland/
Berlin-Brandenburg
TÜV

CERTIFICATE

The Certification Body for Environmental Management Systems
of TÜV Anlagentechnik GmbH
hereby certifies that the enterprise

Shanghai Vishay Semiconductor Opto Co., Ltd.
Shanghai Vishay Semiconductor Co., Ltd.
501 West Jiangchang Road, Shanghai 200436, P. R. China

has established and applies an environmental management system for

Manufacturing of Diodes, Optocoupler, LED and IR-Emitter

The audit was performed,
Report No. 000495
Proof has been furnished, that the requirements according to
ISO 14001
(edition 1996) are fulfilled.
The certificate is valid until 2004 January
Certification Registration No. 01 104 000495

Cologne, 2001-01-05
Certification Body for Environmental Management Systems
TÜV Anlagentechnik GmbH

18592

Figure 4. Shanghai Vishay Semiconductor Co., Ltd., China
ISO 14001 : 1996


CERTIFICATE

The TÜV CERT Certification Body
of TÜV Anlagentechnik GmbH

certifies in accordance with
TÜV CERT procedures that

Shanghai Vishay Semiconductor Co., Ltd.
Shanghai Vishay Semiconductor Opto. Co., Ltd.
501 West Jiangchang Road,
Shanghai 200436,
P.R. China

has established and applies a quality management system for

Manufacturing of Diodes, Transistors, Opto Couplers,
LED's and IR-Emitters
- without product design and development -

The audit was conducted as per the
"Certification Guideline of the Automotive Industry for ISO/TS 16949:2002,
1st edition"

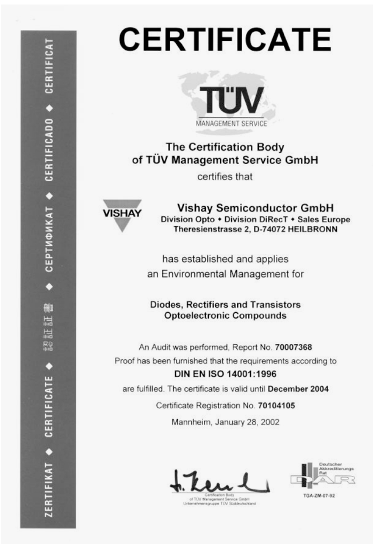
Proof has been furnished through an audit, Report No. 99463
that the requirements according to

ISO/TS 16949:2002

have been fulfilled.
The certificate is valid until 2006-07-21
Certificate Registration No. 01 111 99463
IATF Certificate No. 0018133

18772

Figure 5. Shanghai Vishay Semiconductor Co., Ltd., China
ISO/TS 16949 : 2002


ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE

TÜV
MANAGEMENT SERVICE

The Certification Body
of TÜV Management Service GmbH
certifies that

Vishay Semiconductor GmbH
Division Opto • Division DiRecT • Sales Europe
Theresienstrasse 2, D-74072 HEILBRONN

has established and applies
an Environmental Management for

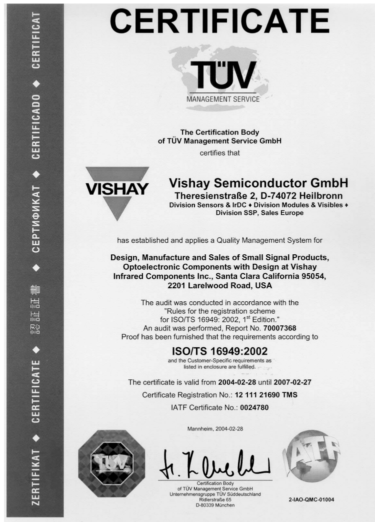
Diodes, Rectifiers and Transistors
Optoelectronic Compounds

An Audit was performed, Report No. 70007368
Proof has been furnished that the requirements according to
DIN EN ISO 14001:1996
are fulfilled. The certificate is valid until December 2004
Certificate Registration No. 70104105
Mannheim, January 28, 2002

TGA-ZM-07-92

19017

Figure 6. Vishay Semiconductor GmbH, D-Heilbronn
ISO 14001 : 1996


ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE

TÜV
MANAGEMENT SERVICE

The Certification Body
of TÜV Management Service GmbH
certifies that

Vishay Semiconductor GmbH
Theresienstraße 2, D-74072 Heilbronn
Division Sensors & IrDC ♦ Division Modules & Visibles ♦
Division SSP, Sales Europe

has established and applies a Quality Management System for

Design, Manufacture and Sales of Small Signal Products,
Optoelectronic Components with Design at Vishay
Infrared Components Inc., Santa Clara California 95054,
2201 Larelwood Road, USA

The audit was conducted in accordance with the
"Rules for the registration scheme
for ISO/TS 16949: 2002, 1st Edition."
An audit was performed, Report No. 70007368
Proof has been furnished that the requirements according to

ISO/TS 16949:2002

and the Customer-Specific requirements as
listed in enclosure are fulfilled.

The certificate is valid from 2004-02-28 until 2007-02-27
Certificate Registration No.: 12 111 21690 TMS
IATF Certificate No.: 0024780

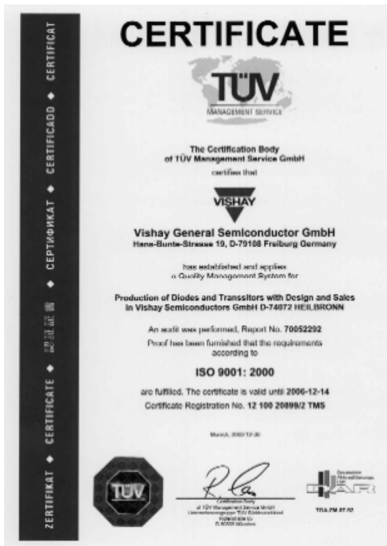
Mannheim, 2004-02-28

Certification Body
of TÜV Management Service GmbH
Unternehmensgruppe TÜV Süddeutschland
Ridlerstraße 65
D-80339 München

2-IAO-QMC-01004

19018

Figure 7. Vishay Semiconductor GmbH, D-Heilbronn
ISO TS 16949 : 2002


ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE

TÜV
MANAGEMENT SERVICE

The Certification Body
of TÜV Management Service GmbH
certifies that

Vishay General Semiconductor GmbH
Hans-Bunte-Strasse 19, D-79108 Freiburg Germany

has established and applies
a Quality Management System for

Production of Diodes and Transsitors with Design and Sales
in Vishay Semiconductors GmbH D-74072 HEILBRONN

An audit was performed, Report No. 70052292
Proof has been furnished that the requirements
according to

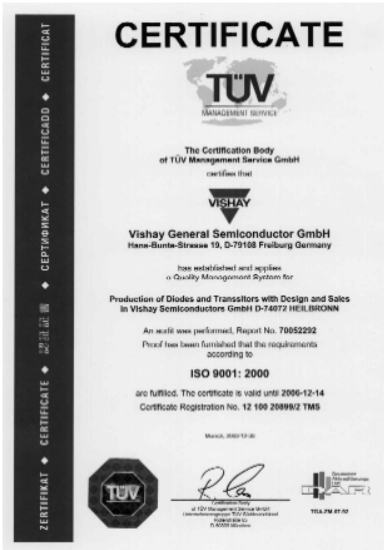
ISO 9001: 2000

are fulfilled. The certificate is valid until 2006-12-14
Certificate Registration No. 12 100 20899/2 TMS

TGA-ZM-07-92

18812

Figure 8. Vishay General Semiconductor GmbH, D-Freiburg
ISO 9001 : 2000



CERTIFICATE

TÜV
MANAGEMENT SERVICE

The Certification Body
of TÜV Management Service GmbH
certifies that

Vishay General Semiconductor GmbH
Hans-Bunte-Strasse 19, D-79108 Freiburg Germany

has established and applies
a Quality Management System for

Production of Diodes and Transistors with Design and Sales
in Vishay Semiconductors GmbH D-74072 HEILBRONN

An audit was performed, Report No. 70052292
Proof has been furnished that the requirements
according to

ISO 9001: 2000

are fulfilled. The certificate is valid until 2006-12-14
Certificate Registration No. 12 100 20899/2 TMS

18811

Figure 9. Vishay General Semiconductor GmbH, D-Freiburg
QS 9000 : 1998

SGS

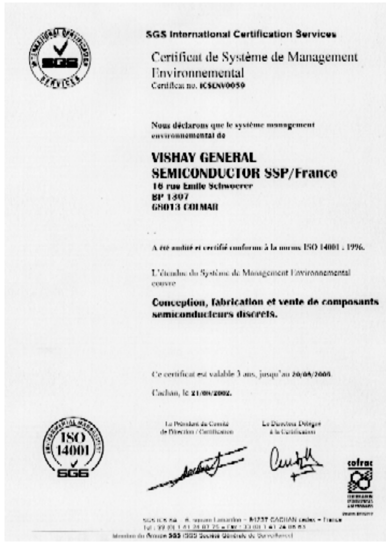
VISHAY
General Semiconductor GmbH

ISO 14001:1996

Herstellung von Diskreten Halbleitern

18793

Figure 10. Vishay General Semiconductor GmbH, D-Freiburg
ISO 14001 : 1996



SGS International Certification Services

Certificat de Système de Management
Environnemental

Nous déclarons que le système management
environnemental de

VISHAY GENERAL
SEMICONDUCTOR SSP/France
16 rue Emile Schwoerer
BP 1307
68013 COLMAR

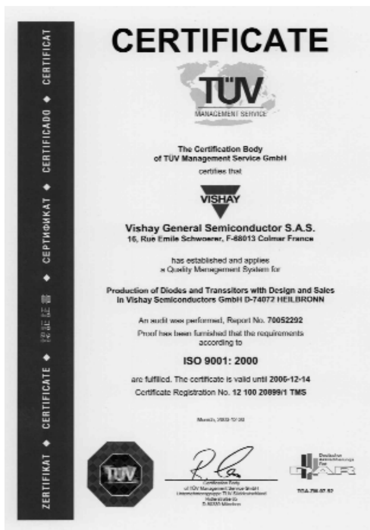
a été audité et certifié conforme à la norme ISO 14001 : 1996.

L'étendue du Système de Management Environnemental
couvre

Conception, fabrication et vente de composants
semiconducteurs discrets.

18788

Figure 11. Vishay General Semiconductor S.A.S, F-Colmar
ISO 14001 : 1996



CERTIFICATE

TÜV
MANAGEMENT SERVICE

The Certification Body
of TÜV Management Service GmbH
certifies that

Vishay General Semiconductor S.A.S.
16, Rue Emile Schwoerer, F-68013 Colmar France

has established and applies
a Quality Management System for

Production of Diodes and Transistors with Design and Sales
in Vishay Semiconductors GmbH D-74072 HEILBRONN

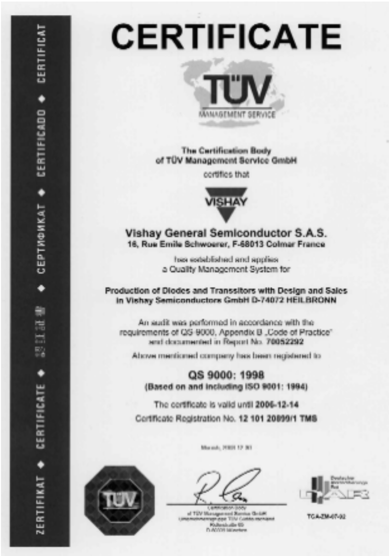
An audit was performed, Report No. 70052292
Proof has been furnished that the requirements
according to

ISO 9001: 2000

are fulfilled. The certificate is valid until 2006-12-14
Certificate Registration No. 12 100 20899/1 TMS

18814

Figure 12. Vishay General Semiconductor S.A.S, F-Colmar
ISO 9001 : 2000



CERTIFICATE

TÜV MANAGEMENT SERVICE

The Certification Body
of TÜV Management Service GmbH
certifies that

VISHAY

Vishay General Semiconductor S.A.S.
16, Rue Emile Schwoerer, F-68013 Colmar France

has established and applies
a Quality Management System for

Production of Diodes and Transistors with Design and Sales
in Vishay Semiconductors GmbH D-74072 HEILBRONN

An audit was performed in accordance with the
requirements of QS-9000, Appendix B „Code of Practice"
and documented in Report No. 70052292

Above mentioned company has been registered to

QS 9000: 1998
(Based on and including ISO 9001: 1994)

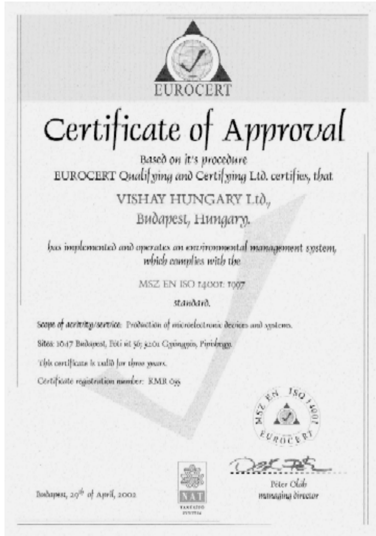
The certificate is valid until 2006-12-14
Certificate Registration No. 12 101 20899/1 TMS

TGA-ZM-07-92

ZERTIFIKAT ◆ CERTIFICATE ◆ CERTIFICADO ◆ CERTIFICAT

18813

Figure 13. Vishay General Semiconductor S.A.S, F-Colmar
QS 9000 : 1998



EUROCERT

Certificate of Approval

Based on it's procedure
EUROCERT Qualifying and Certifying Ltd. certifies, that

VISHAY HUNGARY Ltd,
Budapest, Hungary,

has implemented and operates an environmental management system,
which complies with the

MSZ EN ISO 14001: 1997

standard.

Scope of activity/service: Production of microelectronic devices and systems.

Sites: 1047 Budapest, Fóti út 56; 3201 Gyöngyös, Pipishegy

This certificate is valid for three years.

Certificate registration number: RMR 035

MSZ EN ISO 14001 EUROCERT

Budapest, 29th of April, 2002

NAT

Péter Oláh
managing director

18773

Figure 15. Vishay Hungary Ltd., H-Budapest, H-Gyöngyös
ISO 14001 : 1997

AIB-VINÇOTTE International Ltd.
Brussels, Belgium

02-IAO-QMC-01017

Quality Management System Certificate

ISO/TS 16949 : 2002
(excluding Product Design)
Particular requirements for the application of
ISO 9001 : 2000
for automotive production and relevant service part organizations

This is to certify that VISHAY HUNGARY ELECTRONICS CO.
Diode Production Group

located at Pipis-hegy
3200 GYÖNGYÖS (HUNGARY)

has established and is maintaining a Quality Management System which is in accordance with the requirements of ISO/TS 16949 : 2002 and having been audited in accordance with the "Rules for the registration scheme for ISO/TS 16949 : 2002 First edition" for :

Assembly and test of semiconductor devices

This Certificate is based on the result of an audit documented in report no. REP-2-C-080A, 081A/TS.
This Certificate is granted subject to AIB-VINÇOTTE International's General Regulations on Management Systems Certification.

In appendix (page 2/2): - list of customer specific requirements
- list of supporting remote locations

Certificate number : 00 1451a/III
IATF Certificate number : 0010772
Date of issue : November 25, 2002
This certificate expires on : November 24, 2005
Signed for the certification body :

ir. P. OLIVIER
Chairman Certification Committee

AV INTERNATIONAL

page 1/2

18775

Figure 14. Vishay Hungary Electronics CO., H-Budapest
ISO/TS 16949 : 2002

AIB-VINÇOTTE International Ltd.
Brussels, Belgium

02-IAO-QMC-01017

Quality Management System Certificate

ISO/TS 16949 : 2002
(excluding Product Design)
Particular requirements for the application of
ISO 9001 : 2000
for automotive production and relevant service part organizations

This is to certify that VISHAY HUNGARY ELECTRONICS CO.
Diode Production Group

located at Pipis-hegy
3200 GYÖNGYÖS (HUNGARY)

has established and is maintaining a Quality Management System which is in accordance with the requirements of ISO/TS 16949 : 2002 and having been audited in accordance with the "Rules for the registration scheme for ISO/TS 16949 : 2002 – First edition" for :

Assembly and test of semiconductor devices

This Certificate is based on the result of an audit documented in report no. REP-2-C-080A, 081A/TS.
This Certificate is granted subject to AIB-VINÇOTTE International's General Regulations on Management Systems Certification.

In appendix (page 2/2): - list of customer specific requirements
- list of supporting remote locations

Certificate number : 00 1451a/III
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Date of issue : November 25, 2002
This certificate expires on : November 24, 2005
Signed for the certification body :

ir. P. OLIVIER
Chairman Certification Committee

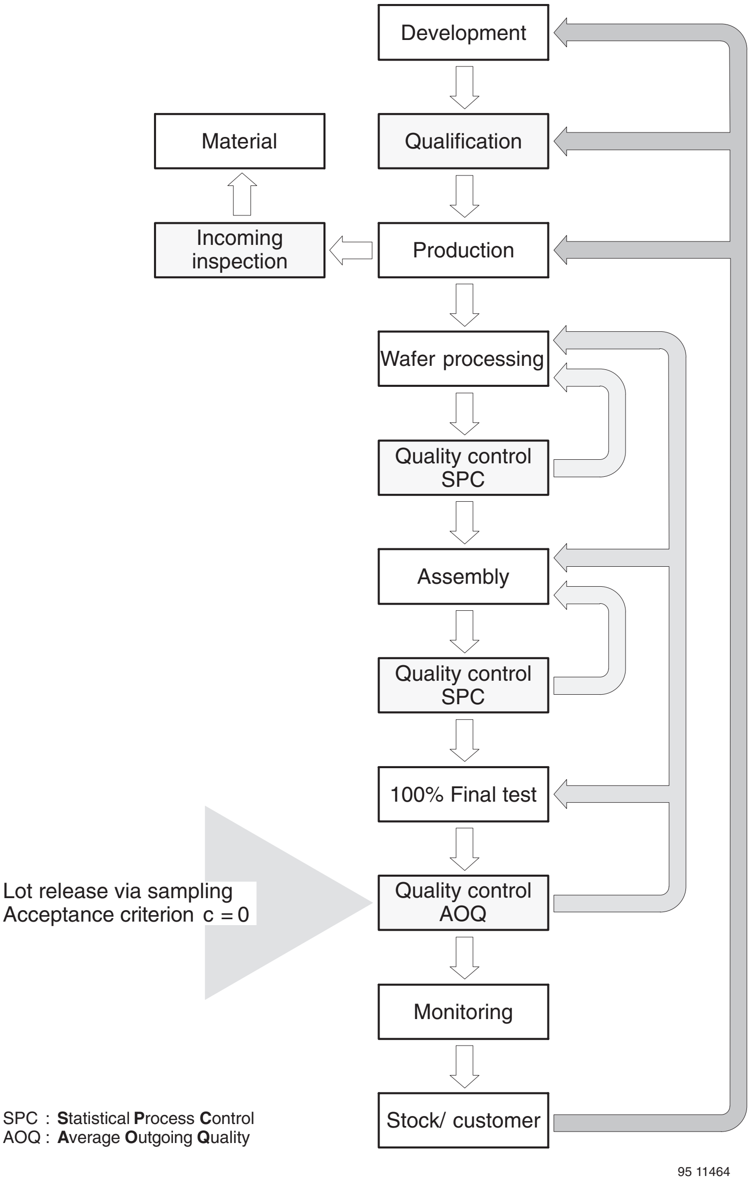
AV INTERNATIONAL

page 1/2

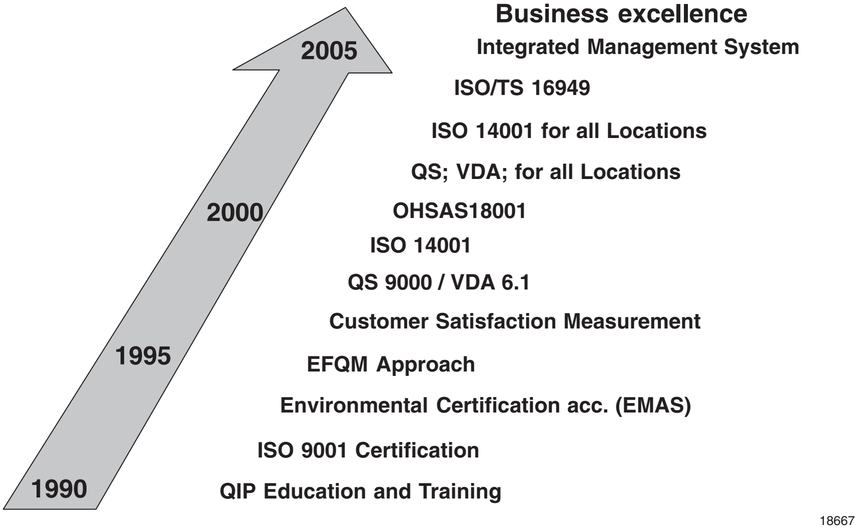
18774

Figure 16. Vishay Hungary Electronics CO., H-Gyöngyös
ISO/TS 16949 : 2002

General Quality Flow Chart



Vishay Quality Road Map



Qualification and Release

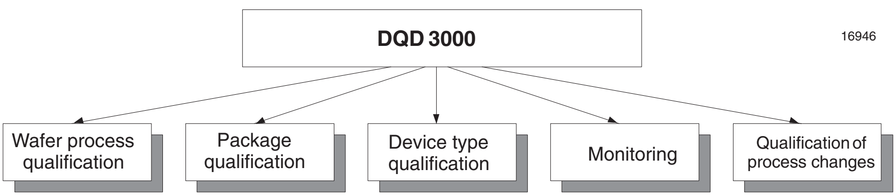


Figure 17. Structure of DQD 3000

New wafer processes, packages and device types are qualified according to the internal Vishay Semiconductors specification DQD 3000.

DQD 3000 consists of five parts (see Figure 15).

Wafer process release:
The wafer process release is the fundamental release qualification for the various technologies used by Vishay Semiconductors. Leading device types are defined for various technologies. Three wafer lots of these types are subjected to an extensive qualification procedure and are used to represent this technology. A positive result will lead to release of the technology.

Package release:
The package release is the fundamental release qualification for the different packages used. Package groups are defined.

Critical packages are selected: two assembly lots are subjected to the qualification procedure represented. A positive result will release all similar packages.

Device type release:

The device type released is the release of individual designs.

Monitoring:

Monitoring serves both as the continuous monitoring of the production and as a source of data for calculation of early failures (early failure rate: EFR).

Product or process changes are released via ECN (Engineering Change Note). This includes proving process capability and meeting the quality requirements.

Test procedures utilized are IEC 68-2-... and

MIL-STD-750 respectively.

Statistical Methods for Prevention

To manufacture high-quality products, it is not sufficient to inspect the product at the end of the production process.

Quality has to be 'designed-in' during process and product development. In addition to that, the 'designing-in' must also be ensured during production flow. Both will be achieved by means of appropriate measurements and tools.

- Statistical Process Control (SPC)
- R&R- (Repeatability and Reproducibility) tests
- Up-Time Control (UTC)
- Failure Mode and Effect Analysis (FMEA)
- Design Of Experiments (DOE)
- Quality Function Deployment (QFD)

Vishay has been using SPC as a tool in production since 1990/91.

By using SPC, deviations from the process control goals are quickly established. This allows control of the processes before the process parameters run out of specified limits. To assure control of the processes, each process step is observed and supervised by trained personnel. Results are documented.

Process capabilities are measured and expressed by the process capability index (C_{pk}).

Validation of the process capability is required for new processes before they are released for production.

Before using new equipment and new gauges in production, machine capability (C_{mk} = machine capability index) or R&R (Repeatability & Reproducibility) is used to validate the equipment's fitness for use.

Up-Time is recorded by an Up-Time Control (UTC) system. This data determines the intervals for preventive maintenance, which is the basis for the maintenance plan.

A process-FMEA is performed for all processes (FMEA = Failure Mode and Effect Analysis). In addition, a design- or product-FMEA is used for critical products or to meet agreed customer requirements.

Design of Experiments (DOE) is a tool for the statistical design of experiments and is used for optimization of processes. Systems (processes, products and procedures) are analyzed and optimized by using designed experiments.

A significant advantage compared to conventional methods is the efficient performance of experiments with minimum effort by determining the most important inputs for optimizing the system.

As a part of the continuous improvement process, all Vishay employees are trained in TQM thinking and in using new statistical methods and procedures.

Reliability

The requirements concerning quality and reliability of products are always increasing. It is not sufficient to only deliver fault-free parts. In addition, it must be ensured that the delivered goods serve their purpose safely and failure of free, i.e. reliably. From the delivery of the device and up to its use in a final product, there are some occasions where the device or the final product may fail despite testing and outgoing inspection.

In principle, this sequence is valid for all components of a product.

For these reasons, the negative consequences of a failure, which become more serious and expensive the later they occur, are obvious. The manufacturer is therefore interested in supplying products with the lowest possible

- AOQ (Average Outgoing Quality) value
- EFR (Early Failure Rate) value
- LFR (Long-term Failure Rate) value

Average Outgoing Quality (AOQ)

All outgoing products are sampled after 2 x 100 % testing. This is known as "Average Outgoing Quality" (AOQ). The results of this inspection are recorded in ppm (parts per million) using the method defined in JEDEC 16.

Early Failure Rate (EFR)

EFR is an estimate (in ppm) of the number of early failures related to the number of devices used. Early failures are normally those which occur within the first 300 to 1000 hours. Essentially, this period of time covers the guarantee period of the finished unit.

Low EFR values are therefore very important to the device user. The early life failure rate is heavily influenced by complexity. Consequently, 'designing-in' of better quality during the development and design phase, as well as optimized process control during manufacturing, significantly reduces the EFR value. Normally, the early failure rate should not be significantly higher than the random failure rate. EFR is given in ppm (parts per million).

Long-Term Failure Rate (LFR)

LFR shows the failure rate during the operational period of the devices. This period is of particular interest to the manufacturer of the final product. Based on the LFR value, estimations concerning long-term failure rate, reliability and a device's or module's operational life may be derived. The usage life time is normally the period of constant failure rate. All failures occuring during this period are random.

Within this period the failure rate is:

$$\lambda = \frac{\text{Sum of failures}}{\Sigma(\text{Quantity} \times \text{Time to failure})} \times \frac{1}{\text{hours}}$$

The measure of λ is FIT (Failures In Time = number of failures in 10^9 device hours).

Example

A sample of 500 semiconductor devices is tested in a operating life test (dynamic electric operation). The devices operate for a period of 10,000 hours.

Failures:

1 failure after 1000 h
1 failure after 2000 h

The failure rate may be calculated from this sample by

$$\lambda = \frac{2}{1 \times 1000 + 1 \times 2000 + 498 \times 10000} \times \frac{1}{h}$$

$$\lambda = \frac{2}{4983000} \cdot \frac{1}{h} = 4.01 \times 10^{-7} \frac{1}{h}$$

This is a λ–value of 400 FIT, or this sample has a failure rate of 0.04 % / 1000 h on average.

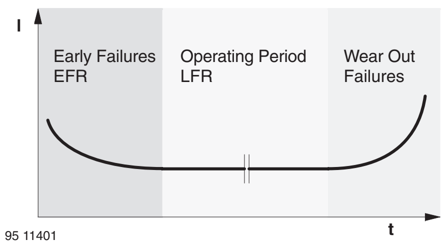


Figure 1. Bath tub curve

Confidence Level

The failure rate λ calculated from the sample is an estimate of the unknown failure rate of the lot.

The interval of the failure rate (confidence interval) may be calculated, depending on the confidence level and sample size.

The following is valid:

- The larger the sample size, the narrower the confidence interval.
- The lower the confidence level of the statement, the narrower the confidence interval.

The confidence level applicable to the failure rate of the whole lot when using the estimated value of λ is derived from the x^2-distribution. In practice, only the upper limit of the confidence interval (the maximum average failure rate) is used.

Therefore:

$$\lambda_{max} = \frac{x^2 / 2r;P_A}{n \times t} \quad \text{in} \quad \frac{1}{h}$$

$$LFR = \frac{x^2 / 2(r;P_A)}{n \times t} \times 1 \times 10^9 \quad \text{in [FIT]}$$

r: Number of failures
PA: Confidence level
n: Sample size
t: Time in hours
n x t: Device hours

The $x^2/2$ for λ are taken from Table1.

For the above example from Table1:

$x^2/2$ (r = 2; PA = 60 %) = 3.08

n x t = 4983000 h

$$\lambda_{max} = \frac{3{,}08}{4983000} = 6{,}8 \times 10^{-7} \frac{1}{h}$$

This means that the failure rate of the lot does not exceed 0.0618 % / 1000 h (618 FIT) with a probability of 60 %.

If a confidence level of 90 % is chosen from table 1:

$x^2/2$ (r = 2; PA = 90 %) = 5.3

$$\lambda_{max} = \frac{5{,}3}{4983000} = 1{,}06 \times 10^{-6} \frac{1}{h}$$

This means that the failure rate of the lot does not exceed 0.106 % / 1000 h (1060 FIT) with a probability of 90 %.

Number of Failures	Confidence Level			
	50 %	60 %	90 %	95 %
0	0.60	0.93	2.31	2.96
1	1.68	2.00	3.89	4.67
2	2.67	3.08	5.30	6.21
3	3.67	4.17	6.70	7.69
4	4.67	5.24	8.00	9.9
5	5.67	6.25	9.25	10.42
6	6.67	7.27	10.55	11.76
7	7.67	8.33	11.75	13.16
8	8.67	9.35	13.00	14.30
9	9.67	10.42	14.20	15.63
10	10.67	11.42	15.40	16.95

Table 1:

Operating Life Tests

Number of devices tested: n = 50
Number of failures:
(positive qualification): c = 0
Test time: t = 2000 hours
Confidence level: PA = 60 %
$x^2/2$ (0; 60 %) = 0.93

$$\lambda_{max} = \frac{0{,}93}{50 \times 2000} = 9{,}3 \times 10^{-6} \frac{1}{h}$$

This means, that the failure rate of the lot does not exceed 0.93 % / 1000 h (9300 FIT) with a probability of 60 %.

This example demonstrates that it is only possible to verify LFR values of 9300 FIT with a confidence level of 60 % in a normal qualification test (50 devices, 2000 h).

To obtain LFR values which meet today's requirements (< 50 FIT), the following conditions have to be fulfilled:

- Very long test periods
- Large quantities of devices
- Accelerated testing (e.g. higher temperature)

Mean Time to Failure (MTTF)

For systems which can not be repaired and whose devices must be changed, e.g. semiconductors, the following is valid:

$$MTTF = \frac{1}{\lambda}$$

MTTF is the average fault-free operating period per a monitored (time) unit.

Accelerating Stress Tests

Innovation cycles in the field of semiconductors are becoming shorter and shorter. This means that products must be brought to the market quicker. At the same time, expectations concerning the quality and reliability of the products have become higher.

Manufacturers of semiconductors must therefore assure long operating periods with high reliability but in a short time. Sample stress testing is the most commonly used way of assuring this.

The rule of Arrhenius describes this temperature-dependent change of the failure rate.

$$\lambda(T_2) = \lambda(T_1) \times e^{\left[\frac{E_A}{k} \times \left(\frac{1}{T_1} - \frac{1}{T_2}\right)\right]}$$

Boltzmann's constant

$k = 8.63 \times 10^{-5}$ eV/K

Activation energy

E_A in eV

Junction temperature real operation

T_1 in Kelvin

Junction temperature stress test

T_2 in Kelvin

Failure rate real operation

λ (T_1)

Failure rate stress test

λ (T_2)

The acceleration factor is described by the exponential function as being:

$$AF = \frac{\lambda(T_2)}{\lambda(T_1)} = e^{\left[\frac{E_A}{k} \times \left(\frac{1}{T_1} - \frac{1}{T_2}\right)\right]}$$

Example

The following conditions apply to an operating life stress test:

Environmental temperature during stress test

T_A = 70 °C

Power dissipation of the device

P_V = 100 mW

Thermal resistance junction/environment

R_{thJA} = 300 K/W

The system temperature / junction temperature results from:

$T_J = T_A + R_{thJA} \times P_V$

T_J = 70 °C + 300 K/W   100 mW

T_J = 100 °C

Operation in the field at an ambient temperature of 50 °C and at an average power dissipation of 80 mW is utilized. This results in a junction temperature in operation of T_J = 74 °C. The activation energy used for opto components is E_A = 0.8 eV.

The resulting acceleration factor is:

$$AF = \frac{\lambda(373K)}{\lambda(347K)} = e^{\left[\frac{E_A}{k} \times \left(\frac{1}{347K} - \frac{1}{373K}\right)\right]}$$

AF ≈ 6.5

This signifies that, in this example, the failure rate is lower by a factor of 6.5 compared to the stress test.

Other accelerating stress tests may be:

- Humidity (except displays type TDS.)
  T_A = 85 °C
  RH = 85 %
- Temperature cycling
  Temperature interval as specified

The tests are carried out according to the requirements of appropriate IEC-standards (see also chapter 'Qualification and Release').

Activation Energy

There are some conditions which need to be fulfilled in order to use Arrhenius' method:

- The validity of Arrhenius' rule has to be verified.
- 'Failure-specific' activation energies must be determined.

These conditions may be verified by a series of tests. Today, this procedure is generally accepted and used as a basis for estimating operating life. The values of activation energies can be determined by experiments for different failure mechanisms.

Values often used for different device groups are:

Opto components	0.8 eV
Bipolar ICs	0.7 eV
MOS ICs	0.6 eV
Transistors	0.7 eV
Diodes	0.7 eV
Sinterglass Diodes	0.7 eV

By using this method, it is possible to provide long-term predictions for the actual operation of semiconductors even with relatively short test periods.

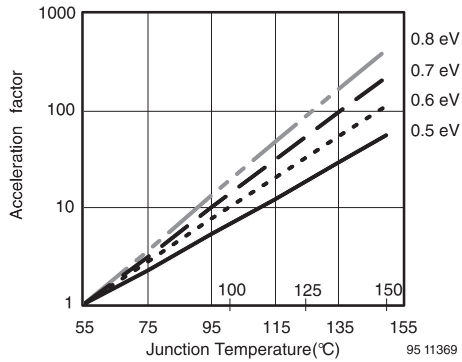


Figure 2. Acceleration factor for different activation energies normalized to T_j = 55 °C

The Constituents of Semiconductor Components

Responsible electronic component and equipment manufacturers are already preparing for the time when the lifespan of their products comes to an end by scrutinizing the materials incorporated and their future recylcability. Recycling laws have already come into force in Germany ("Kreislauf-Wirtschafts-gesetz") and guidelines for electronic scrap are in preparation.

The aim is a suitable waste disposal program and _ as a preventative measure _ a reduction in the content of hazardous damaging materials in such components. In order to conform to this procedure, detailed information about the materials and their quantities is needed.

This present overview answers questions put forward by customers as to the constituents and their function in the most important of Vishay Semiconductor's semiconductor products. Special significance is given to so-called "Hazardous Substances". It demonstrates that Vishay Semiconductor products under normal operating conditions do not expose the applier or environment to any hazard. However, most products nevertheless contain small but necessary quantities of "Hazardous Substances" which can _ if not treated correctly or through accidents _ be released on a small scale into the environment.

The present information was produced with the greatest possible care. Any suggestions for improvement of this brochure are welcome.

Definitions

Vishay Semiconductor offers a wide range of semiconductor components including transistors, diodes and opto-electronic components. These have been manufactured in various standard packages. On the following pages, these packages are listed together with their materials shown in weight percentages. In order to limit the number of tables, all components whose structure and composition are the same have been compiled in families. In many cases, different lead frames together with chips of different sizes may be used for the one package. This usually means that there may be slight differences in the quantities of the declared material. The weight percent is, however, valid for a representative sample of the relevant family. In order to sensibly reduce the number and quantities of materials contained in the respective components, quantities smaller than 0.1 % by weight have been stated in the following list as traces. This is the case unless lower limits are forced by law, e.g., cadmium < 75 ppm and PCDD as well as PCDF (known as dioxin) < 2 ppb. In the lists themselves, details of content and composition are separated into the individual parts of the semiconductor component. The most important of these are:

Active element:

The active element is either a silicon chip or for opto-electronic components a chip containing combinations of Ga (Al) (As, P). These are doped with very small amounts of boron, arsenic, phosphorus, zinc and germanium etc. The metallization consists of thin layers of aluminium, gold or titanium. The chips are generally bonded to the lead frame with a silver epoxy and have gold or aluminium wires bonded to the lead frame.

Lead frame:

For electrical connection, a metal lead frame made from alloys such as FeNi (42) or CuFe (2) and partly or totally plated with silver is commonly used. The metal alloys contain traces of silver, zinc and phosphorus.

Case:

The semiconductor chip is protected from the environment by a case of glass, plastic or metal. The glass is composed of oxides of silicon and lead together with boron and aluminium. Plastic cases are composed of an epoxy resin filled with up to 70 % by weight of quartz particles. Antimony trioxide and brominated epoxy resin (no TBA) are added as flame retardants. Antimony and bromine amount to about 1.6 and 1.0 % respectively.

In use:

In use, it is the content of hazardous substances which is of importance. In Germany, there are a series of lists which give the materials which are potentially hazardous to people and the environment, for example:

Appendix II and IV of the "Hazardous Materials Regulations", the TRGS 900 ("MAK-Wert-Liste") and the "Catalog of Materials Hazardous to the Water Supply". These lists, however, are only partially consistent.

The names used are often different for materials with the same chemical composition. Furthermore, the use of trivial and trade names often adds to the confusion.

Vishay Semiconductor therefore for their descriptions use that proposed by the Zentralverband Elektrotechnik und Elektronikindustrie e.V. (ZVEI; Central Asso-

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ciation of Electrical Engineering and Electronic Industry) for the harmonization of the nomenclature of hazardous substances.

Statements are made on the safety precautions to be used during storage and disposal by mechanical, chemical and thermal means of the more important chemicals (so-called “Leitchemikalien”). These are listed in the tables in the order of their potential risk. Their effect upon people and the environment are also listed and any special precautions emphasized.

Notes: The following information has been prepared to be as exact and reliable as possible.

The manufacture of semiconductor components is, however, subject to regular change without special notification.

The publication of this brochure excludes any responsibility resulting from its use.

Explanation of Abbreviations

While the information on weight percent is believed correct, discrepancies depending upon component type may be possible.

1)	Material information etc. Material listed as “Material Hazardous in Production”
2)	S: Trace material < 0.1% by weight; Cd < 75 ppm; concerning Cd see ***) PCDD and PCDF < 2 ppb
*)	Dioxin content – lies below agreed limits
**)	No. 85 “Rules for Hazardous Materials”, to be replaced as soon as a technically suitable alternative material is available
***)	Traces of cadmium can only be found in lead frames made of copper
CMT:	Material containing carcinogens, mutagens or terratogens
Tox:	Material is toxic or very toxic
S	Material with allergy producing characteristics
HAL	Halogen containing material
WKG	Material hazardous to the water supply
L	Storage, suitable for disposal
D	Disposable
M	Mechanical disposal
N	Chemical disposal
T	Thermal disposal
H	Handling

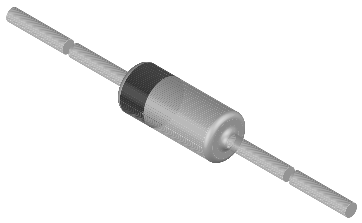
Ozone Depleting Substances

The use of Ozone Depleting Substances has been totally eliminated by Vishay Semiconductor and by doing so meets the legal requirements as defined in the following documents.

1. The “Montreal Protocol” together with the “London Amendments” Appendix A, B, and the “List of Transitional Substances”
2. “Clean Air Act”, Amendments 1990, “Environmental Protection Agency” (EPA), USA, Class I and II – Ozone Depleting Substances
3. “European Council Resolution” number 88/540/EEC and 91/690/eec Appendix A, B and C (Transitional Substances)

Vishay Semiconductor guarantees that its components do not contain and are manufactured without the use of Ozone Depleting Substances.

Declaration of Material Contents DO-35 Package

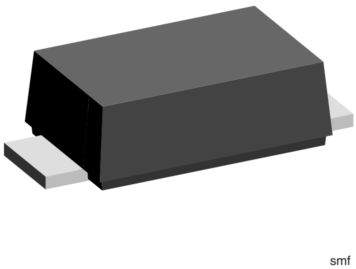


DO-35 Diode

Prohibited Substances		
Material	**Limit ppm**	**ICP Analysis < ppm**
Cadmium	5	5
Asbestos	0	0
Mercury	0	0
Chromium VI	2	0
Polychl. Biphenyle	0	0
Formaldehyde	0	0
Azo Compounds	0	0

MATERIAL CONTENT					
Part	**Material**	**weight mg**	**% of weight**	**ppm of total weight**	**CAS N°**
Leads tinned 85.70 %	Fe	67.17	62.74 %	537037	7439-89-6
	Cu	29.78	27.82 %	238097	7440-50-8
	Ni	9.43	8.81 %	75395	7440-02-0
	Sn	0.57	0.53 %	4557	7440-31-5
	CuO	0.11	0.10 %	879	1317-38-0
	TOTAL	**107.1**			
Package glass 14.30 %	PbO	11.24	62.83 %	89866	1317-36-8
	SiO_2	4.9	27.39 %	39176	14808-60-7
	K_2O	1.38	7.71 %	11033	12136-45-7
	Na_2O	0.13	0.73 %	1039	1313-59-3
	Al_2O_3	0.13	0.73 %	1039	1344-28-1
	BaO	0.11	0.61 %	879	1304-28-5
	TOTAL	**17.9**			
Silicon chip 0.10 %	Si	0.1003	80.11 %	802	7440-21-3
	Ag	0.0208	16.60 %	166	7440-22-4
	SiO_2	0.002	1.60 %	16	14808-60-7
	PbO	0.0018	1.40 %	14	1317-36-8
	Ni	0.0003	0.20 %	2	7440-02-0
	TOTAL	**0.125**			
Total weight		**125**			

Declaration of Material Contents DO-219AB (SMF) Package

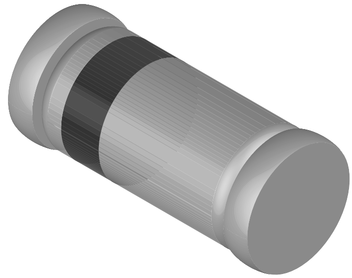


DO-219AB (SMF) Diode

Prohibited Substances		
Material	**Limit ppm**	**ICP Analysis < ppm**
Cadmium	5	5
Asbestos	0	0
Mercury	0	0
Chromium VI	2	0
Polychl. Biphenyle	0	0
Formaldehyde	0	0
Azo Compounds	0	0

MATERIAL CONTENT					
Part	**Material**	**weight mg**	**% of weight**	**ppm of total weight**	**CAS N°**
Lead frame tinned 44.3 %	Cu	6.198	94.34 %	418311	7440-50-8
	Fe	0.153	2.32 %	10302	7439-89-6
	Zn	0.008	0.12 %	515	7440-66-6
	P	0.002	0.03 %	129	7723-14-0
	Sn	0.210	3.20 %	14174	7440-31-5
	TOTAL	**6.57**			
Solder paste (chip solder) 1.1 %	Pb	0.142	90.85 %	9584	7439-92-1
	Sn	0.005	3.07 %	324	7440-31-5
	Ag	0.003	2.11 %	223	7440-22-4
	Hexylene-glyco	0.006	3.97 %	418	107-41-5
	TOTAL	**0.16**			
Silicon chip 3.2 %	Si	0.468	99.57 %	31587	7440-21-3
	Silicon dioxide	0.002	0.43 %	135	14808-60-7
	And/or traces of Au,As,Ti,Ag,Al, Ni, Pd, Cu				
	TOTAL	**0.47**			
Molding compo-und 51.4 %	Cristalline Silica	5.258	69.00 %	354866	14808-60-7
	Polyglyci-dyl ether	1.143	15.00 %	77145	29690-82-2
	Phenolic resin	0.533	7.00 %	36001	9003-35-4
	Bromina-ted epoxy resin	0.229	3.00 %	15429	40039-93-8
	Organo functional silan	0.076	1.00 %	5143	2530-83-8
	Antimony trioxid	0.229	3.00 %	15429	1309-64-4
	Wax	0.076	1.00 %	5143	8015-86-9
	Catalyst	0.076	1.00 %	5143	603-35-0
	TOTAL	**7.62**			
Total weight		**14.8**			

Declaration of Material Contents MiniMELF SOD-80 Package

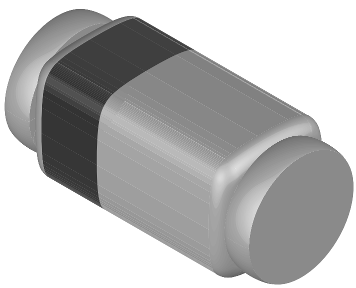


MiniMELF Diode

Prohibited Substances		
Material	**Limit ppm**	**ICP Analysis < ppm**
Cadmium	5	5
Asbestos	0	0
Mercury	0	0
Chromium VI	2	0
Polychl. Biphenyle	0	0
Formaldehyde	0	0
Azo Compounds	0	0

MATERIAL CONTENT					
Part	**Material**	**weight mg**	**% of weight**	**ppm of total weight**	**CAS N°**
Leads Tinned 58.60 %	Fe	11.03	61.38 %	359138	7439-89-6
	Cu	4.86	27.05 %	158242	7440-50-8
	Ni	1.55	8.63 %	50468	7440-02-0
	Sn	0.48	2.67 %	15629	7440-31-5
	CuO	0.05	0.28 %	1628	1317-38-0
	TOTAL	**17.97**			
Package Glass 41.10 %	PbO	7.96	62.92 %	259179	1317-36-8
	SiO_2	3.46	27.35 %	112658	14808-60-7
	K_2O	0.97	7.67 %	31583	12136-45-7
	Na_2O	0.09	0.71 %	2930	1313-59-3
	Al_2O_3	0.09	0.71 %	2930	1344-28-1
	BaO	0.08	0.63 %	2605	1304-28-5
	TOTAL	**12.65**			
Silicon Chip 0.30 %	Si	0.0741	80.19 %	2413	7440-21-3
	Ag	0.0153	16.56 %	498	7440-22-4
	SiO_2	0.0015	1.62 %	49	14808-60-7
	PbO	0.0013	1.41 %	42	1317-36-8
	Ni	0.0002	0.22 %	7	7440-02-0
	TOTAL	**0.0924**			
Total weight		**31**			

Declaration of Material Contents QuadroMELF SOD-80 Q Package

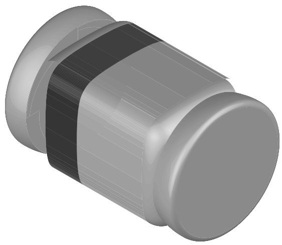


QuadroMELF Diode

Prohibited Substances		
Material	**Limit ppm**	**ICP Analysis < ppm**
Cadmium	5	5
Asbestos	0	0
Mercury	0	0
Chromium VI	2	0
Polychl. Biphenyle	0	0
Formaldehyde	0	0
Azo Compounds	0	0

MATERIAL CONTENT					
Part	**Material**	**weight mg**	**% of weight**	**ppm of total weight**	**CAS N°**
Leads Tinned 53.50 %	Fe	11.02	61.39 %	327965	7439-89-6
	Cu	4.85	27.02 %	144341	7440-50-8
	Ni	1.55	8.64 %	46129	7440-02-0
	Sn	0.48	2.67 %	14285	7440-31-5
	CuO	0.05	0.28 %	1488	1317-38-0
	TOTAL	**17.95**			
Package Glass 46.20 %	PbO	9.79	62.96 %	291360	1317-36-8
	SiO_2	4.25	27.33 %	126484	14808-60-7
	K_2O	1.2	7.72 %	35713	12136-45-7
	Na_2O	0.11	0.71 %	3274	1313-59-3
	Al_2O_3	0.11	0.71 %	3274	1344-28-1
	BaO	0.09	0.58 %	2678	1304-28-5
	TOTAL	**15.55**			
Silicon Chip 0.30 %	Si	0.0811	80.22 %	2414	7440-21-3
	Ag	0.0168	16.62 %	500	7440-22-4
	SiO_2	0.0016	1.58 %	48	14808-60-7
	PbO	0.0014	1.38 %	42	1317-36-8
	Ni	0.0002	0.20 %	6	7440-02-0
	TOTAL	**0.101**			
Total weight		**34**			

Declaration of Material Contents MicroMELF Package



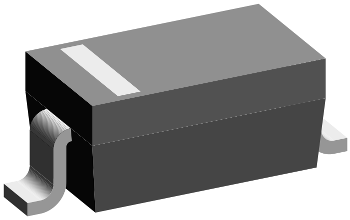
MicroMELF Diode

Prohibited Substances		
Material	**Limit ppm**	**ICP Analysis < ppm**
Cadmium	5	5
Asbestos	0	0
Mercury	0	0
Chromium VI	2	0
Polychl. Biphenyle	0	0
Formaldehyde	0	0
Azo Compounds	0	0

MATERIAL CONTENT					
Part	**Material**	**weight mg**	**% of weight**	**ppm of total weight**	**CAS N°**
Leads Tinned 57.70 %	Fe	4.39	62.01 %	357716	7439-89-6
	Cu	1.97	27.82 %	160524	7440-50-8
	Ni	0.62	8.76 %	50520	7440-02-0
	Sn	0.09	1.27 %	7334	7440-31-5
	CuO	0.01	0.14 %	815	1317-38-0
	TOTAL	**7.08**			
Package Glass 41.50 %	PbO	3.21	62.94 %	261565	1317-36-8
	SiO_2	1.39	27.25 %	113263	14808-60-7
	K_2O	0.39	7.65 %	31779	12136-45-7
	Na_2O	0.04	0.78 %	3259	1313-59-3
	Al_2O_3	0.04	0.78 %	3259	1344-28-1
	BaO	0.03	0.59 %	2445	1304-28-5
	TOTAL	**5.1**			
Silicon Chip 0.80 %	Si	0.074	80.17 %	6030	7440-21-3
	Ag	0.0153	16.58 %	1247	7440-22-4
	SiO_2	0.0015	1.63 %	122	14808-60-7
	PbO	0.0013	1.41 %	106	1317-36-8
	Ni	0.0002	0.22 %	16	7440-02-0
	TOTAL	**0.0923**			
Total weight		**12.3**			

Declaration of Material Contents SOD-123 Package

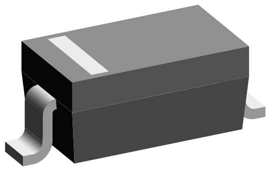
Prohibited Substances		
Material	**Limit ppm**	**ICP Analysis < ppm**
Cadmium	5	5
Asbestos	0	0
Mercury	0	0
Chromium VI	2	0
Polychl. Biphenyle	0	0
Formaldehyde	0	0
Azo Compounds	0	0


sod123

SOD-123 Diode

MATERIAL CONTENT					
Part	**Material**	**weight mg**	**% of weight**	**ppm of total weight**	**CAS N°**
Lead frame tinned 29.4 %	Cu	2.6	95.7 %	280869	7440-50-8
	Sn	0.015	0.6 %	1620	7440-31-5
	Ni	0.01	0.4 %	1080	7440-02-0
	Cr	0.007	0.3 %	756	7440-47-3
	Ti	0.007	0.3 %	756	7440-32-6
	Sn	0.078	2.9 %	8426	7440-31-5
	TOTAL	**2.72**			
Moulding (PPS, Polyphenylene Sulfide) 64.8 %	Mineral reinforcement	3.3	55.00 %	356487	
	1.4- Dichlorobenzene	0.0006	0.01 %	65	25321-22-6
	Other + Carbon black + Silicon dioxide	2.6994	44.99 %	291606	1333-86-4 + 14808-60-7
	TOTAL	**6**			
Glue 0.6 %	Silver powder	0.04215	70.3 %	4553	7440-22-4
	Hardener and epoxy resin	0.01785	29.8 %	1928	
	TOTAL	**0.06**			
Chip 0.9 %	Si	0.07968	99.60 %	8608	7440-21-3
	SiO2	0.00032	0.40 %	35	14808-60-7
	And / or traces of Au, As, Ag, Ti, Al, Ni, Pd, Cu				
	TOTAL	**0.08**			
Bond wire 0.3 %	Au	0.03	100 %	3241	7440-57-5
	TOTAL	**0.03**			
Bond wire coating (Epoxy resin) 4.0 %	Benzophenonetetra carboxylic acid dianhydride	0.12	32.4 %	12963	2421-28-5
	Quartz	0.002	0.5 %	216	14808-60-7
	Cristobalite	0.0012	0.3 %	130	14464-46-1
	Silica	0.12	32.4 %	12963	60676-86-0
	Carbon black	0.004	1.1 %	432	1333-86-4
	Epichlorohydrin	0.00002	0.005 %	2	106-89-8
	Other (harmless addition)	0.12278	33.2 %	13263	
	TOTAL	**0.37**			
Total weight		**9.3**			

Declaration of Material Contents SOD-323 Package



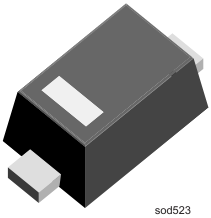
sod323

Prohibited Substances		
Material	**Limit ppm**	**ICP Analysis < ppm**
Cadmium	5	5
Asbestos	0	0
Mercury	0	0
Chromium VI	2	0
Polychl. Biphenyle	0	0
Formaldehyde	0	0
Azo Compounds	0	0

SOD-323 Diode

MATERIAL CONTENT					
Part	**Material**	**weight mg**	**% of weight**	**ppm of total weight**	**CAS N°**
Lead frame tinned 26.9 %	Cu	1.28	95.5%	256977	7440-50-8
	Sn	0.008	0.6%	1606	7440-31-5
	Ni	0.005	0.4%	1004	7440-02-0
	Cr	0.004	0.3%	803	7440-47-3
	Ti	0.004	0.3%	803	7440-32-6
	Sn	0.04	3.0%	8031	7440-31-5
	TOTAL	**1.34**			
Moulding (PPS, Polyphenylene Sulfide) 62.2 %	Mineral reinforcement	1.705	55.00%	342301	
	1.4-Dichlorobenzene	0.00031	0.01%	62	25321-22-6
	Other + Carbon black + Silicon dioxide	1.39	44.99%	280002	1333-86-4 + 14808-60-7
	TOTAL	**3.1**			
Glue 1.2 %	Silver powder	0.04215	70.3%	8462	7440-22-4
	Hardener and epoxyresin	0.01785	29.8%	3584	
	TOTAL	**0.06**			
Chip 1.6 %	Si	0.07968	99.60%	15997	7440-21-3
	SiO2	0.00032	0.40%	64	14808-60-7
	And / or traces of Au, As, Ag, Ti, Al, Ni, Pd, Cu				
	TOTAL	**0.08**			
Bond wire 0.6 %	Au	0.03	100%	6023	7440-57-5
	TOTAL	**0.03**			
Bond wire coating (Epoxy resin) 7.4 %	Benzophenonetetra carboxylic acid dianhydride	0.12	32.4%	24092	2421-28-5
	Quartz	0.002	0.5%	402	14808-60-7
	Cristobalite	0.0012	0.3%	241	14464-46-1
	Silica	0.12	32.4%	24092	60676-86-0
	Carbon black	0.004	1.1%	803	1333-86-4
	Epichlorohydrin	0.00002	0.005%	4	106-89-8
	Other (harmless addition)	0.12278	33.2%	24650	
	TOTAL	**0.37**			
Total weight		**5.0**			

Declaration of Material Contents SOD-523 Package



SOD-523 Diode

Prohibited Substances		
Material	**Limit ppm**	**ICP Analysis < ppm**
Cadmium	5	5
Asbestos	0	0
Mercury	0	0
Chromium VI	2	0
Polychl. Biphenyle	0	0
Formaldehyde	0	0
Azo Compounds	0	0

MATERIAL CONTENT					
Part	**Material**	**weight mg**	**% of weight**	**ppm of total weight**	**CAS N°**
Mold compound 53.2 %	SiO_2	0.65	77.0 %	409882	14808-60-7
	epoxy resin	0.17	20.0 %	106463	25928-94-3
	Sb_2O_3	0.026	3.0 %	15969	1309-64-4
	TOTAL	**0.85**			
Lead frame tinned 43.6 %	Cu	0.627	90.10 %	392660	7440-50-8
	Ag	0.015	2.16 %	9394	7440-22-4
	Sn	0.053	7.62 %	33191	7440-31-5
	Si	0.0001	0.01 %	63	7440-21-3
	Cr	0.000	0.03 %	125	7440-47-3
	Ti	0.001	0.09 %	376	7440-32-6
	TOTAL	**0.696**			
Silicon chip 2.4 %	Si	0.034	89.71 %	21293	7440-21-3
	Au	0.0035	9.23 %	2192	7440-57-5
	SiO_2	0.0002	0.53 %	125	14808-60-7
	Al	0.0002	0.53 %	125	7429-90-5
	And / or traces of Au, As, B, P, Pd, Sn, Ti, V, W				
	TOTAL	**0.038**			
Bond wire 0.8 %	Au	0.013	100.0 %	8141	7440-57-5
	TOTAL	**0.013**			
Total weight		**1.60**			

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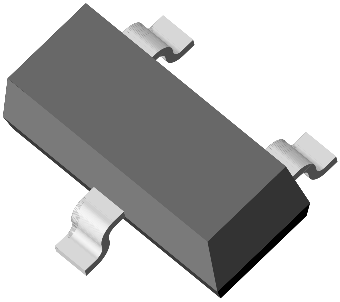
Declaration of Material Contents SOT-23 Package

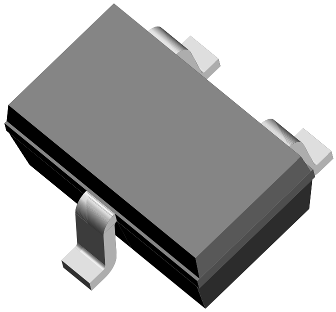


SOT-23 Diode

Prohibited Substances		
Material	**Limit ppm**	**ICP Analysis < ppm**
Cadmium	5	5
Asbestos	0	0
Mercury	0	0
Chromium VI	2	0
Polychl. Biphenyle	0	0
Formaldehyde	0	0
Azo Compounds	0	0

MATERIAL CONTENT					
Part	**Material**	**weight mg**	**% of weight**	**ppm of total weight**	**CAS N°**
Lead frame tinned 31.9 %	Cu	2.7	96.2 %	306954	7440-50-8
	Sn	0.02	0.7 %	2274	7440-31-5
	Ni	0.01	0.4 %	1137	7440-02-0
	Cr	0.008	0.3 %	909	7440-47-3
	Ti	0.008	0.3 %	909	7440-32-6
	Sn	0.06	2.1 %	6821	7440-31-5
	TOTAL	**2.81**			
Moulding (PPS, Polyphenylene Sulfide) 61.4 %	Mineral reinforcement	2.97	55.00 %	337650	
	1.4- Dichlorobenzene	0.00054	0.01 %	61	25321-22-6
	Other + Carbon black + Silicon dioxide	2.43	44.99 %	276197	1333-86-4 + 14808-60-7
	TOTAL	**5.4**			
Glue 0.7 %	Silver powder	0.04215	70.3 %	4792	7440-22-4
	Hardener and epoxy resin	0.01785	29.8 %	2029	
	TOTAL	**0.06**			
Chip 1.1 %	Si	0.0996	99.60 %	11323	7440-21-3
	SiO_2	0.0004	0.40 %	45	14808-60-7
	And / or traces of Au, As, Ag, Ti, Al, Ni, Pd, Cu				
	TOTAL	**0.1**			
Bond wire 0.3 %	Au	0.03	100 %	3411	7440-57-5
	TOTAL	**0.03**			
Bond wire coating (Epoxy resin) 4.5 %	Benzophenonetetra carboxylic acid dianhydride	0.12	30.0 %	13642	2421-28-5
	Quartz	0.002	0.5 %	227	14808-60-7
	Cristobalite	0.0012	0.3 %	136	14464-46-1
	Silica	0.12	30.0 %	13642	60676-86-0
	Carbon black	0.004	1.0 %	455	1333-86-4
	Epichlorohydrin	0.00002	0.005 %	2	106-89-8
	Other (harmless addition)	0.15288	38.2 %	17380	
	TOTAL	**0.40**			
Total weight		**8.8**			

Declaration of Material Contents SOT-323 Package

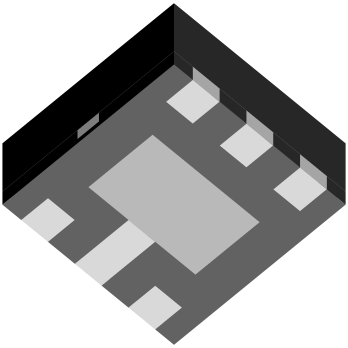


SOT-323 Diode

Prohibited Substances		
Material	**Limit ppm**	**ICP Analysis < ppm**
Cadmium	5	5
Asbestos	0	0
Mercury	0	0
Chromium VI	2	0
Polychl. Biphenyle	0	0
Formaldehyde	0	0
Azo Compounds	0	0

MATERIAL CONTENT					
Part	**Material**	**weight mg**	**% of weight**	**ppm of total weight**	**CAS N°**
Mold compo-und 57.10 %	SiO_2	2.45	71.64 %	408401	14808-60-7
	epoxy resin	0.89	26.02 %	148358	25925-94-3
	Sb_2O_3	0.05	1.46 %	8335	1309-64-4
	Br	0.03	0.88 %	5001	7726-95-6
	TOTAL	**3.42**			
Lead frame tinned 38.70 %	Cu	1.98	85.09 %	330055	7440-50-8
	Ag	0.23	9.88 %	38340	7440-22-4
	Sn	0.077	3.31 %	12835	7440-31.5
	Ni	0.02	0.86 %	3334	7440-02-0
	Cr	0.01	0.43 %	1667	7440-47-3
	Ti	0.01	0.43 %	1667	7440-32-6
	TOTAL	**2.33**			
Silicon chip 3.90 %	Si	0.2188	93.50 %	36473	7440-21-3
	Au	0.0122	5.21 %	2034	7440-57-5
	SiO_2	0.0012	0.51 %	200	14808-60-7
	Al	0.0009	0.38 %	150	7429-90-5
	Si_3N_4	0.0009	0.38 %	150	12033-89-5
	TOTAL	**0.23**			
Bond wire 0.3 %	Au	0.018	100.0 %	3001	7440-57-5
	TOTAL	**0.02**	99.90 %		
Total weight		**6**			

Declaration of Material Contents LLP-75 Package



LLP-75 Diode

Prohibited Substances		
Material	**Limit ppm**	**ICP Analysis < ppm**
Cadmium	5	5
Asbestos	0	0
Mercury	0	0
Chromium VI	2	0
Polychl. Biphenyle	0	0
Formaldehyde	0	0
Azo Compounds	0	0

MATERIAL CONTENT					
Part	**Material**	**weight mg**	**% of weight**	**ppm of total weight**	**CAS N°**
Lead frame tinned 27.8 %	Cu	1.34	93.7 %	260189	7440-50-8
	Sn	0.003	0.2 %	660	7440-31-5
	Zn	0.003	0.2 %	583	7440-66-6
	Cr	0.003	0.2 %	660	7440-47-3
	Sn (plating)	0.08	5.6 %	15534	7440-31-5
	TOTAL	**1.43**			
Mould-ing 63.3 %	Amorphous silica	2.608	79.99 %	506398	7631-86-3
	Others	0.463	14.20 %	89901	
	Epoxy resin	0.16	5.00 %	31650	25928-94-3
	Antimony trioxide	0.016	0.50 %	3165	1309-64-4
	Carbon black	0.01	0.31 %	1942	1333-86-3
	TOTAL	**3.2603**			
Glue 1.7 %	Silver powde	0.063	70.2 %	12272	7440-22-4
	Hardener and epoxy resin	0.027	29.8 %	5204	
	TOTAL	**0.09**			
Chip 5.8 %	Si	0.299	99.60 %	58018	7440-21-3
	SiO2	0.001	0.40 %	233	14808-60-7
	And / or traces of Au, As, Ag, Ti, Al, Ni, Pd, Cu				
	TOTAL	**0.3**			
Bond wire 1.4 %	Au	0.07	100 %	13592	7440-57-5
	TOTAL	**0.07**			
Total weight		**5.2**			

Marking of Diodes

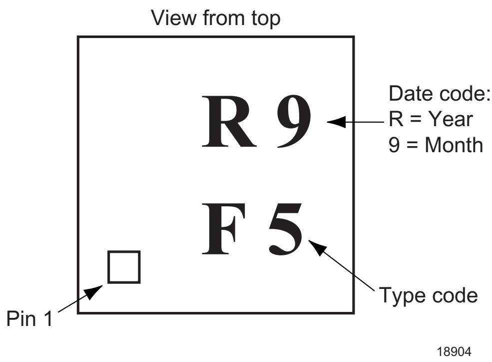


Figure 1. LLP75-3A, LLP75-3B

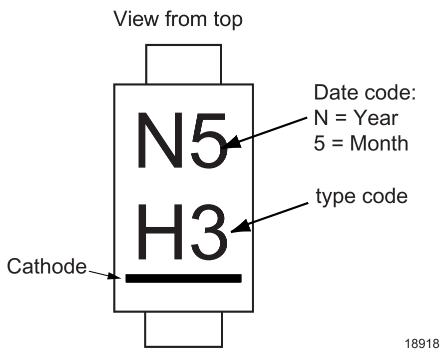


Figure 2. SMF (DO-219AB)

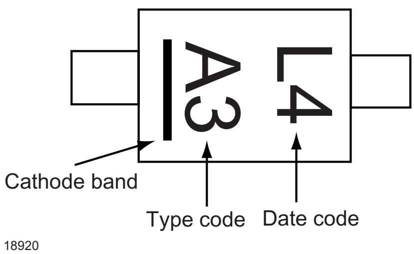


Figure 3. SOD-123

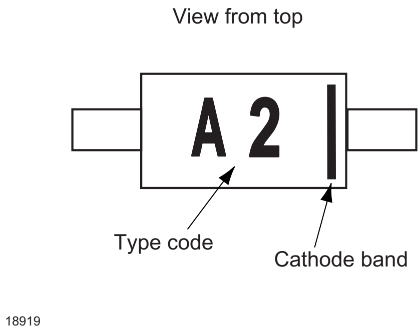


Figure 4. SOD-323

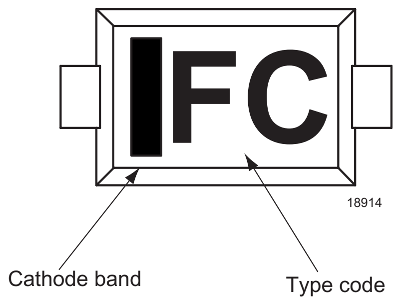


Figure 5. SOD-523

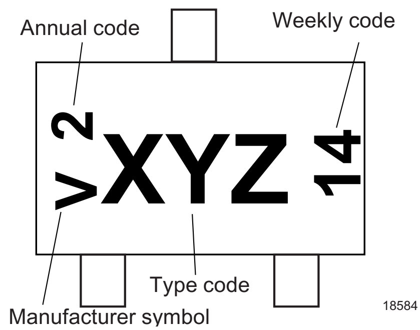


Figure 6. SOT-23

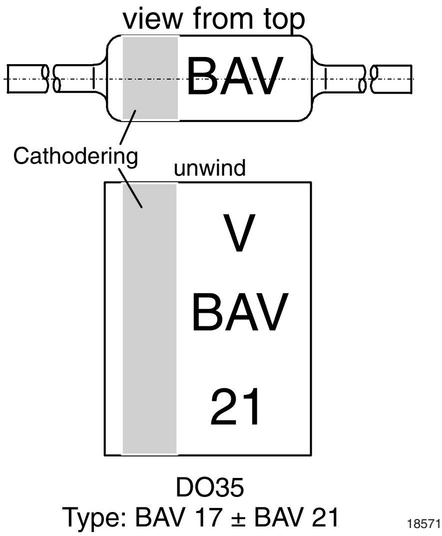


Figure 7. DO-35

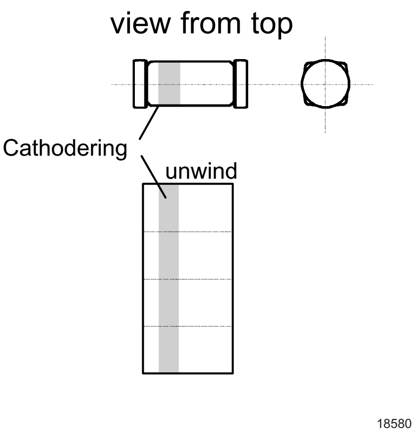


Figure 8. MicroMELF
Label with information of TYPE on reel and package

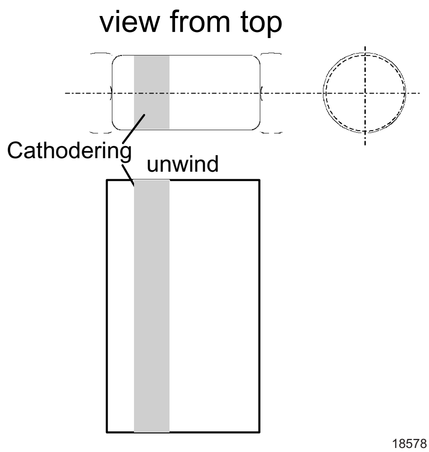


Figure 9. SOD-80 MiniMELF
Label with information of TYPE on reel and package

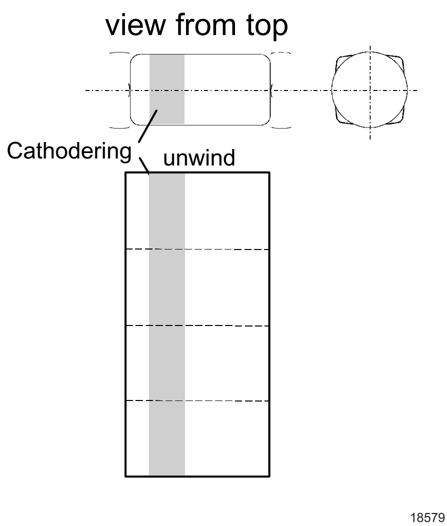
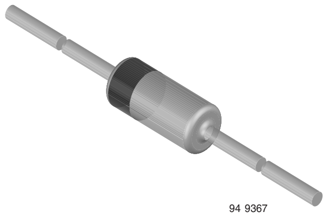


Figure 10. SOD-80 QuadroMELF
Label with information of TYPE on reel and package

Small Signal Fast Switching Diodes

Features

- Silicon Epitaxial Planar Diodes
- Electrically equivalent diodes: 1N4148 - 1N914
  1N4448 - 1N914B



94 9367

Applications

Extreme fast switches

Mechanical Data

Case: DO-35 Glass case

Weight: approx. 125 mg

Packaging Codes/Options:

TR / 10 k per 13 " reel (52 mm tape), 50 k/box

TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
1N4148	V_{RRM} = 100 V, V_F @ I_F 10 mA = 1 V	1N4148-TAP or 1N4148-TR	Ammopack / Tape and Reel
1N4448	V_{RRM} = 100 V, V_F @ I_F 100 mA = 1 V	1N4448-TAP or 1N4448-TR	Ammopack / Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	100	V
Reverse voltage		V_R	75	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2	A
Repetitive peak forward current		I_{FRM}	500	mA
Forward current		I_F	300	mA
Average forward current	V_R = 0	I_{FAV}	150	mA
Power dissipation	l = 4 mm, T_L = 45 °C	P_V	440	mW
	l = 4 mm, $T_L \leq$ 25 °C	P_V	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	350	K/W
Junction temperature		T_j	200	°C
Storage temperature range		T_{stg}	- 65 to + 200	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 5 mA	1N4448-TR	V_F	0.62		0.72	V
	I_F = 10 mA	1N4148-TR	V_F			1	V
	I_F = 100 mA	1N4448-TR	V_F			1	V
Reverse current	V_R = 20 V		I_R			25	nA
	V_R = 20 V, T_j = 150 °C		I_R			50	µA
	V_R = 75 V		I_R			5	µA
Breakdown voltage	I_R = 100 µA, t_p/T = 0.01, t_p = 0.3 ms		$V_{(BR)}$	100			V
Diode capacitance	V_R = 0, f = 1 MHz, V_{HF} = 50 mV		C_D			4	pF
Rectification efficiency	V_{HF} = 2 V, f = 100 MHz		η_r	45			%
Reverse recovery time	I_F = I_R = 10 mA, i_R = 1 mA		t_{rr}			8	ns
	I_F = 10 mA, V_R = 6 V, i_R = 0.1 x I_R, R_L = 100 Ω		t_{rr}			4	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

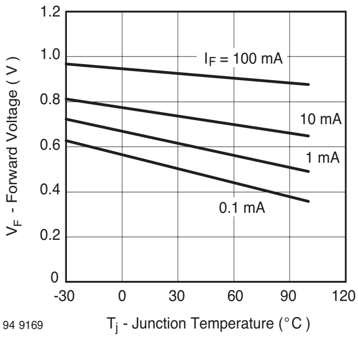


Figure 1. Forward Voltage vs. Junction Temperature

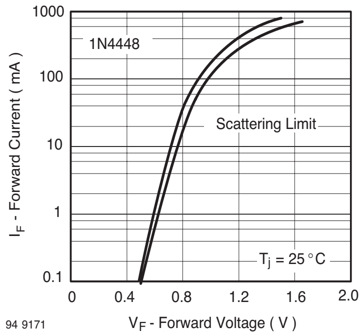


Figure 3. Forward Current vs. Forward Voltage

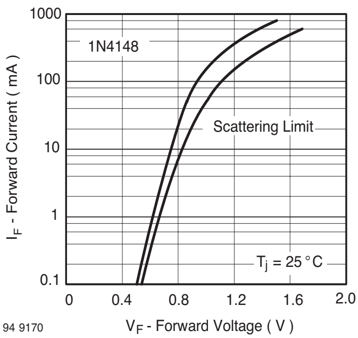


Figure 2. Forward Current vs. Forward Voltage

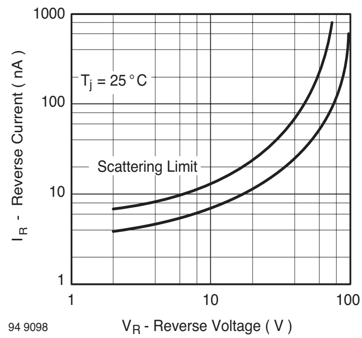


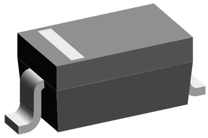
Figure 4. Reverse Current vs. Reverse Voltage

DO-35 Package Dimension
see Package Section

Small Signal Fast Switching Diode

Features

- These diodes are also available in other case styles including the DO-35 case with the type designation 1N4148, the MiniMELF case with the type designation LL4148, and the SOT-23 case with the type designation IMBD4148.
- Silicon Epitaxial Planar Diode
- Fast switching diodes


17431

Mechanical Data

Case: SOD-123 Plastic case

Weight: approx. 9.3 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
1N4148W	1N4148W-GS18 or 1N4148W-GS08	A2	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	75	V
Peak reverse voltage		V_{RM}	100	V
Average rectified current half wave rectification with resistive load	f ≥ 50 Hz	$I_{F(AV)}$	150[1)]	mA
Surge forward current	t < 1 s and T_j = 25 °C	I_{FSM}	500	mA
Power dissipation		P_{tot}	400[1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature.

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	450[1)]	°C/W
Junction temperature		T_j	150	°C
Storage temperature		T_S	- 65 to + 150	°C

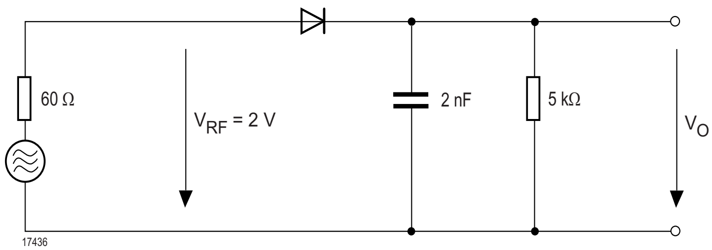
[1)] Valid provided that electrodes are kept at ambient temperature.

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 10 mA	V_F			1.0	V
Leakage current	V_R = 20 V				25	nA
	V_R = 75 V				5.0	µA
	V_R = 20 V, T_J = 150 °C				50	µA
Diode capacitance	V_F = V_R = 0 V	C_{tot}			4	pF
Voltage rise when switching ON (tested with 50 mA pulses)	tested with 50 mA pulses, t_p = 0.1 µs, rise time < 30 ns, f_p = (5 to 100) kHz	V_{fr}			2.5	ns
Reverse recovery time	I_F = 10 mA, I_R = 1 mA, V_R = 6 V, R_L = 100 Ω	t_{rr}			4	ns
Rectification efficiency	f = 100 MHz, V_{RF} = 2 V	η_v	0.45			

Rectification Efficiency Measurement Circuit



Document Number 85748
Rev. 1.3, 14-May-04

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

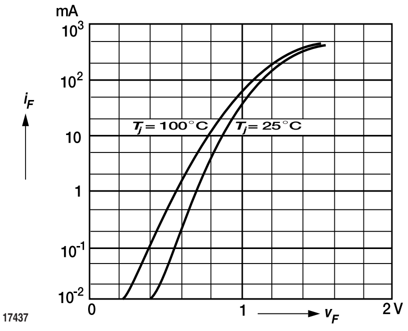


Figure 1. Forward characteristics

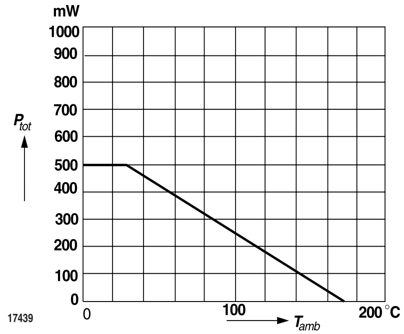


Figure 3. Admissible Power Dissipation vs. Ambient Temperature

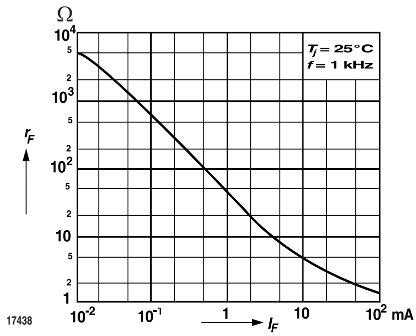


Figure 2. Dynamic Forward Resistance vs. Forward Current

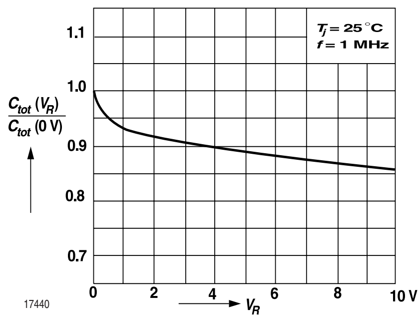


Figure 4. Relative Capacitance vs. Reverse Voltage

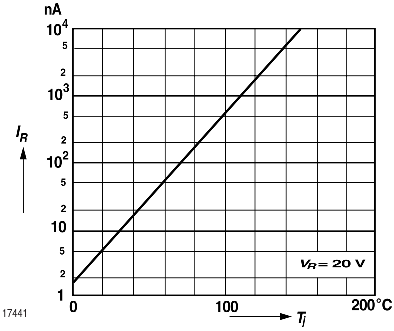


Figure 5. Leakage Current vs. Junction Temperature

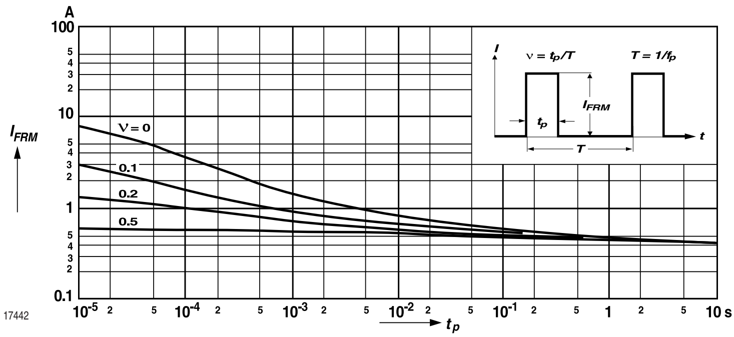


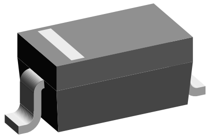
Figure 6. Admissible Repetitive Peak Forward Current vs. Pulse Duration

SOD-123 Package Dimension see Package Section

Small Signal Fast Switching Diode

Features

- These diodes are also available in other case styles including the DO-35 case with the type designation 1N4148, the MiniMELF case with the type designation LL4148, and the SOT-23 case with the type designation IMBD4148.
- Silicon Epitaxial Planar Diode
- Fast switching diodes



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Mechanical Data

Case: SOD-323 Plastic case

Weight: approx. 5.0 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
1N4148WS	1N4148WS-GS18 or 1N4148WS-GS08	A2	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	75	V
Peak reverse voltage		V_{RM}	100	V
Average rectified current half wave rectification with resistive load	f ≥ 50 Hz	$I_{F(AV)}$	150[1)]	mA
Surge forward current	t < 1 s and T_j = 25 °C	I_{FSM}	350	mA
Power dissipation		P_{tot}	200[1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature.

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambien air		R_{thJA}	650[1)]	°C/W
Junction temperature		T_j	150	°C
Storage temperature		T_S	- 65 to + 150	°C

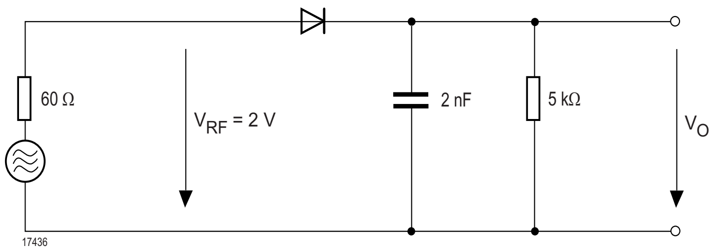
[1)] Valid provided that electrodes are kept at ambient temperature.

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 10 mA	V_F			1.0	V
Leakage current	V_R = 20 V				25	nA
	V_R = 75 V				5.0	µA
	V_R = 20 V, T_J = 150 °C				50	µA
Diode capacitance	$V_F = V_R$ = 0 V	C_{tot}			4	pF
Voltage rise when switching ON (tested with 50 mA pulses)	tested with 50 mA pulses, t_p = 0.1 µs, rise time < 30 ns, f_p = (5 to 100) kHz	V_{fr}			2.5	ns
Reverse recovery time	I_F = 10 mA, I_R = 1 mA, V_R = 6 V, R_L = 100 Ω	t_{rr}			4	ns
Rectification efficiency	f = 100 MHz, V_{RF} = 2 V	η_v	0.45			

Rectification Efficiency Measurement Circuit



Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

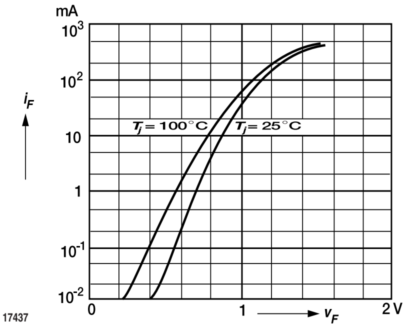


Figure 1. Forward characteristics

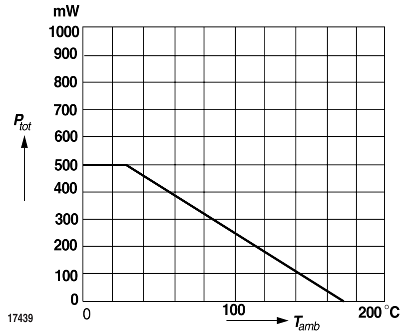


Figure 3. Admissible Power Dissipation vs. Ambient Temperature

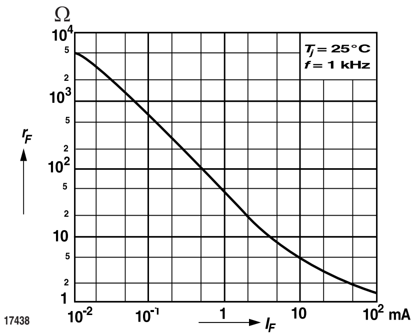


Figure 2. Dynamic Forward Resistance vs. Forward Current

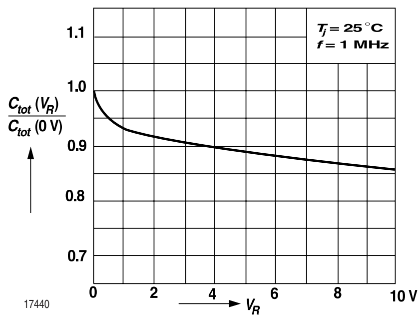


Figure 4. Relative Capacitance vs. Reverse Voltage

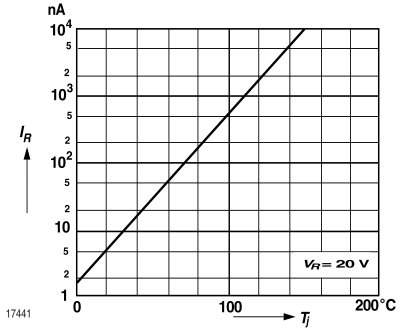


Figure 5. Leakage Current vs. Junction Temperature

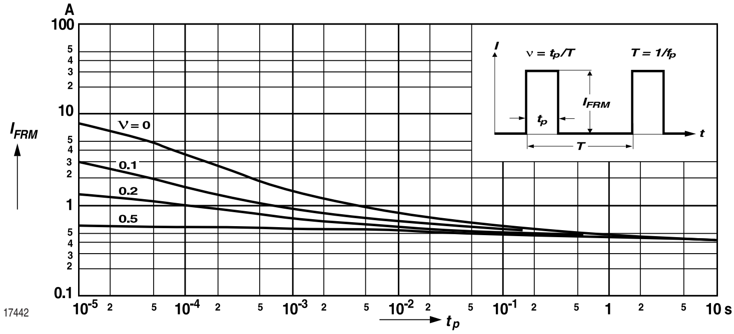


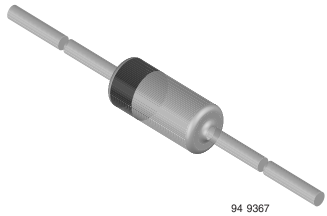
Figure 6. Admissible Repetitive Peak Forward Current vs. Pulse Duration

SOD-323 Package Dimension
see Package Section

Small Signal Fast Switching Diodes

Features

- Silicon Epitaxial Planar Diode
- Low forward voltage drop
- High forward current capability



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Applications

High speed switch and general purpose use in computer and industrial applications

Mechanical Data

Case: DO-35 Glass case

Weight: approx. 125 mg

Packaging Codes/Options:

TR / 10 k per 13 " reel (52 mm tape), 50 k/box

TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
1N4150	Single Diodes	1N4150-TR or 1N4150-TAP	Tape and Reel / Ammopack

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	50	V
Reverse voltage		V_R	50	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	4	A
Average peak forward current		I_{FRM}	600	mA
Forward current	V_R = 0	I_F	300	mA
Average forward current	V_R = 0	I_{FAV}	150	mA
Power dissipation	l = 4 mm, T_L = 45 °C	P_V	440	mW
	l = 4 mm, $T_L \le$ 25 °C	P_V	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	350	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 1 mA	V_F	0.54		0.62	V
	I_F = 10 mA	V_F	0.66		0.74	V
	I_F = 50 mA	V_F	0.76		0.86	V
	I_F = 100 mA	V_F	0.82		0.92	V
	I_F = 200 mA	V_F	0.87		1.0	V
Reverse current	V_R = 50 V	I_R			100	nA
	V_R = 50 V, T_j = 150 °C	I_R			100	µA
Diode capacitance	V_R = 0, f = 1 MHz, V_{HF} = 50 mV	C_D			2.5	pF
Reverse recovery time	$I_F = I_R$ = (10 to 100) mA, i_R = 0.1 x I_R, R_L = 100 Ω	t_{rr}			4	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

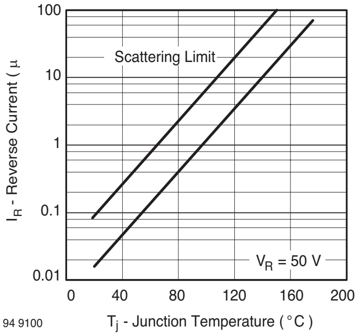


Figure 1. Reverse Current vs. Junction Temperature

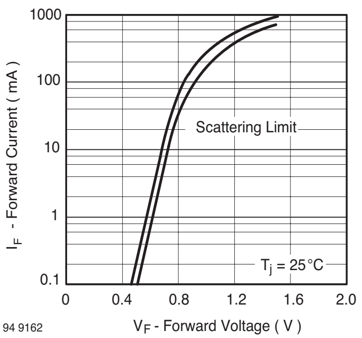


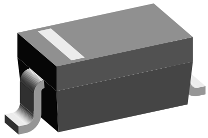
Figure 2. Forward Current vs. Forward Voltage

DO-35 Package Dimension see Package Section

Small Signal Switching Diode

Features

- Silicon Epitaxial Planar Diode
- For general purpose and switching
- This diode is also available in other case styles including the DO-35 case with the type designation 1N4150, and the MiniMELF case with the type designation LL4150.



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Mechanical Data

Case: SOD-123 Plastic case
Weight: approx. 9.3 mg

Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
1N4150W	1N4150W-GS18 or 1N4150W-GS08	A4	Tape and reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Peak reverse voltage		V_{RM}	50	V
Maximum average forward rectified current		$I_{F(AV)}$	200	mA
Maximum power dissipation	T_{amb} = 25 °C	P_{tot}	410[1)]	mW

1) Valid provided that electrodes are kept at ambient temperature.

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Maximum junction temperature		T_j	150	°C
Storage temperature range		T_S	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

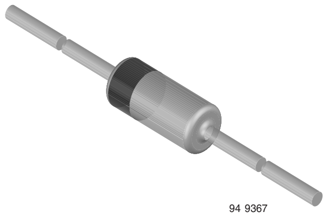
Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage drop	I_F = 200 mA	V_F			1.0	V
Reverse current	V_R = 50 V	I_R			100	nA
Reverse recovery time	$I_F = I_R$ = (10 to 200) mA to $I_{rr} = 0.1 I_F$				4.0	ns

SOD-123 Package Dimension
see Package Section

Small Signal Fast Switching Diodes

Features

- Silicon Epitaxial Planar Diode



Applications

Extreme fast switches

Mechanical Data

Case: DO-35 Glass case
Weight: approx. 125 mg
Packaging Codes/Options:
TR / 10 k per 13 " reel (52 mm tape), 50 k/box
TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Ordering code	Marking	Remarks
1N4151	1N4151-TR or 1N4151-TAP	-	Tape and Reel / Ammopack

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	75	V
Reverse voltage		V_R	50	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2	A
Repetitive peak forward current		I_{FRM}	500	mA
Forward current		I_F	300	mA
Average forward current	V_R = 0	I_{FAV}	150	mA
Power dissipation	l = 4mm, T_L = 45 °C	P_V	440	mW
	l = 4mm, $T_L \leq$ 25 °C	P_V	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	350	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 50 mA	V_F		0.88	1	V
Reverse current	V_R = 50 V	I_R		14	50	nA
	V_R = 50 V, T_j = 150 °C	I_R			50	µA
Breakdown voltage	I_R = 5 µA	$V_{(BR)}$	75			V
Diode capacitance	V_R = 0, f = 1 MHz, V_{HF} = 50 mV	C_D			2	pF
Reverse recovery time	I_F = I_R = 10 mA, i_R = 1 mA	t_{rr}			4	ns
	I_F = 10 mA, V_R = 6 V, i_R = 0.1 x I_R, R_L = 100 Ω	t_{rr}			2	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

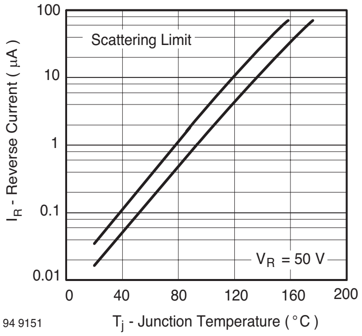


Figure 1. Reverse Current vs. Junction Temperature

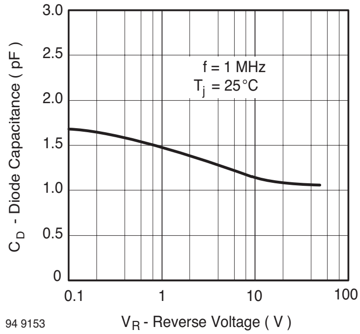


Figure 3. Diode Capacitance vs. Reverse Voltage

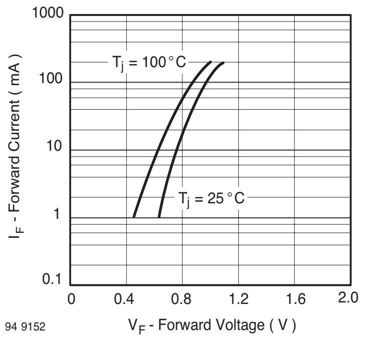


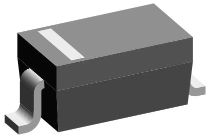
Figure 2. Forward Current vs. Forward Voltage

DO-35 Package Dimension see Package Section

Small Signal Fast Switching Diode

Features

- Silicon Epitaxial Planar Diode
- Fast switching diode
- This diode is also available in other case styles including the DO-35 case with the type designation 1N4151, and the MiniMELF case with the type designation LL4151.



Mechanical Data

Case: SOD-123 Plastic case
Weight: approx. 9.3 mg

Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
1N4151W	1N4151W-GS18 or 1N4151W-GS08	A5	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	50	V
Peak reverse voltage		V_{RM}	75	V
Average rectified current half wave rectification with resistive load	T_{amb} = 25 °C and f ≥ 50 Hz	$I_{F(AV)}$	150[1)]	mA
Surge current	t < 1 s and T_j = 25 °C	I_{FSM}	500	mA
Power dissipation	T_{amb} = 25 °C	P_{tot}	410[1)]	mW

[1)]Valid provided that electrodes are kept at ambient temperature.

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	450[1)]	°C/W
Junction temperature		T_j	150	°C
Storage temperature range		T_S	- 65 to 150	°C

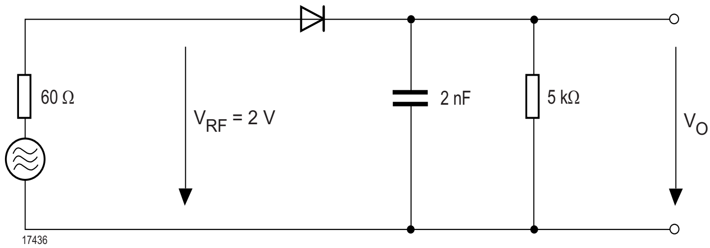
[1)] Valid provided that electrodes are kept at ambient temperature.

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 50 mA	V_F			1.0	V
Leakage current	V_R = 50 V	I_R			50	nA
	V_R = 20 V, T_j = 150 °C	I_R			50	µA
Reverse breakdown voltage	I_R = 5 µA (pulsed)	$V_{(BR)R}$	75			V
Capacitance	V_F = V_R = 0 V				2	pF
Reverse recovery time	I_F = 10 mA to I_R = 10 mA to I_R = 1 mA	t_{rr}			4	ns
	I_F = 10 mA to I_R = 1 mA, V_R = 6 V, R_L = 100 Ω	t_{rr}			2	ns
Rectification efficiency	f = 100 MHz, V_{RF} = 2 V	η_v	0.45			

Rectification Efficiency Measurement Circuit



Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

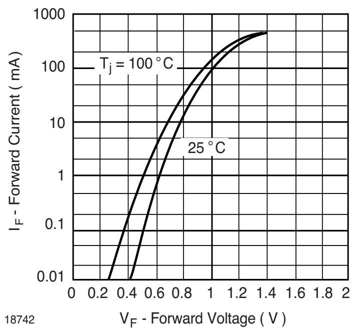


Figure 1. Forward Current vs. Forward Voltage

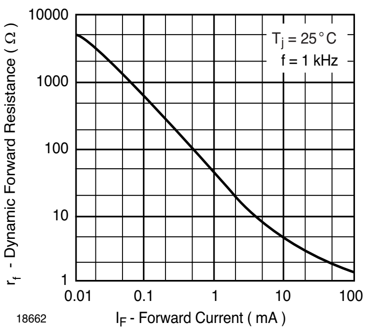


Figure 2. Dynamic Forward Resistance vs. Forward Current

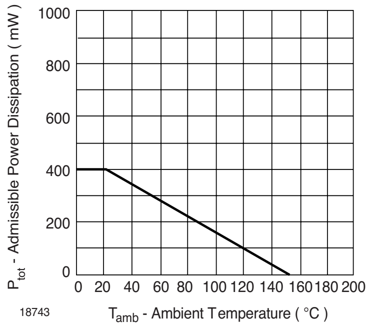


Figure 3. Admissible Power Dissipation vs. Ambient Temperature

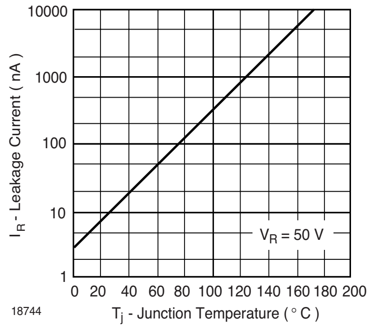


Figure 5. Leakage Current vs. Junction Temperature

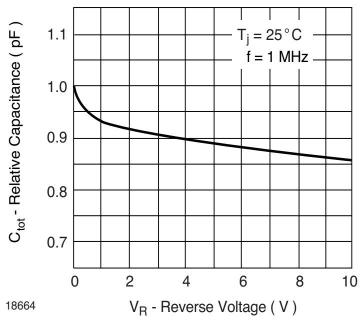


Figure 4. Relative Capacitance vs. Reverse Voltage

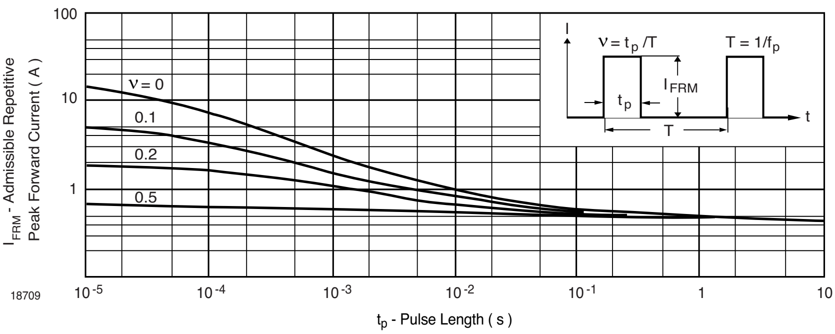


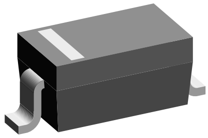
Figure 6. Admissible Repetitive Peak Forward Current vs. Pulse Duration

SOD-123 Package Dimension see Package Section

Small Signal Fast Switching Diode

Features

- Silicon Epitaxial Planar Diode
- Fast switching diode
- This diode is also available in other case styles including the DO-35 case with the type designation 1N4151, and the MiniMELF case with the type designation LL4151.


17431

Mechanical Data

Case: SOD-323 Plastic case
Weight: approx. 5.0 mg

Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
1N4151WS	1N4151WS-GS18 or 1N4151WS-GS08	A5	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	50	V
Peak reverse voltage		V_{RM}	75	V
Average rectified current half wave rectification with resistive load	T_{amb} = 25 °C and f ≥ 50 Hz	$I_{F(AV)}$	150[1)]	mA
Surge current	t < 1 s and T_j = 25 °C	I_{FSM}	500	mA
Power dissipation	T_{amb} = 25 °C	P_{tot}	410[1)]	mW

[1)]Valid provided that electrodes are kept at ambient temperature.

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	450[1)]	°C/W
Junction temperature		T_j	150	°C
Storage temperature range		T_S	- 65 to 150	°C

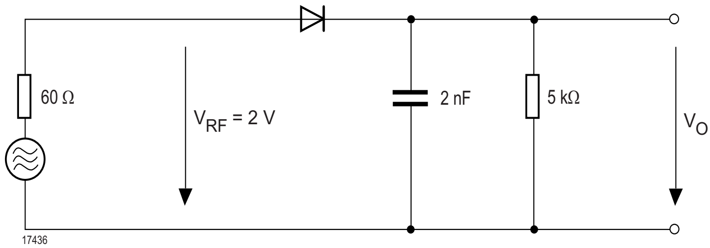
[1)] Valid provided that electrodes are kept at ambient temperature.

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 50 mA	V_F			1.0	V
Leakage current	V_R = 50 V	I_R			50	nA
	V_R = 20 V, T_j = 150 °C	I_R			50	µA
Reverse breakdown voltage	I_R = 5 µA (pulsed)	$V_{(BR)R}$	75			V
Capacitance	V_F = V_R = 0 V				2	pF
Reverse recovery time	I_F = 10 mA to I_R = 10 mA to I_R = 1 mA	t_{rr}			4	ns
	I_F = 10 mA to I_R = 1 mA, V_R = 6 V, R_L = 100 Ω	t_{rr}			2	ns
Rectification efficiency	f = 100 MHz, V_{RF} = 2 V	η_v	0.45			

Rectification Efficiency Measurement Circuit



Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

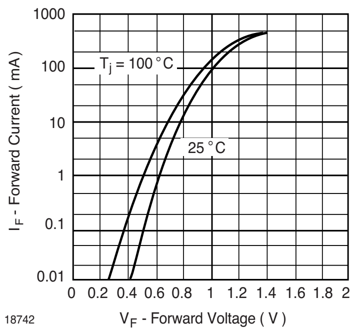


Figure 1. Forward Current vs. Forward Voltage

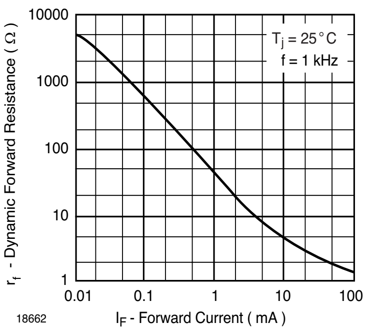


Figure 2. Dynamic Forward Resistance vs. Forward Current

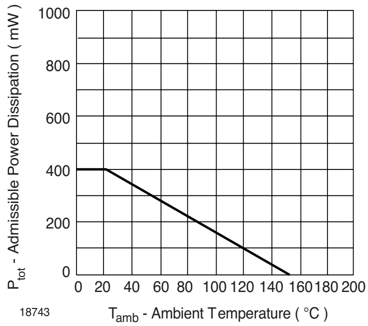


Figure 3. Admissible Power Dissipation vs. Ambient Temperature

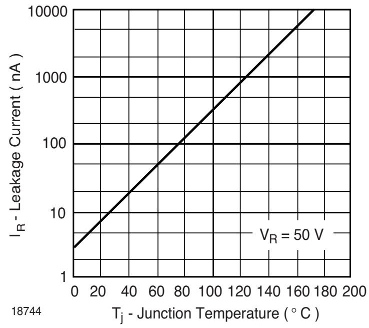


Figure 5. Leakage Current vs. Junction Temperature

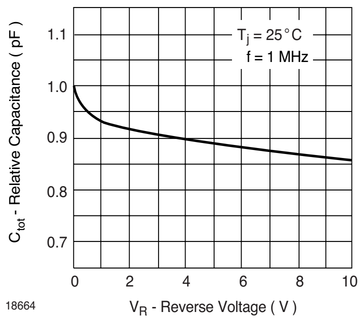


Figure 4. Relative Capacitance vs. Reverse Voltage

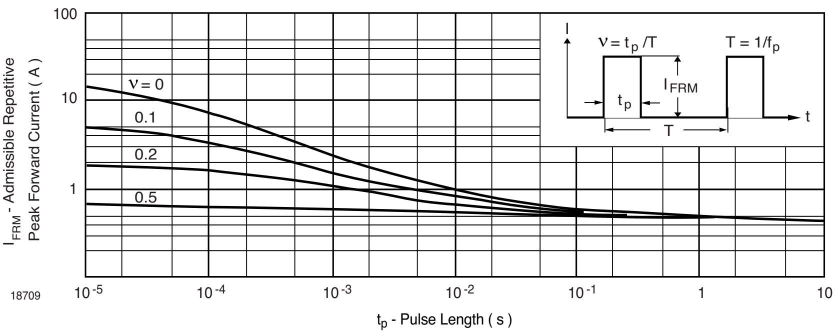
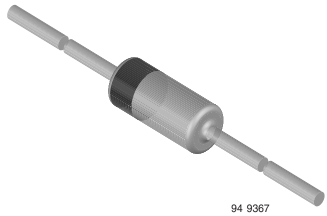


Figure 6. Admissible Repetitive Peak Forward Current vs. Pulse Duration

SOD-323 Package Dimension see Package Section

Small Signal Fast Switching Diodes

Features
- Silicon Epitaxial Planar Diode


94 9367

Applications
Extreme fast switches

Mechanical Data
Case: DO-35 Glass case
Weight: approx. 125 mg
Packaging Codes/Options:
TR / 10 k per 13 " reel (52 mm tape), 50 k/box
TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
1N4154	V_{RRM} = 35 V	1N4154-TR or 1N4154-TAP	Tape and Reel / Ammopack

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	35	V
Reverse voltage		V_R	25	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2	A
Repetitive peak forward current		I_{FRM}	500	mA
Forward current		I_F	300	mA
Average forward current	V_R = 0	I_{FAV}	150	mA
Power dissipation	l = 4 mm, T_L = 45 °C	P_V	440	mW
	l = 4 mm, $T_L \leq$ 25 °C	P_V	500	mV

Thermal Characteristics
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	350	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 30 mA	V_F		0.88	1	V
Reverse current	V_R = 25 V	I_R		9	100	nA
	V_R = 25 V, T_j = 150 °C	I_R			100	µA
Breakdown voltage	I_R = 5 µA, t_p/T = 0.01, t_p = 0.3 ms	$V_{(BR)}$	35			V
Diode capacitance	V_R = 0, f = 1 MHz, V_{HF} = 50 mV	C_D			4	pF
Reverse recovery time	I_F = I_R = 10 mA, i_R = 1 mA	t_{rr}			4	ns
	I_F = 10 mA, V_R = 6 V, i_R = 0.1 x I_R, R_L = 100 Ω	t_{rr}			2	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

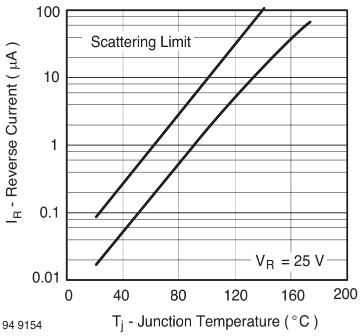


Figure 1. Reverse Current vs. Junction Temperature

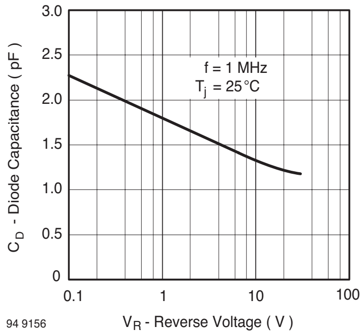


Figure 3. Diode Capacitance vs. Reverse Voltage

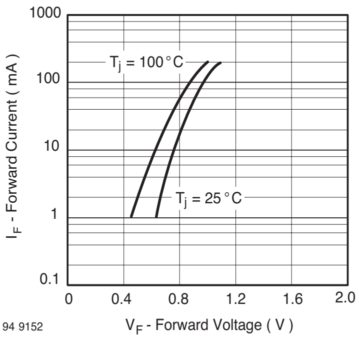


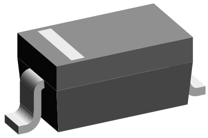
Figure 2. Forward Current vs. Forward Voltage

DO-35 Package Dimension see Package Section

Small Signal Fast Switching Diode

Features

- Silicon Epitaxial Planar Diode
- Fast switching diode.
- This diode is also available in other case styles including the DO-35 case with the type designation 1N4448, the MiniMELF case with the type designation LL4448, and the SOT-23 case with the type designation IMBD4448.



Mechanical Data

Case: SOD-123 Plastic case

Weight: approx. 9.3 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
1N4448W	1N4448W-GS18 or 1N4448W-GS08	A3	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	75	V
Peak reverse voltage		V_{RM}	100	V
Average rectified current half wave rectification with resistive load	f ≥ 50 Hz	$I_{F(AV)}$	150[1)]	mA
Surge current	t < 1 s and T_j = 25 °C	I_{FSM}	500	mA
Power dissipation		P_{tot}	500[1)]	mW

1) Valid provided that leads at a distance of 8 mm from case are kept at ambient temperature.

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	350[1)]	°C/W
Junction temperature		T_j	175	°C
Storage temperature		T_S	- 65 to + 175	°C

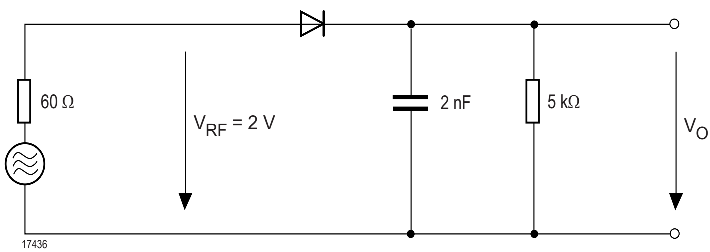
1) Valid provided that leads at a distance of 8 mm from case are kept at ambient temperature.

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 5 mA	V_F	0.62		0.72	V
	I_F = 100 mA	V_F			1	V
Leakage current	V_R = 20 V	I_R			25	nA
	V_R = 75 V	I_R			5	µA
	V_R = 20 V, T_J = 150 °C	I_R			50	µA
Capacitance	V_F = V_R = 0 V				4	pF
Reverse recovery time	I_F = 10 mA to I_R = 10 mA, V_R = 6 V, R_L = 100 Ω	t_{rr}			4	ns
Rectification efficiency	f = 100 MHz, V_{RF} = 2 V	η_v	0.45			

Rectification Efficieny Measurement Circuit



Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

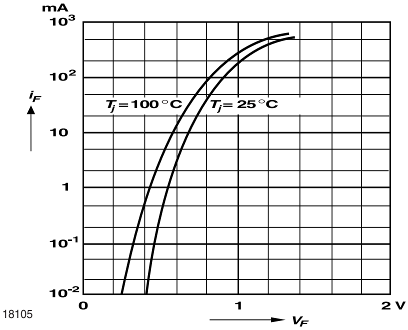


Figure 1. Forward characteristics

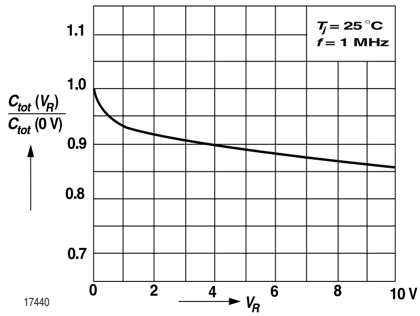


Figure 4. Relative Capacitance vs. Reverse Voltage

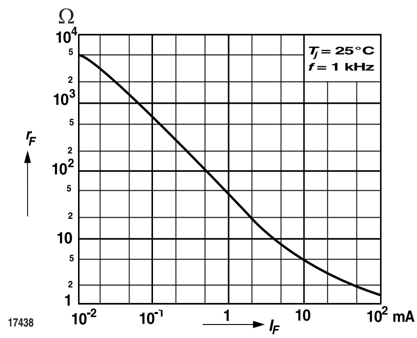


Figure 2. Dynamic Forward Resistance vs. Forward Current

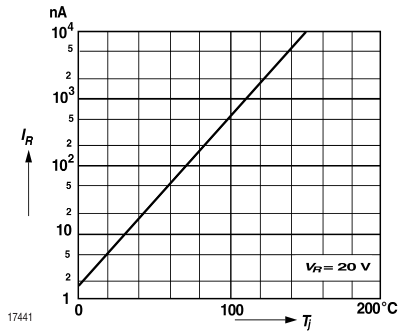


Figure 5. Leakage Current vs. Junction Temperature

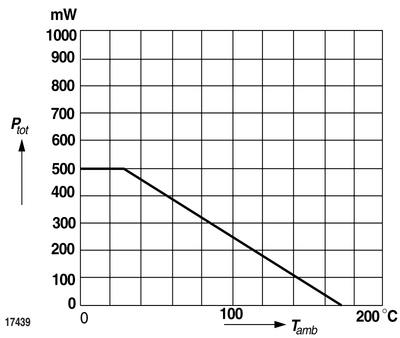


Figure 3. Admissible Power Dissipation vs. Ambient Temperature

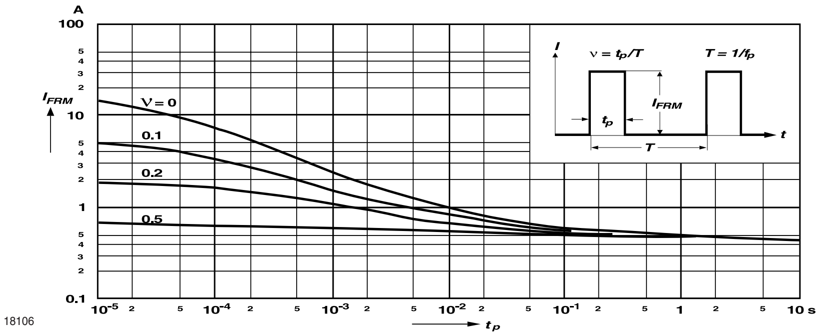


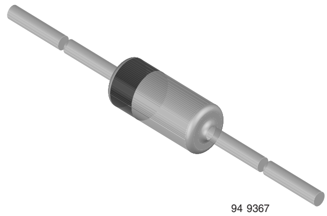
Figure 6. Admissible Repetitive Peak Forward Current vs. Pulse Duration

SOD-123 Package Dimension see Package Section

Small Signal Schottky Diodes

Features

- For general purpose applications
- Metal-on-silicon Schottky barrier device which is protected by a PN junction guard ring. The low forward voltage drop and fast switching make it ideal for protection of MOS devices, steering, biasing and coupling diodes for fast switching and low logic level applications.
- This diode is also available in the MiniMELF case with type designation LL5711 and LL6263.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Mechanical Data

Case: DO-35 Glass case

Weight: approx. 125 mg

Packaging Codes/Options:

TR / 10 k per 13 " reel (52 mm tape), 50 k/box

TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Ordering code	Marking	Remarks
1N5711	1N5711-TR or 1N5711-TAP	-	Tape and Reel / Ammopack
1N6263	1N6263-TR or 1N6263-TAP	-	Tape and Reel / Ammopack

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Peak inverse voltage		1N5711	V_{RRM}	70	V
		1N6263	V_{RRM}	60	V
Power dissipation (infinite heatsink)			P_{tot}	400[1)]	mW
Maximum single cycle surge 10 µs square wave			I_{FSM}	2.0	A

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	0.3[1)]	°C/mW
Junction temperature		T_j	125	°C
Storage temperature range		T_S	- 55 to + 175	°C

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 µA	1N5711	V_R	70			V
		1N6263	V_R	60			V
Leakage current	V_R = 50 V		I_R			200	nA
Forward voltage drop	I_F = 1.0 mA		V_F			0.41	V
	I_F = 15 mA		V_F			1.0	V
Junction capacitance	V_R = 0 V, f = 1.0 MHz	1N5711	C_{tot}			2.0	pF
		1N6263	C_{tot}			2.2	pF
Reverse recovery time	$I_F = I_R$ = 5.0 mA, recover to 0.1 I_R		t_{rr}			1.0	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

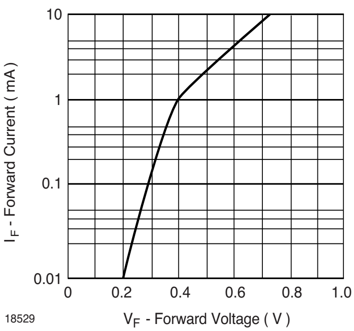


Figure 1. Typical Variation of Forward Current vs. Forward Voltage

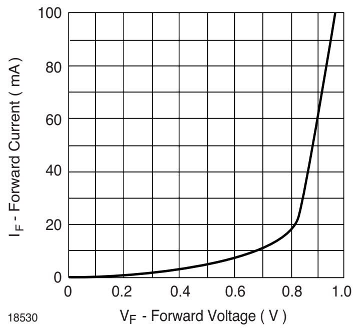


Figure 2. Typical Forward Conduction Curve

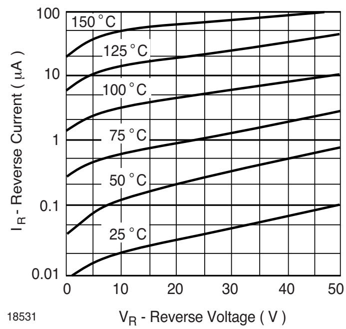


Figure 3. Typical Variation of Reverse Current at Various Temperatures

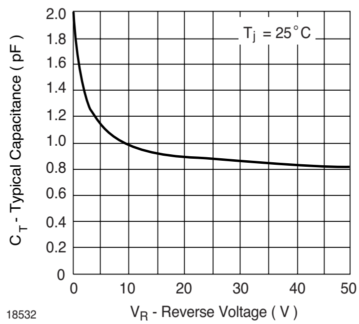


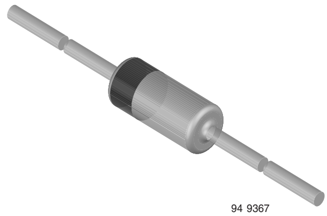
Figure 4. Typical Capacitance Curve as a Function of Reverse Voltage

DO-35 Package Dimension see Package Section

Small Signal Fast Switching Diodes

Features

- Fast switching speed
- High reliability
- High conductance
- For general purpose switching applications



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Mechanical Data

Case: DO-35 Glass case
Weight: approx. 125 mg
Packaging Codes/Options:
TR / 10 k per 13 " reel (52 mm tape), 50 k/box

TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
1N914	V_{RRM} = 75 V	1N914-TAP / 1N914-TR	Ammopack / Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Non repetitive peak reverse voltage		V_{RM}	100	V
Repetitive peak reverse voltage		V_{RRM}	75	V
Working peak reverse voltage		V_{RWM}	75	V
DC blocking voltage		V_R	75	V
RMS Reverse voltage		$V_{R(RMS)}$	53	V
Forward current		I_F	300	mA
Average rectified current	half wave rectification with resistive load and f > 50 MHz	I_{FAV}	200	mA
Non repetitive peak forward surge current	t = 1 s	I_{FSM}	1	A
	t = 1 µs	I_{FSM}	4	A
Power dissipation	l = 4 mm, T_L 25 °C	P_d	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	300	K/W
Operating and storage temperature range		T_j, T_{stg}	-65 to +175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 10 mA	V_F			1	V
Breakdown Voltage	I_R = 100 µA	V_R	100			V
Peak reverse current	V_R = 75 V	I_R			5.0	µA
	V_R = 20 V, T_j = 150 °C	I_R			50	µA
	V_R = 20 V	I_R			25	nA
Diode capacitance	V_R = 0, f = 1 MHz	C_D			4	pF
Reverse recovery time	I_F = 10 mA to I_R = 1 mA, V_R = 6 V, R_L = 100 Ω	t_{rr}			4	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

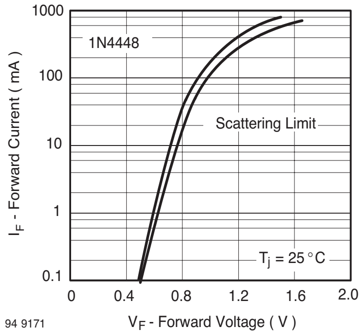


Figure 1. Forward Current vs. Forward Voltage

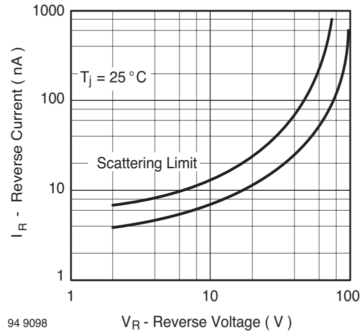


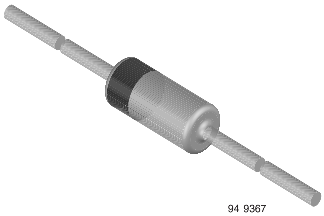
Figure 2. Reverse Current vs. Reverse Voltage

DO-35 Package Dimension see Package Section

Band Switching Diodes

Features

- Silicon Planar Diodes
- Low differential forward resistance
- Low diode capacitance
- High reverse impedance



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Applications

Band switching in VHF-tuners

Mechanical Data

Case: DO-35 Glass case

Weight: approx. 125 mg

Packaging Codes/Options:

TR / 10 k per 13 " reel (52 mm tape), 50 k/box

TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BA282	V_R = 35 V, r_f @ I_F 3 mA = max 0.7 Ω	BA282-TR or BA282-TAP	Tape and Reel / Ammopack
BA283	V_R = 35 V, r_f @ I_F3 mA = max 1.2 Ω	BA283-TR or BA283-TAP	Tape and Reel / Ammopack

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	35	V
Forward current		I_F	100	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	350	K/W
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	-55 to +150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1	V
Reverse current	V_R = 20 V		I_R			50	nA
Diode capacitance	f = 100 MHz, V_R = 1 V		C_D			1.5	pF
	f = 100 MHz, V_R = 3 V	BA282	C_D			1.25	pF
		BA283	C_D			1.2	pF
Differential forward resistance	f = 200 MHz, I_F = 3 mA	BA282	r_f			0.7	Ω
		BA283	r_f			1.2	Ω
	f = 200 MHz, I_F = 10 mA	BA282	r_f			0.5	Ω
		BA283	r_f			0.9	Ω
Reverse impedance	f = 100 MHz, V_R = 1 V		z_r	100			kΩ

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

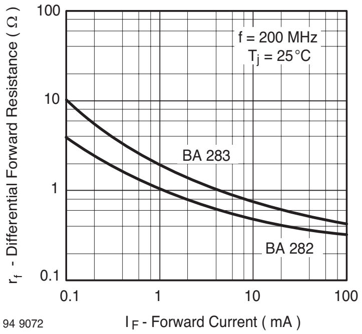


Figure 1. Differential Forward Resistance vs. Forward Current

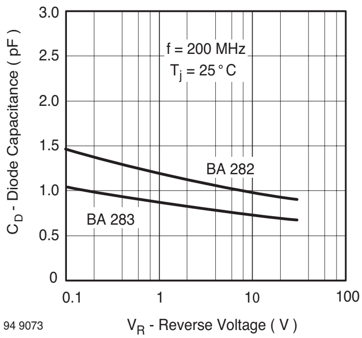
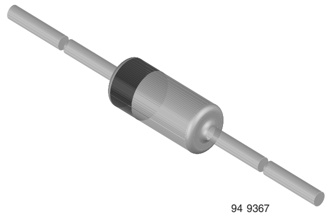


Figure 2. Diode Capacitance vs. Reverse Voltage

DO-35 Package Dimension see Package Section

RF PIN Diodes - Single in DO-35

Features
- Wide frequency range 10 MHz to 1 GHz



Applications
Current controlled HF resistance in adjustable attenuators

Mechanical Data
Case: DO-35 Glass case
Weight: approx. 125 mg
Packaging Codes/Options:

TR / 10 k per 13 " reel (52 mm tape), 50 k/box
TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BA479G	V_R = 30 V, Z_r > 5 kΩ	BA479G-TR or BA479G-TAP	Tape and Reel / Ammopack
BA479S	V_R = 30 V, Z_r > 9 kΩ	BA479S-TR or BA479S-TAP	Tape and Reel / Ammopack

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	30	V
Forward current		I_F	50	mA

Thermal Characteristics
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	350	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 55 to + 125	°C

Electrical Characteristics
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 20 mA		V_F			1	V
Reverse current	V_R = 30 V		I_R			50	nA
Diode capacitance	f = 100 MHz, V_R = 0		C_D			0.5	pF
Differential forward resistance	f = 100 MHz, I_F = 1.5 mA		r_f			50	Ω

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse impedance	f = 100 MHz, V_R = 0	BA479G	z_r	5			kΩ
		BA479S	z_r	9			kΩ
Minority carrier lifetime	I_F = 10 mA, I_R = 10 mA		τ		4		µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

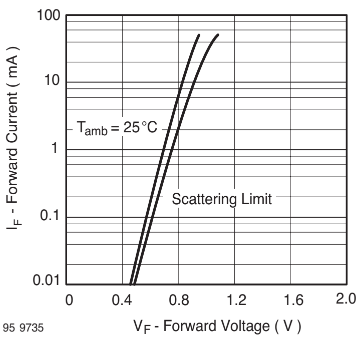


Figure 1. Forward Current vs. Forward Voltage

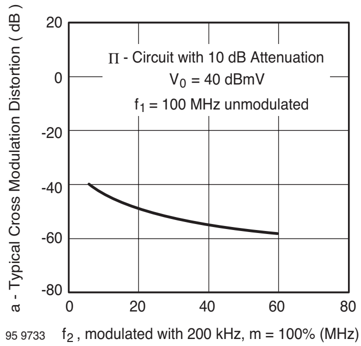


Figure 3. Typ. Cross Modulation Distortion vs. Frequency f_2

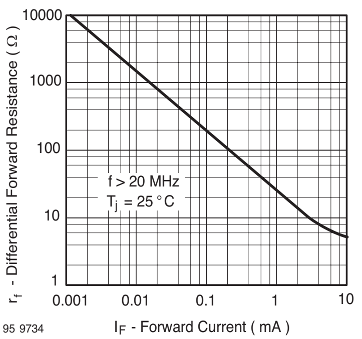


Figure 2. Differential Forward Resistance vs. Forward Current

DO-35 Package Dimension see Package Section

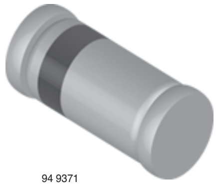
Small Signal Switching Diode

Features
- Silicon Planar Diode

Applications
General purpose

Mechanical Data
Case: MiniMELF Glass case (SOD-80)
Weight: approx. 31 mg
Cathode Band Color: Black
Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box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Parts Table

Part	Type differentiation	Ordering code	Remarks
BA604	V_{RSM} = 80 V	BA604-GS18 or BA604-GS08	Tape and Reel

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Peak reverse voltage, non repetitive		V_{RSM}	80	V
Reverse voltage		V_R	50	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2	A
Repetitive peak forward current		I_{FRM}	450	mA
Forward current		I_F	200	mA
Power dissipation		P_V	500	mW

Thermal Characteristics
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction lead	T_L = constant	R_{thJL}	350	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 55 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

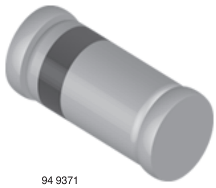
Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 50 mA	V_F			1.1	V
Reverse current	V_R = 50 V	I_R			1	µA
	V_R = 20 V	I_R			50	nA
	V_R = 20 V, T_j = 150 °C	I_R			50	µA
Breakdown voltage	I_R = 100 µA	$V_{(BR)}$	80			V
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, i_R = 1 mA	t_{rr}			20	ns
Diode capacitance	V_R = 0, f = 1 MHz	C_D			4	pF

MiniMELF SOD-80 Package Dimension
see Package Section

Document Number 85528
Rev. 1.6, 17-Feb-04

RF PIN Diodes - Single in MiniMELF SOD-80

Features
- Wide frequency range 10 MHz to 1 GHz



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Applications
Current controlled HF resistance in adjustable attenuators

Mechanical Data
Case: MiniMELF Glass case (SOD-80)
Weight: approx. 31 mg
Cathode Band Color: Black

Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BA679	V_R = 30 V, Z_r > 5 kΩ	BA679-GS18 or BA679-GS08	Tape and Reel
BA679S	V_R = 30 V, Z_r > 9 kΩ	BA679S-GS18 or BA679S-GS08	Tape and Reel

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	30	V
Forward current		I_F	50	mA

Thermal Characteristics
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 55 to + 125	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 20 mA		V_F			1	V
Reverse current	V_R = 30 V		I_R			50	nA
Diode capacitance	f = 100 MHz, V_R = 0		C_D			0.5	pF
Differential forward resistance	f = 100 MHz, I_F = 1.5 mA		r_f			50	Ω
Reverse impedance	f = 100 MHz, V_R = 0	BA679	z_r	5			kΩ
		BA679S	z_r	9			kΩ
Minority carrier lifetime	I_F = 10 mA, I_R = 10 mA		τ		4		µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

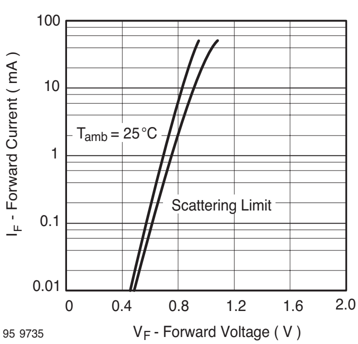


Figure 1. Forward Current vs. Forward Voltage

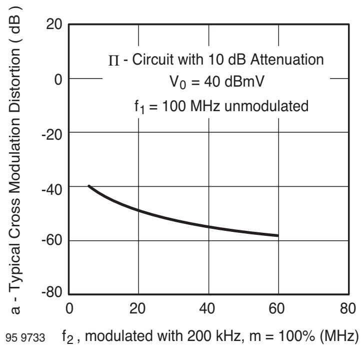


Figure 3. Typ. Cross Modulation Distortion vs. Frequency f_2

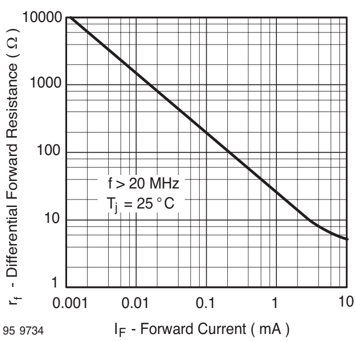
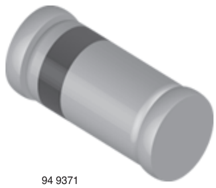


Figure 2. Differential Forward Resistance vs. Forward Current

MiniMELF SOD-80 Package Dimension see Package Section

Band Switching Diodes

Features
- Silicon Planar Diodes
- Low differential forward resistance
- Low diode capacitance
- High reverse impedance



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Applications
Band switching in VHF-tuners

Mechanical Data
Case: MiniMELF Glass case (SOD-80)

Weight: approx. 31 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BA682	V_R = 35 V, r_f @ I_F 3 mA = max 0.7 Ω	BA682-GS18 or BA682-GS08	Tape and Reel
BA683	V_R = 35 V, r_f @ I_F 3 mA = max 1.2 Ω	BA683-GS18 or BA683-GS08	Tape and Reel

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	35	V
Forward current		I_F	100	mA

Thermal Characteristics
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	-55 to +150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1	V
Reverse current	V_R = 20 V		I_R			50	nA
Diode capacitance	f = 100 MHz, V_R = 1 V		C_D			1.5	pF
	f = 100 MHz, V_R = 3 V	BA682	C_D			1.25	pF
		BA683	C_D			1.2	pF
Differential forward resistance	f = 200 MHz, I_F = 3 mA	BA682	r_f			0.7	Ω
		BA683	r_f			1.2	Ω
	f = 200 MHz, I_F = 10 mA	BA682	r_f			0.5	Ω
		BA683	r_f			0.9	Ω

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

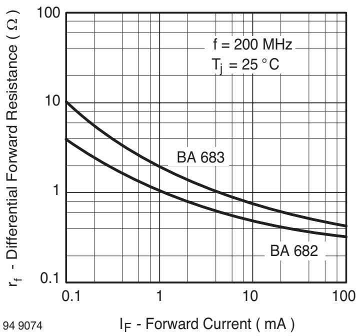


Figure 1. Differential Forward Resistance vs. Forward Current

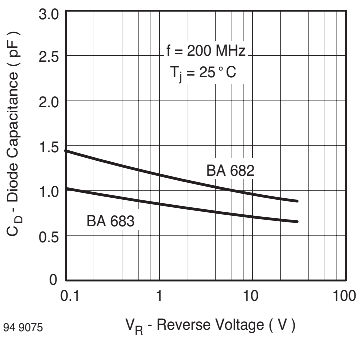
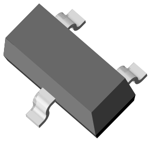
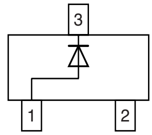


Figure 2. Diode Capacitance vs. Reverse Voltage

MiniMELF SOD-80 Package Dimension see Package Section

RF PIN Diodes - Single in SOT-23





Features

- Wide frequency range 10 MHz to 1 GHz

Applications

Current controlled HF resistance in adjustable attenuators

Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.1 mg
Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BA779	V_R = 30 V, Z_r > 5 kΩ	BA779-GS18 or BA779-GS08	Tape and Reel
BA779S	V_R = 30 V, Z_r > 9 kΩ	BA779S-GS18 or BA779S-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	30	V
Forward current		I_F	50	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 55 to + 125	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 20 mA		V_F			1	V
Reverse current	V_R = 30 V		I_R			50	nA
Diode capacitance	f = 100 MHz, V_R = 0		C_D			0.5	pF
Differential forward resistance	f = 100 MHz, I_F = 1.5 mA		r_f			50	Ω
Reverse impedance	f = 100 MHz, V_R = 0	BA779	z_r	5			kΩ
		BA779S	z_r	9			kΩ
Minority carrier lifetime	I_F = 10 mA, I_R = 10 mA		τ		4		µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

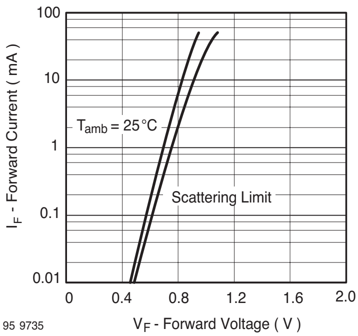


Figure 1. Forward Current vs. Forward Voltage

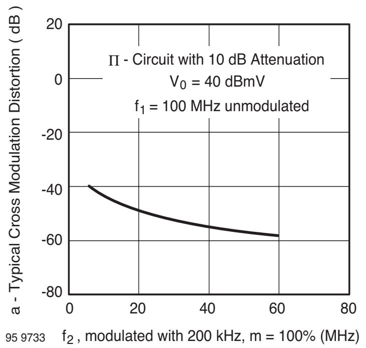


Figure 3. Typ. Cross Modulation Distortion vs. Frequency f_2

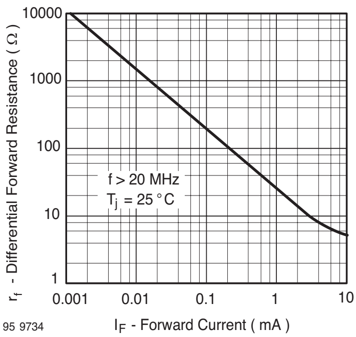


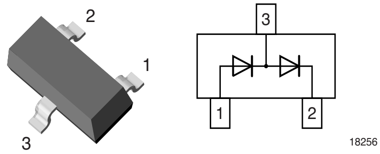
Figure 2. Differential Forward Resistance vs. Forward Current

SOT-23 Package Dimension see Package Section

RF PIN Diodes - Dual in SOT-23

Features

- Wide frequency range 10 MHz to 1 GHz



Applications

Current controlled HF resistance in adjustable attenuators

Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.1 mg
Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BA779-2	V_R = 30 V, Z_r > 5 kΩ	BA779-2-GS18 or BA779-2-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	30	V
Forward current		I_F	50	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 55 to + 125	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 20 mA	V_F			1	V
Reverse current	V_R = 30 V	I_R			50	nA
Diode capacitance	f = 100 MHz, V_R = 0	C_D			0.5	pF

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Differential forward resistance	f = 100 MHz, I_F = 1.5 mA	r_f			50	Ω
Reverse impedance	f = 100 MHz, V_R = 0	z_r	5			kΩ
Minority carrier lifetime	I_F = 10 mA, I_R = 10 mA	τ		4		µs

SOT-23 Package Dimension
see Package Section

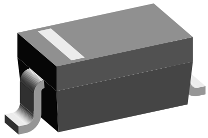
Band Switching Diodes

Description

Silicon Epitaxial Planar Diode Switches

For electric bandswitching in radio and TV tuners in the frequency range of (50 to 1000) MHz. The dynamic forward resistance is constant and very small over a wide range of frequency and forward current. The reverse capacitance is also small and largely independent of the reverse voltage.

These diodes are also available in SOD-323 case with the type designations BA782S and BA783S.



17431

Mechanical Data

Case: SOD-123 Plastic case

Weight: approx. 9.3 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BA782	BA782-GS18 or BA782-GS08	-	Tape and Reel
BA783	BA783-GS18 or BA783-GS08	-	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	35	V
Forward continuous current	T_{amb} = 25 °C	I_F	35	V

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction temperature		T_j	125	°C
Storage temperature range		T_S	- 55 to + 125	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1	V
Leakage current	V_R = 20 V		I_R			50	nA
Dynamic forward resistance	f = (50 to 1000) MHz, I_F = 3 mA	BA782	r_f			0.7	Ω
		BA783	r_f			1.2	Ω
	f = (50 to 1000) MHz, I_F = 10 mA	BA782	r_f			0.5	Ω
		BA783	r_f			0.9	Ω
Capacitance	V_R = 1 V, f = 1 MHz					1.5	pF
	V_R = 3 V, f = 1 MHz	BA782				1.25	pf
		BA783				1.2	pf
Series inductance across case			L_S		2.5		nH

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

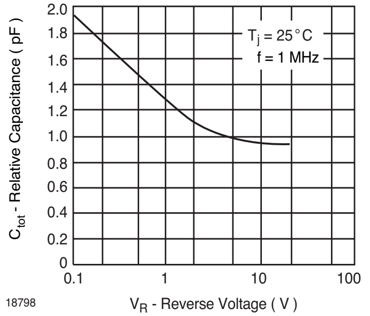


Figure 1. Capacitance vs. Reverse Voltage

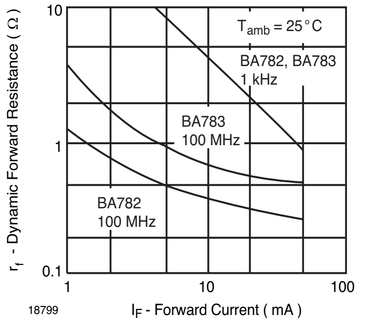


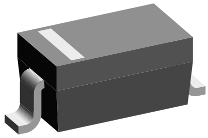
Figure 2. Dynamic Forward Resistance vs. Forward Current

SOD-123 Package Dimension see Package Section

Band Switching Diodes

Features

- Silicon Epitaxial Planar Diode Switches
- For electric bandswitching in radio and TV tuners in the frequency range of (50 to 1000) MHz. The dynamic forward resistance is constant and very small over a wide range of frequency and forward current. The reverse capacitance is also small and largely independent of the reverse voltage.
- These diodes are also available in SOD-123 case with the type designations BA782 and BA783.


17431

Mechanical Data

Case: SOD-323 Plastic case
Weight: approx. 5.0 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BA782S	BA782S-GS18 or BA782S-GS08	-	Tape and Reel
BA783S	BA783S-GS18 or BA783S-GS08	-	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	35	V
Forward continuous current	T_{amb} = 25 °C	I_F	100	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction temperature		T_j	125	°C
Storage temperature range		T_S	- 55 to + 125	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1	V
Leakage current	V_R = 20 V		I_R			50	nA
Dynamik forward resistance	f = (50 to 1000) MHz, I_F = 3 mA	BA782S	r_f			0.7	Ω
		BA783S	r_f			1.2	Ω
	f = (50 to 1000) MHz, I_F = 10 mA	BA782S	r_f			0.5	Ω
		BA783S	r_f			0.9	Ω
Diode capacitance	V_R = 1 V, f = 1 MHz		C_{tot}			1.5	pF
	V_R = 3 V, f = 1 MHz	BA782S	C_{tot}			1.25	pF
		BA783S	C_{tot}			1.2	pF
Series inductance across case			L_S		2.5		nH

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

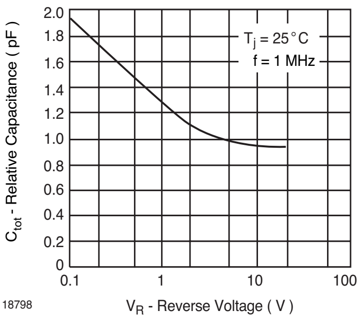


Figure 1. Capacitance vs. Reverse Voltage

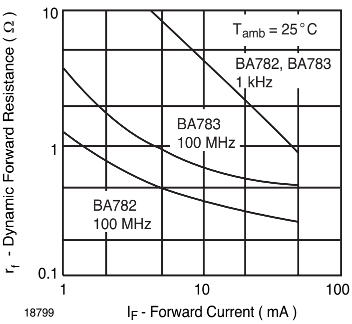


Figure 2. Dynamic Forward Resistance vs. Forward Current

SOD-323 Package Dimension see Package Section

Band Switching Diodes

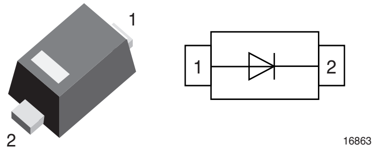
Description

The main purpose of the BA892V-02V is the Band Switching. Biased with a DC forward current for signals at frequencies over 100 MHz up to 3 GHz this diode behaves like a current controlled resistor and not as a diode any more.

Depending on the forward current the forward resistance rf can be switched far below 1 Ω, so that the Switch is closed.

To open the Switch, the BA892V-02V has to be driven in the reverse mode where the BA892V-02V behaves like a small capacitor with high isolation.

So typical applications for this Band Switching Diode are mobile and TV-applications.



Features

- Low forward resistance
- Small, space saving SOD523 package with low series inductance
- Small capacitance

Applications

Band switching up to 3 GHz

Low loss band-switching in TV/VTR tuners

Mechanical Data

Case: SOD-523 Plastic case

Weight: approx. 1.6 mg

Cathode Band Color: Laser marking

Packaging Codes/Options:

GS08 / 3 k per 7" reel (8 mm tape), 3 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BA892V-02V	BA892V-02V-GS08	A	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	35	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	-55 to +150	°C

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction soldering point		R_{thJS}	100	K/W

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	35			V
Reverse current	V_R = 20 V	I_R			20	nA
Forward voltage	I_F = 100 mA	V_F			1.1	V
Diode capacitance	f = 1 MHz, V_R = 0	C_D		1.1		pF
	f = 1 MHz, V_R = 1 V	C_D		0.9	1.2	pF
	f = 1 MHz, V_R = 3 V	C_D		0.85	1.1	pF
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		0.6		Ω
	f = 100 MHz, I_F = 3 mA	r_f		0.45	0.7	Ω
	f = 100 MHz, I_F = 10 mA	r_f		0.34	0.5	Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		90		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

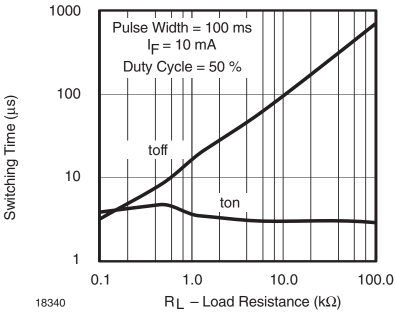


Figure 1. Forward Resistance vs. Forward Current

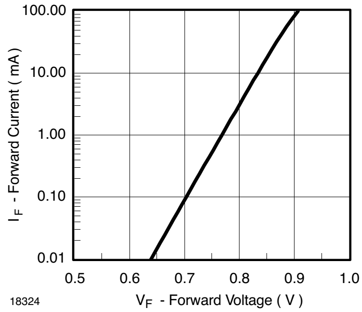


Figure 3. Forward Current vs. Forward Voltage

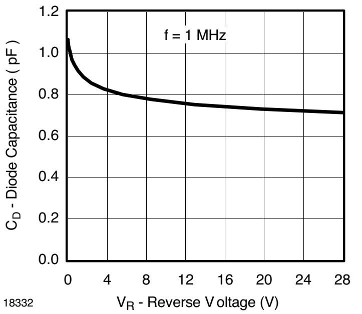


Figure 2. Diode Capacitance vs. Reverse Voltage

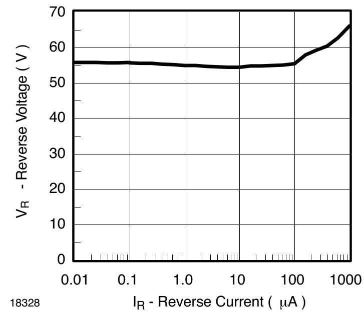


Figure 4. Reverse Voltage vs. Reverse Current

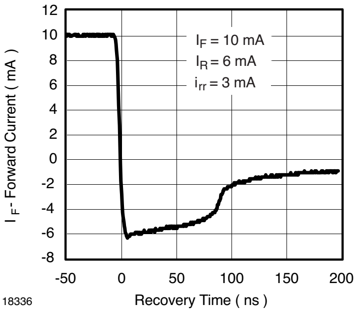


Figure 5. Typical Charge Recovery Curve

SOD-523 Package Dimension see Package Section

Band Switching Diodes - Dual, Series in SOT-323

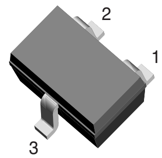
Description

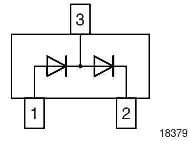
The main purpose of the BA892V-04W is the Band Switching. Biased with a DC forward current for signals at frequencies over 100 MHz up to 3 GHz this diode behaves like a current controlled resistor and not as a diode any more.

Depending on the forward current the forward resistance rf can be switched far below 1 Ω, so that the Switch is closed.

To open the Switch, the BA892V-04W has to be driven in the reverse mode where the BA892V-04W behaves like a small capacitor with high isolation.

So typical applications for this Band Switching Diode are mobile and TV-applications.





Features

- Low forward resistance
- Small reverse capacitance

Applications

Band switching up to 3 GHz

Low loss band-switching in TV/VTR tuners

Mechanical Data

Case: SOT-323 Plastic case

Weight: approx. 6.0 mg

Packaging Codes/Options:

GS08 / 3 k per 7" reel (8 mm tape), 3 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BA892V-04W	BA892V-04W-GS08	AW4	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	35	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	-55 to +150	°C

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction soldering point		R_{thJS}	100	K/W

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	35			V
Reverse current	V_R = 20 V	I_R			20	nA
Forward voltage	I_F = 100 mA	V_F			1.1	V
Diode capacitance	f = 1 MHz, V_R = 0	C_D		1.1		pF
	f = 1 MHz, V_R = 1 V	C_D		0.9	1.2	pF
	f = 1 MHz, V_R = 3 V	C_D		0.85	1.1	pF
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		0.6		Ω
	f = 100 MHz, I_F = 3 mA	r_f		0.45	0.7	Ω
	f = 100 MHz, I_F = 10 mA	r_f		0.34	0.5	Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		90		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

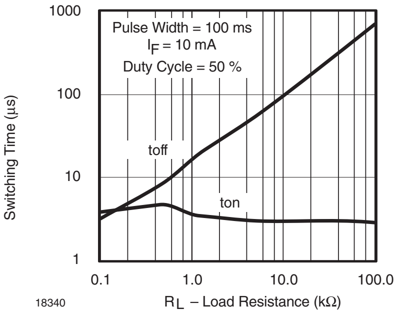


Figure 1. Forward Resistance vs. Forward Current

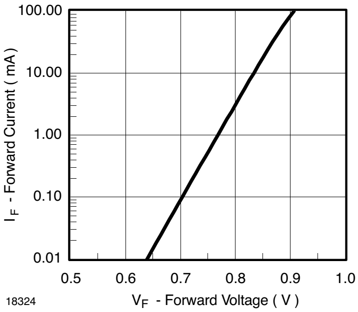


Figure 3. Forward Current vs. Forward Voltage

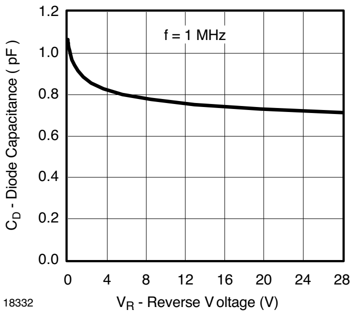


Figure 2. Diode Capacitance vs. Reverse Voltage

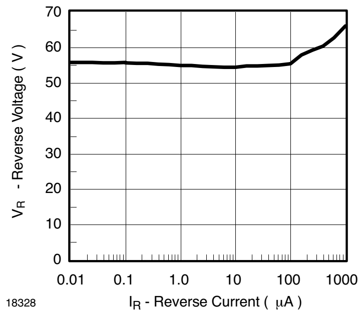


Figure 4. Reverse Voltage vs. Reverse Current

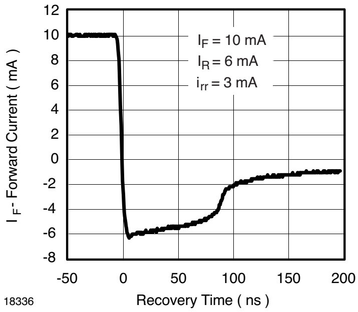


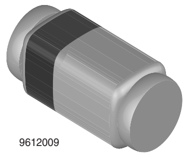
Figure 5. Typical Charge Recovery Curve

SOT-323 Package Dimension see Package Section

RF PIN Diodes - Single in QuadroMELF SOD-80

Features

- Wide frequency range 10 MHz to 1 GHz



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Applications

Current controlled HF resistance in adjustable attenuators

Mechanical Data

Case: QuadroMELF Glass case (SOD-80)
Weight: approx. 34 mg
Cathode Band Color: Black

Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BA979	V_R = 30 V, Z_r > 5 kΩ	BA979-GS18 or BA979-GS08	Tape and Reel
BA979S	V_R = 30 V, Z_r > 9 kΩ	BA979S-GS18 or BA979S-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	30	V
Forward current		I_F	50	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 55 to + 125	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 20 mA		V_F			1	V
Reverse current	V_R = 30 V		I_R			50	nA
Diode capacitance	f = 100 MHz, V_R = 0		C_D			0.5	pF
Differential forward resistance	f = 100 MHz, I_F = 1.5 mA		r_f			50	Ω
Reverse impedance	f = 100 MHz, V_R = 0	BA979	z_r	5			kΩ
		BA979S	z_r	9			kΩ
Minority carrier lifetime	I_F = 10 mA, I_R = 10 mA		τ		4		µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

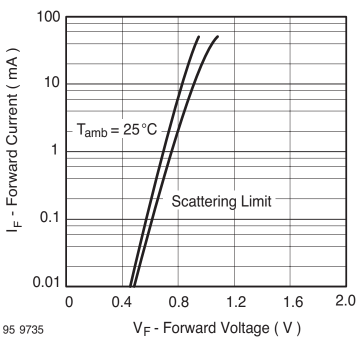


Figure 1. Forward Current vs. Forward Voltage

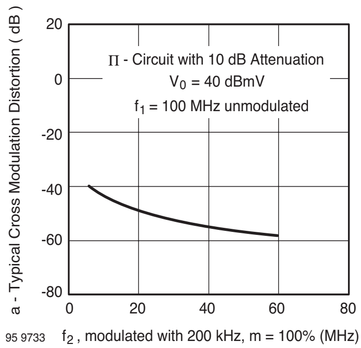


Figure 3. Typ. Cross Modulation Distortion vs. Frequency f_2

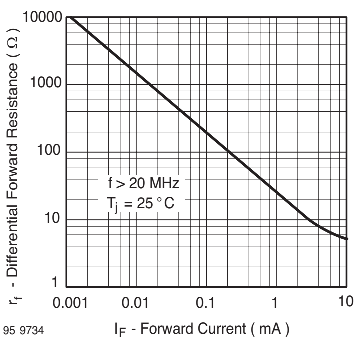


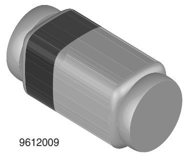
Figure 2. Differential Forward Resistance vs. Forward Current

QuadroMELF SOD-80 Package Dimension see Package Section

RF PIN Diode - Single in QuadroMELF SOD-80

Features

- Wide frequency range 10 MHz to 1 GHz


9612009

Applications

Current controlled HF resistance in adjustable attenuators

Mechanical Data

Case: QuadroMELF Glass case (SOD-80)
Weight: approx. 34 mg
Cathode Band Color: Black

Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BA980	BA980-GS18 or BA980-GS08	-	Tape and Reel (2.500 pcs)

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	30	V
Forward current		I_F	50	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 55 to + 125	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 20 mA	V_F			1	V
Reverse current	V_R = 30 V	I_R			50	nA
Diode capacitance	f = 100 MHz, V_R = 0	C_D			0.5	pF

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Differential forward resistance	f = 100 MHz, I_F = 1.5 mA	r_f	40		60	Ω
Reverse impedance	f = 100 MHz, V_R = 0	z_r	5			kΩ
Minority carrier lifetime	I_F = 10 mA, I_R = 10 mA	τ		4		µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

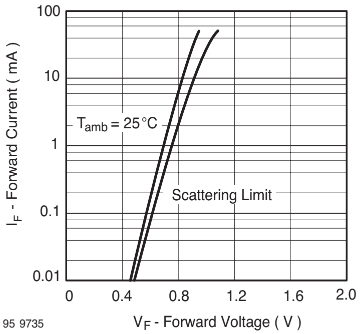


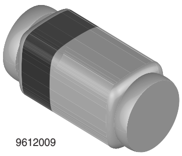
Figure 1. Forward Current vs. Forward Voltage

QuadroMELF SOD-80 Package Dimension see Package Section

Band Switching Diodes

Features

- Silicon Planar Diodes
- Low differential forward resistance
- Low diode capacitance
- High reverse impedance
- Quadro Melf package



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Applications

Band switching in VHF-tuners

Mechanical Data

Case: QuadroMELF Glass case (SOD-80)
Weight: approx. 34 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BA982	V_R = 35 V, r_f @ I_F 3 mA = max 0.7 Ω	BA982-GS18 or BA982-GS08	Tape and Reel
BA983	V_R = 35 V, r_f @ I_F 3 mA = max 1.2 Ω	BA983-GS18 or BA983-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	35	V
Forward current		I_F	100	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	-55 to +150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1	V
Reverse current	V_R = 20 V		I_R			50	nA
Diode capacitance	f = 100 MHz, V_R = 1 V		C_D			1.5	pF
	f = 100 MHz, V_R = 3 V	BA982	C_D			1.25	pF
		BA983	C_D			1.2	pF
Differential forward resistance	f = 200 MHz, I_F = 3 mA	BA982	r_f			0.7	Ω
		BA983	r_f			1.2	Ω
	f = 200 MHz, I_F = 10 mA	BA982	r_f			0.5	Ω
		BA983	r_f			0.9	Ω

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

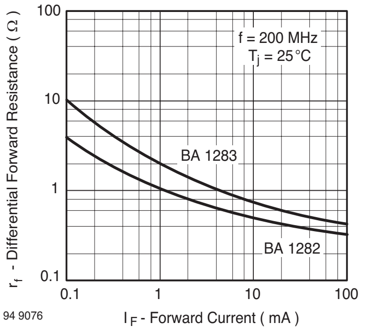


Figure 1. Differential Forward Resistance vs. Forward Current

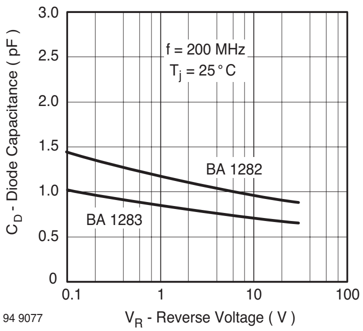


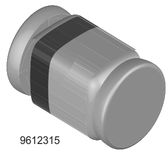
Figure 2. Diode Capacitance vs. Reverse Voltage

**QuadroMELF SOD-80
Package Dimension
see Package Section**

Band Switching Diodes

Features

- Silicon Planar Diode
- Saving space
- Hermetic sealed parts
- Fits onto SOD 323 footprints
- Electrical data identical with the devices BA682.BA683 / BA982.BA983
- Low differential forward resistance
- Low diode capacitance
- High reverse impedance



Applications

Band switching in VHF-tuners

Mechanical Data

Case: MicroMELF Glass case
Weight: approx. 12 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BA1282	V_R = 35 V, r_f @ I_F 3 mA = max 0.7 Ω	BA1282-GS18 or BA1282-GS08	Tape and Reel
BA1283	V_R = 35 V, r_f @ I_F 3 mA = max 1.2 Ω	BA1282-GS18 or BA1282-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	35	V
Forward current		I_F	100	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	mounted on epoxy-glass hard tissue, Fig. 1 35 µm copper clad, 0.9 mm^2 copper area per electrode	R_{thJA}	500	K/W
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1	V
Reverse current	V_R = 20 V		I_R			50	nA
Diode capacitance	f = 100 MHz, V_R = 1 V		C_D			1.5	pF
	f = 100 MHz, V_R = 3 V	BA1282	C_D			1.25	pF
		BA1283	C_D			1.2	pF
Differential forward resistance	f = 200 MHz, I_F = 3 mA	BA1282	r_f			0.7	Ω
		BA1283	r_f			1.2	Ω
	f = 200 MHz, I_F = 10 mA	BA1282	r_f			0.5	Ω
		BA1283	r_f			0.9	Ω

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

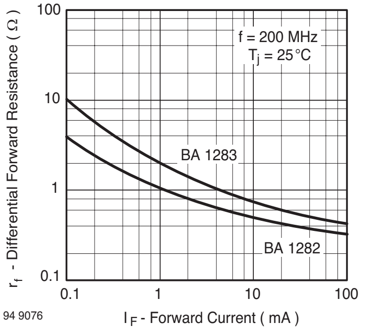


Figure 1. Differential Forward Resistance vs. Forward Current

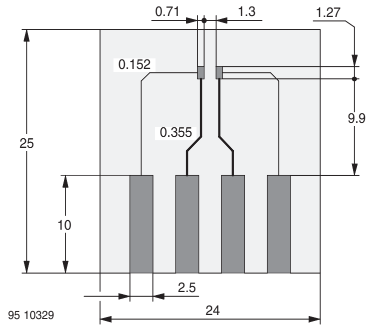


Figure 3. Board for R_{thJA} definition (in mm)

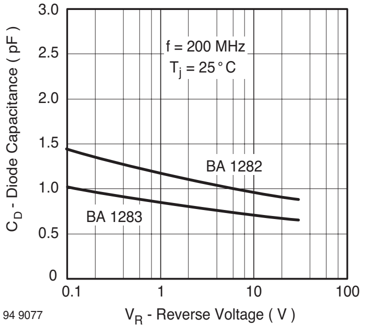


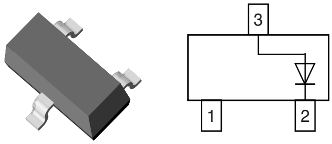
Figure 2. Diode Capacitance vs. Reverse Voltage

MicroMELF Package Dimension see Package Section

Small Signal Fast Switching Diode

Features

- Fast switching speed
- Surface mount package
- Well suited for automated assembly process



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Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.0 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAL99	V_R = 70 V	BAL99-GS18 or BAL99-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage = Working peak reverse voltage = DC Blocking voltage		$V_{RRM} = V_{RWM} = V_R$	70	V
Peak forward surge current	t = 1 µs	I_{FSM}	2	A
	t = 1 ms	I_{FSM}	1	A
	t = 1 s	I_{FSM}	0.5	A
Average forward current		I_{FAV}	250	mA
Power dissipation	on fiberglass substrate 30 mm x 10 mm x 1.6 mm	P_{tot}	350	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction to ambient	on fiberglass substrate 30 mm x 10 mm x 1.6 mm	R_{thJA}	357	K/W
Junction and storage temperature range		$T_j = T_{stg}$	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 1 mA	V_F			0.715	V
	I_F = 10 mA	V_F			0.855	V
	I_F = 50 mA	V_F			1.0	V
	I_F = 150 mA	V_F			1.25	V
Reverse current	V_R = 70 V	I_R			2.5	µA
	V_R = 70 V, T_j = 150 °C	I_R			100	µA
	V_R = 25 V, T_j = 150 °C	I_R			30	µA
Diode capacitance	V_F = V_R = 0, f = 1 MHz	C_D			1.5	pF
Reverse recovery time	I_F = I_R = 10 mA to I_R = 1 mA, R_L = 100 Ω, V_R = 6 V	t_{rr}			6	ns

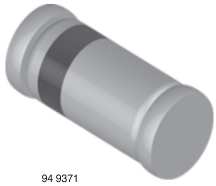
SOT-23 Package Dimension see Package Section

Document Number 85535
Rev. 1.6, 09-Jul-04

Small Signal Switching Diodes, Low Leakage Current

Features

- Silicon Planar Diodes
- Very low reverse current



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Applications

Protection circuits, time delay circuits, peak follower circuits, logarithmic amplifiers

Mechanical Data

Case: MiniMELF Glass case (SOD-80)
Weight: approx. 31 mg

Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAQ33	V_{RRM} = 40 V	BAQ33-GS18 or BAQ33-GS08	Tape and Reel
BAQ34	V_{RRM} = 70 V	BAQ34-GS18 or BAQ34-GS08	Tape and Reel
BAQ35	V_{RRM} = 140 V	BAQ35-GS18 or BAQ35-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Reverse voltage		BAQ33	V_R	30	V
		BAQ34	V_R	60	V
		BAQ35	V_R	125	V
Peak forward surge current	t_p = 1 µs		I_{FSM}	2	A
Forward current			I_F	200	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	200	°C
Storage temperature range		T_{stg}	- 65 to + 200	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1	V
Reverse current	E ≤ 300 lx, V_R		I_R		1	3	nA
	E ≤ 300 lx, V_R, T_j = 125 °C		I_R			0.5	µA
	E ≤ 300 lx, V_R = 15 V	BAQ33	I_R		0.5	1	nA
	E ≤ 300l x, V_R = 30 V	BAQ34	I_R		0.5	1	nA
	E ≤ 300 lx, V_R = 60 V	BAQ35	I_R		0.5	1	nA
Breakdown voltage	I_R = 5 µA, t_p/T = 0.01, t_p= 0.3 ms	BAQ33	$V_{(BR)}$	40			V
	I_R = 5 µA, t_p/T = 0.01, t_p = 0.3 ms	BAQ34	$V_{(BR)}$	70			V
		BAQ35	$V_{(BR)}$	140			V
Diode capacitance	V_R = 0, f = 1 MHz		C_D			3	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

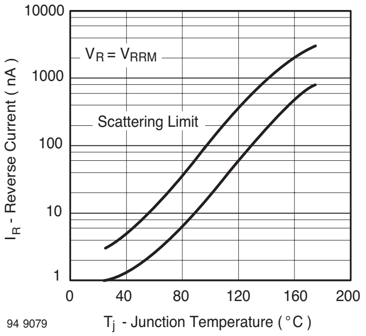


Figure 1. Reverse Current vs. Junction Temperature

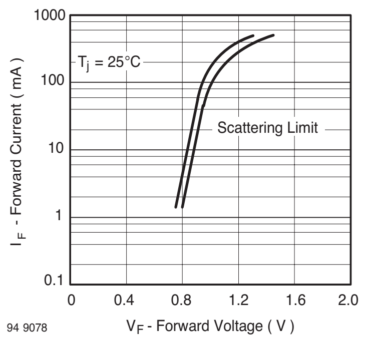
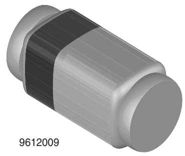


Figure 2. Forward Current vs. Forward Voltage

MiniMELF SOD-80 Package Dimension see Package Section

Small Signal Switching Diodes, Low Leakage Current

Features
- Silicon Planar Diodes
- Very low reverse current



Applications
Protection circuits, time delay circuits, peak follower circuits, logarithmic amplifiers

Mechanical Data
Case: QuadroMELF Glass case (SOD-80)
Weight: approx. 34 mg

Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAQ133	V_{RRM} = 40 V	BAQ133-GS18 or BAQ133-GS08	Tape and Reel
BAQ134	V_{RRM} = 70 V	BAQ134-GS18 or BAQ134-GS08	Tape and Reel
BAQ135	V_{RRM} = 140 V	BAQ135-GS18 or BAQ135-GS08	Tape and Reel

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Reverse voltage		BAQ133	V_R	30	V
		BAQ134	V_R	60	V
		BAQ135	V_R	125	V
Peak forward surge current	t_p = 1 µs		I_{FSM}	2	A
Forward current			I_F	200	mA

Thermal Characteristics
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	200	°C
Storage temperature range		T_{stg}	- 65 to + 200	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1	V
Reverse current	E ≤ 300 lx, V_R		I_R		1	3	nA
	E ≤ 300 lx, V_R, T_j = 125 °C		I_R			0.5	µA
	E ≤ 300 lx, V_R = 15 V	BAQ133	I_R		0.5	1	nA
	E ≤ 300 lx, V_R = 30 V	BAQ134	I_R		0.5	1	nA
	E ≤ 300 lx, V_R = 60 V	BAQ135	I_R		0.5	1	nA
Breakdown voltage	I_R = 5 µA, t_p/T = 0.01, t_p = 0.3 ms	BAQ133	$V_{(BR)}$	40			V
		BAQ134	$V_{(BR)}$	70			V
		BAQ135	$V_{(BR)}$	140			V
Diode capacitance	V_R = 0, f = 1 MHz		C_D			3	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

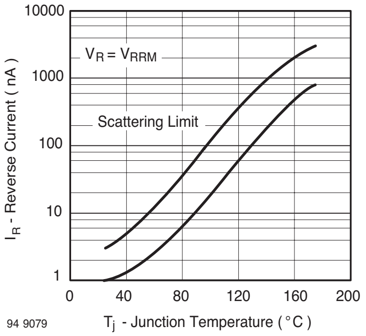


Figure 1. Reverse Current vs. Junction Temperature

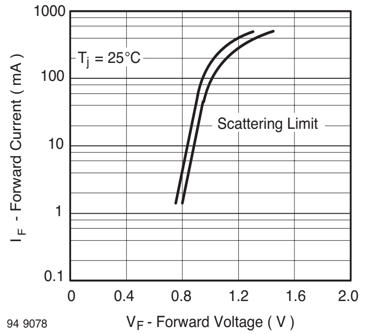


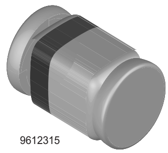
Figure 2. Forward Current vs. Forward Voltage

QuadroMELF SOD-80 Package Dimension see Package Section

Small Signal Switching Diodes, Low Leakage Current

Features

- Silicon Planar Diodes
- Saving space
- Hermetic sealed parts
- Fits onto SOD-323 / SOT-23 footprints
- Electrical data identical with the devices BAQ33...BAQ35 / BAQ133...BAQ135
- Very low reverse current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Applications

Protection circuits, time delay circuits, peak follower circuits, logarithmic amplifiers

Mechanical Data

Case: MicroMELF Glass case
Weight: approx. 12 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAQ333	V_{RRM} = 40 V	BAQ333-GS18 or BAQ333-GS08	Tape and Reel
BAQ334	V_{RRM} = 70 V	BAQ334-GS18 or BAQ334-GS08	Tape and Reel
BAQ335	V_{RRM} = 140 V	BAQ335-GS18 or BAQ335-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Reverse voltage		BAQ333	V_R	30	V
		BAQ334	V_R	60	V
		BAQ335	V_R	125	V
Peak forward surge current	t_p = 1 µs		I_{FSM}	2	A
Forward current			I_F	200	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	mounted on epoxy-glass hard tissue, Fig. 1	R_{thJA}	500	K/W
	35 µm copper clad, 0.9 mm² copper area per electrode	R_{thJA}	500	K/W
Junction temperature		T_j	200	°C
Storage temperature range		T_{stg}	- 65 to + 200	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1	V
Reverse current	E ≤ 300 lx, V_R		I_R		1	3	nA
	E ≤ 300 lx, V_R, T_j = 125 °C		I_R			0.5	µA
	E ≤ 300 lx, V_R = 15 V	BAQ333	I_R		0.5	1	nA
	E ≤ 300 lx, V_R = 30 V	BAQ334	I_R		0.5	1	nA
	E ≤ 300 lx, V_R = 60 V	BAQ335	I_R		0.5	1	nA
Breakdown voltage	I_R = 5 µA, t_p/T = 0.01, t_p = 0.3 ms	BAQ333	$V_{(BR)}$	40			V
		BAQ334	$V_{(BR)}$	70			V
		BAQ335	$V_{(BR)}$	140			V
Diode capacitance	V_R = 0, f = 1 MHz		C_D			3	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

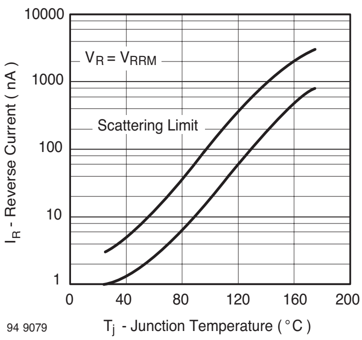


Figure 1. Reverse Current vs. Junction Temperature

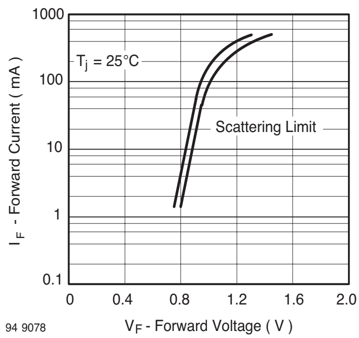


Figure 2. Forward Current vs. Forward Voltage

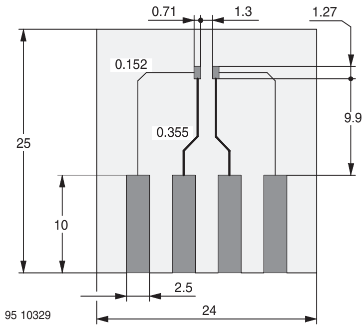


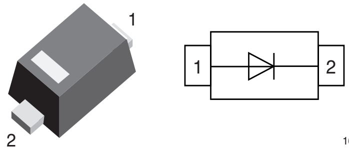
Figure 3. Board for R_{thJA} definition (in mm)

MicroMELF Package Dimension see Package Section

RF PIN Diode - Single in SOD-523

Description

Characterized by a very low reverse Capacitance the PIN Diode BAR63V-02V was designed for RF signal tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted to less than 1 Ω while the low reverse capacitance offers a high isolation. Typical applications for this PIN Diode are wireless, mobile and TV-systems.



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Features

- Low forward resistance
- Space saving SOD-523 package with low series inductance
- Very small reverse capacitance

Applications

For frequency up to 3 GHz
RF-signal tuning
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOD-523 Plastic case
Weight: approx. 1.6 mg
Cathode Band Color: Laser marking
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR63V-02V	BAR63V-02V-GS18 or BAR63V-02V-GS08	C	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	50	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction soldering point		R_{thJS}	100	K/W

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 μA	V_R	50			V
Reverse current	V_R = 35 V	I_R			10	nA
Forward voltage	I_F = 100 mA	V_F			1.2	V
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.28		pF
	f = 1 MHz, V_R = 5 V	C_D		0.23	0.3	pF
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		2.0		Ω
	f = 100 MHz, I_F = 5 mA	r_f		1.1	2.0	Ω
	f = 100 MHz, I_F = 10 mA	r_f		0.9		Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		115		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

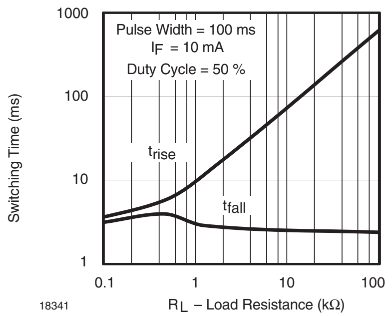


Figure 1. Forward Resistance vs. Forward Current

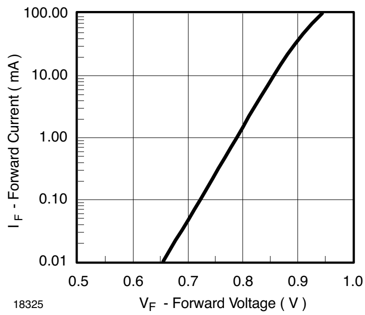


Figure 3. Forward Current vs. Forward Voltage

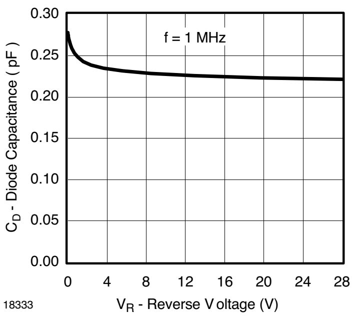


Figure 2. Diode Capacitance vs. Reverse Voltage

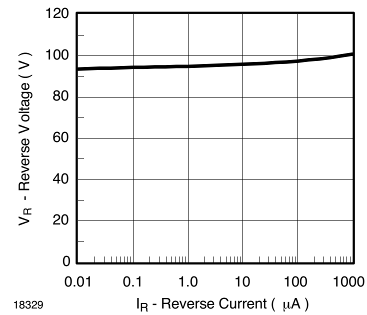


Figure 4. Reverse Voltage vs. Reverse Current

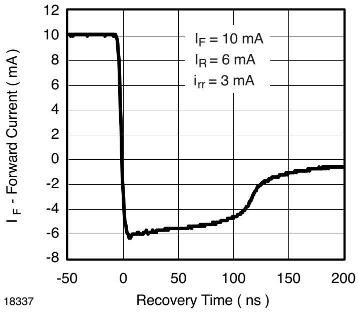


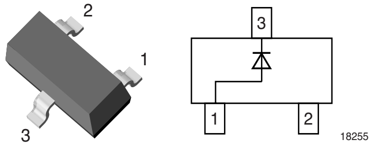
Figure 5. Typical Charge Recovery Curve

SOD-523 Package Dimension see Package Section

RF PIN Diode - Single in SOT-23

Description

Characterized by a very low reverse Capacitance the PIN Diode BAR63V-03 was designed for RF signal tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted to less than 1 Ω while the low reverse capacitance offers a high isolation. Typical applications for this PIN Diodes are wireless, mobile and TV-systems.



Features

- Low forward resistance
- Very small reverse capacitance

Applications

For frequency up to 3 GHz
RF-signal tuning
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.1 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR63V-03	BAR63V-03-GS18 or BAR63V-03-GS08	C3	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	50	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	50			V
Reverse current	V_R = 35 V	I_R			10	nA
Forward voltage	I_F = 100 mA	V_F			1.2	V
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.28		pF
	f = 1 MHz, V_R = 5 V	C_D		0.23	0.3	pF

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		2.0		Ω
	f = 100 MHz, I_F = 5 mA	r_f		1.1	2.0	Ω
	f = 100 MHz, I_F = 10 mA	r_f		0.9		Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		115		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

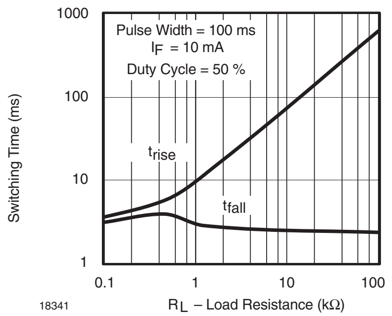


Figure 1. Forward Resistance vs. Forward Current

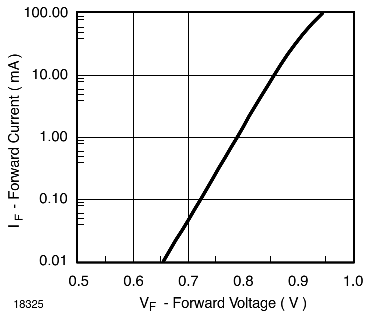


Figure 3. Forward Current vs. Forward Voltage

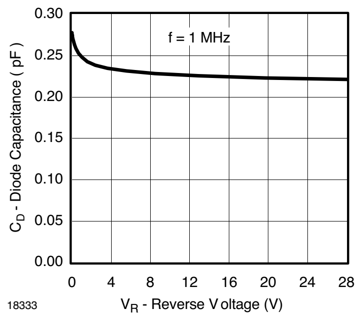


Figure 2. Diode Capacitance vs. Reverse Voltage

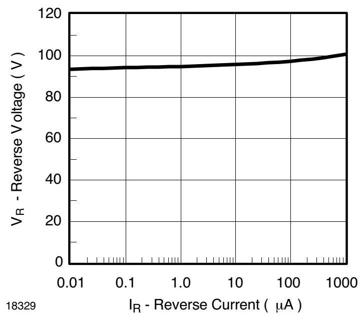


Figure 4. Reverse Voltage vs. Reverse Current

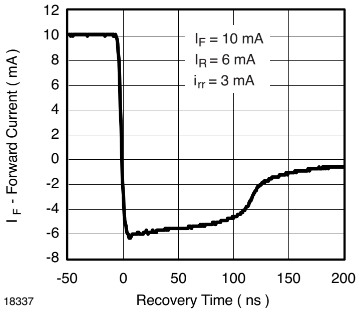


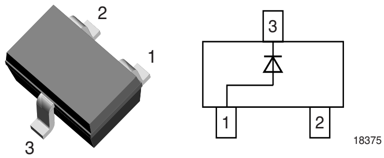
Figure 5. Typical Charge Recovery Curve

SOT-23 Package Dimension see Package Section

RF PIN Diode - Single in SOT-323

Description

Characterized by a very low reverse Capacitance the PIN Diode BAR63V-03W was designed for RF signal tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted to less than 1 Ω while the low reverse capacitance offers a high isolation. Typical applications for this PIN Diodes are wireless, mobile and TV-systems.



Features

- Low forward resistance
- Very small reverse capacitance

Applications

For frequency up to 3 GHz

RF-signal tuning

Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-323 Plastic case

Weight: approx. 6.0 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR63V-03W	BAR63V-03W-GS18 or BAR63V-03W-GS08	CW3	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	50	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	50			V
Reverse current	V_R = 35 V	I_R			10	nA
Forward voltage	I_F = 100 mA	V_F			1.2	V
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.28		pF
	f = 1 MHz, V_R = 5 V	C_D		0.23	0.3	pF

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		2.0		Ω
	f = 100 MHz, I_F = 5 mA	r_f		1.1	2.0	Ω
	f = 100 MHz, I_F = 10 mA	r_f		0.9		Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		115		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

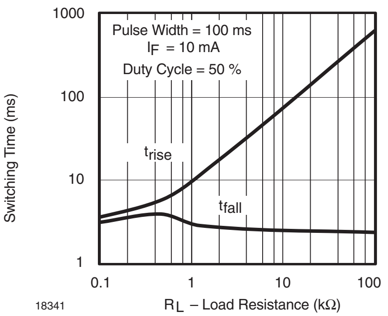


Figure 1. Forward Resistance vs. Forward Current

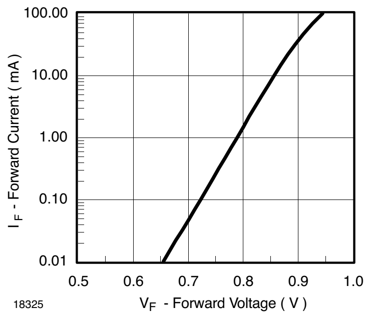


Figure 3. Forward Current vs. Forward Voltage

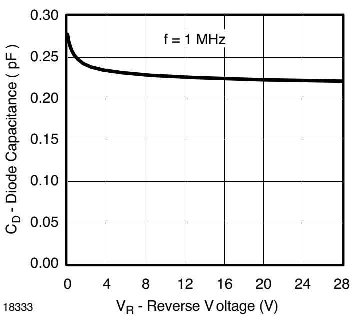


Figure 2. Diode Capacitance vs. Reverse Voltage

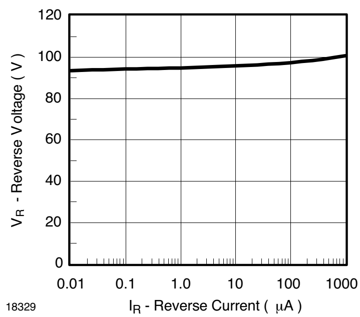


Figure 4. Reverse Voltage vs. Reverse Current

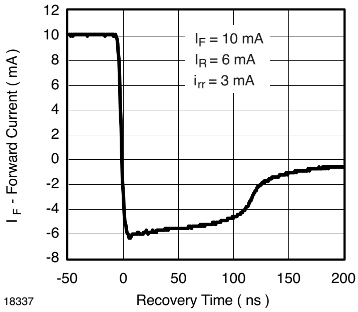


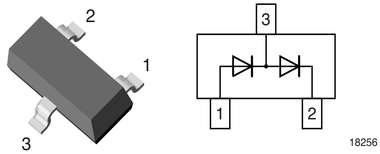
Figure 5. Typical Charge Recovery Curve

SOT-323 Package Dimension see Package Section

RF PIN Diodes - Dual, Series in SOT-23

Description

Characterized by a very low reverse Capacitance the PIN Diode BAR63V-04 was designed for RF signal tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted to less than 1 Ω while the low reverse capacitance offers a high isolation. Typical applications for this PIN Diodes are wireless, mobile and TV-systems.



Features

- Low forward resistance
- Very small reverse capacitance

Applications

For frequency up to 3 GHz
RF-signal tuning
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.1 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR63V-04	BAR63V-04-GS18 or BAR63V-04-GS08	C4	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	50	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	50			V
Reverse current	V_R = 35 V	I_R			10	nA
Forward voltage	I_F = 100 mA	V_F			1.2	V
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.28		pF
	f = 1 MHz, V_R = 5 V	C_D		0.23	0.3	pF

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		2.0		Ω
	f = 100 MHz, I_F = 5 mA	r_f		1.1	2.0	Ω
	f = 100 MHz, I_F = 10 mA	r_f		0.9		Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		115		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

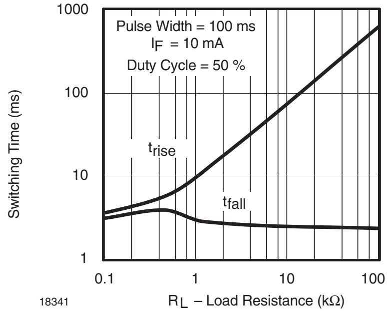


Figure 1. Forward Resistance vs. Forward Current

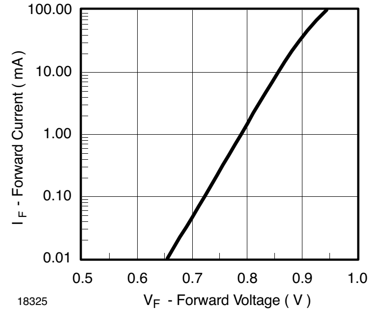


Figure 3. Forward Current vs. Forward Voltage

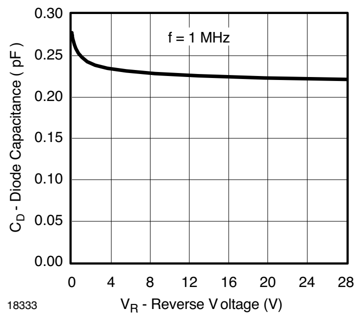


Figure 2. Diode Capacitance vs. Reverse Voltage

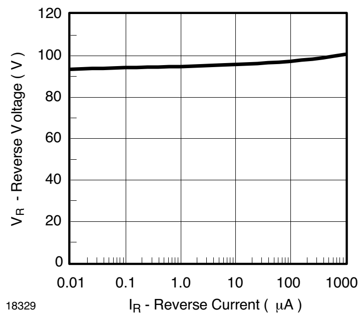


Figure 4. Reverse Voltage vs. Reverse Current

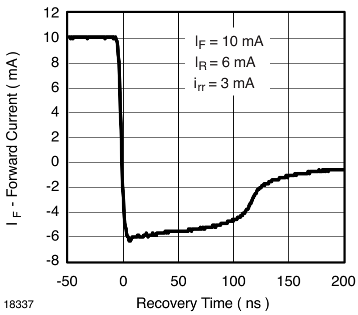


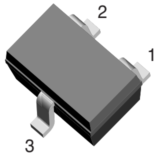
Figure 5. Typical Charge Recovery Curve

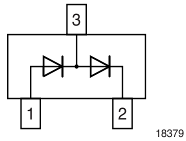
SOT-23 Package Dimension
see Package Section

RF PIN Diodes - Dual, Series in SOT-323

Description

Characterized by a very low reverse Capacitance the PIN Diode BAR63V-04W was designed for RF signal tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted to less than 1 Ω while the low reverse capacitance offers a high isolation. Typical applications for this PIN Diodes are wireless, mobile and TV-systems.





Features

- Low forward resistance
- Very small reverse capacitance

Applications

For frequency up to 3 GHz
RF-signal tuning
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-323 Plastic case
Weight: approx. 6.0 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR63V-04W	BAR63V-04W-GS18 or BAR63V-04W-GS08	CW4	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	50	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	50			V
Reverse current	V_R = 35 V	I_R			10	nA
Forward voltage	I_F = 100 mA	V_F			1.2	V
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.28		pF
	f = 1 MHz, V_R = 5 V	C_D		0.23	0.3	pF

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		2.0		Ω
	f = 100 MHz, I_F = 5 mA	r_f		1.1	2.0	Ω
	f = 100 MHz, I_F = 10 mA	r_f		0.9		Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		115		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

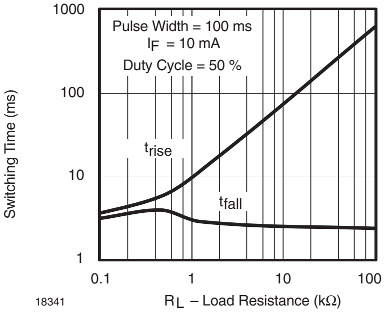


Figure 1. Forward Resistance vs. Forward Current

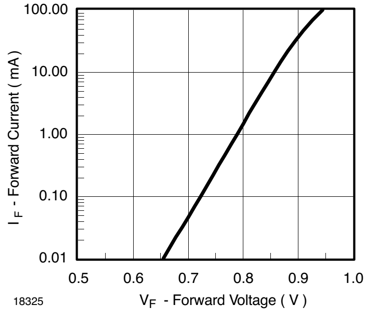


Figure 3. Forward Current vs. Forward Voltage

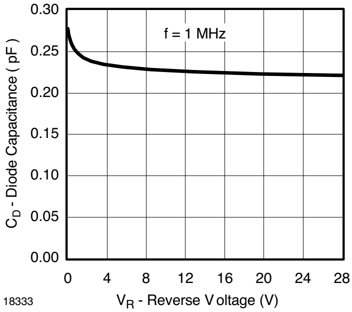


Figure 2. Diode Capacitance vs. Reverse Voltage

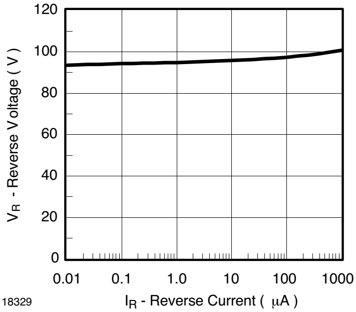


Figure 4. Reverse Voltage vs. Reverse Current

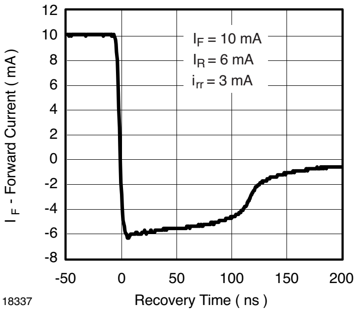


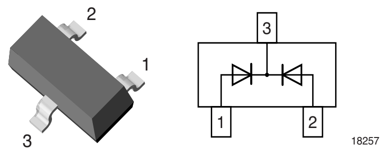
Figure 5. Typical Charge Recovery Curve

SOT-323 Package Dimension see Package Section

RF PIN Diodes - Dual, Common Cathode in SOT-23

Description

Characterized by a very low reverse Capacitance the PIN Diode BAR63V-05 was designed for RF signal tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted to less than 1 Ω while the low reverse capacitance offers a high isolation. Typical applications for this PIN Diodes are wireless, mobile and TV-systems.



Features

- Low forward resistance
- Very small reverse capacitance

Applications

For frequency up to 3 GHz
RF-signal tuning
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.1 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR63V-05	BAR63V-05-GS18 or BAR63V-05-GS08	C5	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	50	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	50			V
Reverse current	V_R = 35 V	I_R			10	nA
Forward voltage	I_F = 100 mA	V_F			1.2	V
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.28		pF
	f = 1 MHz, V_R = 5 V	C_D		0.23	0.3	pF

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		2.0		Ω
	f = 100 MHz, I_F = 5 mA	r_f		1.1	2.0	Ω
	f = 100 MHz, I_F = 10 mA	r_f		0.9		Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		115		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

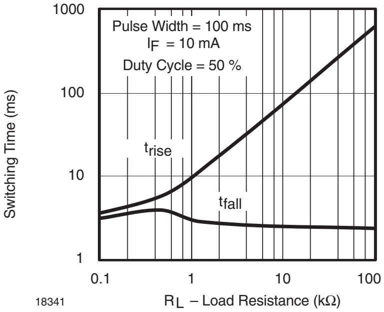


Figure 1. Forward Resistance vs. Forward Current

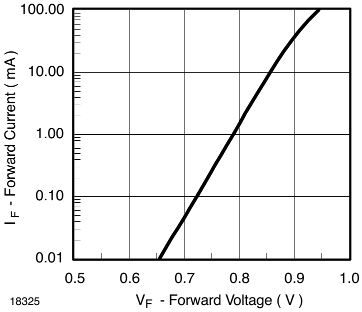


Figure 3. Forward Current vs. Forward Voltage

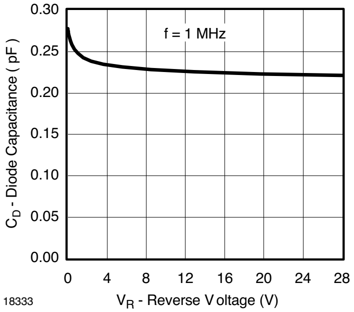


Figure 2. Diode Capacitance vs. Reverse Voltage

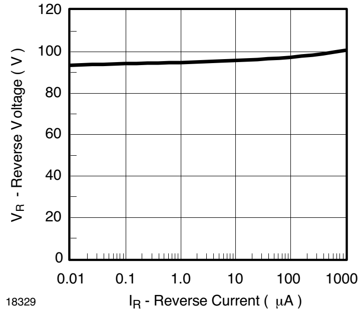


Figure 4. Reverse Voltage vs. Reverse Current

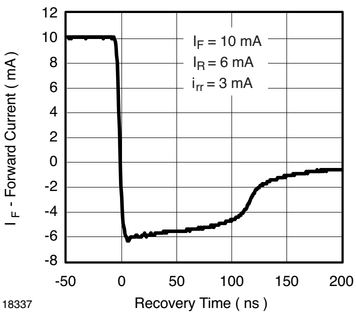


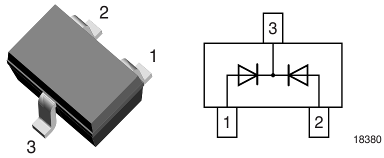
Figure 5. Typical Charge Recovery Curve

SOT-23 Package Dimension see Package Section

RF PIN Diodes - Dual, Common Cathode in SOT-323

Description

Characterized by a very low reverse Capacitance the PIN Diode BAR63V-05W was designed for RF signal tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted to less than 1 Ω while the low reverse capacitance offers a high isolation. Typical applications for this PIN Diodes are wireless, mobile and TV-systems.



Features

- Low forward resistance
- Very small reverse capacitance

Applications

For frequency up to 3 GHz
RF-signal tuning
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-323 Plastic case
Weight: approx. 6.0 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR63V-05W	BAR63V-05W-GS18 or BAR63V-05W-GS08	CW5	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	50	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	50			V
Reverse current	V_R = 35 V	I_R			10	nA
Forward voltage	I_F = 100 mA	V_F			1.2	V
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.28		pF
	f = 1 MHz, V_R = 5 V	C_D		0.23	0.3	pF

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		2.0		Ω
	f = 100 MHz, I_F = 5 mA	r_f		1.1	2.0	Ω
	f = 100 MHz, I_F = 10 mA	r_f		0.9		Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		115		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

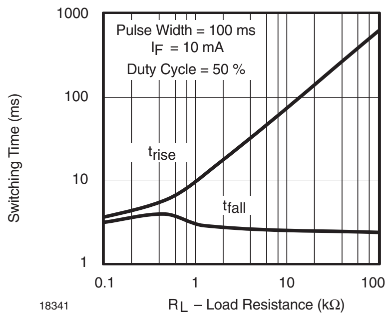


Figure 1. Forward Resistance vs. Forward Current

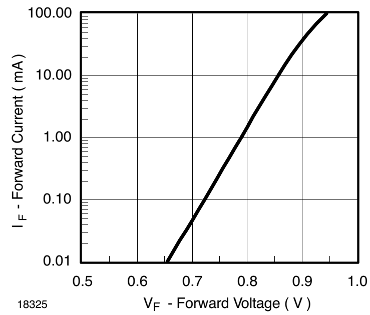


Figure 3. Forward Current vs. Forward Voltage

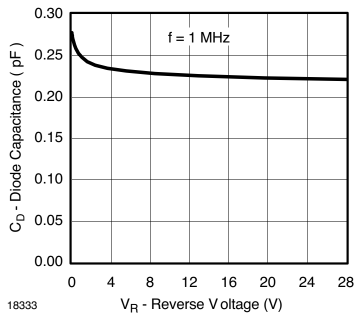


Figure 2. Diode Capacitance vs. Reverse Voltage

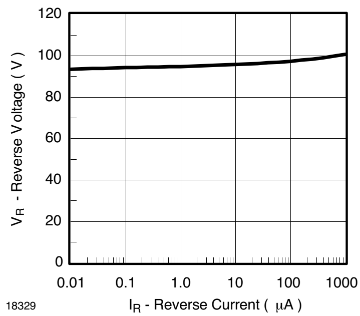


Figure 4. Reverse Voltage vs. Reverse Current

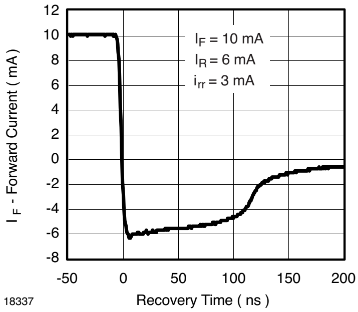


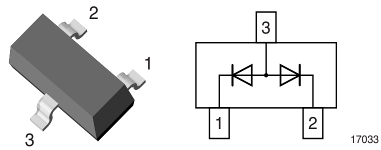
Figure 5. Typical Charge Recovery Curve

SOT-323 Package Dimension see Package Section

RF PIN Diodes - Dual, Common Anode in SOT-23

Description

Characterized by a very low reverse Capacitance the PIN Diode BAR63V-06 was designed for RF signal tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted to less than 1 Ω while the low reverse capacitance offers a high isolation. Typical applications for this PIN Diode are wireless, mobile and TV-systems.



Features

- Low forward resistance
- Very small reverse capacitance

Applications

For frequency up to 3 GHz

RF-signal tuning

Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-23 Plastic case

Weight: approx. 8.1 mg

Cathode Band Color: Laser marking

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR63V-06	BAR63V-06-GS18 or BAR63V-06-GS08	C6	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	50	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 μA	V_R	50			V
Reverse current	V_R = 35 V	I_R			10	nA
Forward voltage	I_F = 100 mA	V_F			1.2	V
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.28		pF
	f = 1 MHz, V_R = 5 V	C_D		0.23	0.3	pF

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		2.0		Ω
	f = 100 MHz, I_F = 5 mA	r_f		1.1	2.0	Ω
	f = 100 MHz, I_F = 10 mA	r_f		0.9		Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		115		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

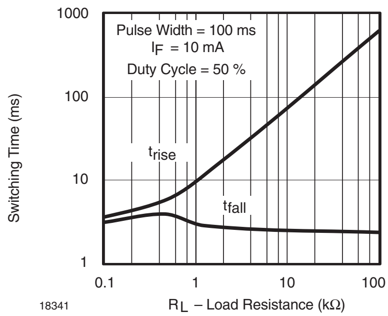


Figure 1. Forward Resistance vs. Forward Current

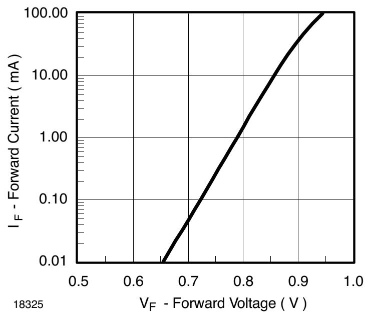


Figure 3. Forward Current vs. Forward Voltage

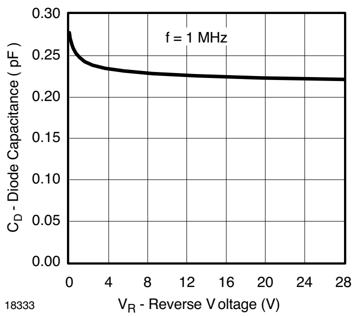


Figure 2. Diode Capacitance vs. Reverse Voltage

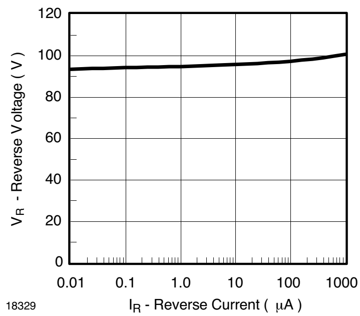


Figure 4. Reverse Voltage vs. Reverse Current

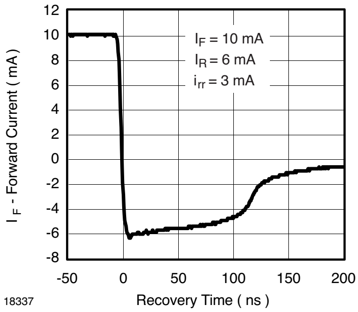


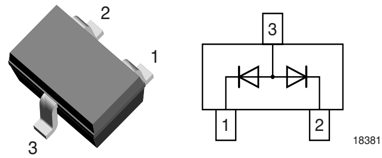
Figure 5. Typical Charge Recovery Curve

SOT-23 Package Dimension
see Package Section

RF PIN Diodes - Dual, Common Anode in SOT-323

Description

Characterized by a very low reverse Capacitance the PIN Diode BAR63V-06W was designed for RF signal tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted to less than 1 Ω while the low reverse capacitance offers a high isolation. Typical applications for this PIN Diode are wireless, mobile and TV-systems.



Features

- Low forward resistance
- Very small reverse capacitance

Applications

For frequency up to 3 GHz
RF-signal tuning
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-323 Plastic case
Weight: approx. 6.0 mg
Cathode Band Color: Laser marking
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR63V-06W	BAR63V-06W-GS18 or BAR63V-06W-GS08	CW6	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	50	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	50			V
Reverse current	V_R = 35 V	I_R			10	nA
Forward voltage	I_F = 100 mA	V_F			1.2	V
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.28		pF
	f = 1 MHz, V_R = 5 V	C_D		0.23	0.3	pF

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		2.0		Ω
	f = 100 MHz, I_F = 5 mA	r_f		1.1	2.0	Ω
	f = 100 MHz, I_F = 10 mA	r_f		0.9		Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		115		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

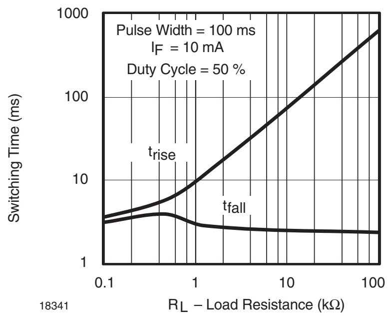


Figure 1. Forward Resistance vs. Forward Current

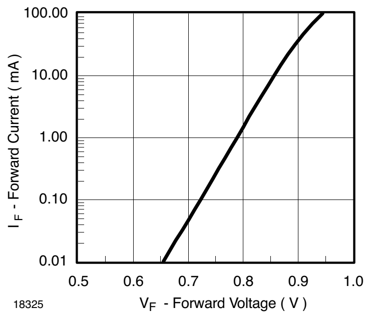


Figure 3. Forward Current vs. Forward Voltage

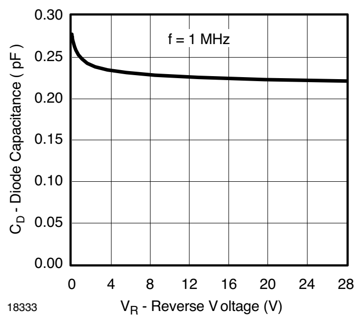


Figure 2. Diode Capacitance vs. Reverse Voltage

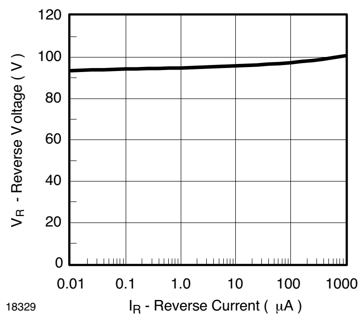


Figure 4. Reverse Voltage vs. Reverse Current

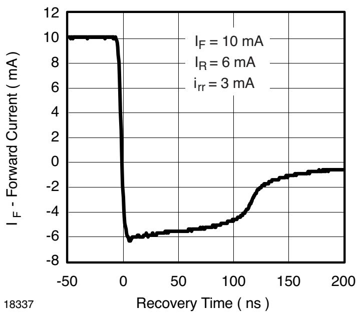


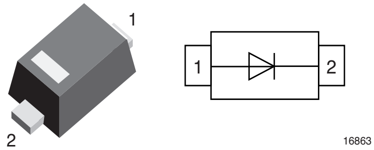
Figure 5. Typical Charge Recovery Curve

SOT-323 Package Dimension
see Package Section

RF PIN Diode - Single in SOD-523

Description

Characterized by low reverse Capacitance the PIN Diode BAR64V-02V was designed for RF signal switching and tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted over a wide range. A long carrier life time offers low signal distortion for signals over 10 MHz up to 3 GHz. Typical applications for this PIN Diode are switches and attenuators in wireless, mobile and TV-systems.



Features

- High reverse Voltage
- Space saving SOD-523 package with low series inductance
- Small reverse capacitance
- High breakdown voltage

Applications

For frequency up to 3 GHz
RF-signal tuning
Signal attenuator and switches
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOD-523 Plastic case
Weight: approx. 1.6 mg
Cathode Band Color: Laser marking
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR64V-02V	BAR64V-02V-GS18 or BAR64V-02V-GS08	D	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	100	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction soldering point		R_{thJS}	100	K/W

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	100			V
Reverse current	V_R = 50 V	I_R			50	nA
Forward voltage	I_F = 50 mA	V_F			1.1	V
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.5		pF
	f = 1 MHz, V_R = 1 V	C_D		0.37	0.5	pF
	f = 1 MHz, V_R = 20 V	C_D		0.23	0.35	pF
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		10	20	Ω
	f = 100 MHz, I_F = 10 mA	r_f		2.0	3.8	Ω
	f = 100 MHz, I_F = 100 mA	r_f		0.8	1.35	Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		1.8		µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

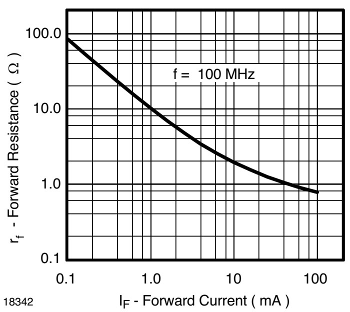


Figure 1. Forward Resistance vs. Forward Current

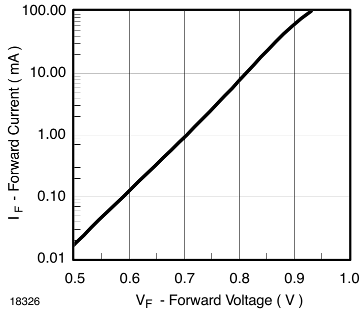


Figure 3. Forward Current vs. Forward Voltage

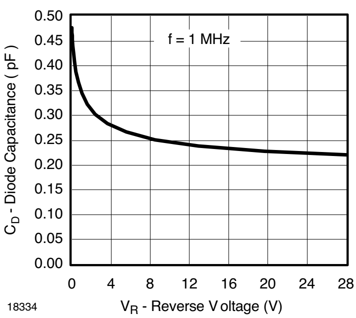


Figure 2. Diode Capacitance vs. Reverse Voltage

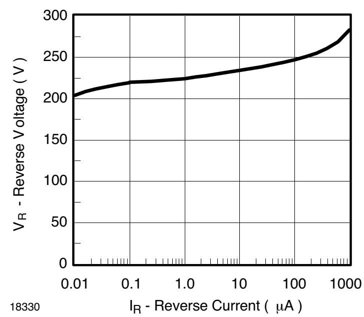


Figure 4. Reverse Voltage vs. Reverse Current

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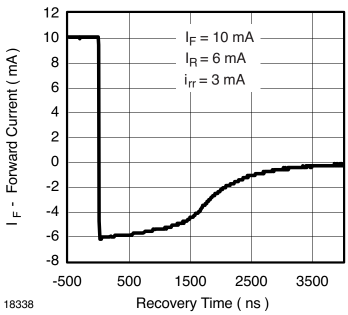


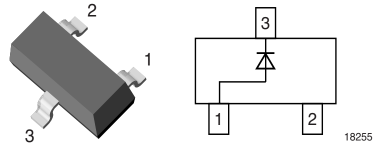
Figure 5. Typical Charge Recovery Curve

SOD-523 Package Dimension
see Package Section

RF PIN Diode - Single in SOT-23

Description

Characterized by low reverse Capacitance the PIN Diodes BAR64V-03 was designed for RF signal switching and tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted over a wide range. A long carrier life time offers low signal distortion for signals over 10 MHz up to 3 GHz. Typical applications for this PIN Diodes are switches and attenuators in wireless, mobile and TV-systems.



Features

- High reverse Voltage
- Small reverse capacitance
- High breakdown voltage

Applications

For frequency up to 3 GHz
RF-signal tuning
Signal attenuator and switches
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.1 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR64V-03	BAR64V-03-GS18 or BAR64V-03-GS08	D3	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	100	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 μA	V_R	100			V
Reverse current	V_R = 50 V	I_R			50	nA
Forward voltage	I_F = 50 mA	V_F			1.1	V

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.5		pF
	f = 1 MHz, V_R = 1 V	C_D		0.37	0.5	pF
	f = 1 MHz, V_R = 20 V	C_D		0.23	0.35	pF
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		10	20	Ω
	f = 100 MHz, I_F = 10 mA	r_f		2.0	3.8	Ω
	f = 100 MHz, I_F = 100 mA	r_f		0.8	1.35	Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		1.8		µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

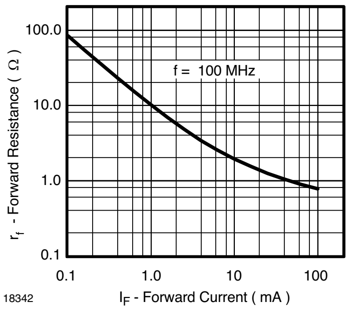


Figure 1. Forward Resistance vs. Forward Current

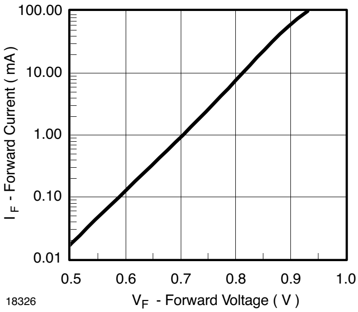


Figure 3. Forward Current vs. Forward Voltage

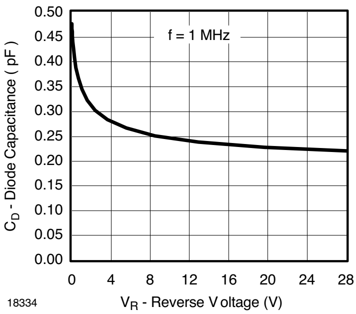


Figure 2. Diode Capacitance vs. Reverse Voltage

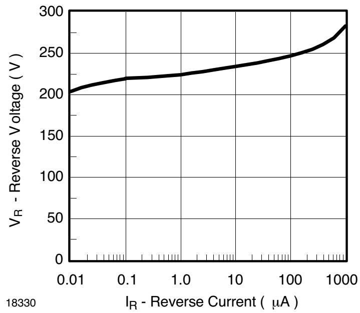


Figure 4. Reverse Voltage vs. Reverse Current

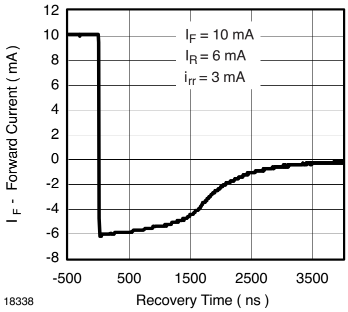


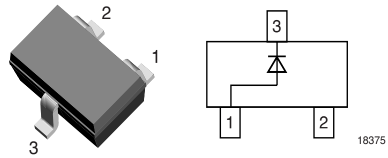
Figure 5. Typical Charge Recovery Curve

SOT-23 Package Dimension see Package Section

RF PIN Diode - Single in SOT-323

Description

Characterized by low reverse Capacitance the PIN Diodes BAR64V-03W was designed for RF signal switching and tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted over a wide range. A long carrier life time offers low signal distortion for signals over 10 MHz up to 3 GHz. Typical applications for this PIN Diodes are switches and attenuators in wireless, mobile and TV-systems.



Features

- High reverse Voltage
- Small reverse capacitance
- High breakdown voltage

Applications

For frequency up to 3 GHz
RF-signal tuning
Signal attenuator and switches
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-323 Plastic case
Weight: approx. 6.0 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR64V-03W	BAR64V-03W-GS18 or BAR64V-03W-GS08	DW3	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	100	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	100			V
Reverse current	V_R = 50 V	I_R			50	nA
Forward voltage	I_F = 50 mA	V_F			1.1	V

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.5		pF
	f = 1 MHz, V_R = 1 V	C_D		0.37	0.5	pF
	f = 1 MHz, V_R = 20 V	C_D		0.23	0.35	pF
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		10	20	Ω
	f = 100 MHz, I_F = 10 mA	r_f		2.0	3.8	Ω
	f = 100 MHz, I_F = 100 mA	r_f		0.8	1.35	Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		1.8		µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

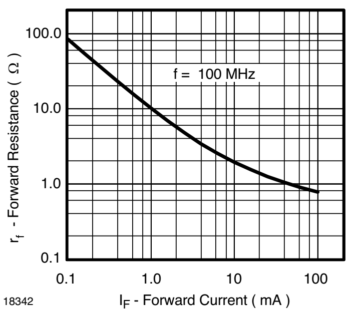


Figure 1. Forward Resistance vs. Forward Current

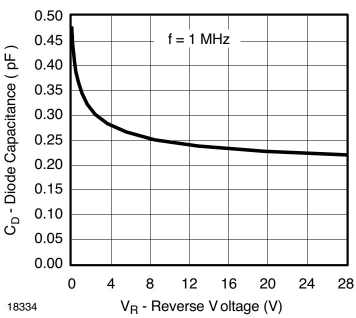


Figure 2. Diode Capacitance vs. Reverse Voltage

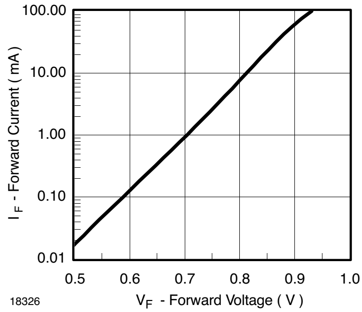


Figure 3. Forward Current vs. Forward Voltage

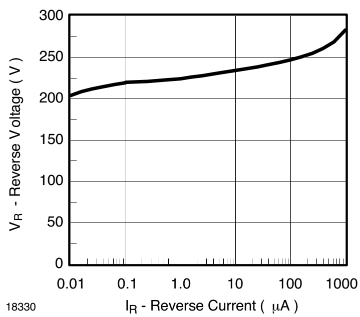


Figure 4. Reverse Voltage vs. Reverse Current

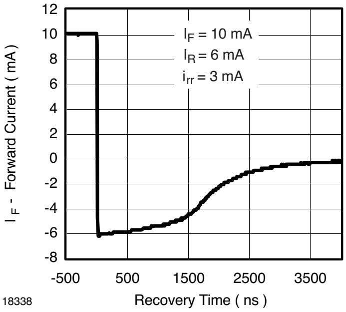


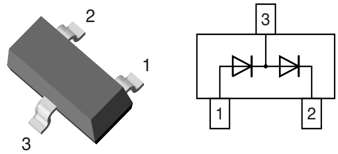
Figure 5. Typical Charge Recovery Curve

SOT-323 Package Dimension
see Package Section

RF PIN Diodes - Dual, Series in SOT-23

Description

Characterized by low reverse Capacitance the PIN Diodes BAR64V-04 was designed for RF signal switching and tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted over a wide range. A long carrier life time offers low signal distortion for signals over 10 MHz up to 3 GHz. Typical applications for this PIN Diodes are switches and attenuators in wireless, mobile and TV-systems.



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Features

- High reverse Voltage
- Small reverse capacitance
- High breakdown voltage

Applications

For frequency up to 3 GHz
RF-signal tuning
Signal attenuator and switches
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.1 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR64V-04	BAR64V-04-GS18 or BAR64V-04-GS08	D4	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	100	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	100			V
Reverse current	V_R = 50 V	I_R			50	nA
Forward voltage	I_F = 50 mA	V_F			1.1	V

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.5		pF
	f = 1 MHz, V_R = 1 V	C_D		0.37	0.5	pF
	f = 1 MHz, V_R = 20 V	C_D		0.23	0.35	pF
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		10	20	Ω
	f = 100 MHz, I_F = 10 mA	r_f		2.0	3.8	Ω
	f = 100 MHz, I_F = 100 mA	r_f		0.8	1.35	Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		1.8		µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

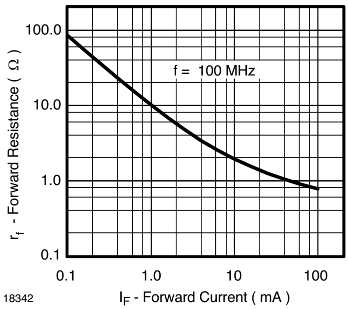


Figure 1. Forward Resistance vs. Forward Current

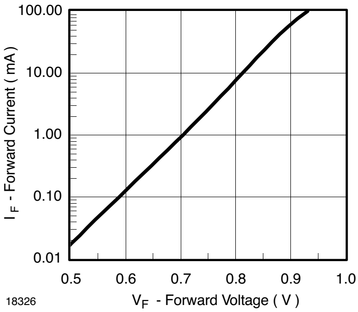


Figure 3. Forward Current vs. Forward Voltage

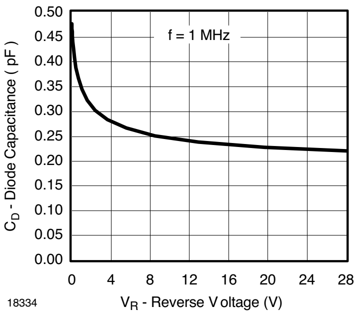


Figure 2. Diode Capacitance vs. Reverse Voltage

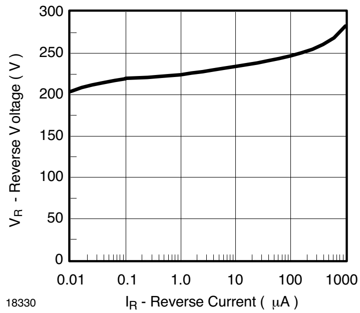


Figure 4. Reverse Voltage vs. Reverse Current

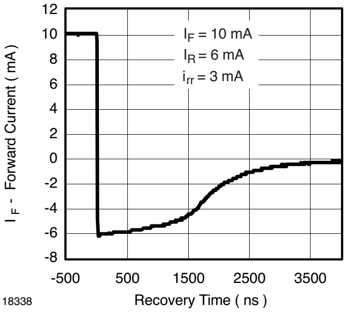


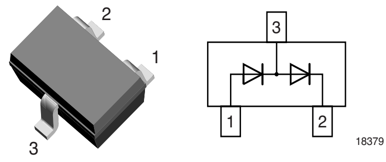
Figure 5. Typical Charge Recovery Curve

SOT-23 Package Dimension see Package Section

RF PIN Diodes - Dual, Series in SOT-323

Description

Characterized by low reverse Capacitance the PIN Diodes BAR64V-04W was designed for RF signal switching and tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted over a wide range. A long carrier life time offers low signal distortion for signals over 10 MHz up to 3 GHz. Typical applications for this PIN Diodes are switches and attenuators in wireless, mobile and TV-systems.



Features

- High reverse Voltage
- Small reverse capacitance
- High breakdown voltage

Applications

For frequency up to 3 GHz
RF-signal tuning
Signal attenuator and switches
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-323 Plastic case
Weight: approx. 6.0 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR64V-04W	BAR64V-04W-GS18 or BAR64V-04W-GS08	DW4	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	100	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	100			V
Reverse current	V_R = 50 V	I_R			50	nA
Forward voltage	I_F = 50 mA	V_F			1.1	V

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.5		pF
	f = 1 MHz, V_R = 1 V	C_D		0.37	0.5	pF
	f = 1 MHz, V_R = 20 V	C_D		0.23	0.35	pF
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		10	20	Ω
	f = 100 MHz, I_F = 10 mA	r_f		2.0	3.8	Ω
	f = 100 MHz, I_F = 100 mA	r_f		0.8	1.35	Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		1.8		µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

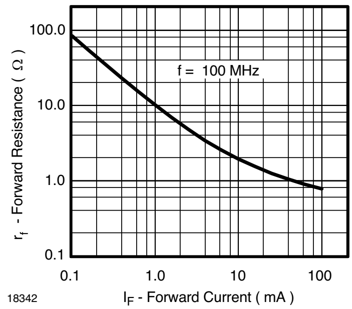


Figure 1. Forward Resistance vs. Forward Current

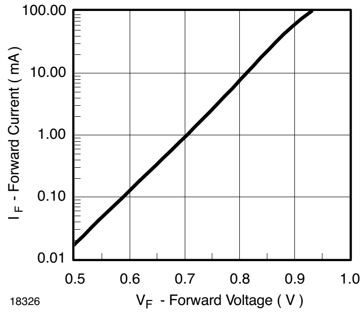


Figure 3. Forward Current vs. Forward Voltage

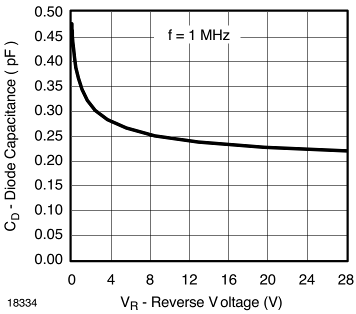


Figure 2. Diode Capacitance vs. Reverse Voltage

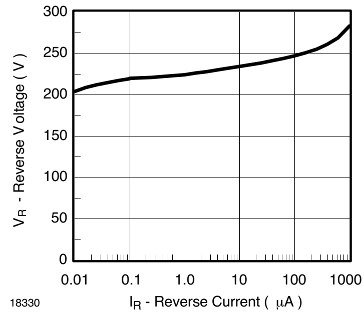


Figure 4. Reverse Voltage vs. Reverse Current

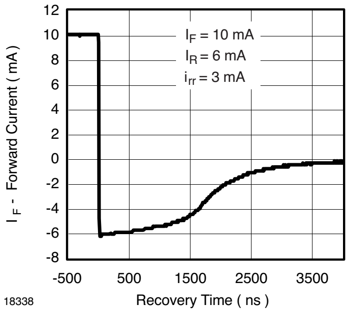


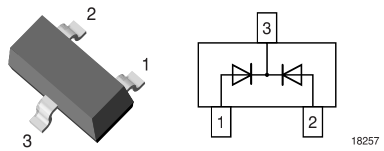
Figure 5. Typical Charge Recovery Curve

SOT-323 Package Dimension see Package Section

RF PIN Diodes - Dual, Common Cathode in SOT-23

Description

Characterized by low reverse Capacitance the PIN Diodes BAR64V-05 was designed for RF signal switching and tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted over a wide range. A long carrier life time offers low signal distortion for signals over 10 MHz up to 3 GHz. Typical applications for this PIN Diodes are switches and attenuators in wireless, mobile and TV-systems.



Features

- High reverse Voltage
- Small reverse capacitance
- High breakdown voltage

Applications

For frequency up to 3 GHz
RF-signal tuning
Signal attenuator and switches
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.1 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR64V-05	BAR64V-05-GS18 or BAR64V-05-GS08	D5	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	100	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	100			V
Reverse current	V_R = 50 V	I_R			50	nA
Forward voltage	I_F = 50 mA	V_F			1.1	V

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.5		pF
	f = 1 MHz, V_R = 1 V	C_D		0.37	0.5	pF
	f = 1 MHz, V_R = 20 V	C_D		0.23	0.35	pF
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		10	20	Ω
	f = 100 MHz, I_F = 10 mA	r_f		2.0	3.8	Ω
	f = 100 MHz, I_F = 100 mA	r_f		0.8	1.35	Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		1.8		µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

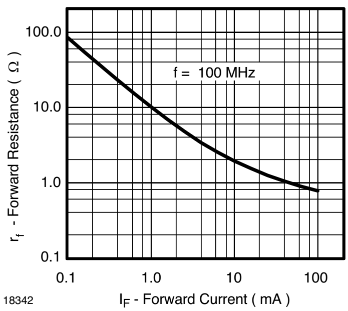


Figure 1. Forward Resistance vs. Forward Current

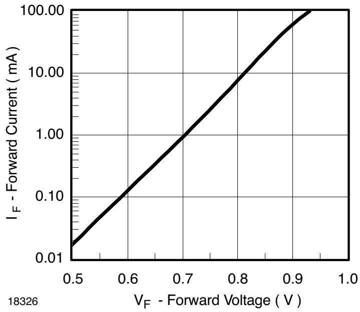


Figure 3. Forward Current vs. Forward Voltage

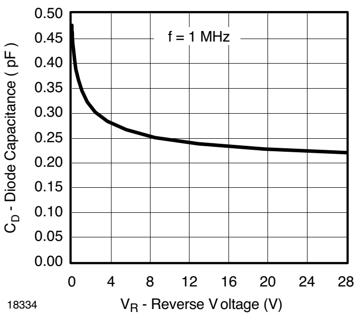


Figure 2. Diode Capacitance vs. Reverse Voltage

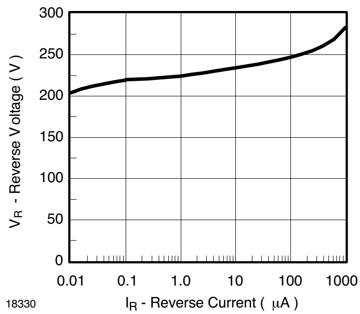


Figure 4. Reverse Voltage vs. Reverse Current

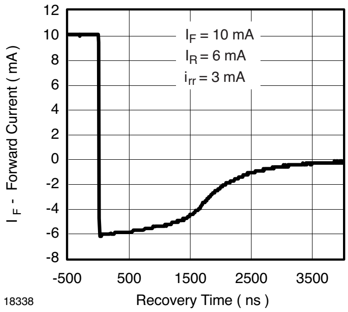


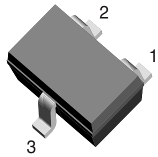
Figure 5. Typical Charge Recovery Curve

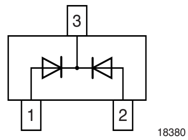
SOT-23 Package Dimension see Package Section

RF PIN Diodes - Dual, Common Cathode in SOT-323

Description

Characterized by low reverse Capacitance the PIN Diodes BAR64V-05W was designed for RF signal switching and tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted over a wide range. A long carrier life time offers low signal distortion for signals over 10 MHz up to 3 GHz. Typical applications for this PIN Diodes are switches and attenuators in wireless, mobile and TV-systems.





Features

- High reverse Voltage
- Small reverse capacitance
- High breakdown voltage

Applications

For frequency up to 3 GHz
RF-signal tuning
Signal attenuator and switches
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-323 Plastic case
Weight: approx. 6.0 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR64V-05W	BAR64V-05W-GS18 or BAR64V-05W-GS08	DW5	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	100	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	100			V
Reverse current	V_R = 50 V	I_R			50	nA
Forward voltage	I_F = 50 mA	V_F			1.1	V

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.5		pF
	f = 1 MHz, V_R = 1 V	C_D		0.37	0.5	pF
	f = 1 MHz, V_R = 20 V	C_D		0.23	0.35	pF
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		10	20	Ω
	f = 100 MHz, I_F = 10 mA	r_f		2.0	3.8	Ω
	f = 100 MHz, I_F = 100 mA	r_f		0.8	1.35	Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		1.8		µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

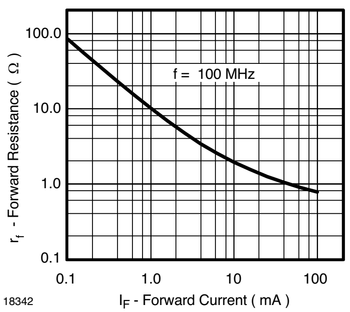


Figure 1. Forward Resistance vs. Forward Current

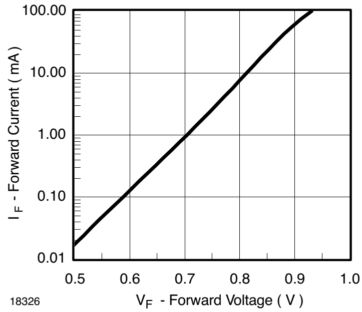


Figure 3. Forward Current vs. Forward Voltage

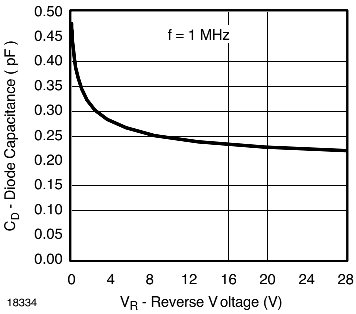


Figure 2. Diode Capacitance vs. Reverse Voltage

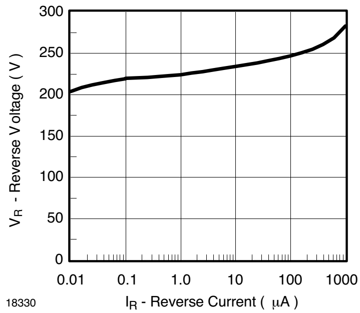


Figure 4. Reverse Voltage vs. Reverse Current

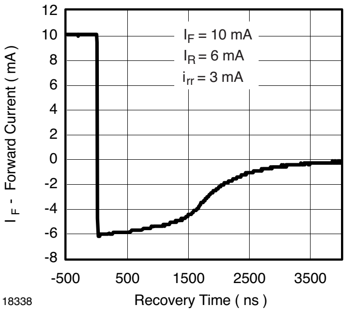


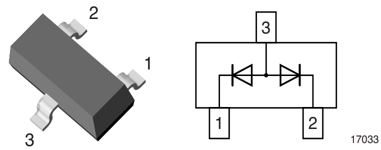
Figure 5. Typical Charge Recovery Curve

SOT-323 Package Dimension see Package Section

RF PIN Diodes - Dual, Common Anode in SOT-23

Description

Characterized by low reverse Capacitance the PIN Diodes BAR64V-06 was designed for RF signal switching and tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted over a wide range. A long carrier life time offers low signal distortion for signals over 10 MHz up to 3 GHz. Typical applications for this PIN Diodes are switches and attenuators in wireless, mobile and TV-systems.



Features

- High reverse Voltage
- Small reverse capacitance
- High breakdown voltage

Applications

For frequency up to 3 GHz

RF-signal tuning

Signal attenuator and switches

Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-23 Plastic case

Weight: approx. 8.1 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR64V-06	BAR64V-06-GS18 or BAR64V-06-GS08	D6	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	100	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	100			V
Reverse current	V_R = 50 V	I_R			50	nA
Forward voltage	I_F = 50 mA	V_F			1.1	V

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.5		pF
	f = 1 MHz, V_R = 1 V	C_D		0.37	0.5	pF
	f = 1 MHz, V_R = 20 V	C_D		0.23	0.35	pF
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		10	20	Ω
	f = 100 MHz, I_F = 10 mA	r_f		2.0	3.8	Ω
	f = 100 MHz, I_F = 100 mA	r_f		0.8	1.35	Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		1.8		µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

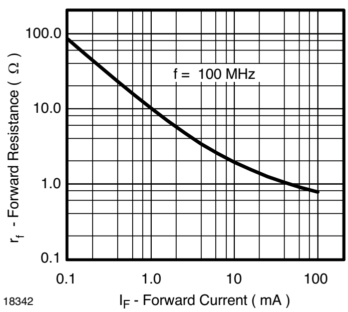


Figure 1. Forward Resistance vs. Forward Current

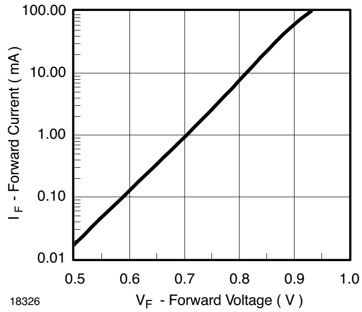


Figure 3. Forward Current vs. Forward Voltage

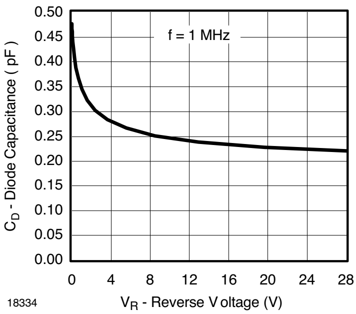


Figure 2. Diode Capacitance vs. Reverse Voltage

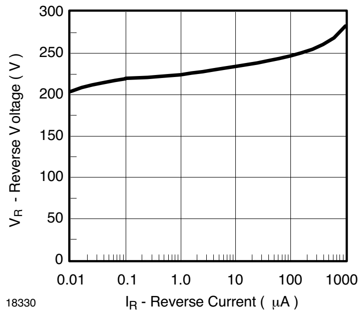


Figure 4. Reverse Voltage vs. Reverse Current

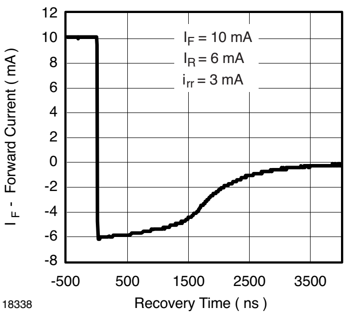


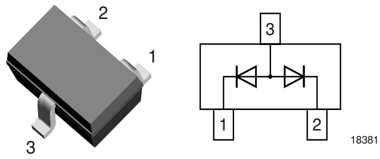
Figure 5. Typical Charge Recovery Curve

SOT-23 Package Dimension see Package Section

RF PIN Diodes - Dual, Common Anode in SOT-323

Description

Characterized by low reverse Capacitance the PIN Diodes BAR64V-06W was designed for RF signal switching and tuning. As a function of the forward bias current the forward resistance (rf) can be adjusted over a wide range. A long carrier life time offers low signal distortion for signals over 10 MHz up to 3 GHz. Typical applications for this PIN Diodes are switches and attenuators in wireless, mobile and TV-systems.



Features

- High reverse Voltage
- Small reverse capacitance
- High breakdown voltage

Applications

For frequency up to 3 GHz
RF-signal tuning
Signal attenuator and switches
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOT-323 Plastic case
Weight: approx. 6.0 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR64V-06W	BAR64V-06W-GS18 or BAR64V-06W-GS08	DW6	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	100	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	100			V
Reverse current	V_R = 50 V	I_R			50	nA
Forward voltage	I_F = 50 mA	V_F			1.1	V

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.5		pF
	f = 1 MHz, V_R = 1 V	C_D		0.37	0.5	pF
	f = 1 MHz, V_R = 20 V	C_D		0.23	0.35	pF
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		10	20	Ω
	f = 100 MHz, I_F = 10 mA	r_f		2.0	3.8	Ω
	f = 100 MHz, I_F = 100 mA	r_f		0.8	1.35	Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		1.8		µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

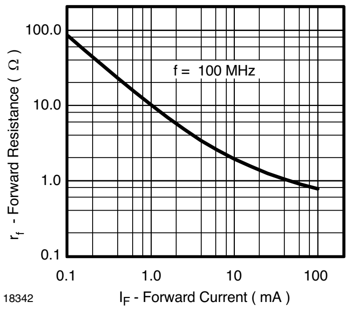


Figure 1. Forward Resistance vs. Forward Current

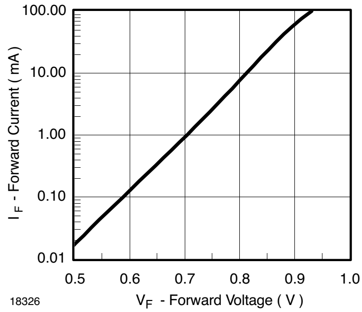


Figure 3. Forward Current vs. Forward Voltage

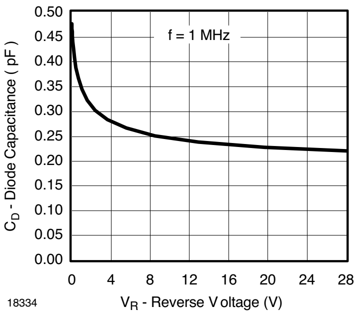


Figure 2. Diode Capacitance vs. Reverse Voltage

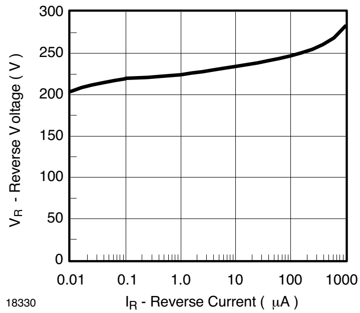


Figure 4. Reverse Voltage vs. Reverse Current

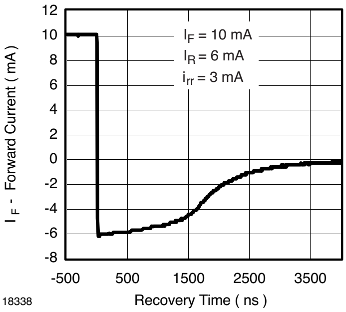


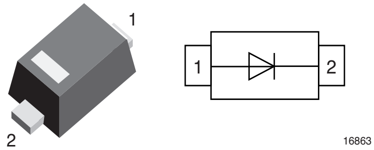
Figure 5. Typical Charge Recovery Curve

SOT-323 Package Dimension
see Package Section

RF PIN Diode - Single in SOD-523

Description

With the very low forward resistance combined with a low reverse capacitance the BAR65V-02V is ideal for RF-signal switching. Depending on the forward current (If) the forward resistance (rf) can be reduced to only a few hundred mΩ. Driven In the reverse mode the "switch is off" , the isolation capacitance is less than 1pF. Typical applications for this PIN Diode are wireless, mobile and TV-systems.



Features

- Space saving SOD-523 package with low series inductance
- Very low forward resistance
- Small reverse capacitance

Applications

For frequency up to 3 GHz
RF-signal switching
Mobile, wireless and TV-Applications

Mechanical Data

Case: SOD-523 Plastic case
Weight: approx. 1.6 mg
Cathode Band Color: Laser marking
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAR65V-02V	BAR64V-02V-GS18 or BAR64V-02V-GS08	E	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	30	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction soldering point		R_{thJS}	100	K/W

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 10 µA	V_R	30			V
Reverse current	V_R = 20 V	I_R			20	nA
Forward voltage	I_F = 100 mA	V_F			1.1	V
Diode capacitance	f = 1 MHz, V_R = 0	C_D		0.65		pF
	f = 1 MHz, V_R = 1 V	C_D		0.55	0.9	pF
	f = 1 MHz, V_R = 3 V	C_D		0.50	0.8	pF
Forward resistance	f = 100 MHz, I_F = 1 mA	r_f		1		Ω
	f = 100 MHz, I_F = 5 mA	r_f		0.6	0.95	Ω
	f = 100 MHz, I_F = 10 mA	r_f		0.5	0.9	Ω
Charge carrier life time	I_F = 10 mA, I_R = 6 mA, i_R = 3 mA	t_{rr}		175		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

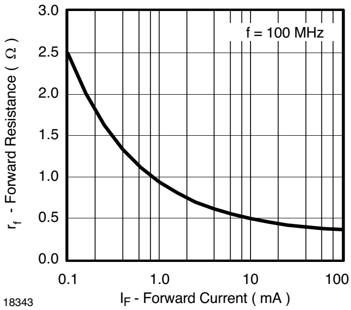


Figure 1. Forward Resistance vs. Forward Current

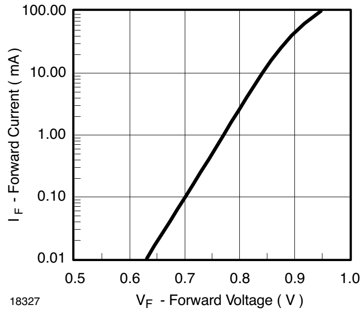


Figure 3. Forward Current vs. Forward Voltage

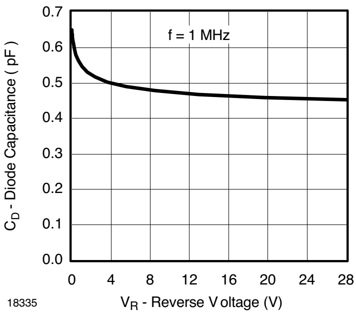


Figure 2. Diode Capacitance vs. Reverse Voltage

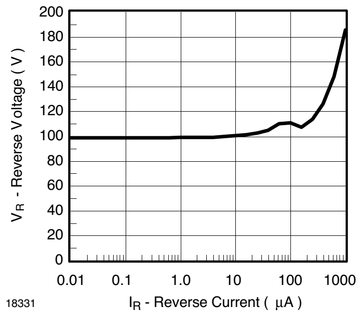


Figure 4. Reverse Voltage vs. Reverse Current

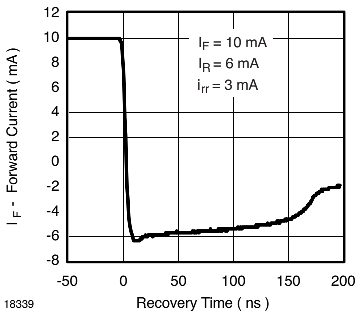


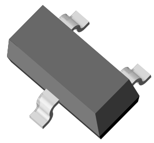
Figure 5. Typical Charge Recovery Curve

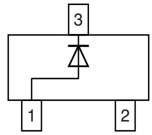
SOD-523 Package Dimension see Package Section

Small Signal Fast Switching Diode

Features

- Silicon Epitaxial Planar Diode
- Ultra fast switching speed
- Surface mount package ideally suited for automatic insertion
- High conductance





16923

Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.0 mg
Polarity: cathode band

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAS16	BAS16-GS18 or BAS16-GS08	KA6	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Non repetitive peak reverse voltage		V_{RM}	100	V
Repetitive peak reverse voltage = Working peak reverse voltage = DC Blocking voltage		$V_{RRM} = V_{RWM} = V_R$	75	V
Peak forward surge current	t_p = 1 s	I_{FSM}	1	A
	t_p =1 µs	I_{FSM}	2	A
Average forward current	half wave rectification with resistive load and f ≥ 50 MHz, on ceramic substrate 8 mm x10 mm x 0.7 mm	I_{FAV}	150	mA
Forward current	on ceramic substrate 8 mm x 10 mm x 0.7 mm	I_F	300	mA
Power dissipation	on ceramic substrate 8 mm x 10 mm x 0.7 mm	P_{tot}	350	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on ceramic substrate 8 mm x 10 mm x 0.7 mm	R_{thJA}	357	K/W
Junction and storage temperature range		$T_j = T_{stg}$	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 1 mA	V_F			715	mV
	I_F = 10 mA	V_F			855	mV
	I_F = 50 mA	V_F			1	V
	I_F = 150 mA	V_F			1.25	V
Reverse current	V_R = 75 V	I_R			1	µA
	V_R = 75 V, T_j = 150 °C	I_R			50	µA
	V_R = 25 V, T_j = 150 °C	I_R			30	µA
Diode capacitance	V_R = 0, f = 1 MHz	C_D			4	pF
Reverse recovery time	I_F = 10 mA to I_R = 1 mA, V_R = 6 V, R_L = 100 Ω	t_{rr}			6	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

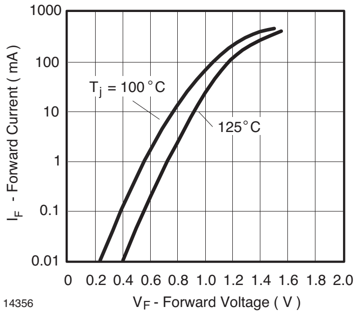


Figure 1. Forward Current vs. Forward Voltage

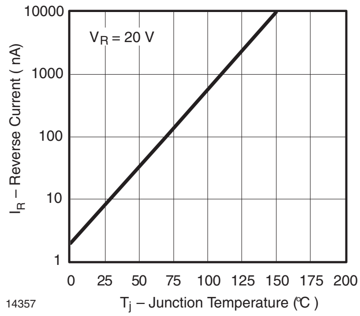


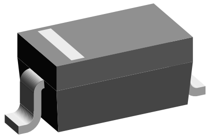
Figure 2. Reverse Current vs. Junction Temperature

SOT-23 Package Dimension see Package Section

Small Signal Fast Switching Diode

Features

- Silicon Epitaxial Planar Diode
- Fast switching diode
- Also available in case SOT-23 with designation BAS16


17431

Mechanical Data

Case: SOD-123 Plastic case
Weight: approx. 9.3 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAS16D	BAS16D-GS18 or BAS16D-GS08	A6	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	75	V
Peak reverse voltage		V_{RM}	100	V
Forward current (continuous)		I_F	250	mA
Non-repetitive peak forward current	t = 1 µs	I_{FSM}	2.0	A
	t = 1 ms	I_{FSM}	1.0	A
	t = 1 s	I_{FSM}	0.5	A
Power dissipation		P_{tot}	350[1)]	mW

[1)] Valid provided electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Maximum junction temperature		T_j	150	°C
Storage temperature		T_S	- 65 to 150[1)]	°C

[1)] Valid provided electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 1 mA	V_F			715	mV
	I_F = 10 mA	V_F			855	mV
	I_F = 50 mA	V_F			1.00	V
	I_F = 150 mA	V_F			1.25	V
Leakage current	V_R = 25 V, T_J = 150 °C	I_R			30	µA
	V_R = 75 V	I_R			1	µA
	V_R = 75 V, T_J = 150 °C	I_R			50	µA
Diode capacitance	V_R = 0; f = 1 MHz	C_{tot}			2	pF
Reverse recovery time	I_F = 10 mA to I_R = 10 mA, I_R = 1 mA, R_L = 100 Ω	t_{rr}			6	ns
Thermal resistance junction to ambient air		R_{thJA}			375[1)]	°C/W

[1)] Valid provided electrodes are kept at ambient temperature

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

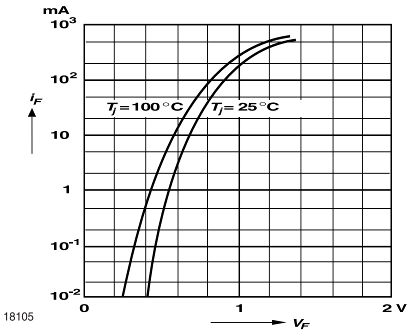


Figure 1. Forward characteristics

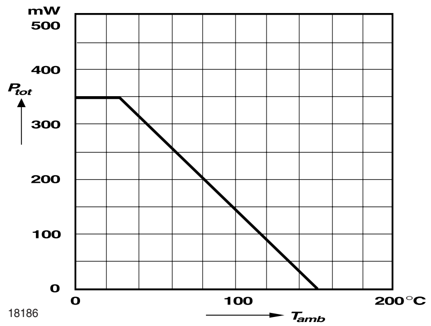


Figure 3. Admissible Power Dissipation vs. Ambient Temperature

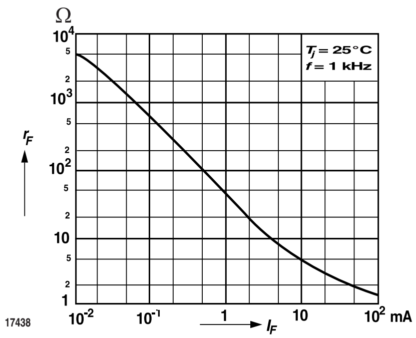


Figure 2. Dynamic Forward Resistance vs. Forward Current

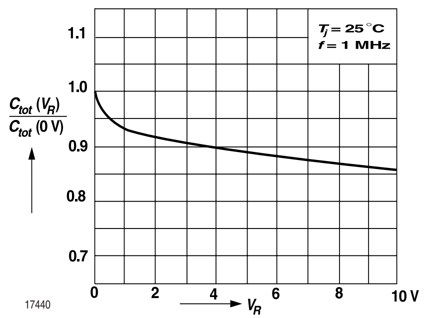


Figure 4. Relative Capacitance vs. Reverse Voltage

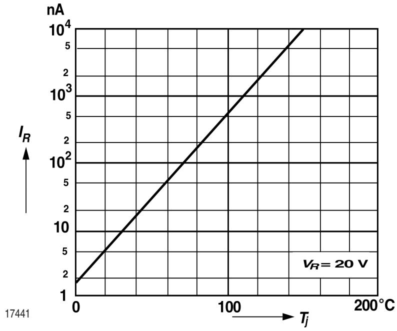


Figure 5. Leakage Current vs. Junction Temperature

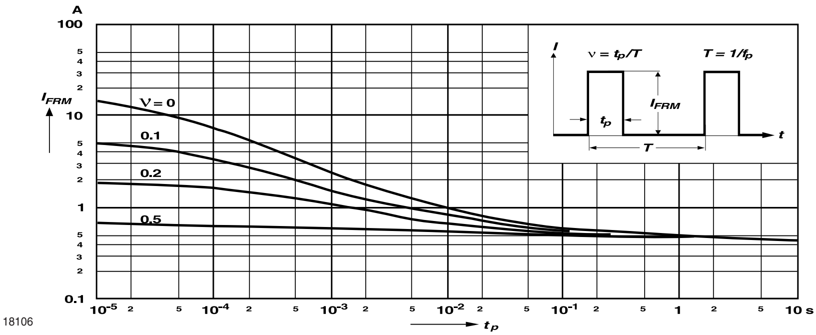


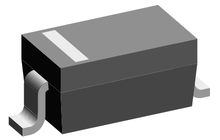
Figure 6. Admissible Repetitive Peak Forward Current vs. Pulse Duration

SOD-123 Package Dimension see Package Section

Small Signal Fast Switching Diode

Features

- Silicon Epitaxial Planar Diode
- Fast switching diode
- Also available in case SOT-23 with designation BAS16



17431

Mechanical Data

Case: SOD-323 Plastic case
Weight: approx. 5.0 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAS16WS	BAS16WS-GS18 or BAS16WS-GS08	A6	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	75	V
Peak reverse voltage		V_{RM}	100	V
Forward current (continuous)		I_F	250	mA
Non-repetitive peak forward current	t = 1 µs	I_{FSM}	2.0	A
	t = 1 ms	I_{FSM}	1.0	A
	t = 1 s	I_{FSM}	0.5	A
Power dissipation		P_{tot}	200	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Maximum junction temperature		T_j	150	°C
Storage temperature		T_S	- 65 to 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 1 mA	V_F			715	mV
	I_F = 10 mA	V_F			855	mV
	I_F = 50 mA	V_F			1.00	V
	I_F = 150 mA	V_F			1.25	V
Leakage current	V_R = 25 V, T_J = 150 °C	I_R			30	µA
	V_R = 75 V	I_R			1	µA
	V_R = 75 V, T_J = 150 °C	I_R			50	µA
Diode capacitance	V_R = 0; f = 1 MHz	C_{tot}			2	pF
Reverse recovery time	I_F = 10 mA to I_R = 10 mA, I_R = 1 mA, R_L = 100 Ω	t_{rr}			6	ns
Thermal resistance junction to ambient air		R_{thJA}			650	°C/W

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

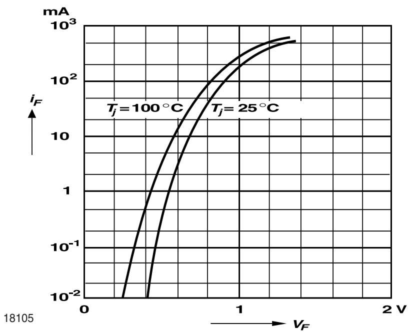


Figure 1. Forward characteristics

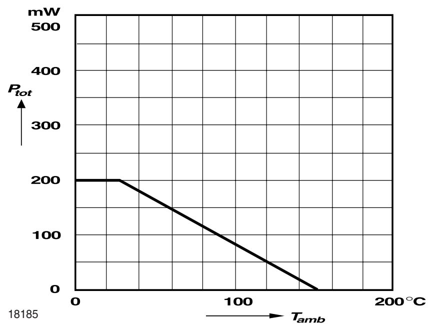


Figure 3. Admissible Power Dissipation vs. Ambient Temperature

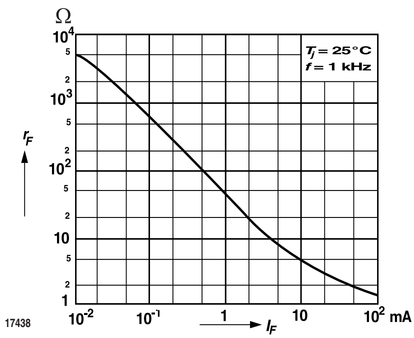


Figure 2. Dynamic Forward Resistance vs. Forward Current

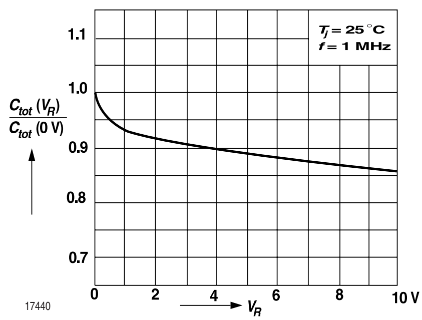


Figure 4. Relative Capacitance vs. Reverse Voltage

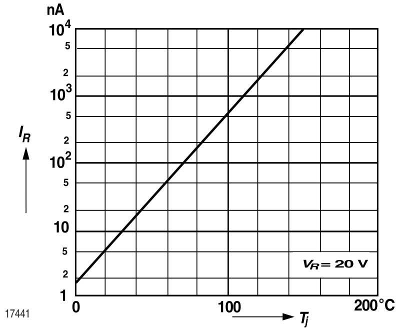


Figure 5. Leakage Current vs. Junction Temperature

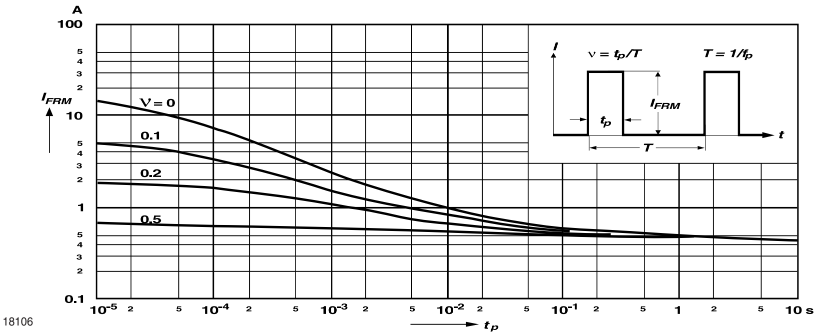


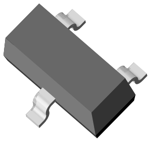
Figure 6. Admissible Repetitive Peak Forward Current vs. Pulse Duration

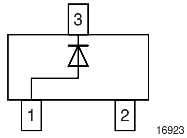
SOD-323 Package Dimension see Package Section

Small Signal Switching Diodes, High Voltage

Features

- Silicon Epitaxial Planar Diode
- Fast switching diode in case SOT-23, especially suited for automatic insertion.
- These diodes are also available in other case styles including:the SOD-123 case with the type designations BAV19W to BAV21W, the Mini-MELF case with the type designation BAV101 to BAV103, the DO-35 case with the type designations BAV19 to BAV21 and the SOD-323 case with type designation BAV19WS to BAV21WS.





Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.8 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Type differentiation	Ordering code	Marking	Remarks
BAS19	V_{RRM} = 120 V	BAS19-GS18 or BAS19-GS08	A8	Tape and Reel
BAS20	V_{RRM} = 200 V	BAS20-GS18 or BAS20-GS08	A81	Tape and Reel
BAS21	V_{RRM} = 250 V	BAS21-GS18 or BAS21-GS08	A82	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Continuous reverse voltage		BAS19	V_R	100	V
		BAS20	V_R	150	V
		BAS21	V_R	200	V
Repetitive peak reverse voltage		BAS19	V_{RRM}	120	V
		BAS20	V_{RRM}	200	V
		BAS21	V_{RRM}	250	V
Non-repetitive peak forward current	t = 1 µs		I_{FSM}	2.5	A
Non-repetitive peak forward surge current	t = 1 s		I_{FSM}	0.5	A
Maximum average forward rectified current	(av. over any 20 ms period)		$I_{F(AV)}$	200[1)]	mA
DC forward current	T_{amb} = 25 °C		I_F	200[2)]	mA
Repetitive peak forward current			I_{FRM}	625	mA
Power dissipation	T_{amb} = 25 °C		P_{tot}	250[2)]	mW

1) Measured under pulse conditions; Pulse time = $T_p \leq 0.3$ ms

2) Device on fiberglass substrate, see layout on next page

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	430[1)]	°C
Junction temperature		T_j	150	°C
Storage temperature range		T_S	- 65 to + 150	°C

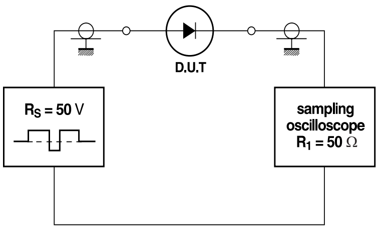
1) Device on fiberglass substrate, see layout on next page

Electrical Characteristics

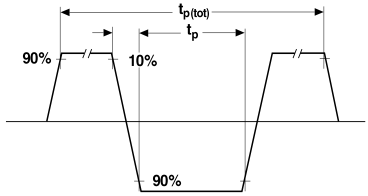
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA	V_F			1.0	V
	I_F = 200 mA	V_F			1.25	V
Leakage current	$V_R = V_{Rmax}$	I_R			100	nA
	$V_R = V_{Rmax}$, T_j = 150 °C	I_R			100	µA
Dynamic forward resistance	I_F = 10 mA	r_f		5		Ω
Diode capacitance	V_R = 0, f = 1 MHz	C_{tot}			5	pF
Reverse recovery time	$I_F = I_R$ = 30 mA, R_L = 100 Ω, I_{rr} = 3 mA	t_{rr}			50	ns

Test Circuit and Waveforms



Test circuit

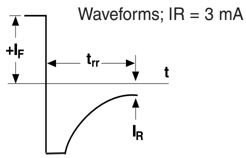


Input signal

Input Signal	- total pulse duration	tp(tot) = 2 µs
	- duty factor	δ = 0.0025
	- rise time of reverse pulse	t_r = 0.6ns
	- reverse pulse duration	t_p = 100ns
Oscilloscope	- rise time	t_r = 0.35ns
	- cicuit capitance*	C < 1pF

*C = oscilloscope input capactitance + parasitic capacitance

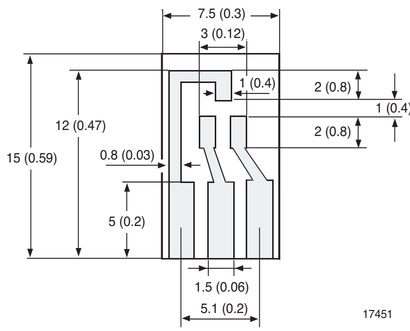
18098



Output signal

Layout for R_{thJA} test

Thickness:
Fiberglass 1.5 mm (0.059 in.)
Copper leads 0.3 mm (0.012 in.)



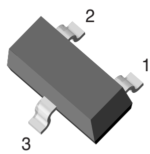
17451

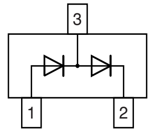
SOT-23 Package Dimension see Package Section

Small Signal Switching Diode, Dual Serial

Features

- Silicon Epitaxial Planar Diode
- For general purpose switching applications





18256

Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.8 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAS31	BAS31-GS18 or BAS31-GS08	L21	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	90	V
Peak repetitive reverse voltage		V_{RRM}	110	V
Peak repetitive reverse current		I_{RRM}	600	mA
Forward current (continuous) single diode loaded		I_F	250 1)	mA
Forward current (continuous) dual diode loaded		I_F	150 1)	mA
Peak repetitive forward current		I_{RRM}	600	mA
Non-repetitive peak forward current 2)	t_p = 1 µs	I_{FSM}	10	A
	t_p = 100 µs	I_{FSM}	4.0	A
	t_p = 1 s	I_{FSM}	0.75	A
Power dissipation		P_{tot}	250 1)	mW
Peak repetitive reverse energy	t_p = 50 µs, f ≤ 20 Hz, T_J = 25 °C	E_{RRM}	5	mJ

1) Device on fiberglass substrate, see layout on second page

2) Square wave with T_J = 25 °C prior to surge

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Typical thermal resistance junction to ambient air		R_{thJA}	500[1)]	°C/W
Junction temperature		T_j	150	°C
Storage temperature range		T_S	- 65 to +150	°C

1) Device on fiberglass substrate, see layout on second page

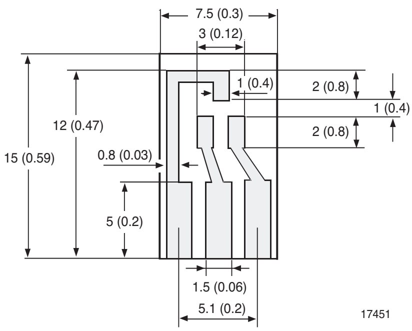
Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 10 mA	V_F			750	mV
	I_F = 50 mA	V_F			840	mV
	I_F = 100 mA	V_F			900	mV
	I_F = 200 mA	V_F			1.00	mV
	I_F = 400 mA	V_F			1.25	mV
Reverse current	V_R = 90 V,	I_R			100	nA
	V_R = 90 V, T_j = 150 °C	I_R			100	µs
Reverse avalanche breakdown voltage	I_R = 1 mA	$V_{(BR)R}$	120		170	V
Diode capacitance	f = 1 MHz, V_R = 0	C_d			35	pF
Reverse recovery time	I_F = I_A = 30 mA, I_R = 30 mA, R_L = 100 Ω, I_{rr} = 3 mA	t_{rr}			50	ns

Layout for R_{thJA} test

Thickness: Fiberglass 1.5 mm (0.059 in.)
Copper leads 0.3 mm (0.012 in.)

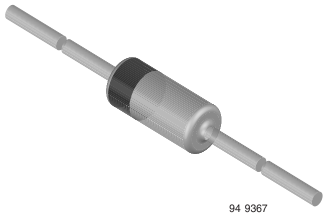


SOT-23 Package Dimension see Package Section

Small Signal Switching Diodes

Features

- Silicon Planar Diodes
- Very low reverse current



94 9367

Applications

Protection circuits, time delay circuits, peak follower circuits, logarithmic amplifiers

Mechanical Data

Case: DO-35 Glass case
Weight: approx. 125 mg

Packaging Codes/Options:
TR / 10 k per 13 " reel (52 mm tape), 50 k/box
TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAS33	V_{RRM} = 40 V	BAS33-TAP or BAS33-TR	Ammopack / Tape and Reel
BAS34	V_{RRM} = 70 V	BAS34-TAP or BAS34-TR	Ammopack / Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Reverse voltage		BAS33	V_R	30	V
		BAS34	V_R	60	V
Peak forward surge current	t_p = 1 µs		I_{FSM}	2	A
Forward current			I_F	200	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	350	K/W
Junction temperature		T_j	200	°C
Storage temperature range		T_{stg}	- 65 to + 200	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1	V
Reverse current	E ≤ 300 lx, V_R		I_R		1	3	nA
	E ≤ 300 lx, V_R, T_j = 125 °C		I_R			0.5	µA
	E ≤ 300 lx, V_R = 15V	BAS33	I_R		0.5	1	nA
	E ≤ 300 lx, V_R = 30 V	BAS34	I_R		0.5	1	nA
Breakdown voltage	I_R = 5 µA, t_p/T = 0.01, t_p = 0.3 ms	BAS33	$V_{(BR)}$	40			V
		BAS34	$V_{(BR)}$	70			V
Diode capacitance	V_R = 0, f = 1 MHz		C_D			3	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

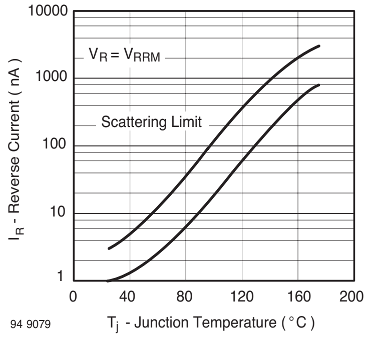


Figure 1. Reverse Current vs. Junction Temperature

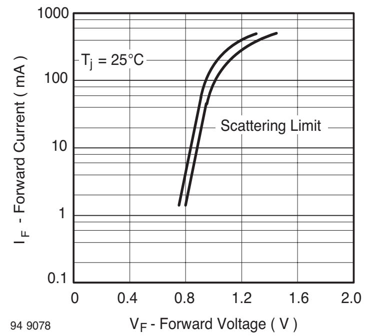
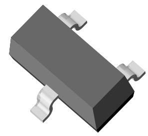


Figure 2. Forward Current vs. Forward Voltage

DO-35 Package Dimension
see Package Section

Small Signal Schottky Diodes, Single & Dual

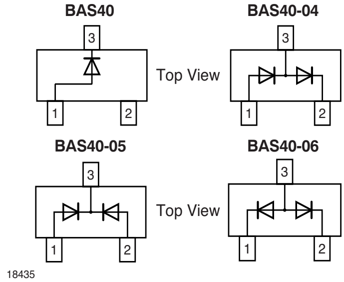


Features

- These diodes feature very low turn-on voltage and fast switching.
- These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.

Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.8 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box



Parts Table

Part	Ordering code	Marking	Remarks
BAS40	BAS40-GS18 or BAS40-GS08	43	Tape and Reel
BAS40-04	BAS40-04-GS18 or BAS40-04-GS08	44	Tape and Reel
BAS40-05	BAS40-05-GS18 or BAS40-05-GS08	45	Tape and Reel
BAS40-06	BAS40-06-GS18 or BAS40-06-GS08	46	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		$V_{RRM} = V_{RWM} = V_R$	40	V
Forward continuous current	T_{amb} = 25 °C	I_F	200[1)]	mA
Surge forward current	t_p < 1 s, T_{amb} = 25 °C	I_{FSM}	600[1)]	mA
Power dissipation[1)]	T_{amb} = 25 °C	P_{tot}	200[1)]	mW

[1)] Device on fiberglass substrate, see layout on next page

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	430[1)]	°C
Junction temperature		T_j	150	°C
Storage temperature range		T_S	- 55 to +150	°C

[1)] Device on fiberglass substrate, see layout on next page.

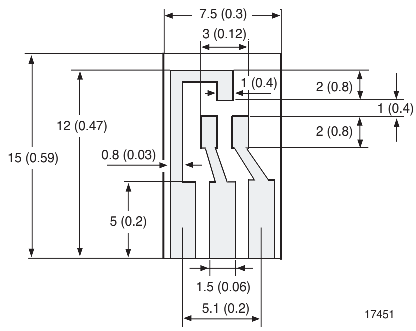
Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 µA (pulsed)	$V_{(BR)}$	40			V
Leakage current	Pulse test V_R = 30 V, t_p < 300 µs	I_R		20	100	nA
Forward voltage	Pulse test t_p < 300 µs, I_F = 1.0 mA	V_F			380	mV
	Pulse test t_p < 300 µs, I_F = 40 mA,	V_F			1000	mV
Diode capacitance	V_R = 0 V, f = 1 MHz	C_{tot}		4.0	5	pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, I_{rr} = 1 mA, R_L = 100 Ω	t_{rr}			5	ns

Layout for R_{thJA} test

Thickness:
Fiberglass 1.5 mm (0.059 in.)
Copper leads 0.3 mm (0.012 in.)

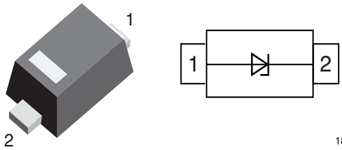


SOT-23 Package Dimension see Package Section

Small Signal Schottky Diodes, Single

Features

- These diodes feature very low turn-on voltage and fast switching.
- These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.
- Space saving SOD-523 package



18554

Mechanical Data

Case: SOD-523 Plastic case

Molding Compound Flammability Rating:
UL 94 V-0

Terminals: High temperature soldering guaranteed: 260 °C/10 sec. at terminals

Weight: approx. 1.6 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAS40-02V	BAS40-02V-GS18 or BAS40-02V-GS08	W	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	40	V
Forward continuous current	T_{amb} = 25 °C	I_F	200	mA
Surge forward current	t_p < 1 s, T_{amb} = 25 °C	I_{FSM}	600	mA
Power dissipation	T_{amb} = 25 °C	P_{tot}	200	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction soldering point		R_{thJS}	100	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_S	- 55 to +125	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 µA (pulsed)	$V_{(BR)}$	40			V
Leakage current	Pulse test V_R = 30 V, t_p < 300 µs	I_R		20	100	nA
Forward voltage	Pulse test t_p < 300 µs, I_F = 1.0 mA	V_F			380	mV
	Pulse test t_p < 300 µs, I_F = 40 mA,	V_F			1000	mV
Diode capacitance	V_R = 0 V, f = 1 MHz	C_{tot}		4.0	5	pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, I_{rr} = 1 mA, R_L = 100 Ω	t_{rr}			5	ns

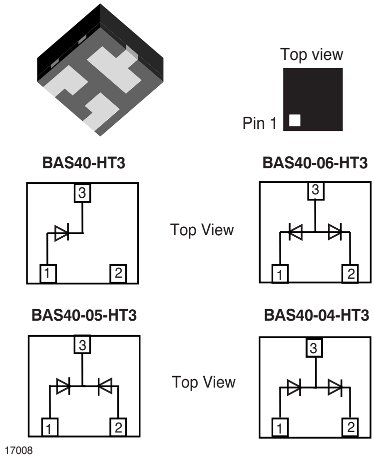
SOD-523 Package Dimension see Package Section

Document Number 85651
Rev. 1.2, 26-Apr-04

Small Signal Schottky Diodes, Single & Dual

Features

- These diodes feature very low turn-on voltage and fast switching.
- These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.
- Space saving LLP package



Mechanical Data

Case: LLP75-3B Plastic case

Molding Compound Flammability Rating:
UL 94 V-0

Terminals: High temperature soldering guaranteed: 260 °C/10 sec. at terminals

Weight: approx. 5.2 mg

Parts Table

Part	Ordering code	Marking	Remarks
BAS40-HT3	BAS40-HT3-GS08	43	Tape and Reel
BAS40-04-HT3	BAS40-04-HT3-GS08	44	Tape and Reel
BAS40-05-HT3	BAS40-05-HT3-GS08	45	Tape and Reel
BAS40-06-HT3	BAS40-06-HT3-GS08	46	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	40	V
Forward continuous current	T_{amb} = 25 °C	I_F	200	mA
Surge forward current	t_p < 1 s, T_{amb} = 25 °C	I_{FSM}	600	mA
Power dissipation	T_{amb} = 25 °C	P_{tot}	200	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	430	°C/W
Junction temperature		T_j	125	°C
Storage temperature range		T_S	- 55 to +125	°C

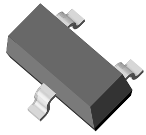
Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 µA (pulsed)	$V_{(BR)}$	40			V
Leakage current	Pulse test V_R = 30 V, t_p < 300 µs	I_R		20	100	nA
Forward voltage	Pulse test t_p < 300 µs, I_F = 1.0 mA	V_F			380	mV
	Pulse test t_p < 300 µs, I_F = 40 mA,	V_F			1000	mV
Diode capacitance	V_R = 0 V, f = 1 MHz	C_{tot}		4.0	5	pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, I_{rr} = 1 mA, R_L = 100 Ω	t_{rr}			5	ns

LLP75-3B Package Dimension see Package Section

Small Signal Schottky Diodes, Single & Dual

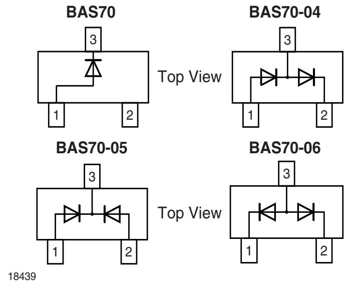


Features

- These diodes feature very low turn-on voltage and fast switching.
- These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.

Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.8 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box



Parts Table

Part	Ordering code	Marking	Remarks
BAS70	BAS70-GS18 or BAS70-GS08	73	Tape and Reel
BAS70-04	BAS70-04-GS18 or BAS70-04-GS08	74	Tape and Reel
BAS70-05	BAS70-05-GS18 or BAS70-05-GS08	75	Tape and Reel
BAS70-06	BAS70-06-GS18 or BAS70-06-GS08	76	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		$V_{RRM} = V_{RWM} = V_R$	70	V
Forward continuous current	T_{amb} = 25 °C	I_F	200[1)]	mA
Surge forward current	t_p < 1 s, T_{amb} = 25 °C	I_{FSM}	600[1)]	mA
Power dissipation[1)]	T_{amb} = 25 °C	P_{tot}	200[1)]	mW

[1)] Device on fiberglass substrate, see layout on next page

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	430[1)]	°C
Junction temperature		T_j	150	°C
Storage temperature range		T_S	- 55 to +150	°C

[1)] Device on fiberglass substrate, see layout on next page

Electrical Characteristics

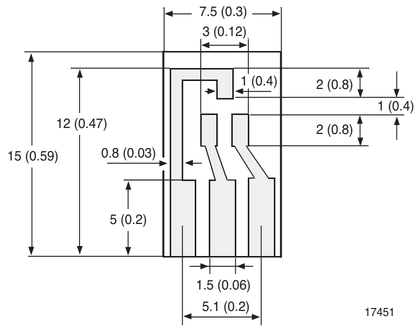
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 μA (pulsed)	$V_{(BR)}$	70			V
Leakage current	V_R = 50 V	I_R		20	100	nA
Forward voltage	I_F = 1.0 mA	V_F			410	mV
Forward voltage[1)]	I_F = 15 mA,	V_F			1000	mV
Diode capacitance	V_R = 0 V, f = 1 MHz	C_{tot}		1.5	2	pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, I_{rr} = 1 mA, R_L = 100 Ω	t_{rr}			5	ns

[1)] Pulse test; $t_p \le 300$ μs

Layout for R_{thJA} test

Thickness:
Fiberglass 1.5 mm (0.059 in.)
Copper leads 0.3 mm (0.012 in.)

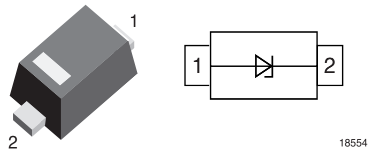


SOT-23 Package Dimension see Package Section

Small Signal Schottky Diodes, Single

Features

- These diodes feature very low turn-on voltage and fast switching.
- These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.
- Space saving SOD-523 package



Mechanical Data

Case: SOD-523 Plastic case

Molding Compound Flammability Rating:
UL 94 V-0

Terminals: High temperature soldering guaranteed: 260 °C/10 sec. at terminals

Weight: approx. 1.6 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAS70-02V	BAS70-02V-GS18 or BAS70-02V-GS08	X	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	70	V
Forward continuous current	T_{amb} = 25 °C	I_F	200	mA
Surge forward current	t_p < 1 s, T_{amb} = 25 °C	I_{FSM}	600	mA
Power dissipation	T_{amb} = 25 °C	P_{tot}	200	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction soldering point		R_{thJS}	100	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_S	- 55 to +125	°C

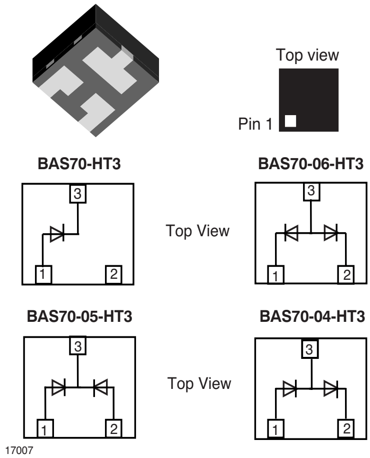
Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 µA (pulsed)	$V_{(BR)R}$	70			V
Leakage current	V_R = 50 V, t_p < 300 µs	I_R		20	100	nA
Forward voltage	t_p < 300 µs, I_F = 1.0 mA	V_F			410	mV
	t_p < 300 µs, I_F = 15 mA	V_F			1000	mV
Diode capacitance	V_R = 0 V, f = 1 MHz	C_{tot}		1.5	2	pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, I_{rr} = 1 mA, R_L = 100 Ω	t_{rr}			5	ns

SOD-523 Package Dimension
see Package Section

Small Signal Schottky Diodes, Single & Dual



Features

- These diodes feature very low turn-on voltage and fast switching.
- These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.
- Space saving LLP package

Mechanical Data

Case: LLP75-3B Plastic case

Molding Compound Flammability Rating:
UL 94 V-0

Terminals: High temperature soldering guaranteed:
260 °C/10 sec. at terminals

Weight: approx. 5.2 mg

Parts Table

Part	Ordering code	Marking	Remarks
BAS70-HT3	BAS70-HT3-GS08	73	Tape and Reel
BAS70-04-HT3	BAS70-04-HT3-GS08	74	Tape and Reel
BAS70-05-HT3	BAS70-05-HT3-GS08	75	Tape and Reel
BAS70-06-HT3	BAS70-06-HT3-GS08	76	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	70	V
Forward continuous current	T_{amb} = 25 °C	I_F	200	mA
Surge forward current	t_p < 1 s, T_{amb} = 25 °C	I_{FSM}	600	mA
Power dissipation	T_{amb} = 25 °C	P_{tot}	200	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	430	°C
Junction temperature		T_j	125	°C
Storage temperature range		T_S	- 55 to +125	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

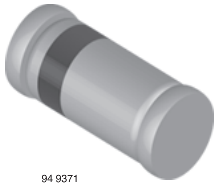
Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 µA (pulsed)	$V_{(BR)R}$	70			V
Leakage current	V_R = 50 V, t_p < 300 µs	I_R		20	100	nA
Forward voltage	t_p < 300 µs, I_F = 1.0 mA	V_F			410	mV
	t_p < 300 µs, I_F = 15 mA	V_F			1000	mV
Diode capacitance	V_R = 0 V, f = 1 MHz	C_{tot}		1.5	2	pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, I_{rr} = 1 mA, R_L = 100 Ω	t_{rr}			5	ns

LLP75-3B Package Dimension
see Package Section

Small Signal Schottky Diodes

Features

- Integrated protection ring against static discharge
- Low capacitance
- Low leakage current
- Low forward voltage drop
- Very low switching time



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Applications

HF-Detector
Protection circuit
Diode for low currents with a low supply voltage
Small battery charger
Power supplies
DC / DC converter for notebooks

Mechanical Data

Case: MiniMELF Glass case (SOD-80)
Weight: approx. 31 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAS81	V_R = 40 V	BAS81-GS18 or BAS81-GS08	Tape and Reel
BAS82	V_R = 50 V	BAS82-GS18 or BAS82-GS08	Tape and Reel
BAS83	V_R = 60 V	BAS83-GS18 or BAS83-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Reverse voltage		BAS81	V_R	40	V
		BAS82	V_R	50	V
		BAS83	V_R	60	V
Peak forward surge current	t_p = 1 s		I_{FSM}	500	mA
Repetitive peak forward current			I_{FRM}	150	mA
Forward current			I_F	30	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	320	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 0.1 mA	V_F			330	mV
	I_F = 1 mA	V_F			410	mV
	I_F = 15 mA	V_F			1	V
Reverse current	$V_R = V_{Rmax}$	I_R			200	nA
Diode capacitance	V_R = 1 V, f = 1 MHz	C_D			1.6	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

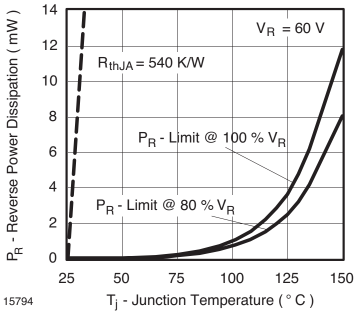


Figure 1. Max. Reverse Power Dissipation vs. Junction Temperature

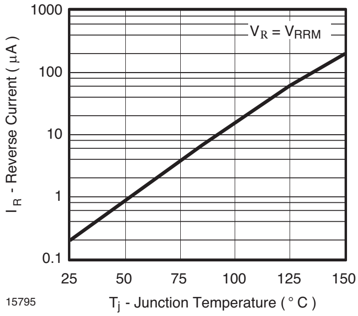


Figure 2. Reverse Current vs. Junction Temperature

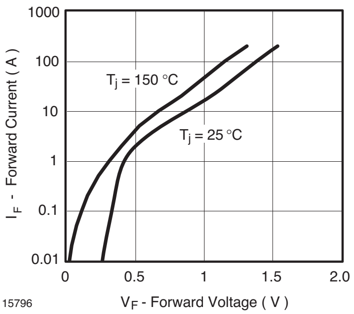


Figure 3. Forward Current vs. Forward Voltage

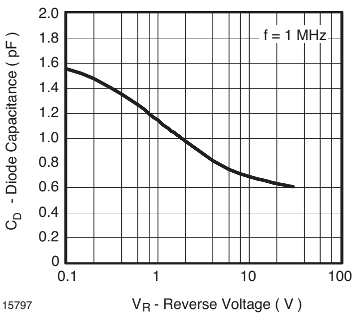


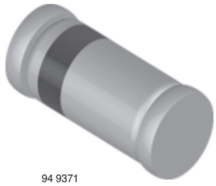
Figure 4. Diode Capacitance vs. Reverse Voltage

MiniMELF SOD-80 Package Dimension
see Package Section

Small Signal Schottky Diode

Features

- For general purpose applications
- This diode features low turn-on voltage.
- The devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.
- This diode is also available in a DO-35 case with type designation BAT85.



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Applications

Applications where a very low forward voltage is required

Mechanical Data

Case: MiniMELF Glass case (SOD-80)
Weight: approx. 31 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAS85	BAS85-GS18 or BAS85-GS08	-	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	30	
Forward continuous current	T_{amb} = 25 °C	I_F	200[1)]	mA
Peak forward current	T_{amb} = 25 °C	I_{FM}	300[1)]	mA
Surge forward current	t_p < 1 s, T_{amb} = 25 °C	I_{FSM}	600[1)]	mA
Power dissipation	T_{amb} = 65 °C	P_{tot}	200[1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature.

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	430[1)]	°C
Junction temperature		T_j	125	°C
Storage temperature range		T_S	- 55 to +150	°C

[1)] Valid provided that electrodes are kept at ambient temperature.

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 μA (pulsed)	$V_{(BR)R}$	30			V
Leakage current	V_R = 25 V	I_R		0.2	2	μA
Forward voltage	Pulse test t_p < 300 μs, I_F = 0.1 mA	V_F			0.24	V
	Pulse test t_p < 300 μs, I_F = 1 mA,	V_F			0.32	V
	Pulse test t_p < 300 μs, I_F = 10 mA	V_F			0.4	V
	Pulse test t_p < 300 μs, I_F = 30 mA	V_F		0.5		V
	Pulse test t_p < 300 μs, I_F = 100 mA	V_F			0.8	V
Diode capacitance	V_R = 1 V, f = 1 MHz	C_{tot}			10	pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, I_{rr} = 1 mA,	t_{rr}			5	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

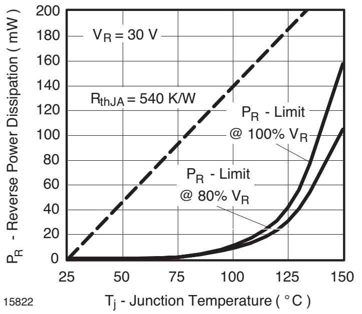


Figure 1. Max. Reverse Power Dissipation vs. Junction Temperature

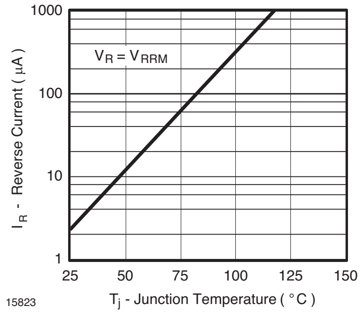


Figure 2. Reverse Current vs. Junction Temperature

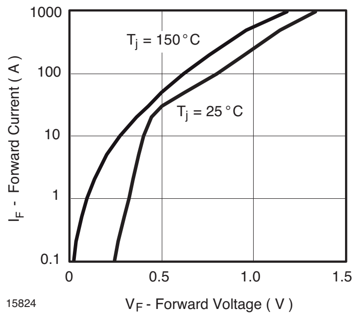


Figure 3. Forward Current vs. Forward Voltage

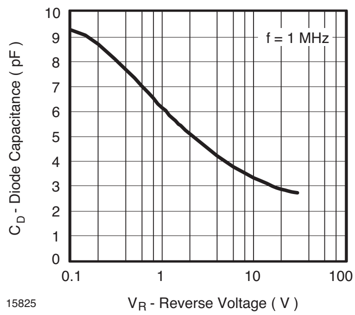


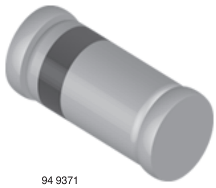
Figure 4. Diode Capacitance vs. Reverse Voltage

MiniMELF SOD-80 Package Dimension see Package Section

Small Signal Schottky Diode

Features

- For general purpose applications
- This diode features low turn-on voltage. The devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.
- Metal-on-silicon Schottky barrier device which is protected by a PN junction guard ring.
- The low forward voltage drop and fast switching make it ideal for protection of MOS devices, steering, biasing and coupling diodes for fast switching and low logic level applications
- This diode is also available in a DO-35 case with type designation BAT86.



Applications

Applications where a very low forward voltage is required

Mechanical Data

Case: MiniMELF Glass case (SOD-80)
Weight: approx. 31 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAS86	BAS86-GS18 or BAS86-GS08	-	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	50	V
Forward continuous current	T_{amb} = 25 °C	I_F	200[1)]	mA
Repetitive peak forward current	t_p < 1 s, T_{amb} = 25 °C, $\nu \leq 0.5$	I_{FRM}	500[1)]	mA
Power dissipation[1)]	T_{amb} = 25 °C	P_{tot}	200[1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	300[1)]	°C
Junction temperature		T_j	125	°C
Ambient operating temperature range		T_{amb}	- 65 to + 125	°C
Storage temperature range		T_S	- 65 to +150	°C

[1)] Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 µA (pulsed)	$V_{(BR)}$	50			V
Leakage current	V_R = 40 V	I_R			5	µA
Forward voltage	Pulse test t_p < 300 µs, I_F = 0.1 mA, δ < 2 %	V_F		0.200	0.300	V
	Pulse test t_p < 300 µs, I_F = 1 mA, δ < 2 %	V_F		0.275	0.380	V
	Pulse test t_p < 300 µs, I_F = 10 mA, δ < 2 %	V_F		0.365	0.450	V
	Pulse test t_p < 300 µs, I_F = 30 mA, δ < 2 %	V_F		0.460	0.600	V
	Pulse test t_p < 300 µs, I_F = 100 mA, δ < 2 %	V_F		0.700	0.900	V
Diode capacitance	V_R = 1 V, f = 1 MHz	C_{tot}			8	pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, I_{rr} = 1 mA,	t_{rr}			5	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

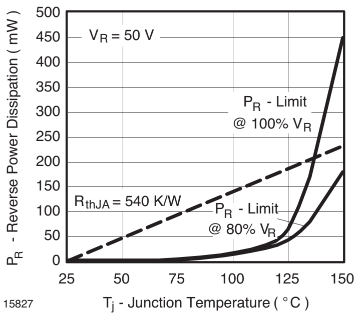


Figure 1. Max. Reverse Power Dissipation vs. Junction Temperature

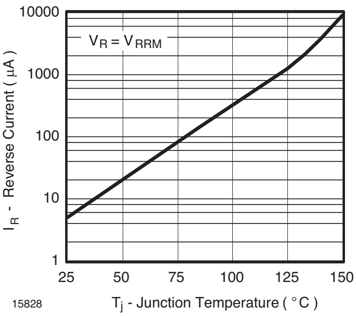


Figure 2. Reverse Current vs. Junction Temperature

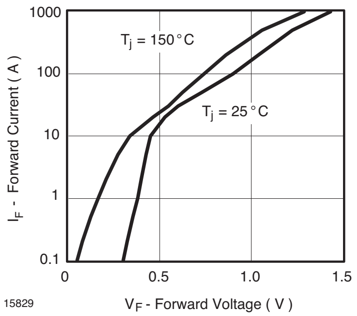


Figure 3. Forward Current vs. Forward Voltage

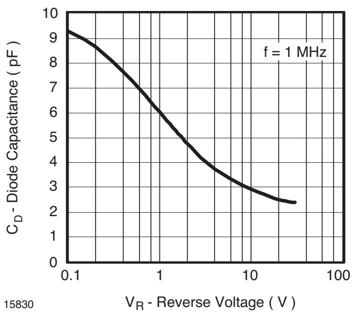
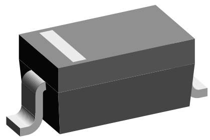


Figure 4. Diode Capacitance vs. Reverse Voltage

MiniMELF SOD-80 Package Dimension see Package Section

Small Signal Schottky Diode


17431

Features

- Schottky diode for high-speed switching
- Circuit protection
- Voltage clamping
- High-level detecting and mixing

Mechanical Data

Case: SOD-323 Plastic case
Weight: approx. 5.0 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAS170WS	BAS170WS-GS18 or BAS170WS-GS08	73	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	70	V
Forward continuous current	T_{amb} = 25 °C	I_F	70	mA
Surge forward current	t_p < 1 s, T_{amb} = 25 °C	I_{FSM}	600	mA
Power dissipation[1)]	T_{amb} = 25 °C	P_{tot}	200	mW

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air1)		R_{thJA}	650	°C/W
Junction temperature		T_j	150	°C
Operating temperature range		T_{amb}	- 55 to + 125	°C
Storage temperature range		T_S	- 55 to +150	°C

1) Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 µA (pulsed)	$V_{(BR)R}$	70			V
Leakage current	V_R = 50 V	I_R			0.1	µA
	V_R = 70 V	I_R			10	µA
Forward voltage	I_F = 1 mA	V_F		375	410	mV
	I_F = 10 mA	V_F		705	750	mV
Forward voltage1)	I_F = 15 mA	V_F		880	1000	mV
Diode capacitance	V_R = 0 V, f = 1 MHz	C_{tot}		1.5	2	pF
Charge carrier lifetime	I_F = 25 mA	τ		100		ps
Differential forward resistance	I_E = 5 mA, f = 10 kHz	R_F		34		Ω

1) Pulse test; $t_p \leq 300$ µs

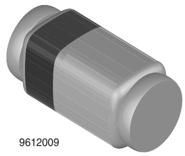
SOD-323 Package Dimension
see Package Section

Document Number 85653
Rev. 1.4, 09-Jul-04

Small Signal Schottky Diodes

Features

- Integrated protection ring against static discharge
- Low capacitance
- Low leakage current
- Low forward voltage drop
- Very low switching time


9612009

Applications

General purpose and switching Schottky barrier diode
HF-Detector
Protection circuit

Diode for low currents with a low supply voltage
Small battery charger
Power supplies
DC / DC converter for notebooks

Mechanical Data

Case: QuadroMELF Glass case (SOD-80)
Weight: approx. 34 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAS281	V_R = 40 V	BAS281-GS18 or BAS281-GS08	Tape and Reel
BAS282	V_R = 50 V	BAS282-GS18 or BAS282-GS08	Tape and Reel
BAS283	V_R = 60 V	BAS283-GS18 or BAS283-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Reverse voltage		BAS281	V_R	40	V
		BAS282	V_R	50	V
		BAS283	V_R	60	V
Peak forward surge current	t_p = 1 s		I_{FSM}	500	mA
Repetitive peak forward current			I_{FRM}	150	mA
Forward current			I_F	30	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	320	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 0.1 mA	V_F			330	mV
	I_F = 1 mA	V_F			410	mV
	I_F = 15 mA	V_F			1	V
Reverse current	$V_R = V_{Rmax}$	I_R			200	nA
Diode capacitance	V_R = 1 V, f = 1 MHz	C_D			1.6	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

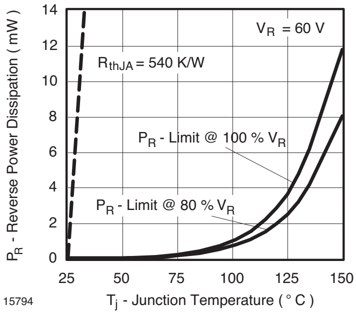


Figure 1. Max. Reverse Power Dissipation vs. Junction Temperature

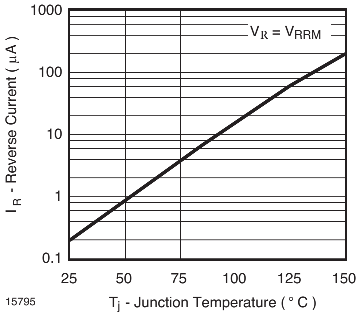


Figure 2. Reverse Current vs. Junction Temperature

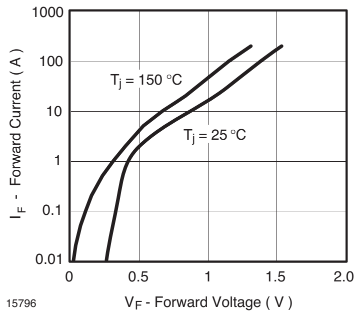


Figure 3. Forward Current vs. Forward Voltage

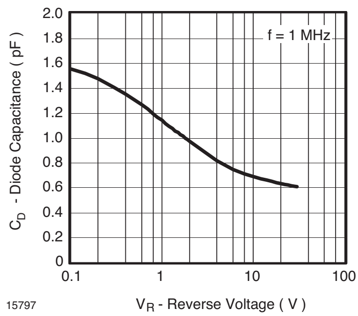


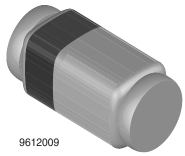
Figure 4. Diode Capacitance vs. Reverse Voltage

QuadroMELF SOD-80
Package Dimension
see Package Section

Small Signal Schottky Diode

Features

- Integrated protection ring against static discharge
- Very low forward voltage



Applications

Applications where a very low forward voltage is required

Mechanical Data

Case: QuadroMELF Glass case (SOD-80)
Weight: approx. 34 mg

Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAS285	V_R = 30 V	BAS285-GS18 or BAS285-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	30	V
Peak forward surge current	t_p = 10 ms	I_{FSM}	5	A
Repetitive peak forward current	$t_p \le 1$ s	I_{FRM}	300	mA
Forward current		I_F	200	mA
Average forward current		I_{FAV}	200	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	320	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 0.1 mA	V_F			240	mV
	I_F = 1 mA	V_F			320	mV
	I_F = 10 mA	V_F			400	mV
	I_F = 30 mA	V_F			500	mV
	I_F = 100 mA	V_F			800	mV
Reverse current	V_R = 25 V, t_p = 300 µs	I_R			2.3	µA
Diode capacitance	V_R = 1 V, f = 1 MHz	C_D			10	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

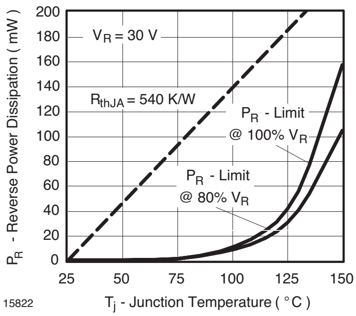


Figure 1. Max. Reverse Power Dissipation vs. Junction Temperature

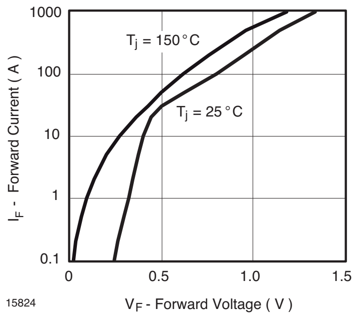


Figure 3. Forward Current vs. Forward Voltage

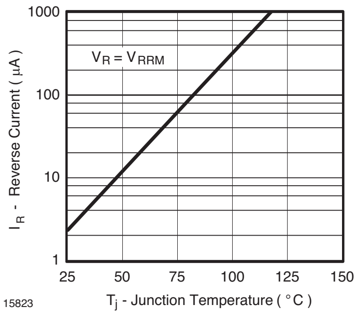


Figure 2. Reverse Current vs. Junction Temperature

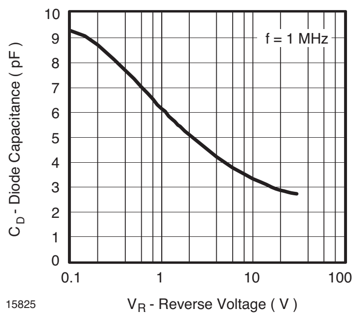
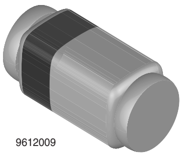


Figure 4. Diode Capacitance vs. Reverse Voltage

**QuadroMELF SOD-80
Package Dimension
see Package Section**

Small Signal Schottky Diode

Features
- Integrated protection ring against static discharge
- Very low forward voltage


9612009

Applications
Applications where a very low forward voltage is required

Mechanical Data
Case: QuadroMELF Glass case (SOD-80)
Weight: approx. 34 mg

Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAS286	V_R = 50 V	BAS286-GS18 or BAS286-GS08	Tape and Reel

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	50	V
Peak forward surge current	t_p = 10 ms	I_{FSM}	5	A
Repetitive peak forward current	$t_p \leq 1$ s	I_{FRM}	500	mA
Forward current		I_F	200	mA
Average forward current		I_{FAV}	200	mA

Thermal Characteristics
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	320	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 0.1 mA	V_F			300	mV
	I_F = 1 mA	V_F			380	mV
	I_F = 10 mA	V_F			450	mV
	I_F = 30 mA	V_F			600	mV
	I_F = 100 mA	V_F			900	mV
Reverse current	V_R = 40 V	I_R			5	µA
Diode capacitance	V_R = 1 V, f = 1 MHz	C_D			8	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

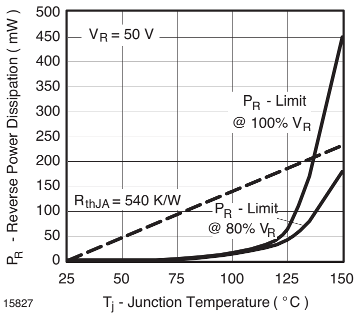


Figure 1. Max. Reverse Power Dissipation vs. Junction Temperature

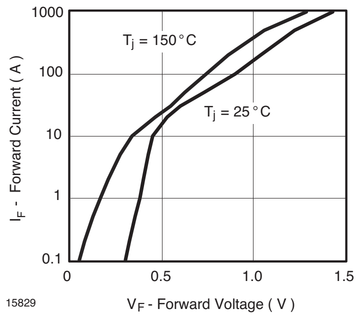


Figure 3. Forward Current vs. Forward Voltage

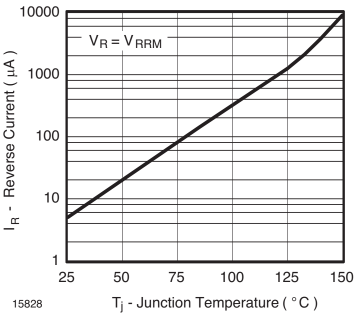


Figure 2. Reverse Current vs. Junction Temperature

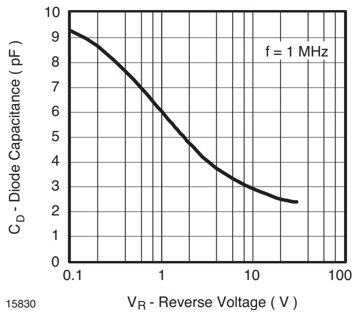


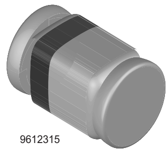
Figure 4. Diode Capacitance vs. Reverse Voltage

QuadroMELF SOD-80
Package Dimension
see Package Section

Small Signal Schottky Diodes

Features

- Integrated protection ring against static discharge
- Low capacitance
- Low leakage current
- Low forward voltage drop
- Very low switching time



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Applications

General purpose and switching Schottky barrier diode
HF-Detector
Protection circuit

Diode for low currents with a low supply voltage
Small battery charger
Power supplies
DC / DC converter for notebooks

Mechanical Data

Case: MicroMELF Glass case
Weight: approx. 12 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAS381	V_R = 40 V	BAS381-GS18 or BAS381-GS08	Tape and Reel
BAS382	V_R = 50 V	BAS382-GS18 or BAS382-GS08	Tape and Reel
BAS383	V_R = 60 V	BAS383-GS18 or BAS383-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Reverse voltage		BAS381	V_R	40	V
		BAS382	V_R	50	V
		BAS383	V_R	60	V
Peak forward surge current	t_p = 1 s		I_{FSM}	500	mA
Repetitive peak forward current			I_{FRM}	150	mA
Forward current			I_F	30	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	320	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 0.1 mA	V_F			330	mV
	I_F = 1 mA	V_F			410	mV
	I_F = 15 mA	V_F			1	V
Reverse current	$V_R = V_{Rmax}$	I_R			200	nA
Diode capacitance	V_R = 1 V, f = 1 MHz	C_D			1.6	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

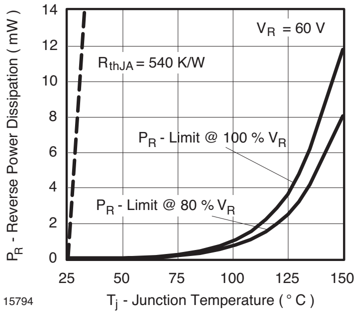


Figure 1. Max. Reverse Power Dissipation vs. Junction Temperature

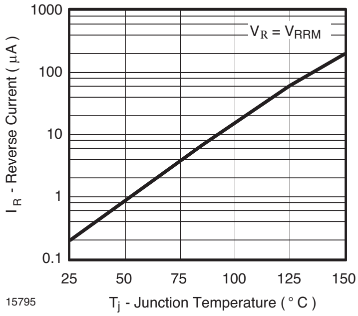


Figure 2. Reverse Current vs. Junction Temperature

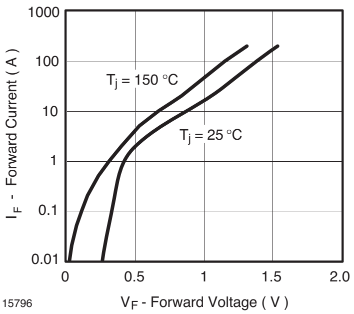


Figure 3. Forward Current vs. Forward Voltage

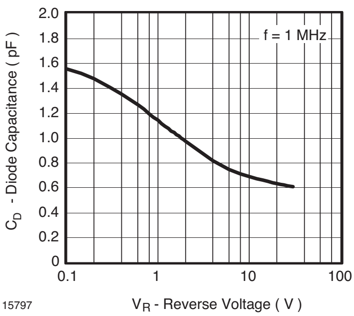


Figure 4. Diode Capacitance vs. Reverse Voltage

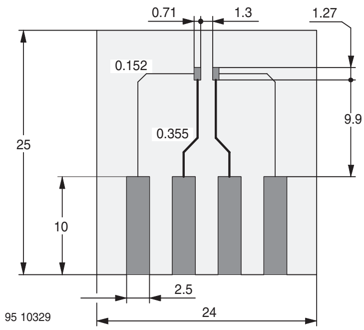


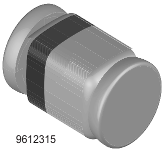
Figure 5. Board for R_{thJA} definition (in mm)

MicroMELF Package Dimension see Package Section

Small Signal Schottky Diode

Features

- Integrated protection ring against static discharge
- Very low forward voltage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Applications

Applications where a very low forward voltage is required

Mechanical Data

Case: MicroMELF Glass case
Weight: approx. 12 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAS385	V_R = 30 V	BAS385-GS18 or BAS385-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	30	V
Peak forward surge current	t_p = 10 ms	I_{FSM}	5	A
Repetitive peak forward current	$t_p \leq 1$ s	I_{FRM}	300	mA
Forward current		I_F	200	mA
Average forward current	V_{RWM} = 25 V	I_{FAV}	200	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	320	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 0.1 mA	V_F			240	mV
	I_F = 1 mA	V_F			320	mV
	I_F = 10 mA	V_F			400	mV
	I_F = 30 mA	V_F			500	mV
	I_F = 100 mA	V_F			800	mV
Reverse current	V_R = 25 V, t_p = 300 µs	I_R			2.3	µA
Diode capacitance	V_R = 1 V, f = 1 MHz	C_D			10	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

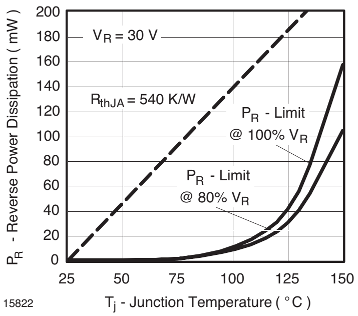


Figure 1. Max. Reverse Power Dissipation vs. Junction Temperature

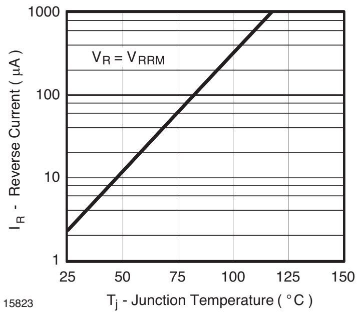


Figure 2. Reverse Current vs. Junction Temperature

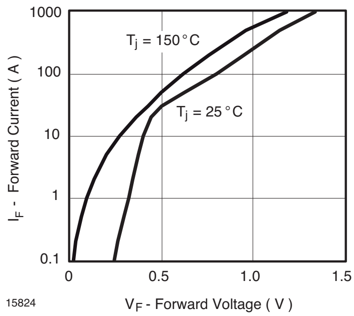


Figure 3. Forward Current vs. Forward Voltage

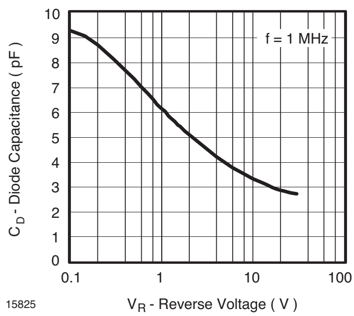


Figure 4. Diode Capacitance vs. Reverse Voltage

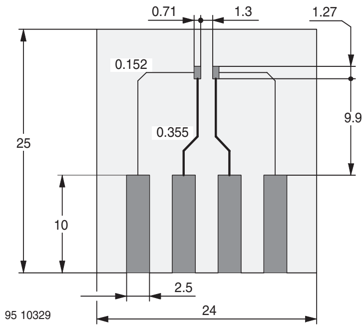


Figure 5. Board for R_{thJA} definition (in mm)

MicroMELF Package Dimension see Package Section

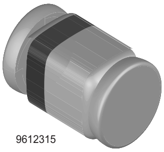
Small Signal Schottky Diode

Features

- Integrated protection ring against static discharge
- Very low forward voltage

Applications

Applications where a very low forward voltage is required



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Mechanical Data

Case: MicroMELF Glass case
Weight: approx. 12 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAS386	V_R = 50 V	BAS386-GS18 or BAS386-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	50	V
Peak forward surge current	t_p = 10 ms	I_{FSM}	5	A
Repetitive peak forward current	$t_p \leq 1$ s	I_{FRM}	500	mA
Forward current		I_F	200	mA
Average forward current		I_{FAV}	200	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	320	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 0.1 mA	V_F			300	mV
	I_F = 1 mA	V_F			380	mV
	I_F = 10 mA	V_F			450	mV
	I_F = 30 mA	V_F			600	mV
	I_F = 100 mA	V_F			900	mV
Reverse current	V_R = 40 V	I_R			5	µA
Diode capacitance	V_R = 1 V, f = 1 MHz	C_D			8	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

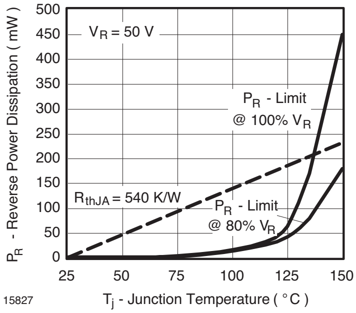


Figure 1. Max. Reverse Power Dissipation vs. Junction Temperature

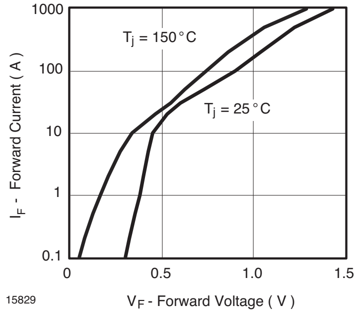


Figure 3. Forward Current vs. Forward Voltage

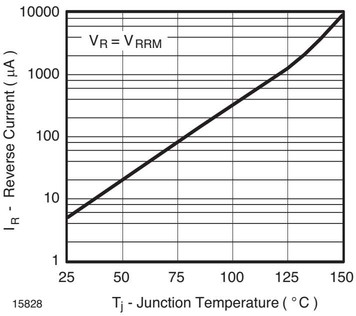


Figure 2. Reverse Current vs. Junction Temperature

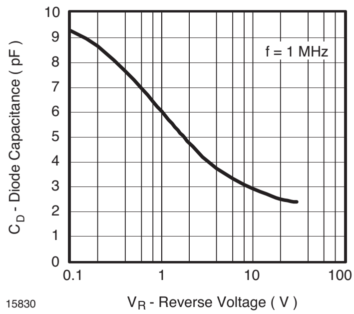


Figure 4. Diode Capacitance vs. Reverse Voltage

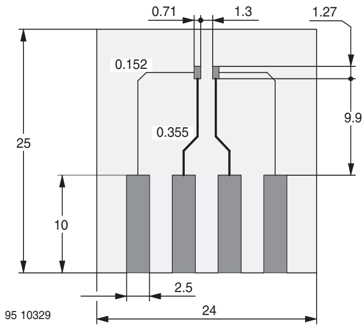


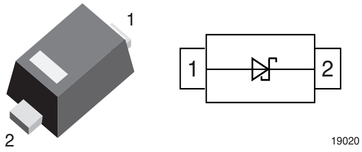
Figure 5. Board for R_{thJA} definition (in mm)

MicroMELF Package Dimension see Package Section

Small Signal Schottky Diode

Features

- These diodes feature very low turn-on voltage and fast switching.
- These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.
- Space saving SOD-523 package



Mechanical Data

Case: SOD-523 Plastic case

Molding Compound Flammability Rating:
UL 94 V-0

Terminals: High temperature soldering guaranteed: 260 °C/10 sec. at terminals

Weight: approx. 1.6 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAS520-02V	BAS520-02V-GS18 or BAS520-02V-GS08	T	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	30	V
Forward continuous current	T_{amb} = 25 °C	I_F	200	mA
Power dissipation	T_{amb} = 25 °C	P_{tot}	200	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction soldering point		R_{thJS}	100	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_S	- 55 to +125	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 1 μA (pulsed)	$V_{(BR)}$	30			V
Leakage current	Pulse test V_R = 30 V, t_p < 300 μs	I_R		0.5	1	μA
Forward voltage	Pulse test t_p < 300 μs, I_F = 1.0 mA	V_F			320	mV
	Pulse test t_p < 300 μs, I_F = 200 mA,	V_F			600	mV
Diode capacitance	V_R = 0 V, f = 1 MHz	C_{tot}		25	30	pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, I_{rr} = 1 mA, R_L = 100 Ω	t_{rr}		10		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

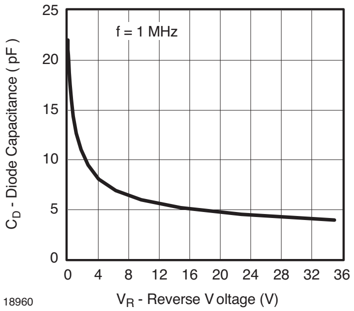


Figure 1. Typical Capacitance vs. Reverse Voltage

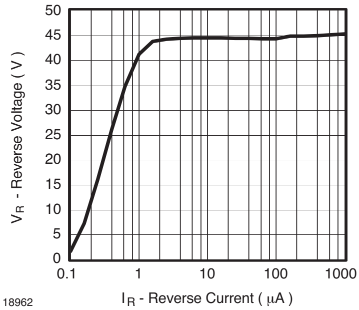


Figure 3. Typical Reverse Voltage vs. Reverse Current

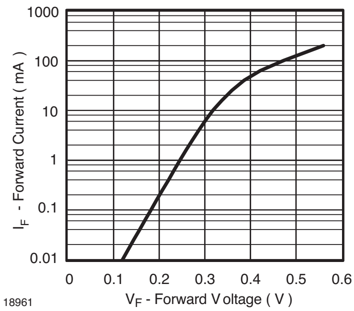


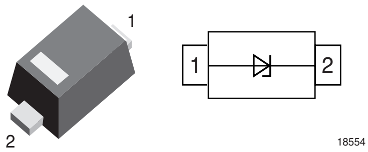
Figure 2. Forward Current vs. Forward Voltage

SOD-523 Package Dimension see Package Section

Small Signal Schottky Diodes, Single

Features

- These diodes feature very low turn-on voltage and fast switching.
- Space saving SOD-523 package



Mechanical Data

Case: SOD-523 Plastic case

Molding Compound Flammability Rating: UL 94 V-0

Terminals: High temperature soldering guaranteed: 260 °C/10 sec. at terminals

Weight: approx. 1.6 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAS581-02V	BAS581-02V-GS18 or BAS581-02V-GS08	Z	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage=Working peak reverse voltage		V_{RRM}	40	V
Forward continuous current		I_F	30	mA
Surge forward current		I_{FSM}	200	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction soldering point		R_{thJS}	100	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_S	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse Breakdown voltage	I_r = 100 μA	$V_{(BR)}$	40			V
Leakage current	V_R = 30 V	I_r			0.5	μA
Forward voltage	I_F = 1 mA	V_F			370	mV
Diode capacitance	V_R = 1 V, f = 1 MHz	C_{tot}			2	pF

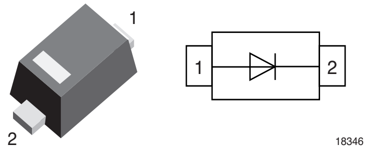
SOD-523 Package Dimension
see Package Section

RF Small Signal Schottky Diode

Description

Designed for RF-signal level detection and RF-mixer application the low barrier Schottky Diode BAT15V-02V can be used in wireless and mobile systems up to 12 GHz.

The small space saving SOD-523 package is a contribution to the continuously growing integration density on the PCB and the increasing quality standards. On the electrical side the SOD-523 package is characterized by low inductance and capacitance.



Electrostatic sensitive device.
Observe precautions for handling.

Features

- Low barrier schottky diode
- Small, space saving SOD-523 package with low series inductance
- Small capacitance

Applications

Mixer application up to 12 GHz

RF-Signal level detection

Mechanical Data

Case: SOD-523 Plastic case

Weight: approx. 1.6 mg

Cathode Band Color: Laser marking

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAT15V-02V	BAT15V-02V-GS18 or BAT15V-02V-GS08	U	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	4	V
Forward current		I_F	100	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	-55 to +150	°C

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction soldering point		R_{thJS}	100	K/W

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse voltage	I_R = 5 μA	V_R	4			V
Forward voltage	I_F = 1 mA	V_F			0.32	V
	I_F = 10 mA	V_F			0.41	V
Diode capacitance	f = 1 MHz, V_R = 0	C_D			0.35	pF
Forward resistance	I_F = 20 mA to I_F = 50 mA, f = 100 MHz	r_f		6		Ω

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

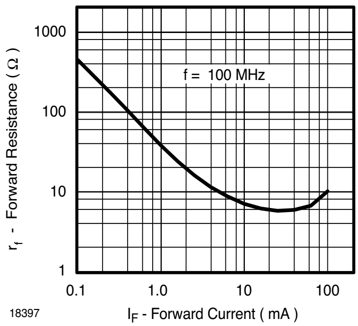


Figure 1. Forward Resistance vs. Forward Current

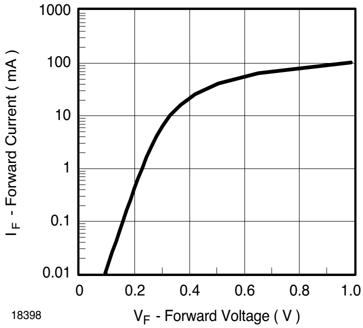


Figure 3. Forward Current vs. Forward Voltage

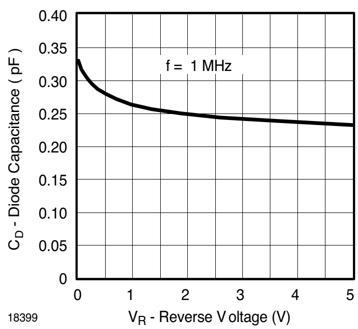


Figure 2. Diode Capacitance vs. Reverse Voltage

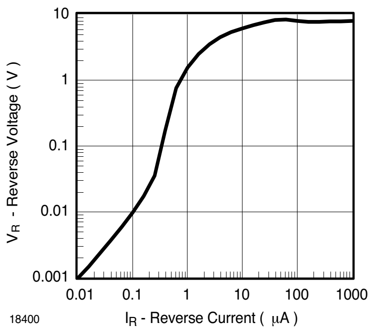


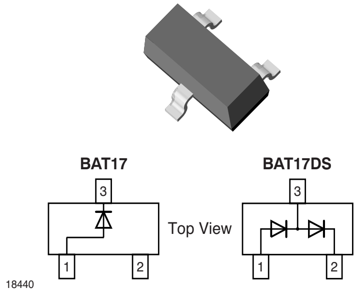
Figure 4. Reverse Voltage vs. Reverse Current

SOD-523 Package Dimension
see Package Section

Small Signal Schottky Diodes, Single & Dual

Features

- Low turn-on voltage, Low capacitance
- Ultrafast switching
- Ideal for single or double, UHF balanced mixer, modulators and phase detectors.
- These diodes are also available in case styles SOD-123 with type designation BAT17W, and SOD-323 with type designation BAT17WS



Mechanical Data

Case: SOT-23 Plastic case

Weight: approx. 8.8 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAT17	BAT17-GS18 or BAT17-GS08	L7	Tape and Reel
BAT17DS	BAT17DS-GS18 or BAT17DS-GS08	L72	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	4	V
Forward current		I_F	30	mA
Power dissipation	T_C = 25 °C	P_{tot}	150[1)]	mW

1) Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	500[1)]	°C/W
Maximum junction temperature		T_j	125	°C
Storage temperature range		T_S	- 65 to + 150	°C

1) Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Minimum reverse breakdown voltage	I_R = 10 μA	$V_{(BR)R}$	4			V
Maximum leakage current	V_R = 3 V	I_R			0.25	μA
	V_R = 3 V, T_{amb} = 60 °C	I_R			1.25	μA
Maximum forward voltage	I_F = 10 mA	V_F			600	mV
Diode capacitance	V_R = 0 V, f = 1 MHz	C_D			1.0	pF

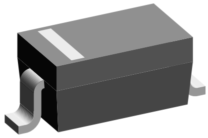
SOT-23 Package Dimension see Package Section

Document Number 85656
Rev. 1.3, 09-Jul-04

Small Signal Schottky Diode

Features

- Low turn-on voltage Low capacitance
- Ultrafast switching
- Ideal for single or double, UHF balanced mixer, modulators and phase detectors.
- These diodes are also available in case styles SOT-23 with type designation BAT17, and SOD-323 with type designation BAT17WS



Mechanical Data

Case: SOD-123 Plastic case
Weight: approx. 9.3 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAT17W	BAT17W-GS18 or BAT17W-GS08	L7	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	4	V
Forward current		I_F	30	mA
Power dissipation	T_C = 25 °C	P_{tot}	150[1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	500[1)]	°C/W
Maximum junction temperature		T_j	125	°C
Storage temperature range		T_S	- 65 to + 150	°C

[1)] Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Minimum reverse breakdown voltage	I_R = 10 µA	$V_{(BR)R}$	4			V
Maximum leakage current	V_R = 3 V	I_R			0.25	µA
	V_R = 3 V, T_{amb} = 60 °C	I_R			1.25	µA
Maximum forward voltage	I_F = 10 mA	V_F			600	mV
Diode capacitance	V_R = 0 V, f = 1 MHz	C_D			1.0	pF

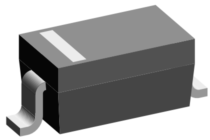
SOD-123 Package Dimension
see Package Section

Document Number 85657
Rev. 1.2, 03-Feb-04

Small Signal Schottky Diode

Features

- Low turn-on voltage Low capacitance
- Ultrafast switching
- Ideal for single or double, UHF balanced mixer, modulators and phase detectors
- These diodes are also available in case styles SOT-23 with type designation BAT 17, and SOD-123 with type designation BAT17W



17431

Mechanical Data

Case: SOD-323 Plastic case

Weight: approx. 5.0 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAT17WS	BAT17WS-GS18 or BAT17WS-GS08	L7	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	4	V
Forward current		I_F	30	mA
Power dissipation	T_C = 25 °C	P_{tot}	150[1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	500[1)]	°C/W
Maximum junction temperature		T_j	125	°C
Storage temperature range		T_S	- 65 to + 150	°C

[1)] Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

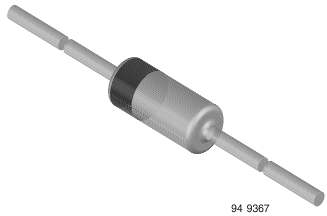
Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Minimum reverse breakdown voltage	I_R = 10 μA	$V_{(BR)R}$	4			V
Maximum leakage current	V_R = 3 V	I_R			0.25	μA
	V_R = 3 V, T_{amb} = 60 °C	I_R			1.25	μA
Maximum forward voltage	I_F = 10 mA	V_F			600	mV
Diode capacitance	V_R = 0 V, f = 1 MHz	C_D			1.0	pF

SOD-323 Package Dimension
see Package Section

Small Signal Schottky Diode

Features

- For general purpose applications
- This diode features low turn-on voltage and high breakdown voltage. This device is protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges
- This diode is also available in a MiniMELF case with type designation LL41


94 9367

Mechanical Data

Case: DO-35 Glass case

Weight: approx. 125 mg

Packaging Codes/Options:

TR / 10 k per 13 " reel (52 mm tape), 50 k/box

TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAT41	BAT41-TAP or BAT41-TR	-	Ammopack / Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	100	V
Forward continuous current	T_{amb} = 25 °C	I_F	100[1)]	mA
Repetitive peak forward current	t_p < 1 s, δ < 0.5, T_{amb} = 25 °C	I_{FRM}	350[1)]	mA
Surge forward current	t_p = 10 ms, T_{amb} 25 °C	I_{FSM}	750[1)]	A
Power dissipation	T_{amb} = 25 °C	P_{tot}	400[1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	300[1)]	°C/W
Junction temperature		T_j	125	°C
Ambient operating temperature range		T_{amb}	- 65 to + 125	°C
Storage temperature range		T_S	- 65 to +150	°C

[1)] Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage[2)]	I_R = 100 µA	$V_{(BR)R}$	100	110		V
Leakage current[2)]	V_R = 50 V, T_j = 25 °C	I_R			100	nA
	V_R = 50 V, T_j = 100 °C	I_R			20	µA
Forward voltage[2)]	I_F = 1 mA	V_F		0.40	0.45	V
	I_F = 200 mA	V_F			1.0	V
Diode capacitance	V_R = 1 V, f = 1 MHz	C_{tot}		2		pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, I_{rr} = 1 mA, R_L = 100 Ω			5		ns

[2)] Pulse test, t_p = 300 µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

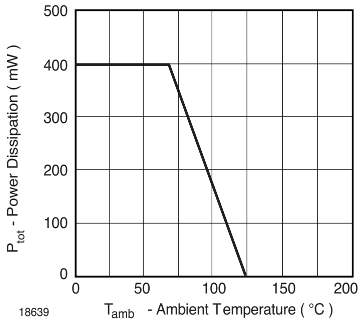


Figure 1. Admissible Power Dissipation vs. Ambient Temperature

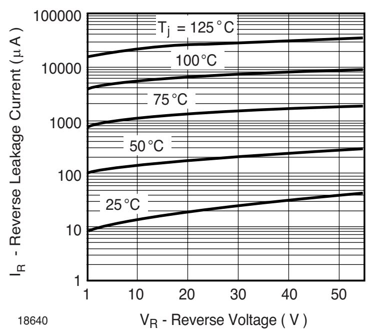


Figure 2. Typical Reverse Characteristics

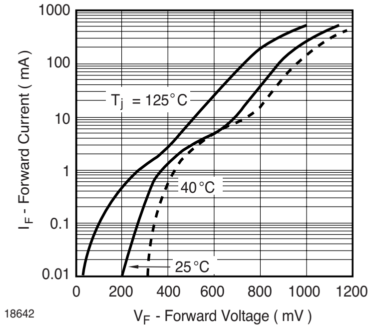


Figure 3. Typical Forward Characteristics

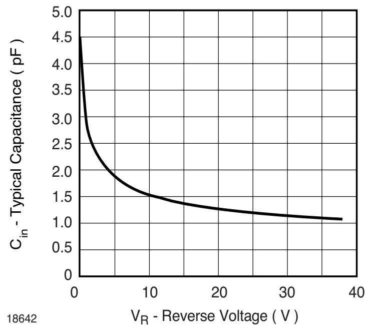


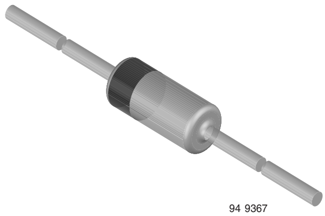
Figure 4. Typical Capacitance vs. Reverse Voltage

DO-35 Package Dimension see Package Section

Small Signal Schottky Diodes

Features

- For general purpose applications
- These diodes feature very low turn-on voltage and fast guard ring against excessive voltage, such as electrostatic discharges
- These diodes are also available in the SOD-123 case with the type designations BAT42W to BAT43W and in designations LL42 to LL43.


94 9367

Mechanical Data

Case: DO-35 Glass case

Weight: approx. 125 mg

Packaging Codes/Options:

TR / 10 k per 13 " reel (52 mm tape), 50 k/box

TAP / 10 k per Ammo tape (52 mm tape), 50 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAT42	BAT42-TAP or BAT42-TR	-	Ammopack / Tape and Reel
BAT43	BAT43-TAP or BAT43-TR	-	Ammopack / Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	30	V
Forward continuous current	T_{amb} = 25 °C	I_F	200[1)]	mA
Repetitive peak forward current	t_p < 1 s, δ < 0.5, T_{amb} = 25 °C	I_{FRM}	500[1)]	mA
Surge forward current	t_p < 10 ms, T_{amb} = 25 °C	I_{FSM}	4[1)]	A
Power dissipation[1)]	T_{amb} = 65 °C	P_{tot}	200[1)]	mW

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	300[1)]	°C/W
Junction temperature		T_j	125	°C
Ambient operating temperature range		T_{amb}	- 65 to + 125	°C
Storage temperature range		T_S	- 65 to +150	°C

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 100 μA (pulsed)		$V_{(BR)R}$	30			V
Leakage current	V_R = 25 V		I_R			0.5	μA
	V_R = 25 V, T_j = 100 °C		I_R			100	μA
Forward voltage	I_F = 200 mA		V_F			1	V
	I_F = 10 mA	BAT42	V_F			0.4	V
	I_F = 50 mA	BAT42	V_F			0.65	V
	I_F = 2 mA	BAT43	V_F	0.26		0.33	V
	I_F = 15 mA	BAT43	V_F			0.45	V
Diode capacitance	V_R = 1 V, f = 1 MHz		C_{tot}		7		pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, I_{rr} = 1 mA, R_L = 100 Ω		t_{rr}			5	ns
Detection efficiency	R_L = 15 kΩ, C_L = 300 pF, f = 45 MHz, V_{RF} = 2 V		η_v	80			%

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

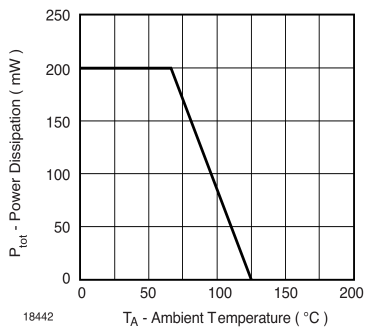


Figure 1. Admissible Power Dissipation vs. Ambient Temperature

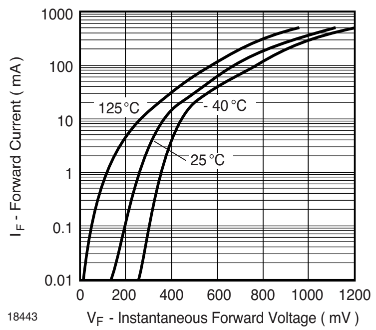


Figure 2. Typical Reverse Characteristics

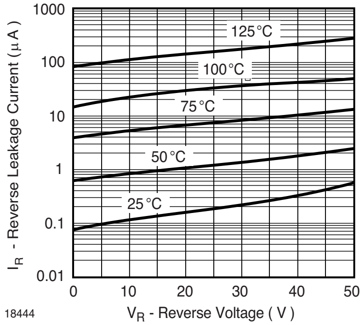


Figure 3. Typical Reverse Characteristics

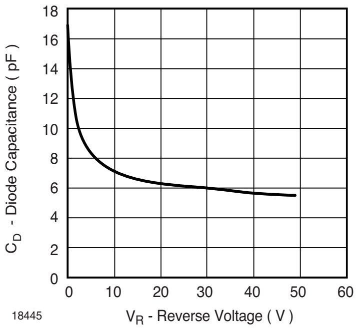


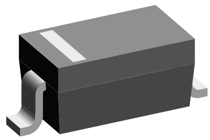
Figure 4. Typical Capacitance vs. Reverse Applied Voltage

DO-35 Package Dimension
see Package Section

Small Signal Schottky Diodes

Features

- These diodes feature very low turn-on voltage and fast switching. These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges
- These diodes are also available in the SOD-123 case with the type designations BAT42W to BAT43W and in designations LL42 to LL43.
- For general purpose applications



17431

Mechanical Data

Case: SOD-123 Plastic case
Weight: approx. 9.3 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAT42W	BAT42W-GS18 or BAT42W-GS08	L2	Tape and Reel
BAT43W	BAT43W-GS18 or BAT43W-GS08	L3	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	30	V
Forward continuous current	T_{amb} = 25 °C	I_F	200[1)]	mA
Repetitive peak forward current	t_p < 1 s, δ < 0.5, T_{amb} = 25 °C	I_{FRM}	500[1)]	mA
Surge forward current	t_p < 10 ms, T_{amb} = 25 °C	I_{FSM}	4[1)]	A
Power dissipation[1)]	T_{amb} = 65 °C	P_{tot}	200[1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	300[1)]	°C/W
Junction temperature		T_j	125	°C
Ambient operating temperature range		T_{amb}	- 55 to + 125	°C
Storage temperature range		T_S	- 55 to + 150	°C

[1)] Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 100 µA (pulsed)		$V_{(BR)R}$	30			V
Leakage current[1)]	V_R = 25 V		I_R			0.5	nA
	V_R = 25 V, T_j = 100 °C		I_R			100	µA
Forward voltage[1)]	I_F = 200 mA		V_F			1	V
	I_F = 10 mA	BAT42W	V_F			0.4	V
	I_F = 50 mA	BAT42W	V_F			0.65	V
	I_F = 2 mA	BAT43W	V_F	0.26		0.33	V
	I_F = 15 mA	BAT43W	V_F			0.45	V
Diode capacitance	V_R = 1 V, f = 1 MHz		C_{tot}		7		pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, I_{rr} = 1 mA, R_L = 100 Ω		t_{rr}			5	ns
Detection efficieny	R_L = 15 kΩ, C_L = 300 pF, f = 45 MHz, V_{RF} = 2 V		η_v	80			%

[1)] Pulse test t_p < 300 µs θ < 2 %

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

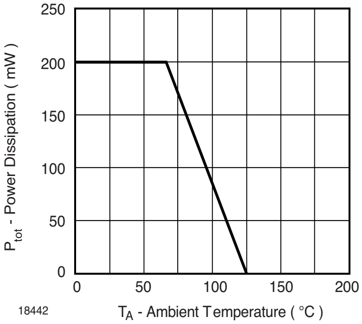


Figure 1. Admissible Power Dissipation vs. Ambient Temperature

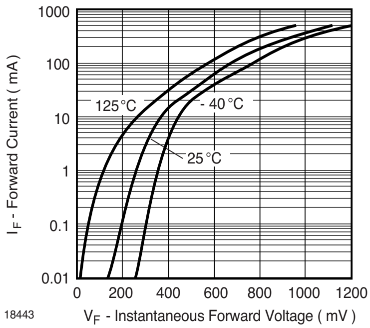


Figure 2. Typical Reverse Characteristics

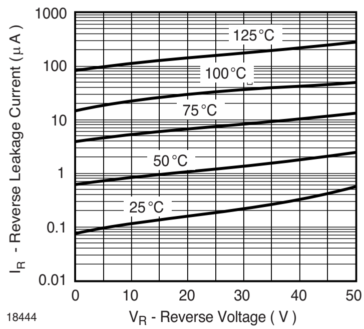


Figure 3. Typical Reverse Characteristics

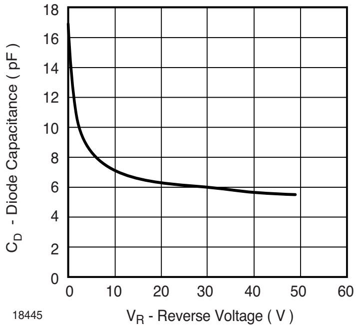


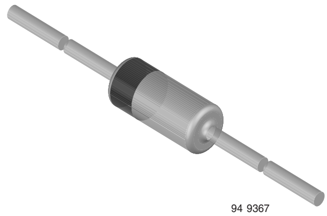
Figure 4. Typical Capacitance vs. Reverse Applied Voltage

SOD-123 Package Dimension see Package Section

Small Signal Schottky Diode

Features

- For general purpose applications.
- This diode features very low turn-on voltage and fast switching. This device is protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges
- This diode is also available in the SOD-123 case with type designation BAT46W and in the MiniMELF case with type designations LL46.


94 9367

Mechanical Data

Case: DO-35 Glass case

Weight: approx. 125 mg

Packaging Codes/Options:

TR / 10 k per 13 " reel (52 mm tape), 50 k/box

TAP / 10 k per Ammo tape (52 mm tape), 50 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAT46	BAT46-TR or BAT46-TAP	-	Tape and Reel / Ammopack

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	100	V
Forward continuous current	T_{amb} = 25 °C	I_F	150[1)]	mA
Repetitive peak forward current	t_p < 1 s, δ < 0.5, T_{amb} = 25 °C	I_{FRM}	350[1)]	mA
Surge forward current	t_p < 10 ms, T_{amb} = 25 °C	I_{FSM}	750[1)]	A
Power dissipation[1)]	T_{amb} = 65 °C	P_{tot}	150[1)]	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	0.3[1)]	°C/W
Junction temperature		T_j	125	°C
Ambient operating temperature range		T_{amb}	- 65 to + 125	°C
Storage temperature range		T_S	- 65 to +150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 100 µA (pulsed)	$V_{(BR)R}$	100			V
Leakage current	Pulse test t_p < 300 µs, δ < 2 % V_R = 1.5 V	I_R			0.5	µA
	Pulse test t_p < 300 µs, δ < 2 % V_R = 1.5 V, T_j = 60 °C	I_R			5	µA
	Pulse test t_p < 300 µs, δ < 2 % V_R = 10 V	I_R			0.8	µA
	Pulse test t_p < 300 µs, δ < 2 % V_R = 10 V, T_j = 60 °C	I_R			7.5	µA
	Pulse test t_p < 300 µs, δ < 2 % V_R = 50 V	I_R			2	µA
	Pulse test t_p < 300 µs, δ < 2 % V_R = 50 V, T_j = 60 °C	I_R			15	µA
	Pulse test t_p < 300 µs, δ < 2 % V_R = 75 V	I_R			5	µA
	Pulse test t_p < 300 µs, δ < 2 % V_R = 75 V, T_j = 60 °C	I_R			20	µA
Forward voltage	Pulse test t_p < 300 µs, δ < 2 %, I_F = 0.1 mA	V_F			0.25	V
	Pulse test t_p < 300 µs, δ < 2 %, I_F = 10 mA	V_F			0.45	V
	Pulse test t_p < 300 µs, δ < 2 %, I_F = 250 mA	V_F			1	V
Diode capacitance	V_R = 0 V, f = 1 MHz	C_{tot}		10		pF
	V_R = 1 V, f = 1 MHz	C_{tot}		6		pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

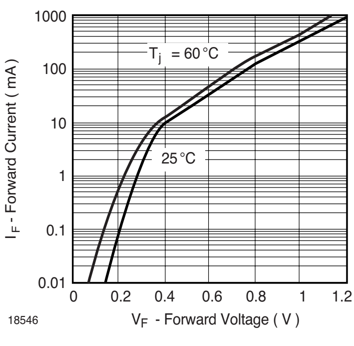


Figure 1. Typical Instantaneous Forward Characteristics

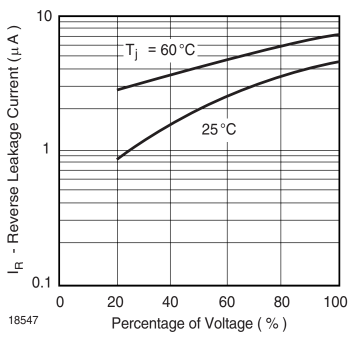


Figure 2. Typical Reverse Characteristics

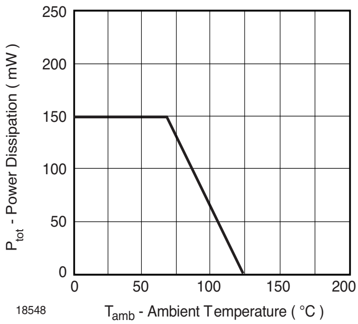


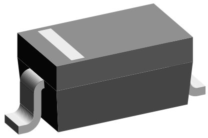
Figure 3. Admissible Power Dissipation vs. Ambient Temperature

DO-35 Package Dimension see Package Section

Small Signal Schottky Diode

Features

- For general purpose applications
- This diode features very low turn-on voltage and fast switching.
- This device is protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.
- This diode is also available in the DO-35 case with the type designation BAT46 and in the MiniMELF case with the type designation LL46.


17431

Mechanical Data

Case: SOD-123 Plastic case
Weight: approx. 9.3 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAT46W	BAT46W-GS18 or BAT46W-GS08	L6	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	100	V
Forward continuous current	T_{amb} = 25 °C	I_F	150[1)]	mA
Repetitive peak forward current	t_p < 1 s, δ < 0.5, T_{amb} = 25 °C	I_{FRM}	350[1)]	mA
Surge forward current	t_p < 10 ms, T_{amb} = 25 °C	I_{FSM}	750[1)]	A
Power dissipation[1)]	T_{amb} = 65 °C	P_{tot}	150[1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	300[1)]	°C/W
Junction temperature		T_j	125	°C
Ambient operating temperature range		T_{amb}	- 55 to + 125	°C
Storage temperature range		T_S	- 55 to +150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

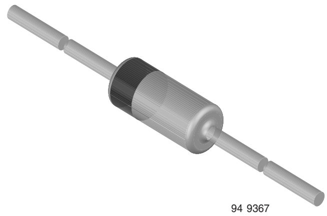
Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 100 µA (pulsed)	$V_{(BR)R}$	100			V
Leakage current	Pulse test t_p < 300 µs, δ < 2 % V_R = 1.5 V	I_R			0.5	µA
	Pulse test t_p < 300 µs, δ < 2 % V_R = 1.5 V, T_j = 60 °C	I_R			5	µA
	Pulse test t_p < 300 µs, δ < 2 % V_R = 10 V	I_R			0.8	µA
	Pulse test t_p < 300 µs, δ < 2 % V_R = 10 V, T_j = 60 °C	I_R			7.5	µA
	Pulse test t_p < 300 µs, δ < 2 % V_R = 50 V	I_R			2	µA
	Pulse test t_p < 300 µs, δ < 2 % V_R = 50 V, T_j = 60 °C	I_R			15	µA
	Pulse test t_p < 300 µs, δ < 2 % V_R = 75 V	I_R			5	µA
	Pulse test t_p < 300 µs, δ < 2 % V_R = 75 V, T_j = 60 °C	I_R			20	µA
Forward voltage[1)]	I_F = 0.1 mA	V_F			0.25	V
	I_F = 10 mA	V_F			0.45	V
	I_F = 250 mA	V_F			1.00	V
Diode capacitance	V_R = 1 V, f = 1 MHz	C_{tot}		10		pF
		C_{tot}		6		pF

SOD-123 Package Dimension see Package Section

Small Signal Schottky Diode

Features

- For general purpose applications
- These diodes feature very low turn-on voltage and fast switching. These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges
- This diode is also available in the Mini-MELF case with type designations LL46


94 9367

Mechanical Data

Case: DO-35 Glass case

Weight: approx. 125 mg

Packaging Codes/Options:

TR / 10 k per 13 " reel (52 mm tape), 50 k/box

TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAT48	BAT48-TAP or BAT48-TR	-	Ammopack / Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	40	V
Forward continuous current	T_{amb} = 25 °C	I_F	350[1)]	mA
Repetitive peak forward current	t_p < 1 s, δ < 0.5, T_{amb} = 25 °C	I_{FRM}	1.0[1)]	A
Surge forward current	t_p < 10 ms, T_{amb} = 25 °C	I_{FSM}	7.5[1)]	A
Power dissipation[1)]	T_{amb} = 65 °C	P_{tot}	330[1)]	mW

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	300[1)]	°C/W
Junction temperature		T_j	125	°C
Ambient operating temperature range		T_{amb}	- 65 to + 125	°C
Storage temperature range		T_S	- 65 to +150	°C

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 100 µA (pulsed)	$V_{(BR)R}$	40			V
Forward voltage	Pulse test t_p < 300 µs, δ < 2 % at I_F = 0.1 mA	V_F			0.25	V
Forward voltage[1)]	Pulse test t_p < 300 µs, δ < 2 % at I_F = 1.0 mA	V_F			0.30	V
	Pulse test t_p < 300 µs, δ < 2 % at I_F = 10 mA	V_F			0.40	V
	Pulse test t_p < 300 µs, δ < 2 % at I_F = 50 mA	V_F			0.50	V
	Pulse test t_p < 300 µs, δ < 2 % at I_F = 200 mA	V_F			0.75	V
	Pulse test t_p < 300 µs, δ < 2 % at I_F = 500 mA	V_F			0.90	V
Leakage current	Pulse test t_p < 300 µs, δ < 2 % at V_R = 10 V	I_R			2	nA
	Pulse test t_p < 300 µs, δ < 2 % at V_R = 1.5 V, T_j = 60 °C	I_R			15	nA
	Pulse test t_p < 300 µs, δ < 2 % at V_R = 10 V	I_R			5	nA
	Pulse test t_p < 300 µs, δ < 2 % at V_R = 10 V, T_j = 60 °C	I_R			25	nA
	Pulse test t_p < 300 µs, δ < 2 % at V_R = 20 V	I_R			25	nA
	Pulse test t_p < 300 µs, δ < 2 % at V_R = 20 V, T_j = 60 °C	I_R			50	nA
Diode capacitance	V_R = 1 V, f = 1 MHz	C_{tot}		12		pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

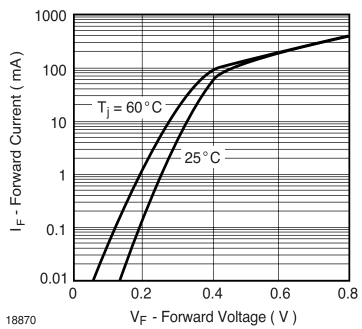


Figure 1. Forward Current vs. Forward Voltage

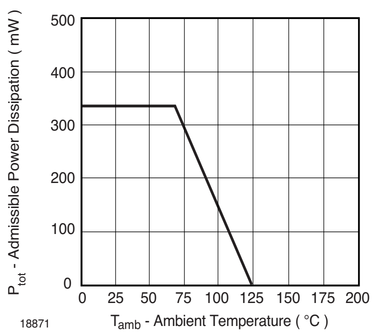


Figure 2. Admissible Power Dissipation vs. Ambient Temperature

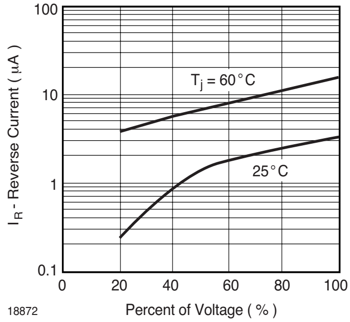


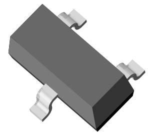
Figure 3. Reverse Current vs. Percent of Reverse Voltage

DO-35 Package Dimension
see Package Section

Small Signal Schottky Diodes, Single & Dual

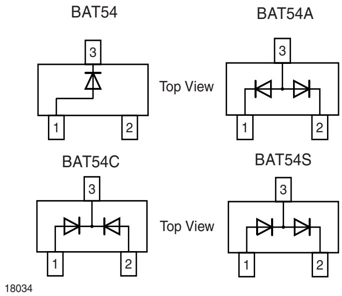
Features

- These diodes feature very low turn-on voltage and fast switching.
- These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.



Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.8 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box



Parts Table

Part	Ordering code	Marking	Remarks
BAT54	BAT54-GS18 or BAT54-GS08	L4	Tape and Reel
BAT54A	BAT54A-GS18 or BAT54A-GS08	L42	Tape and Reel
BAT54C	BAT54C-GS18 or BAT54C-GS08	L43	Tape and Reel
BAT54S	BAT54S-GS18 or BAT54S-GS08	L44	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	30	V
Forward continuous current		I_F	200[1)]	mA
Repetitive peak forward current		I_{FRM}	300[1)]	mA
Surge forward current current	$t_p < 1$ s	I_{FSM}	600[1)]	mA
Power dissipation		P_{tot}	230	mW

[1)] Device on fiberglass substrate, see layout on next page.

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambiant air		R_{thJA}	430[1)]	°C/W
Junction temperature		$T_j = T_{stg}$	- 65 to + 150	°C
Storage temperature range		T_S	- 65 to + 150	°C

[1)] Device on fiberglass substrate, see layout on next page.

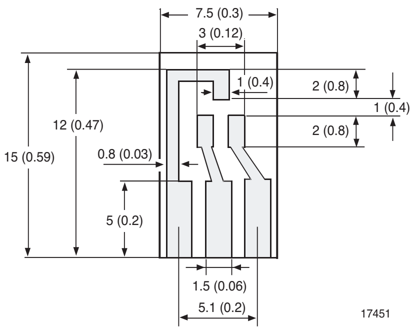
Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse Breakdown voltage	I_R = 100 µA pulses	$V_{(BR)}$	30			V
Leakage current	Pulse test t_p < 300 µs, δ < 2 % at V_R = 25 V	I_R			2	µA
Forward voltage	I_F = 0.1 mA, t_p < 300 µs, δ < 2 %	V_F			240	mV
	I_F = 1 mA, t_p < 300 µs, δ < 2 %	V_F			320	mV
	I_F = 10 mA, t_p < 300 µs, δ < 2 %	V_F			400	mV
	I_F = 30 mA, t_p < 300 µs, δ < 2 %	V_F			500	mV
	I_F = 100 mA, t_p < 300 µs, δ < 2 %	V_F			1000	mV
Diode capacitance	V_R = 1 V, f = 1 MHz	C_{tot}			10	pF
Reverse recovery time	I_F = 10 mA through I_R = 10 mA to I_{rr} = 1mA, R_L = 100 Ω	t_{rr}			5	ns

Layout for R_{thJA} test

Thickness:
Fiberglass 1.5 mm (0.059 in.)
Copper leads 0.3 mm (0.012 in.)



Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

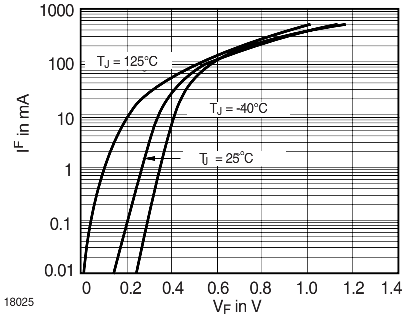


Figure 1. Typical Forward Voltage Forward Current at Various Temperatures

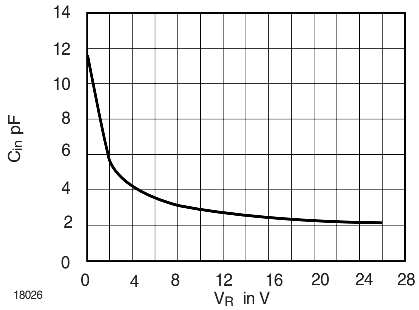


Figure 2. Typical Capacitance °C vs. Reverse Applied Voltage V_R

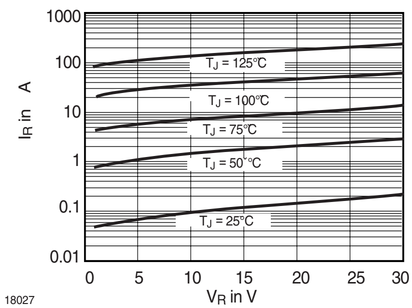


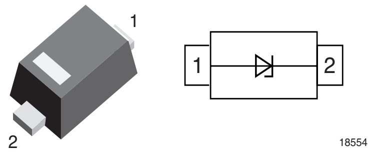
Figure 3. Typical Variation of Reverse Current at Various Temperatures

SOT-23 Package Dimension see Package Section

Small Signal Schottky Diode

Features

- These diodes feature very low turn-on voltage and fast switching.
- These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.
- Space saving SOD-523 package



Mechanical Data

Case: SOD-523 Plastic case

Weight: approx. 1.6 mg

Molding Compound Flammability Rating:
UL 94 V-0

Terminals: High temperature soldering guaranteed:
260 °C/10 sec. at terminals

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAT54-02V	BAT54-02V-GS18 or BAT54-02V-GS08	V	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage=Working peak reverse voltage		V_{RRM}	30	V
Forward continuous current		I_F	200	mA
Repetitive peak forward current		I_{FRM}	300	mA
Surge forward current		I_{FSM}	600	mA
Power dissipation		P_{tot}	230	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction soldering point		R_{thJS}	100	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_S	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse Breakdown voltage	100 µA pulses	$V_{(BR)}$	30			V
Leakage current	Pulse test t_p < 300 µs, δ < 2 % at V_R = 25 V				2	µA
Forward voltage	I_F = 0.1 mA, t_p < 300 µs, δ < 2 %	V_F			240	mV
	I_F = 1 mA, t_p < 300 µs, δ < 2 %	V_F			320	mV
	I_F = 10 mA, t_p < 300 µs, δ < 2 %	V_F			400	mV
	I_F = 30 mA, t_p < 300 µs, δ < 2 %	V_F			500	mV
	I_F = 100 mA, t_p < 300 µs, δ < 2 %	V_F			1000	mV
Diode capacitance	V_R = 1 V, f = 1 MHz	C_{tot}			10	pF
Reverse recovery time	I_F = 10 mA , I_R = 10 mA to I_R = 1 mA, R_L = 100 Ω	t_{rr}			5	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

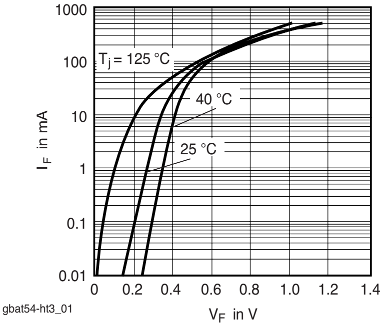


Figure 1. Typical Forward Voltage Forward Current at Various Temperatures

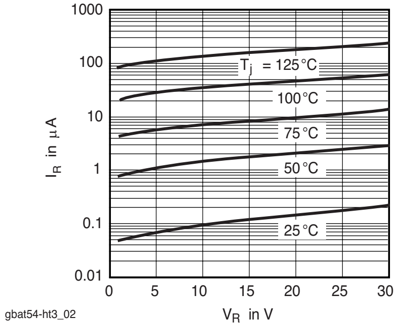


Figure 2. Typical Variation of Reverse Current at Various Temperatures

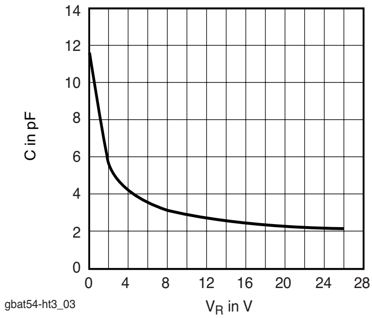


Figure 3. Typical Capacitance °C vs. Reverse Applied Voltage V_R

SOD-523 Package Dimension
see Package Section

Small Signal Schottky Diodes, Single & Dual

Features

- These diodes feature very low turn-on voltage and fast switching.
- These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.
- Space saving LLP package

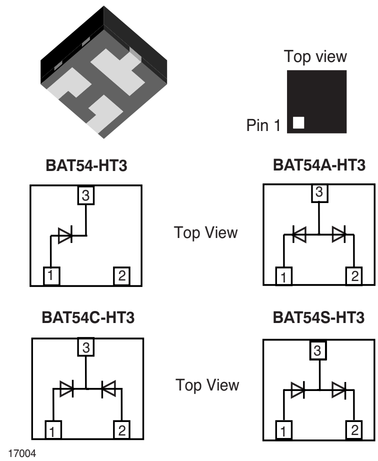
Mechanical Data

Case: LLP75-3B Plastic case

Molding Compound Flammability Rating: UL 94 V-0

Terminals: High temperature soldering guaranteed: 260 °C/10 sec. at terminals

Weight: approx. 5.2 mg



Parts Table

Part	Ordering code	Marking	Remarks
BAT54-HT3	BAT54-HT3-GS08	L4	Tape and Reel
BAT54A-HT3	BAT54A-HT3-GS08	L5	Tape and Reel
BAT54C-HT3	BAT54C-HT3-GS08	L6	Tape and Reel
BAT54S-HT3	BAT54S-HT3-GS08	L7	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage=Working peak reverse voltage		V_{RRM}	30	V
Forward continuous current		I_F	200	mA
Repetitive peak forward current		I_{FRM}	300	mA
Surge forward current current		I_{FSM}	600	mA
Power dissipation		P_{tot}	230	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambiant air		R_{thJA}	430	°C/W
Junction temperature		T_j	125	°C
Storage temperature range		T_S	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse Breakdown voltage	100 µA pulses	$V_{(BR)}$	30			V
Leakage current	Pulse test t_p < 300 µs, δ < 2 % at V_R = 25 V				2	µA
Forward voltage	I_F = 0.1 mA, t_p < 300 µs, δ < 2 %	V_F			240	mV
	I_F = 1 mA, t_p < 300 µs, δ < 2 %	V_F			320	mV
	I_F = 10 mA, t_p < 300 µs, δ < 2 %	V_F			400	mV
	I_F = 30 mA, t_p < 300 µs, δ < 2 %	V_F			500	mV
	I_F = 100 mA, t_p < 300 µs, δ < 2 %	V_F			1000	mV
Diode capacitance	V_R = 0 V, f = 1 MHz	C_{tot}			12	pF
Reverse recovery time	I_F = 10 mA , I_R = 10 mA to I_R = 1 mA, R_L = 100 Ω	t_{rr}			5	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

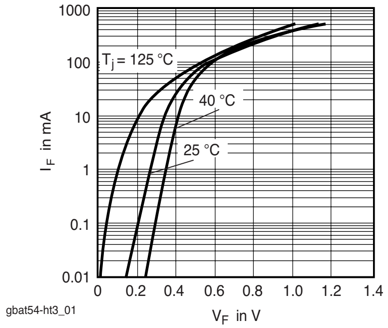


Figure 1. Typical Forward Voltage Forward Current at Various Temperatures

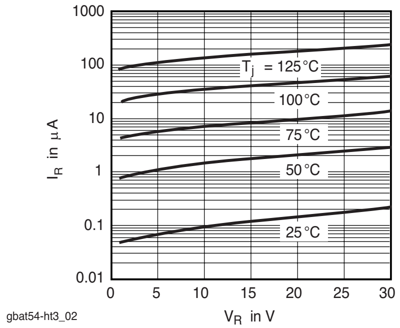


Figure 2. Typical Variation of Reverse Current at Various Temperatures

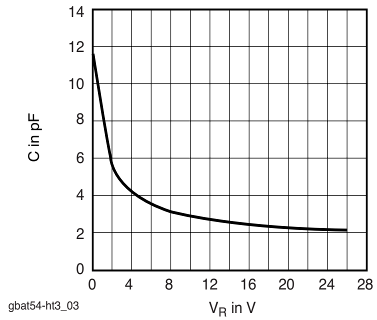
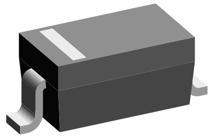


Figure 3. Typical Capacitance °C vs. Reverse Applied Voltage V_R

LLP75-3B Package Dimension see Package Section

Small Signal Schottky Diode



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Features

- These diodes feature very low turn-on voltage and fast switching.
- These devices are protected by a PN junction guard ring against excessive voltage,such as electrostatic discharges.

Mechanical Data

Case: SOD-123 Plastic case
Weight: approx. 9.3 mg
Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAT54W	BAT54W-GS18 or BAT54W-GS08	L4	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	30	V
Forward continuous current	T_{amb} = 25 °C	I_F	200[1)]	mA
Repetitive peak forward current	t_p < 1 s, δ < 0.5, T_{amb} = 25 °C	I_{FRM}	300[1)]	mA
Surge forward current	t_p < 10 ms, T_{amb} = 25 °C	I_{FSM}	600[1)]	A
Power dissipation[1)]	T_{amb} = 25 °C	P_{tot}	150[1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	650[1)]	°C/W
Maximum junction temperature		T_j	125	°C
Storage temperature range		T_S	- 65 to +150	°C

[1)] Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	tested with 100 µA pulses	$V_{(BR)R}$	30			V
Forward voltage	Pulse test t_p < 300 µs, δ < 2 % at I_F = 0.1 mA	V_F			240	mV
	Pulse test t_p < 300 µs, δ < 2 % at I_F = 1 mA	V_F			320	mV
	Pulse test t_p < 300 µs, δ < 2 % at I_F = 10 mA	V_F			400	mV
	Pulse test t_p < 300 µs, δ < 2 % at I_F = 30 mA	V_F			500	mV
	Pulse test t_p < 300 µs, δ < 2 % at I_F = 100 mA	V_F			1000	mV
Leakage current	Pulse test t_p < 300 µs, δ < 2 % at V_R = 25 V	I_R			2	µA
Diode capacitance	V_F = 1 V, f = 1 MHz	C_{tot}			10	pF
Reverse recovery time	from I_F = 10 mA through I_R = 10 mA to I_R = 1 mA, R_L = 100 Ω	t_{rr}			5	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

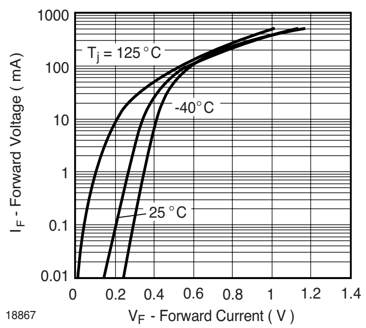


Figure 1. Typical Forward Voltage Forward Current at Various Temperatures

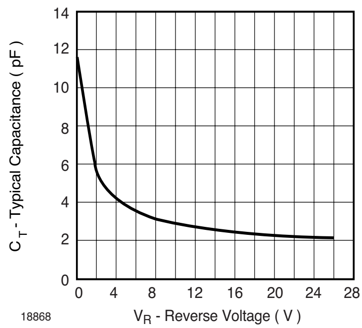


Figure 2. Typical Capacitance °C vs. Reverse Applied Voltage V_R

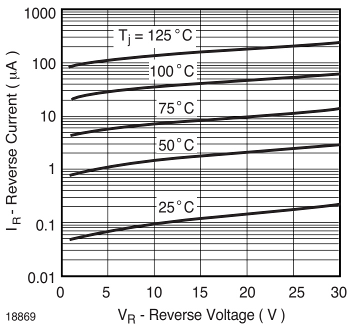


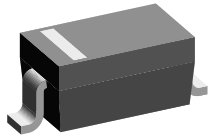
Figure 3. Typical Variation of Reverse Current at Various Temperatures

SOD-123 Package Dimension see Package Section

Small Signal Schottky Diode

Features

- These diodes feature very low turn-on voltage and fast switching.
- These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.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Mechanical Data

Case: SOD-323 Plastic case
Weight: approx. 5.0 mg
Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAT54WS	BAT54WS-GS18 or BAT54WS-GS08	L4	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	30	V
Forward continuous current	T_{amb} = 25 °C	I_F	200[1)]	mA
Repetitive peak forward current	T_{amb} = 25 °C	I_{FRM}	300[1)]	mA
Surge forward current	t_p < 1 s, T_{amb} = 25 °C	I_{FSM}	600[1)]	A
Power dissipation[1)]	T_{amb} = 25 °C	P_{tot}	150[1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	650[1)]	°C/W
Maximum junction temperature		T_j	125	°C
Storage temperature range		T_S	- 65 to +150	°C

[1)] Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	tested with 100 µA pulses	$V_{(BR)R}$	30			V
Leakage current[2)]	Pulse test t_p < 300 µs, δ < 2 % at V_R = 25 V	I_R			2	µA
Forward voltage[2)]	Pulse test t_p < 300 µs, δ < 2 % at I_F = 0.1 mA	V_F			240	mV
	Pulse test t_p < 300 µs, δ < 2 % at I_F = 1 mA	V_F			320	mV
	Pulse test t_p < 300 µs, δ < 2 % at I_F = 10 mA	V_F			400	mV
	Pulse test t_p < 300 µs, δ < 2 % at I_F = 30 mA	V_F			500	mV
	Pulse test t_p < 300 µs, δ < 2 % at I_F = 100 mA	V_F			1000	mV
Diode capacitance	V_F = 1 V, f = 1 MHz	C_{tot}			10	pF
Reverse recovery time	from I_F = 10 mA through I_R = 10 mA to I_R = 1 mA, R_L = 100 Ω	t_{rr}			5	ns

2) Pulse test: t_p < 300 µs, θ < 2 %

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

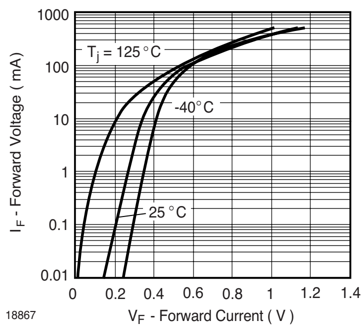


Figure 1. Typical Forward Voltage Forward Current at Various Temperatures

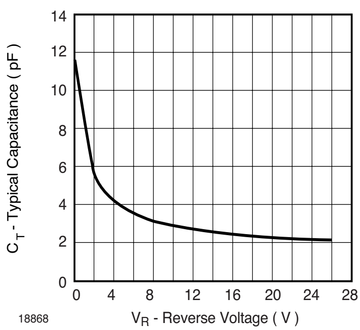


Figure 2. Typical Capacitance °C vs. Reverse Applied Voltage V_R

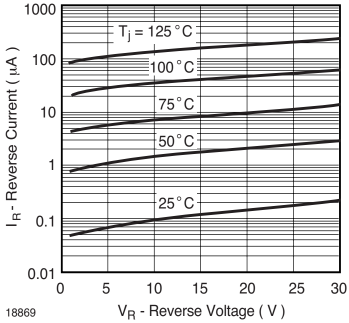


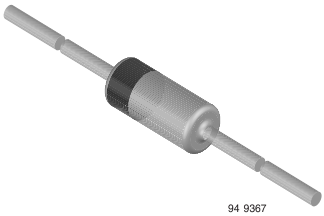
Figure 3. Typical Variation of Reverse Current at Various Temperatures

SOD-323 Package Dimension
see Package Section

Small Signal Schottky Diodes

Features

- Integrated protection ring against static discharge
- Low capacitance
- Low leakage current
- Low forward voltage drop
- Very low switching time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Applications

General purpose and switching Schottky barrier diode
HF-Detector
Protection circuit

Diode for low currents with a low supply voltage
Small battery charger
Power supplies
DC / DC converter for notebooks

Mechanical Data

Case: DO-35 Glass case
Weight: approx. 125 mg
Packaging Codes/Options:
TR / 10 k per 13 " reel (52 mm tape), 50 k/box
TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAT81S	V_R = 40 V	BAT81S-TAP or BAT81S-TR	Ammopack / Tape and Reel
BAT82S	V_R = 50 V	BAT82S-TAP or BAT82S-TR	Ammopack / Tape and Reel
BAT83S	V_R = 60 V	BAT83S-TAP or BAT83S-TR	Ammopack / Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Reverse voltage		BAT81S	V_R	40	V
		BAT82S	V_R	50	V
		BAT83S	V_R	60	V
Forward current			I_F	30	mA
Peak forward surge current	$t_p \leq 10$ ms		I_{FSM}	500	mA
Repetitive peak forward current	$t_p \leq 1$ s		I_{FRM}	150	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	320	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 0.1 mA	V_F			330	mV
	I_F = 1 mA	V_F			410	mV
	I_F = 15 mA	V_F			1	V
Reverse current	$V_R = V_{Rmax}$	I_R			200	nA
Diode capacitance	V_R = 1 V, f = 1 MHz	C_D			1.6	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

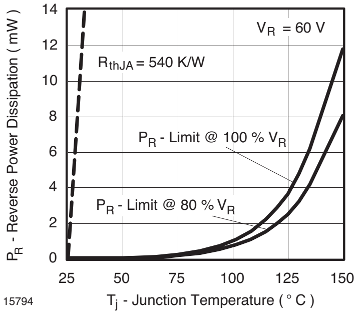


Figure 1. Max. Reverse Power Dissipation vs. Junction Temperature

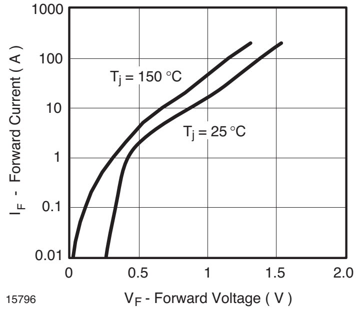


Figure 3. Forward Current vs. Forward Voltage

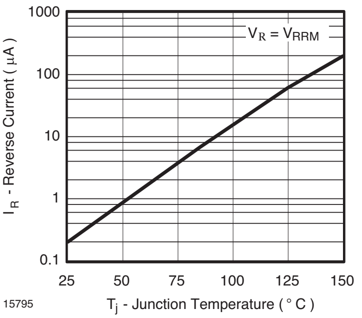


Figure 2. Reverse Current vs. Junction Temperature

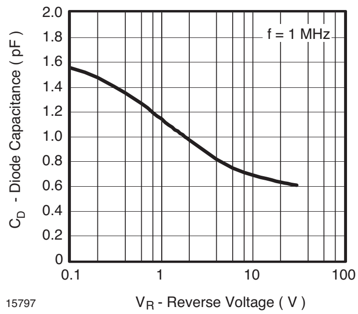


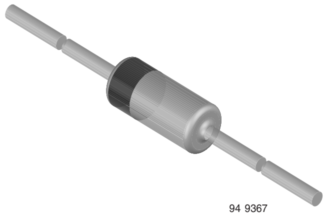
Figure 4. Diode Capacitance vs. Reverse Voltage

DO-35 Package Dimension see Package Section

Small Signal Schottky Diode

Features

- For general purpose applications.
- This diode features low turn-on voltage. This device is protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges
- This diode is also available in the MiniMELF case with type designation BAS85.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Mechanical Data

Case: DO-35 Glass case

Weight: approx. 125 mg

Packaging Codes/Options:

TR / 10 k per 13 " reel (52 mm tape), 50 k/box

TAP / 10 k per Ammo tape (52 mm tape), 50 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAT85	BAT85-TR or BAT85-TAP	-	Tape and Reel / Ammopack

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	30	V
Forward continuous current	T_{amb} = 25 °C	I_F	200[1)]	mA
Peak forward current	T_{amb} = 25 °C	I_{FM}	300[1)]	mA
Surge forward current	t_p < 1 s, T_{amb} = 25 °C	I_{FSM}	600[1)]	mA
Power dissipation	T_{amb} = 65 °C	P_{tot}	200[1)]	mW

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	430[1)]	°C/W
Junction temperature		T_j	125	°C
Ambient operating temperature range		T_{amb}	- 65 to + 125	°C
Storage temperature range		T_S	- 65 to + 150	°C

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 μA (pulsed)	$V_{(BR)R}$	30			V
Leakage current	V_R = 25 V	I_R			2	μA
Forward voltage	Pulse test t_p < 300 μs, δ < 2 %, I_F = 0.1 mA	V_F			0.24	V
	Pulse test t_p < 300 μs, δ < 2 %, I_F = 1 mA	V_F			0.32	V
	Pulse test t_p < 300 μs, δ < 2 %, I_F = 10 mA	V_F			0.4	V
	Pulse test t_p < 300 μs, δ < 2 %, I_F = 30 mA	V_F		0.5		V
	Pulse test t_p < 300 μs, δ < 2 %, I_F = 100 mA	V_F			0.8	V
Diode capacitance	V_R = 1 V, f = 1 MHz	C_{tot}			10	pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, I_{rr} = 1 mA	t_{rr}			5	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

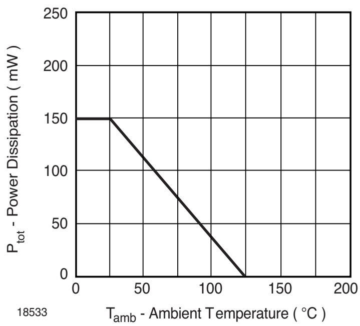


Figure 1. Admissible Power Dissipation vs. Ambient Temperature

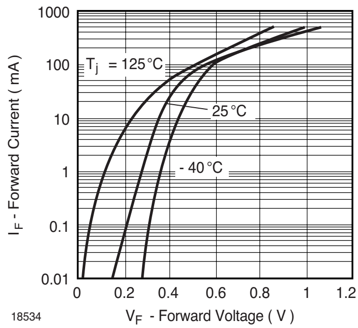


Figure 2. Typical Instantaneous Forward Characteristics

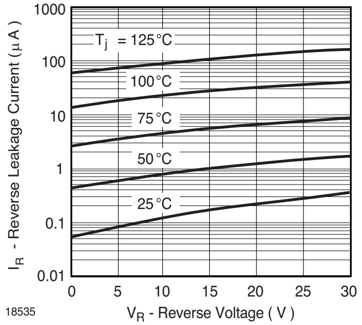


Figure 3. Typical Reverse Characteristics

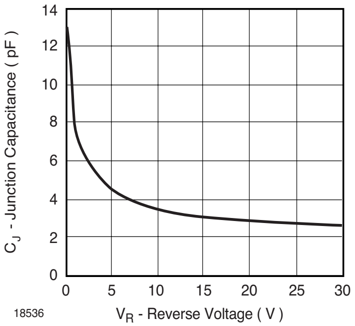


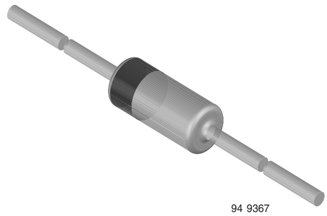
Figure 4. Typical Junction Capacitance

DO-35 Package Dimension see Package Section

Small Signal Schottky Diode

Features

- Integrated protection ring against static discharge
- Very low forward voltage



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Applications

Applications where a very low forward voltage is required

Mechanical Data

Case: DO-35 Glass case

Weight: approx. 125 mg

Packaging Codes/Options:

TR / 10 k per 13 " reel (52 mm tape), 50 k/box

TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAT85S	V_R = 30 V	BAT85S-TAP or BAT85S-TR	Ammopack / Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	30	V
Peak forward surge current	$t_p \leq 10$ ms	I_{FSM}	5	A
Repetitive peak forward current	$t_p \leq 1$ s	I_{FRM}	300	mA
Forward current		I_F	200	mA
Average forward current	PCB mounting, l = 4 mm; V_{RWM} = 25 V, T_{amb} = 50 °C	I_{FAV}	200	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	350	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 0.1 mA	V_F			240	mV
	I_F = 1 mA	V_F			320	mV
	I_F = 10 mA	V_F			400	mV
	I_F = 30 mA	V_F			500	mV
	I_F = 100 mA	V_F			800	mV
Reverse current	V_R = 25 V	I_R			2	µA
Diode capacitance	V_R = 1 V, f = 1 MHz	C_D			10	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

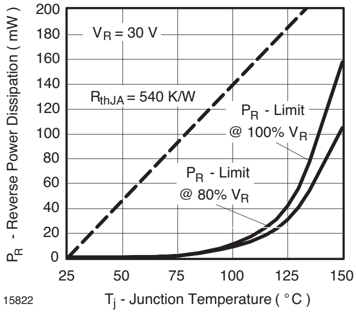


Figure 1. Max. Reverse Power Dissipation vs. Junction Temperature

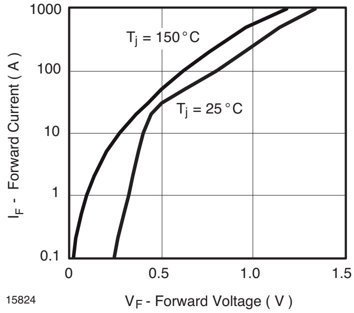


Figure 3. Forward Current vs. Forward Voltage

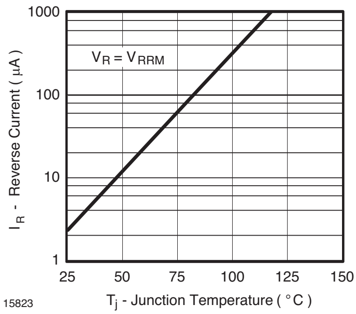


Figure 2. Reverse Current vs. Junction Temperature

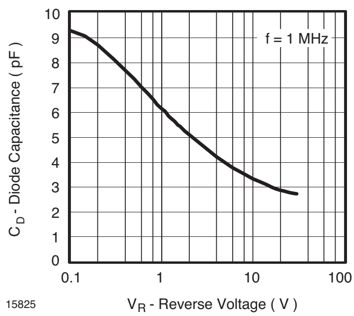
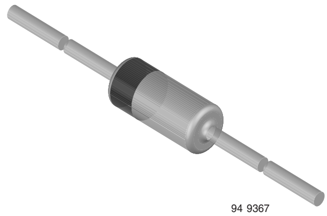


Figure 4. Diode Capacitance vs. Reverse Voltage

DO-35 Package Dimension see Package Section

Small Signal Schottky Diode



Features

- For general purpose applications.
- This diode features low turn-on voltage. This device is protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.
- Metal-on-silicon Schottky barrier device which is protected by a PN junction guard ring. The low forward voltage drop and fast switching make it ideal for protection of MOS devices, steering, biasing and coupling diodes for fast switching and low logic level applications.
- This diode is also available in the MiniMELF case with type designation BAS86.

Mechanical Data

Case: DO-35 Glass case
Weight: approx. 125 mg
Packaging Codes/Options:
TR / 10 k per 13 " reel (52 mm tape), 50 k/box
TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAT86	BAT86-TR or BAT86-TAP	-	Tape and reel / Ammopack

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	50	V
Forward continuous current	T_{amb} = 25 °C	I_F	200[1)]	mA
Repetititve peak forward current	t_p < 1 s, $\nu \leq 0.5$, T_{amb} = 25 °C	I_{FRM}	500[1)]	mA
Power dissipation	T_{amb} = 25 °C	P_{tot}	200[1)]	mW

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	300[1)]	°C/W
Junction temperature		T_j	125	°C
Ambient operating temperature range		T_{amb}	- 65 to + 125	°C
Storage temperature range		T_S	- 65 to + 150	°C

1) Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

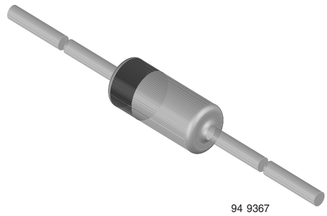
Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 µA (pulsed)	$V_{(BR)R}$	50			V
Leakage current	V_R = 40 V	I_R			5	µA
Forward voltage	Pulse test t_p < 300 µs, δ < 2 %, I_F = 0.1 mA	V_F		0.200	0.300	V
	Pulse test t_p < 300 µs, δ < 2 %, I_F = 1 mA	V_F		0.275	0.380	V
	Pulse test t_p < 300 µs, δ < 2 %, I_F = 10 mA	V_F		0.365	0.450	V
	Pulse test t_p < 300 µs, δ < 2 %, I_F = 30 mA	V_F		0.460	0.600	V
	Pulse test t_p < 300 µs, δ < 2 %, I_F = 100 mA	V_F		0.700	0.900	V
Diode capacitance	V_R = 1 V, f = 1 MHz	C_{tot}			8	pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA I_R = 1 mA	t_{rr}			5	ns

DO-35 Package Dimension see Package Section

Small Signal Schottky Diode

Features

- Integrated protection ring against static discharge
- Very low forward voltage



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Applications

Applications where a very low forward voltage is required

Mechanical Data

Case: DO-35 Glass case
Weight: approx. 125 mg

Cathode Band Color: Black
Packaging Codes/Options:
TR / 10 k per 13 " reel (52 mm tape), 50 k/box
TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAT86S	V_R = 50 V	BAT86S-TR or BAT86S-TAP	Tape and Reel / Ammopack

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	50	V
Peak forward surge current	$t_p \leq 10$ ms	I_{FSM}	5	A
Repetitive peak forward current	$t_p \leq 1$ s	I_{FRM}	500	mA
Forward current		I_F	200	mA
Average forward current	PCB mounting, l = 4 mm; V_{RWM} = 25 V, T_{amb} = 50 °C	I_{FAV}	200	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	320	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 0.1 mA	V_F			300	mV
	I_F = 1 mA	V_F			380	mV
	I_F = 10 mA	V_F			450	mV
	I_F = 30 mA	V_F			600	mV
	I_F = 100 mA	V_F			900	mV
Reverse current	V_R = 40 V	I_R			5	µA
Diode capacitance	V_R = 1 V, f = 1 MHz	C_D			8	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

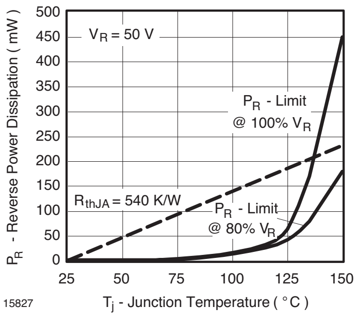


Figure 1. Max. Reverse Power Dissipation vs. Junction Temperature

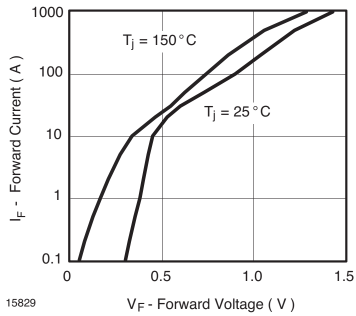


Figure 3. Forward Current vs. Forward Voltage

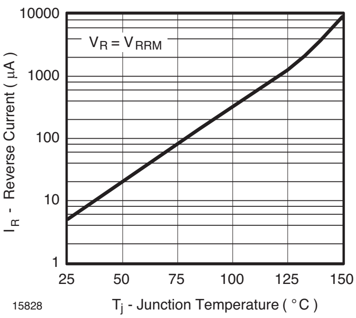


Figure 2. Reverse Current vs. Junction Temperature

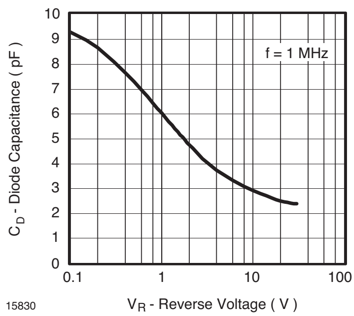
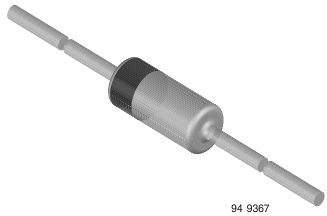


Figure 4. Diode Capacitance vs. Reverse Voltage

DO-35 Package Dimension see Package Section

Small Signal Switching Diodes, High Voltage



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Features

- Silicon Epitaxial Planar Diodes

Applications

General purposes

Mechanical Data

Case: DO-35 Glass case
Weight: approx. 125 mg
Packaging Codes/Options:
TR / 10 k per 13 " reel (52 mm tape), 50 k/box

TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAV17	V_{RRM} = 25 V, Single Diodes	BAV17-TAP or BAV17-TR	Ammopack / Tape and Reel
BAV18	V_{RRM} = 60 V, Single Diodes	BAV18-TAP or BAV18-TR	Ammopack / Tape and Reel
BAV19	V_{RRM} = 120 V, Single Diodes	BAV19-TAP or BAV19-TR	Ammopack / Tape and Reel
BAV20	V_{RRM} = 200 V, Single Diodes	BAV20-TAP or BAV20-TR	Ammopack / Tape and Reel
BAV21	V_{RRM} = 250 V, Single Diodes	BAV21-TAP or BAV21-TR	Ammopack / Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Peak reverse voltage		BAV17	V_{RRM}	25	V
		BAV18	V_{RRM}	60	V
		BAV19	V_{RRM}	120	V
		BAV20	V_{RRM}	200	V
		BAV21	V_{RRM}	250	V
Reverse voltage		BAV17	V_R	20	V
		BAV18	V_R	50	V
		BAV19	V_R	100	V
		BAV20	V_R	150	V
		BAV21	V_R	200	V
Forward current			I_F	250	mA
Peak forward surge current	t_p = 1 s, T_j = 25 °C		I_{FSM}	1	A
Forward peak current	f = 50 Hz		I_{FM}	625	mA
Power dissipation			P_V	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	350	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1	V
Reverse current	V_R = 20 V	BAV17	I_R			100	nA
	V_R = 50 V	BAV18	I_R			100	nA
	V_R = 100 V	BAV19	I_R			100	nA
	V_R = 150 V	BAV20	I_R			100	nA
	V_R = 200 V	BAV21	I_R			100	nA
	T_j = 100 °C, V_R = 20 V	BAV17	I_R			15	µA
	T_j = 100 °C, V_R = 50 V	BAV18	I_R			15	µA
	T_j = 100 °C, V_R = 100V	BAV19	I_R			15	µA
	T_j = 100 °C, V_R = 150 V	BAV20	I_R			15	µA
	T_j = 100 °C, V_R = 200 V	BAV21	I_R			15	µA
Breakdown voltage	I_R = 100 µA, t_p/T = 0.01, t_p = 0.3 ms	BAV17	$V_{(BR)}$	25			V
		BAV18	$V_{(BR)}$	60			V
		BAV19	$V_{(BR)}$	120			V
		BAV20	$V_{(BR)}$	200			V
		BAV21	$V_{(BR)}$	250			V
Diode capacitance	V_R = 0, f = 1 MHz		C_D		1.5		pF
Differential forward resistance	I_F = 10 mA		r_f		5		Ω
Reverse recovery time	$I_F = I_R$ = 30 mA, i_R = 3 mA, R_L = 100 Ω		t_{rr}			50	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

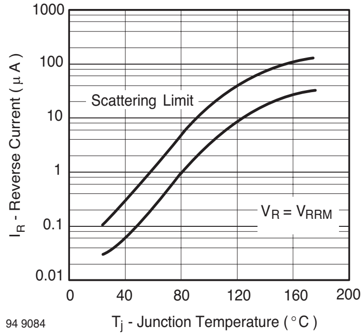


Figure 1. Reverse Current vs. Junction Temperature

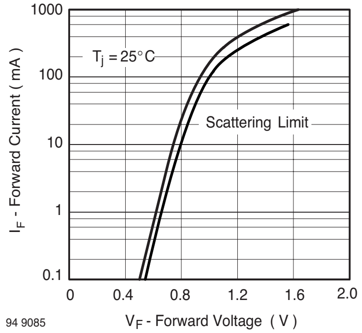


Figure 2. Forward Current vs. Forward Voltage

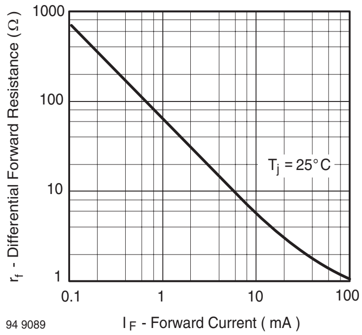


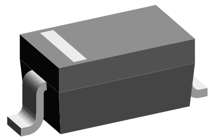
Figure 3. Differential Forward Resistance vs. Forward Current

DO-35 Package Dimension see Package Section

Small Signal Switching Diodes, High Voltage

Features

- Silicon Epitaxial Planar Diodes
- For general purpose
- These diodes are also available in other case styles including: the DO-35 case with the type designations BAV19 to BAV21, the MiniMELF case with the type designations BAV100 to BAV103, the SOT-23 case with the type designations BAS19 to BAS21, and the SOD-323 case with type designations BAV19WS to BAV21WS.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Mechanical Data

Case: SOD-123 Plastic case

Weight: approx. 9.3 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Type differentiation	Ordering code	Marking	Remarks
BAV19W	V_R = 100 V	BAV19W-GS18 or BAV19W-GS08	A8	Tape and Reel
BAV20W	V_R = 150 V	BAV20W-GS18 or BAV20W-GS08	A9	Tape and Reel
BAV21W	V_R = 200 V	BAV21W-GS18 or BAV21W-GS08	AA	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Continuous reverse voltage		BAV19W	V_R	100	V
		BAV20W	V_R	150	V
		BAV21W	V_R	200	V
Repetitive peak voltage		BAV19W	V_{RRM}	120	V
		BAV20W	V_{RRM}	200	V
		BAV21W	V_{RRM}	250	V
DC Forward current	T_{amb} = 25 °C		I_F	250[1)]	mA
Rectified current (average) half wave rectification with resist. load	T_{amb} = 25 °C		$I_{F(AV)}$	200[1)]	A
Repetitive peak forward current	f ≥ 50 Hz, θ = 180 °, T_{amb} = 25 °C		I_{FRM}	625[1)]	mA
Surge forward current	t < 1 s, T_j = 25 °C		I_{FSM}	1	A
Power dissipation	T_{amb} = 25 °C		P_{tot}	410[1)]	mW

1) Valid provided that leads are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	375[1)]	°C/W
Junction temperature		T_j	150[1)]	°C
Storage temperature range		T_S	- 65 to + 150[1)]	°C

1) Valid provided that leads are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1.00	V
	I_F = 200 mA		V_F			1.25	V
Leakage current	V_R = 100 V	BAV19W	I_R			100	nA
	V_R = 100 V, T_j = 100 °C	BAV19W	I_R			15	µA
	V_R = 150 V	BAV20W	I_R			100	nA
	V_R = 150 V, T_j = 100 °C	BAV20W	I_R			15	µA
	V_R = 200 V	BAV21W	I_R			100	nA
	V_R = 200 V, T_j = 100 °C	BAV21W	I_R			15	µA
Dynamic forward resistance	I_F = 10 mA		r_f		5		Ω
Diode capacitance	V_R = 0, f = 1 MHz		C_{tot}		1.5		pF
Reverse recovery time	I_F = 30 mA, I_R = 30 mA, I_{rr} = 3 mA, R_L = 100 Ω		t_{rr}			50	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

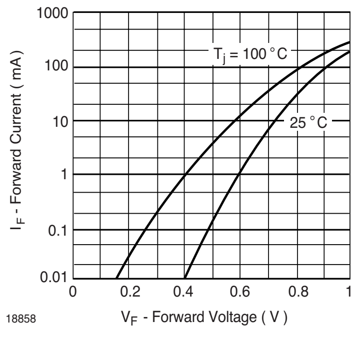


Figure 1. Forward Current vs. Forward Voltage

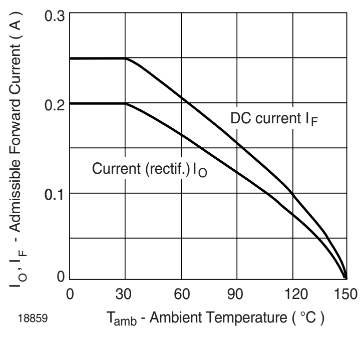


Figure 2. Admissible Forward Current vs. Ambient Temperature

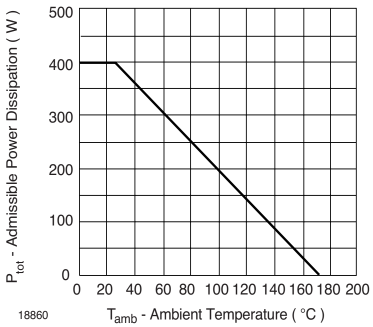


Figure 3. Admissible Power Dissipation vs. Ambient Temperature

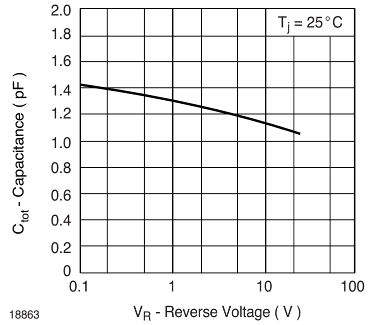


Figure 6. Capacitance vs. Reverse Voltage

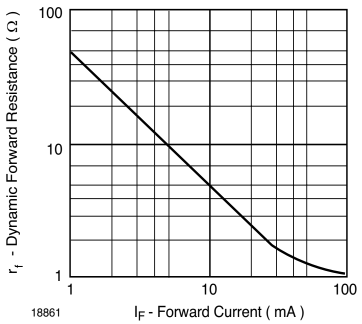


Figure 4. Dynamic Forward Resistance vs. Forward Current

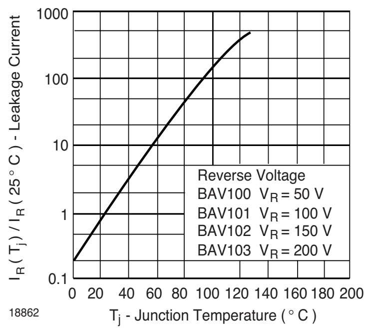


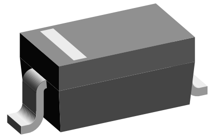
Figure 5. Leakage Current vs. Junction Temperature

SOD-123 Package Dimension see Package Section

Small Signal Switching Diodes, High Voltage

Features

- Silicon Epitaxial Planar Diodes
- For general purpose
- These diodes are also available in other case styles including: the DO-35 case with the type designation BAV19 - BAV21, the MiniMELF case with the type designation BAV100 - BAV103, the SOT-23 case with the type designation BAS19 - BAS21 and the SOD-123 case with the type designation BAV19W - BAV21W


17431

Mechanical Data

Case: SOD-323 Plastic case
Weight: approx. 5.0 mg

Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Type differentiation	Ordering code	Marking	Remarks
BAV19WS	V_R = 100 V	BAV19WS-GS18 or BAV19WS-GS08	A8	Tape and Reel
BAV20WS	V_R = 150 V	BAV20WS-GS18 or BAV20WS-GS08	A9	Tape and Reel
BAV21WS	V_R = 200 V	BAV21WS-GS18 or BAV21WS-GS08	AA	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Continuous reverse voltage		BAV19WS	V_R	100	V
		BAV20WS	V_R	150	V
		BAV21WS	V_R	200	V
Repetitive peak reverse voltage		BAV19WS	V_{RRM}	120	V
		BAV20WS	V_{RRM}	200	V
		BAV21WS	V_{RRM}	250	V
DC Forward current	T_{amb} = 25 °C		I_F	250[1)]	mA
Rectified current (average) half wave rectification with resist. load	T_{amb} = 25 °C		$I_{F(AV)}$	200[1)]	A
Repetitive peak forward current	f ≥ 50 Hz, θ = 180 °, T_{amb} = 25 °C		I_{FRM}	625[1)]	mA
Surge forward current	t < 1 s, T_j = 25 °C		I_{FSM}	1	A
Power dissipation	T_{amb} = 25 °C		P_{tot}	200[1)]	mW

1) Valid provided that leads are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	650[1)]	°C/W
Junction temperature		T_j	150[1)]	°C
Storage temperature range		T_S	- 65 to + 175[1)]	°C

1) Valid provided that leads are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1.00	V
	I_F = 200 mA		V_F			1.25	V
Leakage current	V_R = 100 V	BAV19WS	I_R			100	nA
	V_R = 100 V, T_j = 100 °C	BAV19WS	I_R			15	µA
	V_R = 150 V	BAV20WS	I_R			100	nA
	V_R = 150 V, T_j = 100 °C	BAV20WS	I_R			15	µA
	V_R = 200 V	BAV21WS	I_R			100	nA
	V_R = 200 V, T_j = 100 °C	BAV21WS	I_R			15	µA
Dynamic forward resistance	I_F = 10 mA		r_f		5		Ω
Diode capacitance	V_R = 0, f = 1 MHz		C_{tot}			1.5	pF
Reverse recovery time	I_F = 30 mA, I_R = 30 mA, I_{rr} = 3 mA, R_L = 100 Ω		t_{rr}			50	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

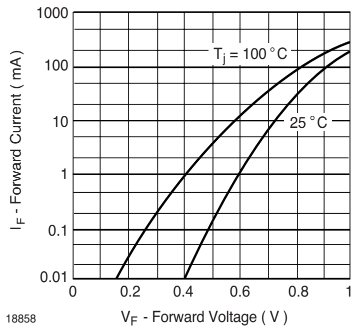


Figure 1. Forward Current vs. Forward Voltage

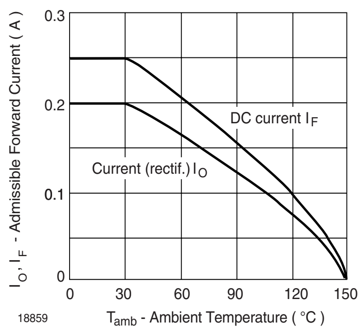


Figure 2. Admissible Forward Current vs. Ambient Temperature

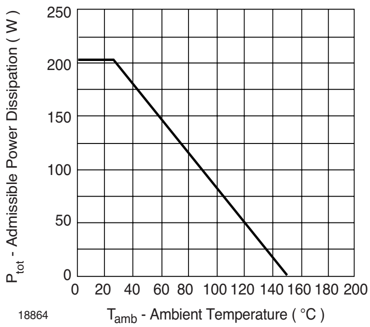


Figure 3. Admissible Power Dissipation vs. Ambient Temperature

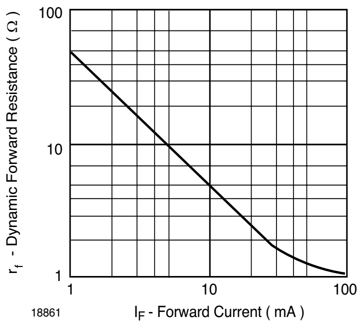


Figure 4. Dynamic Forward Resistance vs. Forward Current

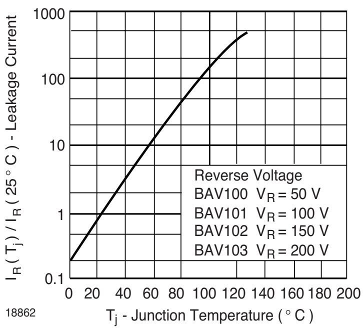


Figure 5. Leakage Current vs. Junction Temperature

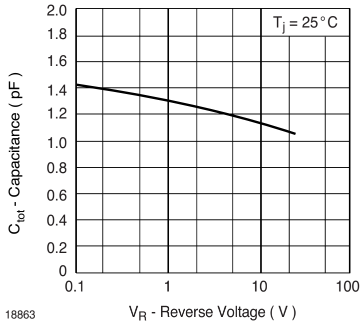


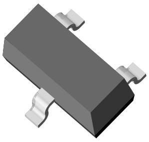
Figure 6. Capacitance vs. Reverse Voltage

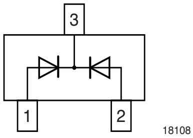
SOD-323 Package Dimension see Package Section

Small Signal Switching Diode, Dual

Features

- Silicon Epitaxial Planar Diode
- Fast switching dual diode with common cathode
- This diode is also available in other configurations including:a dual common anode to cathode with type designation BAV99, a dual common anode with type designation BAW56, and a single diode with type designation BAL99.





Mechanical Data

Case: SOT-23 Plastic case

Weight: approx. 8.8 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAV70	BAV70-GS18 or BAV70-GS08	KJH	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage, peak reverse voltage		V_R, V_{RM}	70	V
Forward current (continuous)		I_F	250	mA
Non repetitive peak forward current	t_p = 1 µs	I_{FSM}	2	A
	t_p = 1 ms	I_{FSM}	1	A
	t_p = 1 s	I_{FSM}	0.5	A
Power dissipation		P_{tot}	350[1)]	mW

[1)] Device on fiberglass substrate, see layout

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	430[1)]	°C/W
Junction temperature		T_j	150	°C
Storage temperature range		$T_j = T_{stg}$	- 65 to + 150	°C

[1)] Device on Fiberglass substrate, see layout on second page.

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 1 mA	V_F			715	mV
	I_F = 10 mA	V_F			855	mV
	I_F = 50 mA	V_F			1	V
	I_F = 150 mA	V_F			1.25	V
Reverse current	V_R = 70 V	I_R			2.5	μA
	V_R = 70 V, T_j = 150 °C	I_R			50	μA
	V_R = 25 V, T_j = 150 °C	I_R			30	μA
Diode capacitance	V_R = 0, f = 1 MHz	C_D			1.5	pF
Reverse recovery time	I_F = 10 mA to I_R = 1 mA, V_R = 6 V, R_L = 100 Ω	t_{rr}			6	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

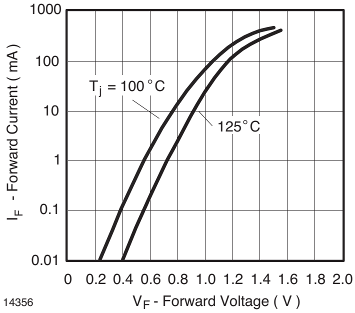


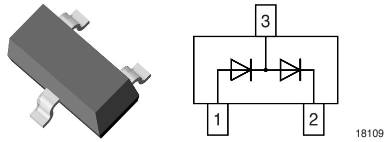
Figure 1. Forward Current vs. Forward Voltage

SOT-23 Package Dimension see Package Section

Small Signal Switching Diode, Dual

Features

- Fast switching speed
- High conductance
- Surface mount package ideally suited for automatic insertion
- Connected in series



Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.8 mg
Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAV99	BAV99-GS18 or BAV99-GS08	JE	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Non repetitive peak reverse voltage		V_{RM}	100	V
Repetitive peak reverse voltage = Working peak reverse voltage = DC Blocking voltage		$V_{RRM} = V_{RWM} = V_R$	70	V
Peak forward surge current	t_p = 1s	I_{FSM}	1	A
	t_p = 1 µs	I_{FSM}	4.5	A
Average forward current	half wave rectification with resistive load and f ≥ 50 MHz, on ceramic substrate 10 mm x 8 mm x 0.7 mm	I_{FAV}	150	mA
Forward current	on ceramic substrate 10 mm x 8 mm x 0.7 mm	I_F	250	mA
Power dissipation	on ceramic substrate 10 mm x 8 mm x 0.7 mm	P_{tot}	300	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on ceramic substrate 10 mm x 8 mm x 0.7 mm	R_{thJA}	430	K/W
Junction and storage temperature range		$T_j = T_{stg}$	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 1 mA	V_F			715	mV
	I_F = 10 mA	V_F			855	mV
	I_F = 50 mA	V_F			1	V
	I_F = 150 mA	V_F			1.25	V
Reverse current	V_R = 70 V	I_R			2.5	µA
	V_R = 70 V, T_j = 150 °C	I_R			50	µA
	V_R = 25 V, T_j = 150 °C	I_R			30	µA
Diode capacitance	V_R = 0, f = 1 MHz	C_D			1.5	pF
Reverse recovery time	I_F = 10 mA to I_R = 1 mA, V_R = 6 V, R_L = 100 Ω	t_{rr}			6	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

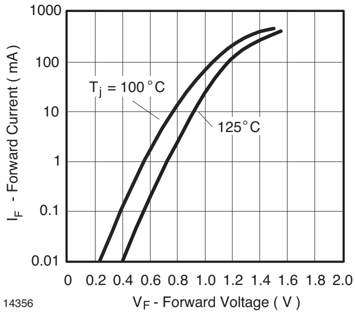
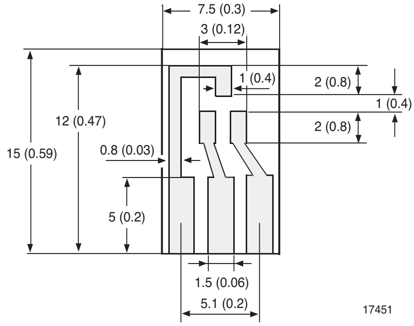


Figure 1. Forward Current vs. Forward Voltage

Layout for R_{thJA} test

Thickness:
Fiberglass 1.5 mm (0.059 in.)
Copper leads 0.3 mm (0.012 in.)

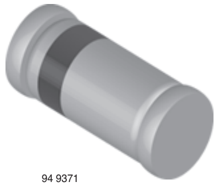


SOT-23 Package Dimension see Package Section

Small Signal Switching Diodes, High Voltage

Features
- Silicon Epitaxial Planar Diodes

Applications
General purposes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Mechanical Data
Case: MiniMELF Glass case (SOD-80)
Weight: approx. 31 mg
Cathode Band Color: Black
Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAV100	V_{RRM} = 60 V	BAV100-GS18 or BAV100-GS08	Tape and Reel
BAV101	V_{RRM} = 120 V	BAV101-GS18 or BAV101-GS08	Tape and Reel
BAV102	V_{RRM} = 200 V	BAV102-GS18 or BAV102-GS08	Tape and Reel
BAV103	V_{RRM} = 250 V	BAV103-GS18 or BAV103-GS08	Tape and Reel

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Repetitive peak reverse voltage		BAV100	V_{RRM}	60	V
		BAV101	V_{RRM}	120	V
		BAV102	V_{RRM}	200	V
		BAV103	V_{RRM}	250	V
Reverse voltage		BAV100	V_R	50	V
		BAV101	V_R	100	V
		BAV102	V_R	150	V
		BAV103	V_R	200	V
Peak forward surge current	t_p = 1 s		I_{FSM}	1	A
Repetitive peak forward current			I_{FRM}	625	mA
Forward current			I_F	250	mA
Power dissipation			P_V	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction lead		R_{thJL}	350	K/W
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1	V
Reverse current	V_R = 50 V	BAV100	I_R			100	nA
	V_R = 100 V	BAV101	I_R			100	nA
	V_R = 150 V	BAV102	I_R			100	nA
	V_R = 200 V	BAV103	I_R			100	nA
	T_j = 100 °C, V_R = 50 V	BAV100	I_R			15	µA
	T_j = 100 °C, V_R = 100 V	BAV101	I_R			15	µA
	T_j = 100 °C, V_R = 150 V	BAV102	I_R			15	µA
	T_j = 100 °C, V_R = 200 V	BAV103	I_R			15	µA
Breakdown voltage	I_R = 100 µA, t_p/T = 0.01, t_p = 0.3 ms	BAV100	$V_{(BR)}$	60			V
	I_R=100 µA, t_p/T = 0.01, t_p = 0.3 ms	BAV101	$V_{(BR)}$	120			V
	I_R = 100 µA, t_p/T = 0.01, t_p = 0.3 ms	BAV102	$V_{(BR)}$	200			V
		BAV103	$V_{(BR)}$	250			V
Diode capacitance	V_R = 0, f = 1 MHz		C_D		1.5		pF
Differential forward resistance	I_F = 10 mA		r_f		5		Ω
Reverse recovery time	$I_F = I_R$ = 30 mA, i_R = 3 mA, R_L = 100 Ω		t_{rr}			50	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

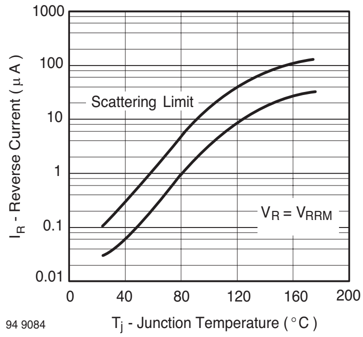


Figure 1. Reverse Current vs. Junction Temperature

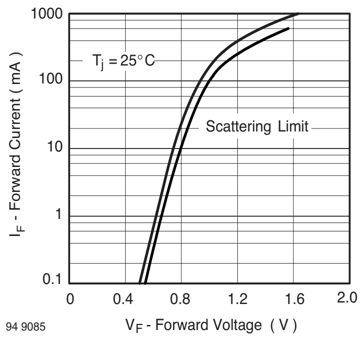


Figure 2. Forward Current vs. Forward Voltage

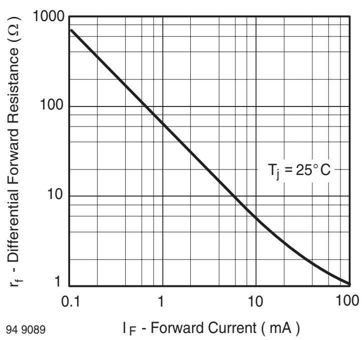


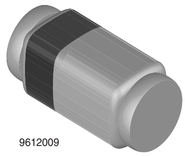
Figure 3. Differential Forward Resistance vs. Forward Current

MiniMELF SOD-80 Package Dimension see Package Section

Small Signal Switching Diodes, High Voltage

Features

- Silicon Epitaxial Planar Diodes



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Applications

General purposes

Mechanical Data

Case: QuadroMELF Glass case (SOD-80)
Weight: approx. 34 mg
Cathode Band Color: Black
Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAV200	V_{RRM} = 60 V	BAV200-GS18 or BAV200-GS08	Tape and Reel
BAV201	V_{RRM} = 120 V	BAV201-GS18 or BAV201-GS08	Tape and Reel
BAV202	V_{RRM} = 200 V	BAV202-GS18 or BAV202-GS08	Tape and Reel
BAV203	V_{RRM} = 250 V	BAV203-GS18 or BAV203-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Peak reverse voltage		BAV200	V_{RRM}	60	V
		BAV201	V_{RRM}	120	V
		BAV202	V_{RRM}	200	V
		BAV203	V_{RRM}	250	V
Reverse voltage		BAV200	V_R	50	V
		BAV201	V_R	100	V
		BAV202	V_R	150	V
		BAV203	V_R	200	V
Forward current			I_F	250	mA
Peak forward surge current	t_p = 1 s, T_j = 25 °C		I_{FSM}	1	A
Forward peak current	f = 50 Hz		I_{FM}	625	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1	V
Reverse current	V_R = 50 V	BAV200	I_R			100	nA
	V_R = 100 V	BAV201	I_R			100	nA
	V_R = 150 V	BAV202	I_R			100	nA
	V_R = 200 V	BAV203	I_R			100	nA
	T_j = 100 °C, V_R = 50 V	BAV200	I_R			15	µA
	T_j = 100 °C, V_R = 100 V	BAV201	I_R			15	µA
	T_j = 100 °C, V_R = 150 V	BAV202	I_R			15	µA
	T_j = 100 °C, V_R = 200 V	BAV203	I_R			15	µA
Breakdown voltage	I_R = 100 µA, t_p/T = 0.01, t_p = 0.3 ms	BAV200	$V_{(BR)}$	60			V
		BAV201	$V_{(BR)}$	120			V
		BAV202	$V_{(BR)}$	200			V
		BAV203	$V_{(BR)}$	250			V
Diode capacitance	V_R = 0, f = 1 MHz		C_D		1.5		pF
Differential forward resistance	I_F = 10 mA		r_f		5		Ω
Reverse recovery time	$I_F = I_R$ = 30 mA, i_R = 3 mA, R_L = 100 Ω		t_{rr}			50	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

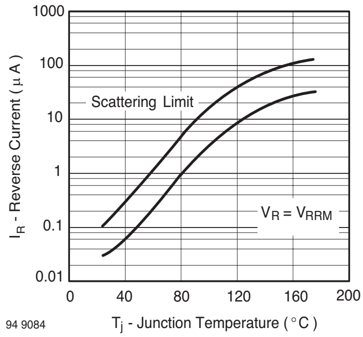


Figure 1. Reverse Current vs. Junction Temperature

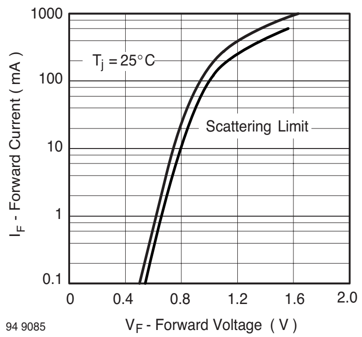


Figure 2. Forward Current vs. Forward Voltage

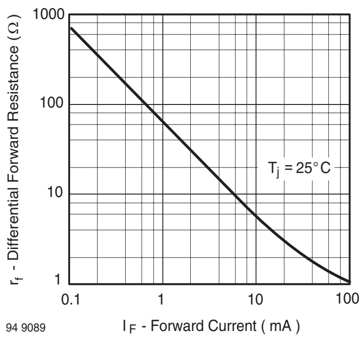


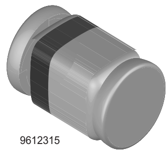
Figure 3. Differential Forward Resistance vs. Forward Current

QuadroMELF SOD-80
Package Dimension
see Package Section

Small Signal Switching Diodes, High Voltage

Features

- Silicon Epitaxial Planar Diodes
- Saving space
- Hermetic sealed parts
- Fits onto SOD-323 / SOT-23 footprints
- Electrical data identical with the devices BAV100...BAV103 / BAV200...BAV203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Applications

General purposes

Mechanical Data

Case: MicroMELF Glass case
Weight: approx. 12 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAV300	V_{RRM} = 60 V	BAV300-GS18 or BAV300-GS08	Tape and Reel
BAV301	V_{RRM} = 120 V	BAV301-GS18 or BAV301-GS08	Tape and Reel
BAV302	V_{RRM} = 200 V	BAV302-GS18 or BAV302-GS08	Tape and Reel
BAV303	V_{RRM} = 250 V	BAV303-GS18 or BAV303-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Peak reverse voltage		BAV300	V_{RRM}	60	V
		BAV301	V_{RRM}	120	V
		BAV302	V_{RRM}	200	V
		BAV303	V_{RRM}	250	V
Reverse voltage		BAV300	V_R	50	V
		BAV301	V_R	100	V
		BAV302	V_R	150	V
		BAV303	V_R	200	V
Forward current			I_F	250	mA
Peak forward surge current	t_p = 1 s, T_j = 25 °C		I_{FSM}	1	A
Forward peak current	f = 50 Hz		I_{FM}	625	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	mounted on epoxy-glass hard tissue, Fig. 4 35 µm copper clad, 0.9 mm^2 copper area per electrode	R_{thJA}	500	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA		V_F			1	V
Reverse current	V_R = 50 V	BAV300	I_R			100	nA
	V_R = 100 V	BAV301	I_R			100	nA
	V_R = 150 V	BAV302	I_R			100	nA
	V_R = 200 V	BAV303	I_R			100	nA
	T_j = 100 °C, V_R = 50 V	BAV300	I_R			15	µA
	T_j = 100 °C, V_R = 100 V	BAV301	I_R			15	µA
	T_j = 100 °C, V_R = 150V	BAV302	I_R			15	µA
	T_j = 100 °C, V_R = 200V	BAV303	I_R			15	µA
Breakdown voltage	I_R = 100 µA, t_p/T = 0.01, t_p = 0.3 ms	BAV300	$V_{(BR)}$	60			V
	I_R = 100 µA, t_p/T = 0.01, t_p = 0.3 ms	BAV301	$V_{(BR)}$	120			V
		BAV302	$V_{(BR)}$	200			V
		BAV303	$V_{(BR)}$	250			V
Diode capacitance	V_R = 0, f = 1 MHz		C_D		1.5		pF
Differential forward resistance	I_F = 10 mA		r_f		5		Ω
Reverse recovery time	$I_F = I_R$ = 30 mA, i_R = 3 mA, R_L = 100 Ω		t_{rr}			50	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

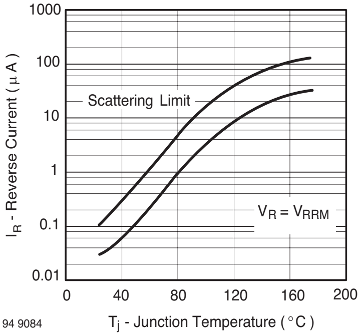


Figure 1. Reverse Current vs. Junction Temperature

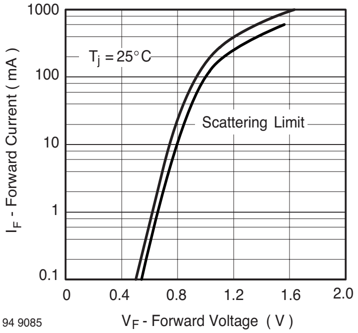


Figure 2. Forward Current vs. Forward Voltage

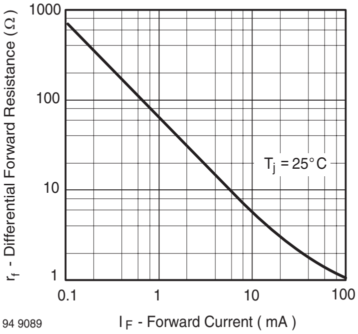


Figure 3. Differential Forward Resistance vs. Forward Current

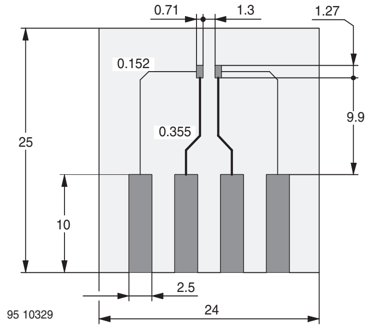
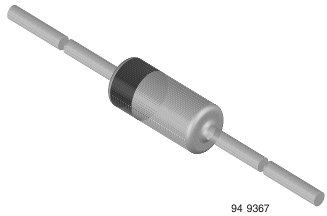


Figure 4. Board for R_{thJA} definition (in mm)

MicroMELF Package Dimension see Package Section

Small Signal Switching Diode


94 9367

Features

- Silicon Epitaxial Planar Diode
- Low forward voltage drop
- High forward current capability

Applications

High speed switch and general purpose use
in computer and industrial applications

Mechanical Data

Case: DO-35 Glass case

Weight: approx. 125 mg

Packaging Codes/Options:

TR / 10 k per 13 " reel (52 mm tape), 50 k/box

TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAW27	V_{RRM} = 75 V	BAW27-TR or BAW27-TAP	Tape and Reel / Ammopack

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	75	V
Reverse voltage		V_R	60	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	4	A
Forward current		I_F	600	mA
Average forward current	V_R = 0	I_{FAV}	300	mA
Power dissipation	l = 4 mm, T_L = 45 °C	P_V	440	mW
	l = 4 mm, $T_L \leq$ 25 °C	P_V	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	350	K/W
Junction temperature		T_j	200	°C
Storage temperature range		T_{stg}	- 65 to + 200	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

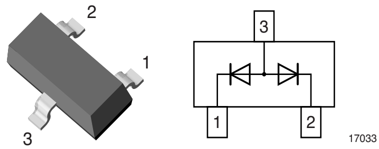
Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 10 mA	V_F		0.67	0.75	V
	I_F = 50 mA	V_F		0.8	0.85	V
	I_F = 200 mA	V_F		0.95	1.0	V
	I_F = 400 mA	V_F		1.12	1.25	V
Reverse current	V_R = 60 V	I_R			100	nA
	V_R = 60 V, T_j = 100 °C	I_R			50	µA
Breakdown voltage	I_R = 5 µA, t_p/T = 0.01, t_p = 0.3 ms	$V_{(BR)}$	75			V
Diode capacitance	V_R = 0, f = 1 MHz, V_{HF} = 50 mV	C_D			4	pF
Reverse recovery time	I_F = I_R = 10 to 100 mA, i_R = 0.1 x I_R	t_{rr}			6	ns

DO-35 Package Dimension
see Package Section

Small Signal Switching Diode, Dual

Features

- Silicon Epitaxial Planar Diode
- Fast switching dual diode with common anode
- This diode is also available in other configurations including: a single with type designation BAL99, a dual anode to cathode with type designation BAV99, and a dual common cathode with type designation BAV70.



Mechanical Data

Case: SOT-23 Plastic case

Weight: approx. 8.8 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
BAW56	BAW56-GS18 or BAW56-GS08	JD	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage = Working peak reverse voltage = DC Blocking voltage		V_R, V_{RM}	70	V
Forward current (continous)		I_F	250	mA
Non repetitive peak forward current	t_p = 1 µs	I_{FSM}	2.0	A
	t_p = 1 ms	I_{FSM}	1.0	A
	t_p = 1 s	I_{FSM}	0.5	A
Power dissipation		P_{diss}	350[1)]	mW

[1)] Device on fiberglass substrate, see layout

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambiant air		R_{thJA}	430	°C/W
Junction temperature		T_J	150	°C
Storage temperature range		T_S	- 65 to + 150	°C

1) Device on fiberglass substrate, see layout

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 1 mA	V_F			0.715	V
	I_F = 10 mA	V_F			0.855	V
	I_F = 50 mA	V_F			1.0	V
	I_F = 150 mA	V_F			1.25	V
Reverse current	V_R = 70 V	I_R			2.5	µA
	V_R = 70 V, T_j = 150 °C	I_R			100	µA
	V_R = 25 V, T_j = 150 °C	I_R			30	µA
Diode capacitance	$V_F = V_R$ = 0, f = 1 MHz	C_{tot}			2	pF
Reverse recovery time	I_F = 10 mA to I_R = 1 mA, V_R = 6 V, R_L = 100 Ω	t_{rr}			6	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

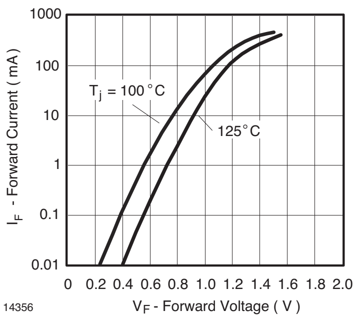
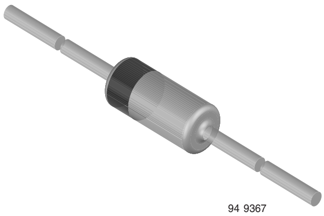


Figure 1. Forward Current vs. Forward Voltage

SOT-23 Package Dimension see Package Section

Small Signal Switching Diode



Features

- Silicon Epitaxial Planar Diode

Applications

Extreme fast switches

Mechanical Data

Case: DO-35 Glass case
Weight: approx. 125 mg
Packaging Codes/Options:
TR / 10 k per 13 " reel (52 mm tape), 50 k/box

TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAW75	V_{RRM} = 35 V	BAW75-TR or BAW75-TAP	Tape and Reel / Ammopack

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	35	V
Reverse voltage		V_R	25	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2000	mA
Repetitive peak forward current		I_{FRM}	450	mA
Forward current		I_F	300	mA
Average forward current	V_R = 0	I_{FAV}	150	mA
Power dissipation	l = 4 mm, T_L = 45 °C	P_V	440	mW
	l = 4 mm, $T_L \leq$ 25 °C	P_V	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	350	K/W
Junction temperature		T_j	200	°C
Storage temperature range		T_{stg}	- 65 to + 200	°C

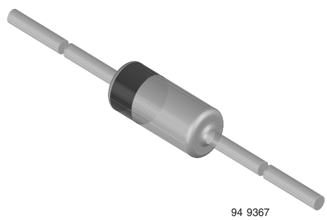
Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 30 mA	V_F			1	V
Reverse current	V_R = 25 V	I_R			100	nA
	V_R = 25 V, T_j = 150 °C	I_R			100	µA
Breakdown voltage	I_R = 5 µA, t_p/T = 0.01, t_p = 0.3 ms	$V_{(BR)}$	35			V
Diode capacitance	V_R = 0, f = 1 MHz, V_{HF} = 50 mV	C_D			4	pF
Reverse recovery time	$I_F = I_R$ = 10 mA, i_R = 1 mA	t_{rr}			4	ns
	I_F = 10 mA, V_R = 6 V, i_R = 1 mA, R_L = 100 Ω	t_{rr}			2	ns

DO-35 Package Dimension see Package Section

Small Signal Switching Diode



Features

- Silicon Epitaxial Planar Diode

Applications

Extreme fast switches

Mechanical Data

Case: DO-35 Glass case
Weight: approx. 125 mg
Packaging Codes/Options:
TR / 10 k per 13 " reel (52 mm tape), 50 k/box
TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAW76	V_{RRM} = 75 V	BAW76-TR or BAW76-TAP	Tape and Reel / Ammopack

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	75	V
Reverse voltage		V_R	50	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2000	mA
Repetitive peak forward current		I_{FRM}	450	mA
Forward current		I_F	300	mA
Average forward current	V_R = 0	I_{FAV}	150	mA
Power dissipation	l = 4 mm, T_L = 45 °C	P_V	440	mW
	l = 4 mm, $T_L \leq$ 25 °C	P_V	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	350	K/W
Junction temperature		T_j	200	°C
Storage temperature range		T_{stg}	- 65 to + 200	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

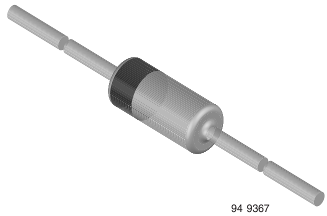
Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA	V_F			1	V
Reverse current	V_R = 50 V	I_R			100	nA
	V_R = 50 V, T_j = 150 °C	I_R			100	µA
Breakdown voltage	I_R = 5 µA, t_p/T = 0.01, t_p = 0.3 ms	$V_{(BR)}$	75			V
Diode capacitance	V_R = 0, f = 1 MHz, V_{HF} = 50 mV	C_D		1.7	2	pF
Reverse recovery time	I_F = I_R = 10 mA, i_R = 1 mA	t_{rr}			4	ns
	I_F = 10 mA, V_R = 6 V, i_R = 1 mA, R_L = 100 Ω	t_{rr}			2	ns

DO-35 Package Dimension
see Package Section

Small Signal Switching Diode, High Voltage

Features

- Silicon Epitaxial Planar Diode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Applications

General purpose

Mechanical Data

Case: DO-35 Glass case
Weight: approx. 125 mg
Packaging Codes/Options:
TR / 10 k per 13 " reel (52 mm tape), 50 k/box
TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAY80	V_{RRM} = 150 V	BAY80-TR or BAY80-TAP	Tape and Reel / Ammopack

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	150	V
Reverse voltage		V_R	120	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	1	A
Repetitive peak forward current		I_{FRM}	625	mA
Forward current		I_F	250	mA
Average forward current		I_{FAV}	200	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	350	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 200	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 0.1 mA	V_F	0.4		0.52	V
	I_F = 10 mA	V_F	0.63		0.78	V
	I_F = 50 mA	V_F	0.73		0.92	V
	I_F = 100 mA	V_F	0.78		1	V
	I_F = 150 mA	V_F			1.07	V
Reverse current	V_R = 120 V	I_R			100	nA
	V_R = 120 V, T_j = 150 °C	I_R			100	µA
Breakdown voltage	I_R = 100 µA, t_p/T = 0.01, t_p = 0.3 ms	$V_{(BR)}$	150			V
Diode capacitance	V_R = 0, f = 1MHz	C_D		1.5	5	pF
Differential forward resistance	I_F = 10 mA	r_f		5		Ω
Reverse recovery time	I_F = I_R = 30 mA, i_R = 3 mA, R_L = 100 Ω	t_{rr}			50	ns

Typical Characteristics (T$_{amb}$ = 25 °C unless otherwise specified)

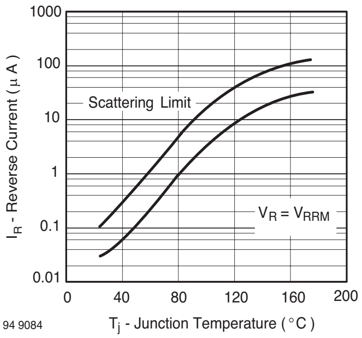


Figure 1. Reverse Current vs. Junction Temperature

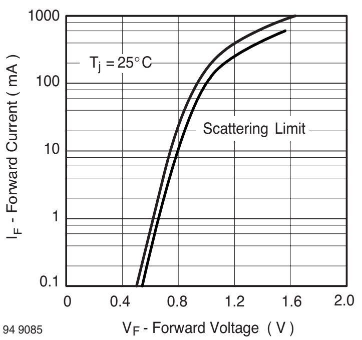


Figure 2. Forward Current vs. Forward Voltage

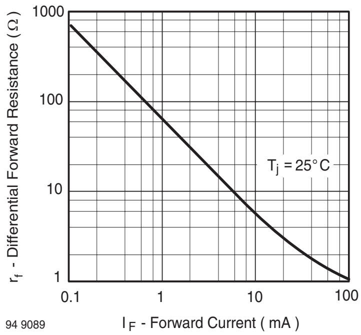


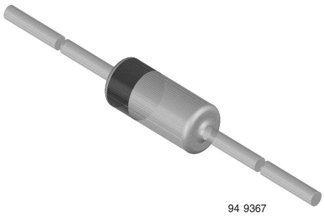
Figure 3. Differential Forward Resistance vs. Forward Current

DO-35 Package Dimension see Package Section

Small Signal Switching Diode, High Voltage

Features

- Silicon Planar Diode
- Very low reverse current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Applications

Protection circuits, delay circuits

Mechanical Data

Case: DO-35 Glass case
Weight: approx. 125 mg
Packaging Codes/Options:

TR / 10 k per 13 " reel (52 mm tape), 50 k/box
TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BAY135	V_{RRM} = 140 V	BAY135-TR or BAY135-TAP	Tape and Reel / Ammopack

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Peak reverse voltage, non repetitive		V_{RSM}	140	V
Repetitive peak reverse voltage		V_{RRM}	140	V
Reverse voltage		V_R	125	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2	A
Average forward current	f = 50 Hz	I_{FAV}	200	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	350	K/W
Junction temperature		T_j	200	°C
Storage temperature range		T_{stg}	- 65 to + 200	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 100 mA	V_F			1	V
Reverse current	E ≤ 300 lx, V_R	I_R			3	nA
	E ≤ 300 lx, V_R, T_j = 125 °C	I_R			0.5	µA
	E ≤ 300 lx, V_R = 60 V	I_R			1	nA
Breakdown voltage	I_R = 5 µA, t_p/T = 0.01, t_p = 0.3 ms	$V_{(BR)}$	140			V
Diode capacitance	V_R = 0, f = 1 MHz	C_D			5	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

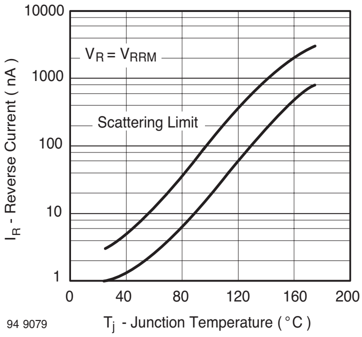


Figure 1. Reverse Current vs. Junction Temperature

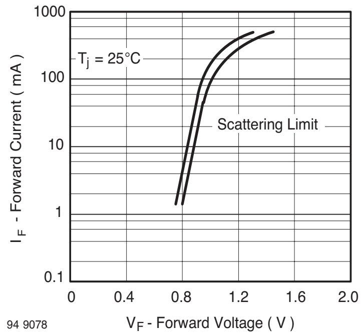


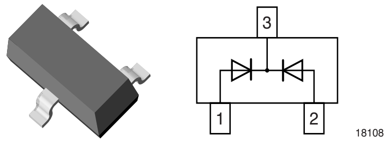
Figure 2. Forward Current vs. Forward Voltage

DO-35 Package Dimension see Package Section

Dual Varicap Diode

Features

- Silicon Epitaxial Planar Diode
- Common cathode



Applications

Tuning of separate resonant circuits,
push-pull circuits in FM range,
especially for car radios

Mechanical Data

Case: SOT-23 Plastic case

Weight: approx. 8.1 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Type differentiation	Ordering code	Marking	Remarks
BB804-0	V_{RRM} = 20 V, C_D 42-43, 5 pF	BB804-0-GS18 or BB804-0-GS08	FM0	Tape and Reel
BB804-1	V_{RRM} = 20 V, C_D 43-44, 5 pF	BB804-1-GS18 or BB804-1-GS08	FM1	Tape and Reel
BB804-2	V_{RRM} = 20 V, C_D 44-45, 5 pF	BB804-2-GS18 or BB804-2-GS08	FM2	Tape and Reel
BB804-3	V_{RRM} = 20 V, C_D 45-46, 5 pF	BB804-3-GS18 or BB804-3-GS08	FM3	Tape and Reel
BB804-4	V_{RRM} = 20 V, C_D 46-47, 5 pF	BB804-4-GS18 or BB804-4-GS08	FM4	Tape and Reel

[1)] Any selection part and any marking out of the below listed FM0 to FM4 is possible.

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	20	V
Reverse voltage		V_R	18	V
Forward current		I_F	50	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction temperature		T_j	100	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

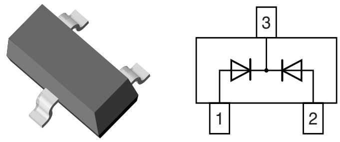
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse current	V_R = 16 V		I_R			20	nA
	V_R = 16 V, T_j = 60 °C		I_R			0.2	µA
Diode capacitance [1]	V_R = 2 V, f = 1 MHz		C_D	42		47.5	pF
Diode capacitance	V_R = 2 V, f = 1 MHz	Group 0	C_D	42		43.5	pF
		Group 1	C_D	43		44.5	pF
		Group 2	C_D	44		45.5	pF
		Group 3	C_D	45		46.5	pF
		Group 4	C_D	46		47.5	pF
Capacitance ratio	V_R = 2 V, 8 V, f = 100 MHz		C_{D2}/ C_{D8}	1.65		1.75	
Series resistance	C_D = 38 pF, f = 100 MHz		r_s		0.3	0.4	Ω
Figure of merit	C_D = 38 pF, f = 100 MHz		Q	100	140		

[1] A packing unit (reel) contains diodes from one capacitance group only. Delivery of single capacitance groups available only on request.

SOT-23 Package Dimension
see Package Section

Dual Varicap Diode



18108

Features

- Silicon Epitaxial Planar Diode
- Common cathode

Applications

Tuning of separate resonant circuits,
push-pull circuits in FM range,
especially for car radios

Mechanical Data

Case: SOT-23 Plastic case

Weight: approx. 8.1 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BB814	V_{RRM} = 20 V, C_D 43-46, 5 pF	BB814-GS18 or BB814-GS08	Tape and Reel
BB814-1	V_{RRM} = 20 V, C_D 43-45, 5 pF	BB814-1-GS18 or BB814-1-GS08	Tape and Reel
BB814-2	V_{RRM} = 20 V, C_D 44.5-46, 5 pF	BB814-2-GS18 or BB814-2-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	20	V
Reverse voltage		V_R	18	V
Forward current		I_F	50	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse current	V_R = 16 V		I_R			20	nA
	V_R = 16 V, T_j = 60 °C		I_R			200	nA
Diode capacitance [1])	V_R = 2 V	BB814-1	C_D	43		45	pF
Diode capacitance		BB814-2	C_D	44.5		46.5	pF
	V_R = 8 V	BB814-1	C_D	19.1		21.95	pF
		BB814-2	C_D	19.75		22.70	pF
Capacitance ratio	V_R = 2 V, 8 V, f = 1 MHz		C_{D2}/ C_{D8}	2.05		2.25	
Series resistance	C_D = 38 pF, f = 100 MHz		r_s			0.5	Ω

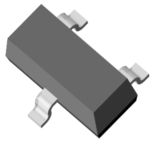
[1]) In the reverse voltage range of V_R = (2 to 8 V) for 4 diodes taped in sequence the max. deviation is 3 %.

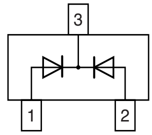
SOT-23 Package Dimension see Package Section

Dual Varicap Diode

Features

- Silicon Epitaxial Planar Diode
- Common cathode
- High capacitance ratio





18108

Applications

Tuning of separate resonant circuits, push-pull circuits in FM range, especially for car radios

Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.1 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
BB824	V_{RRM} = 20 V, C_D 42.3-45, 8 pF	BB824-GS18 or BB824-GS08	Tape and Reel
BB824-2	V_{RRM} = 20 V, C_D 42.3-43, 8 pF	BB824-2-GS18 or BB824-2-GS08	Tape and Reel
BB824-3	V_{RRM} = 20 V, C_D 43.7-45, 8 pF	BB824-3-GS18 or BB824-3-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	20	V
Reverse voltage		V_R	18	V
Forward current		I_F	50	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse current	V_R = 16 V		I_R			20	nA
	V_R = 16 V, T_j = 60 °C		I_R			200	nA
Diode capacitance [1])	V_R = 2 V	BB824-2	C_D	42.5		43.8	pF
Diode capacitance		BB824-3	C_D	43.7		45	pF
	V_R = 8 V	BB824-2	C_D	17.5		19.2	pF
		BB824-3	C_D	18.0		19.8	pF
Capacitance ratio	V_R = 2 V, 8 V, f = 1 MHz		C_{D2}/ C_{D8}	2.25		2.45	
Series resistance	V_R = 2 V, f = 100 MHz		r_s			0.5	Ω

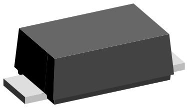
[1]) In the reverse voltage range of V_R = (2 to 8) V for 4 diodes taped in sequence the max. deviation is 3 %.

SOT-23 Package Dimension
see Package Section

Small Surface Mount Ultrafast Diodes

Features

- For surface mounted applications
- Low profile package
- Ideal for automated placement
- Glass passivated
- High temperature soldering:
  260 °C/ 10 seconds at terminals


17249

Mechanical Data

Case: JEDEC DO-219AB (SMF®) Plastic case
Polarity: Band denotes cathode end

Weight: approx. 15 mg
Packaging codes-options:
GS18 / 10 K per 13" reel (8 mm tape), 50 k/box
GS08 / 3 K per 7" reel (8 mm tape), 30 k/box

Parts Table

Part	Ordering code	Marking	Remarks
ES07B	ES07B-GS18 or ES07B-GS08	EB	Tape and Reel
ES07D	ES07D-GS18 or ES07D-GS08	ED	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Maximum repetitive peak reverse voltage		ES07B	V_{RRM}	100	V
		ES07D	V_{RRM}	200	V
Maximum RMS voltage		ES07B	V_{RMS}	70	V
		ES07D	V_{RMS}	140	V
Maximum DC blocking voltage		ES07B	V_{DC}	100	V
		ES07D	V_{DC}	200	V
Maximum average forward rectified current	T_{tp} = 105 °C		$I_{F(AV)}$	1.2	A
	T_A = 65 °C[1)]		$I_{F(AV)}$	0.5	A
Peak forward surge current 8.3 ms single half sine-wave	T_L = 25 °C		I_{FSM}	30	A

1) Mounted on epoxy glass PCB with 3 x 3 mm, Cu pads (≥ 40 µm thick)

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air[1)]		R_{thJA}	180	K/W
Operating junction and storage temperature range		T_J, T_{STG}	- 55 to + 150	°C

1) Mounted on epoxy glass PCB with 3 x 3 mm, Cu pads (≥ 40 μm thick)

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Maximum instantaneous forward voltage	1.0 A[3)]	V_F			0.98	V
Maximum DC reverse current at rated DC blocking voltage	T_A = 25°C	I_R			10	μA
	T_A = 100°C	I_R			10	μA
Reverse recovery time	I_F = 0.5 A, I_R = 1 A, I_{rr} = 0.25 A	t_{rr}			25	ns
Typical capacitance	4 V, 1 MHz	C_j		4		pF

3) Pulse test, 300 μs pulse with 1 % duty cycle

Typical Characteristics (T$_{amb}$ = 25 °C unless otherwise specified)

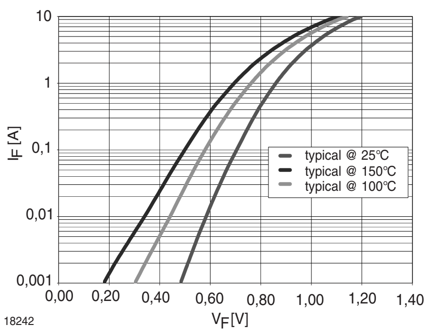


Figure 1. Typical Forward Characteristics

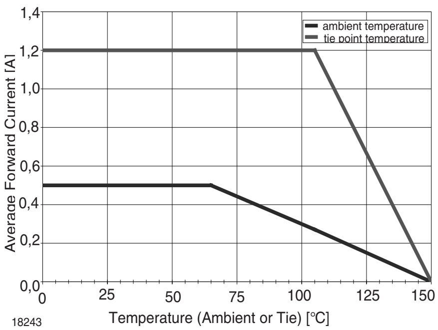


Figure 2. Forward Current Derating Curve

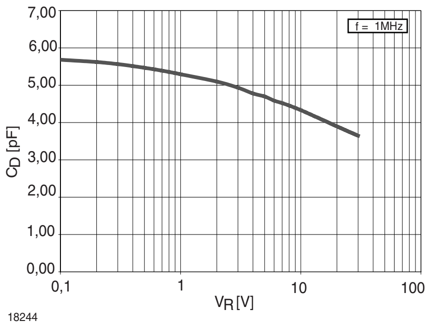


Figure 3. Typ. Diode Capacitance vs. Reverse Voltage

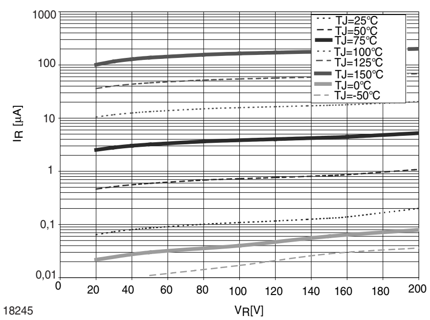


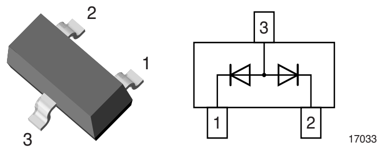
Figure 4. Typical Reverse Characteristics

DO-219AB (SMF) Package Dimension see Package Section

Dual Common-Anode Small-Signal High-Voltage Switching Diode

Features

- Silicon Epitaxial Planar Diode
- Fast switching dual common-anode diode, especially suited for applications requiring high voltage capability



Mechanical Data

Case: SOT-23 (TO-236AB) Plastic case
Weight: approx. 8.8 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
GSD2004A	GSD2004A-GS18 or GSD2004A-GS08	DBA	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	240	V
Peak repetitive reverse voltage		V_{RRM}	300	V
Peak repetitive reverse current		I_{RRM}	200	mA
Forward current (continuous)		I_F	225	mA
Peak repetitive forward current		I_{RFM}	625	mA
Non-repetitive peak forward current	t_p = 1 µs	I_{FSM}	4.0	A
	t_p = 1 s	I_{FSM}	1.0	A
Power dissipation		P_{tot}	350 1)	mW

1) Device on Fiberglass Substrate, see layout on bottom of second page

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Typical thermal resistance junction to ambiant air		R_{thJA}	357 1)	°C/W
Junction temperature		T_j	150	°C
Storage temperature range		T_S	- 65 to + 150	°C

1) Device on Fiberglass Substrate, see layout on bottom of second page

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 100 µA	V_{BR}	300			V
Leakage current	V_R = 240 V	I_R			100	nA
	V_R = 240 V, T_j = 150 °C	I_R			100	µA
Forward voltage	I_F = 20 mA	V_F		0.83	0.87	V
	I_F = 100 mA	V_F			1.00	V
Diode capacitance	$V_F = V_R$ = 0, f = 1 MHz	C_{tot}			5.0	pF
Reverse recovery time	$I_F = I_A$ = 30 mA, I_{rr} = 3.0 mA, R_L = 100 Ω	t_{rr}			50	ns

[1)] Device on Fiberglass Substrate, see layout on bottom of second page

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

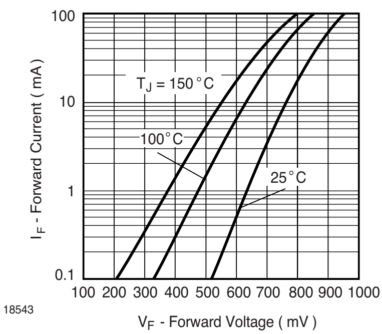


Figure 1. Typical Instantaneous Forward Characteristics

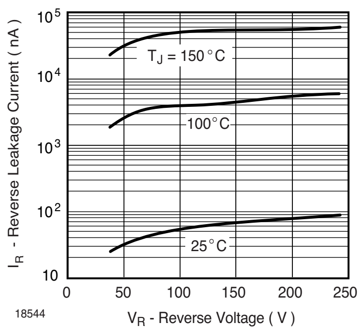
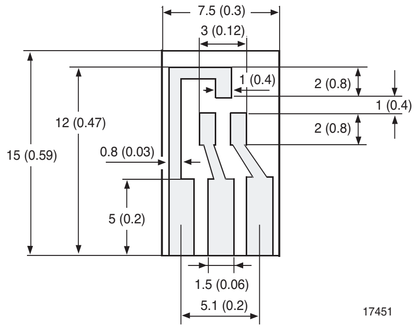


Figure 2. Typical Reverse Characteristics

Layout for R_{thJA} test

Thickness:
Fiberglass 1.5 mm (0.059 in.)
Copper leads 0.3 mm (0.012 in.)

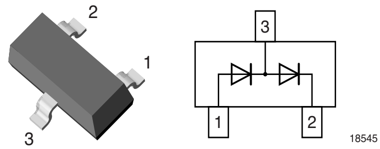


SOT-23 Package Dimension see Package Section

Dual In-Series Small-Signal High-Voltage Switching Diode

Features

- Silicon Epitaxial Planar Diode
- Fast switching dual in-series diode, especially suited for applications requiring high voltage capability



Mechanical Data

Case: SOT-23 (TO-236AB) Plastic case
Weight: approx. 8.8 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
GSD2004S	GSD2004S-GS18 or GSD2004S-GS08	DB6	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	240	V
Peak repetitive reverse voltage		V_{RRM}	300	V
Peak repetitive reverse current		I_{RRM}	200	mA
Forward current (continuous)		I_F	225	mA
Peak repetitive forward current		I_{RFM}	625	mA
Non-repetitive peak forward current	t_p = 1 µs	I_{FSM}	4.0	A
	t_p = 1 s	I_{FSM}	1.0	A
Power dissipation		P_{tot}	350[1)]	mW

[1)] Device on Fiberglass Substrate, see layout on second page

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Typical thermal resistance junction to ambiant air		R_{thJA}	357[1)]	°C/W
Junction temperature		T_j	150	°C
Storage temperature range		T_S	- 65 to + 150	°C

[1)] Device on Fiberglass Substrate, see layout on second page

Electrical Characteristics

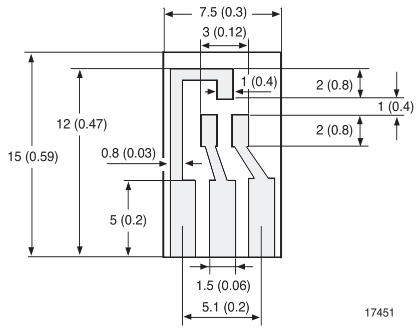
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 100 µA	V_{BR}	300			V
Leakage current	V_R = 240 V	I_R			100	nA
	V_R = 240 V, T_j = 150 °C	I_R			100	µA
Forward voltage	I_F = 20 mA	V_F		0.83	0.87	V
	I_F = 100 mA	V_F			1.00	V
Diode capacitance	V_F = V_R = 0, f = 1 MHz	C_{tot}			5.0	pF
Reverse recovery time	I_F = I_A = 30 mA, I_{rr} = 3.0 mA, R_L = 100 Ω	t_{rr}			50	ns

[1)] Device on Fiberglass Substrate, see layout

Layout for R_{thJA} test

Thickness:
Fiberglass 1.5 mm (0.059 in.)
Copper leads 0.3 mm (0.012 in.)

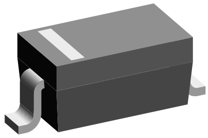


SOT-23 Package Dimension see Package Section

Small Signal Switching Diode, High Voltage

Features

- Silicon Epitaxial Planar Diode
- Fast switching diode, especially suited for applications requiring high voltage capability



17431

Mechanical Data

Case: SOD-123 Plastic case
Weight: approx. 9.3 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
GSD2004W	GSD2004W-GS18 or GSD2004W-GS08	-	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	240	V
Peak repetitive reverse voltage		V_{RRM}	300	V
Peak repetitive reverse current		I_{RRM}	200	mA
Forward current (continuous)		I_F	225	mA
Peak repetitive forward current		I_{RFM}	625	mA
Non-repetitive peak forward current	t_p = 1 µs	I_{FSM}	4.0	A
	t_p = 1 s	I_{FSM}	1.0	A
Power dissipation		P_{tot}	350	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Typical thermal resistance junction to ambiant air		R_{thJA}	357	°C/W
Junction temperature		T_j	150	°C
Storage temperature range		T_S	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

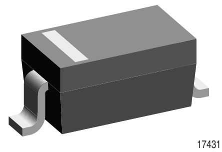
Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 100 µA	V_{BR}	300			V
Leakage current	V_R = 240 V	I_R			100	nA
	V_R = 240 V, T_j = 150 °C	I_R			100	µA
Forward voltage	I_F = 20 mA	V_F		0.83	0.87	V
	I_F = 100 mA	V_F			1.00	V
Diode capacitance	$V_F = V_R$ = 0, f = 1 MHz	C_{tot}			5.0	pF
Reverse recovery time	$I_F = I_A$ = 30 mA, I_{rr} = 3.0 mA, R_L = 100 Ω	t_{rr}			50	ns

SOD-123 Package Dimension
see Package Section

Small Signal Switching Diode, High Voltage

Features

- Silicon Epitaxial Planar Diode
- Fast switching diode,especially suited for applications requiring high voltage capability



Mechanical Data

Case: SOD-323 Plastic case
Weight: approx. 5.0 mg
Packaging Codes/options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
GSD2004WS	GSD2004WS-GS18 or GSD2004WS-GS08	B6	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	240	V
Peak repetitive reverse voltage		V_{RRM}	300	V
Peak repetitive reverse current		I_{RRM}	200	mA
Forward current (continuous)		I_F	225	mA
Peak repetitive forward current		I_{RFM}	625	mA
Non-repetitive peak forward current	t_p = 1 µs	I_{FSM}	4.0	A
	t_p = 1 s	I_{FSM}	1.0	A
Power dissipation		P_{tot}	200[1)]	mW

1) Device on Fiberglass Substrate, see layout on second page

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Typical thermal resistance junction to ambiant air		R_{thJA}	650[1)]	°C/W
Junction temperature		T_j	150	°C
Storage temperature range		T_S	- 65 to + 150	°C

[1)] Device on Fiberglass Substrate, see layout on second page

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 100 µA	V_{BR}	300			V
Leakage current	V_R = 240 V	I_R			100	nA
	V_R = 240 V, T_j = 150 °C	I_R			100	µA
Forward voltage	I_F = 20 mA	V_F		0.83	0.87	V
	I_F = 100 mA	V_F			1.00	V
Diode capacitance	V_F = V_R = 0, f = 1 MHz	C_{tot}			5.0	pF
Reverse recovery time	I_F = I_A = 30 mA, I_{rr} = 3.0 mA, R_L = 100 Ω	t_{rr}			50	ns

[1)] Device on Fiberglass Substrate, see layout

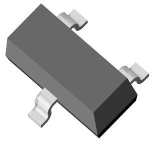
SOD-323 Package Dimension see Package Section

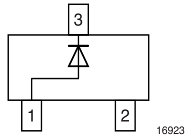
Document Number 85730
Rev. 1.3, 08-Jul-04

Small Signal Switching Diode

Features

- Silicon Epitaxial Planar Diodes
- Fast switching diode in case SOT-23, especially suited for automatic insertion.
- This diodes are also available in other case styles including: the DO-35 case with the type designation 1N4148, the Mini-MELF case with the type designation LL4148, and the SOD-123 case with the type designation 1N4148W.





Mechanical Data

Case: SOT-23 Plastic case

Weight: approx. 8.8 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
IMBD4148	IMBD4148-GS18 or IMBD4148-GS08	A2	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	75	V
Peak reverse voltage		V_{RM}	100	V
Rectified current (average) half wave rectification with resist.	T_{amb} = 25 °C, ≥ f ≥ 50 Hz	$I_{F(AV)}$	150[1)]	mA
Surge forward current	t < 1 s, T_j = 25 °C	I_{FSM}	500	mA
Power dissipation	up to T_{amb} = 25 °C	P_{tot}	350[1)]	mW

[1)] Device on fiberglass substrate, see layout (SOT-23).

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	450[1)]	°C/W
Junction temperature		T_j	150	°C
Storage temperature range		T_S	- 65 to + 150	°C

[1)] Device on fiberglass substrate, see layout (SOT-23).

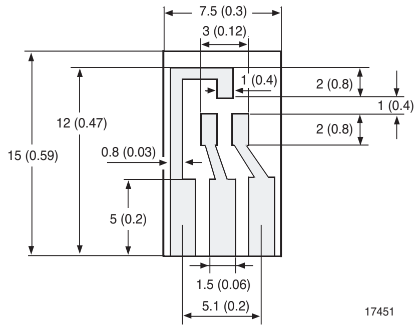
Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 10 mA	V_F			1.0	V
Leakage current	V_R = 70 V	I_R			2.5	µA
	V_R = 70 V, T_j = 150 °C	I_R			50	µA
	V_R = 25 V, T_j = 150 °C	I_R			30	µA
Diode capacitance	$V_F = V_R = 0$	C_{tot}			4	pF
Reverse recovery time (see figures)	I_F = 10 mA, I_R = 10 mA, V_R = 6 V, R_L = 100 Ω	t_{rr}			4	ns

Layout for R_{thJA} test

Thickness:
Fiberglass 1.5 mm (0.059 in.)
Copper leads 0.3 mm (0.012 in.)



Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

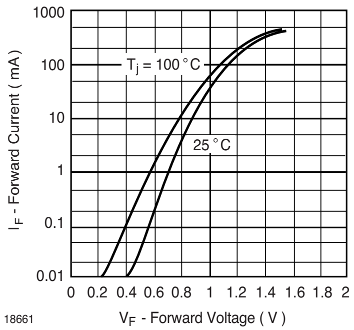


Figure 1. Forward Current vs. Forward Voltage

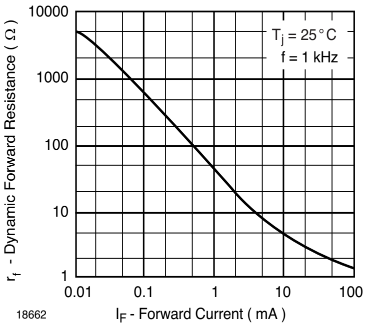


Figure 2. Dynamic Forward Resistance vs. Forward Current

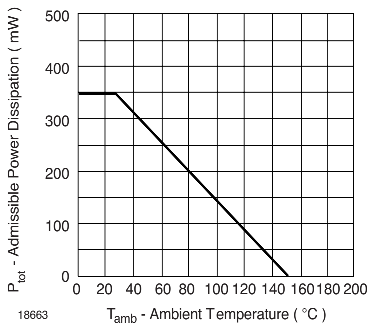


Figure 3. Admissible Power Dissipation vs. Ambient Temperature

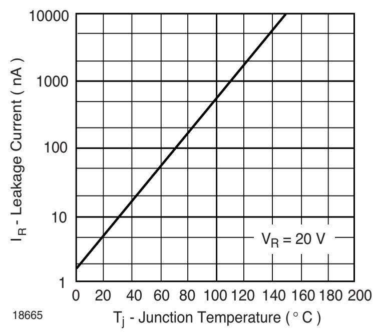


Figure 5. Leakage Current vs. Junction Temperature

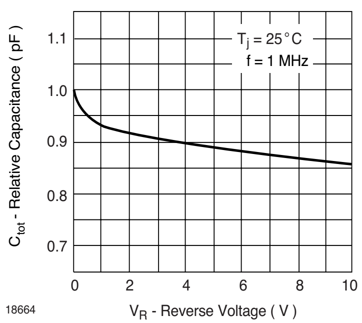


Figure 4. Relative Capacitance vs. Reverse Voltage

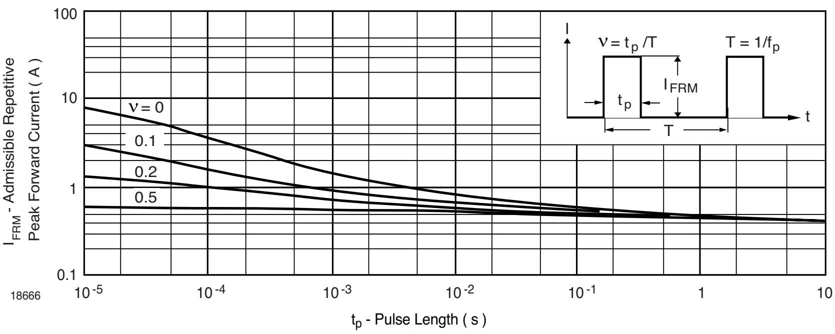


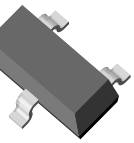
Figure 6. Admissible Repetitive Peak Forward Current vs. Pulse Duration

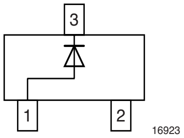
SOT-23 Package Dimension see Package Section

Small Signal Switching Diode

Features

- Silicon Epitaxial Planar Diodes
- Fast switching diode in case SOT-23, especially suited for automatic insertion.
- This diodes are also available in other case styles including: the DO-35 case with the type designation 1N4448, the Mini-MELF case with the type designation LL4448, and the SOD-123 case with the type designation 1N4448W.





Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.8 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
IMBD4448	IMBD4448-GS18 or IMBD4448-GS08	A3	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	75	V
Peak reverse voltage		V_{RM}	100	V
Rectified current (average) half wave rectification with resist.	T_{amb} = 25 °C and f ≥ 50 Hz	$I_{F(AV)}$	150[1)]	mA
Surge forward current	t < 1 s and T_j = 25 °C	I_{FSM}	500	mA
Power dissipation	T_{amb} = 25 °C	P_{tot}	350[1)]	mW

[1)] Device on fiberglass substrate, see layout (SOT-23).

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	450[1)]	°C/W
Junction temperature		T_j	150	°C
Storage temperature range		T_S	- 65 to + 150	°C

[1)] Device on fiberglass substrate, see layout (SOT-23).

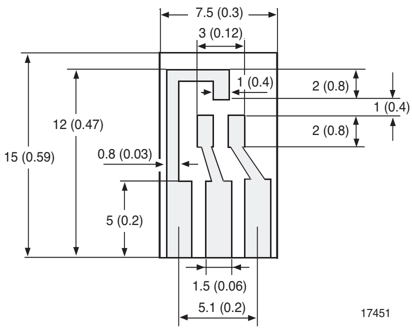
Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 5 mA	V_F	0.62		0.72	V
	I_F = 100 mA	V_F			1.0	V
Leakage current	V_R = 70 V	I_R			2.5	µA
	V_R = 70 V, T_j = 150 °C	I_R			50	µA
	V_R = 25 V, T_j = 150 °C	I_R			30	µA
Diode capacitance	$V_F = V_R = 0$	C_{tot}			4	pF
Reverse recovery time (see figures)	I_F = 10 mA, I_R = 10 mA, V_R = 6 V, R_L = 100 Ω	t_{rr}			4	ns

Layout for R_{thJA} test

Thickness:
Fiberglass 1.5 mm (0.059 in.)
Copper leads 0.3 mm (0.012 in.)



Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

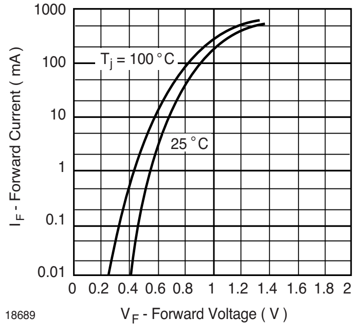


Figure 1. Forward Current vs. Forward Voltage

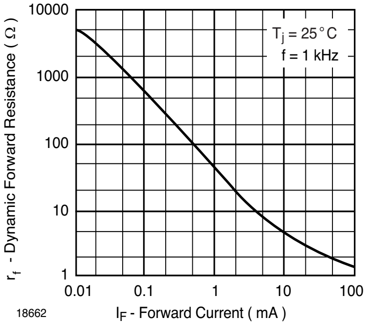


Figure 2. Dynamic Forward Resistance vs. Forward Current

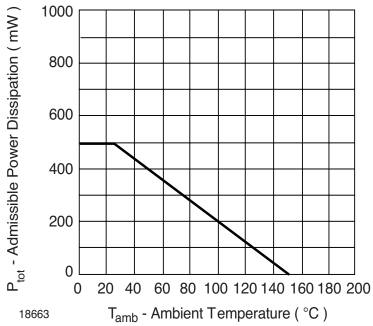


Figure 3. Admissible Power Dissipation vs. Ambient Temperature

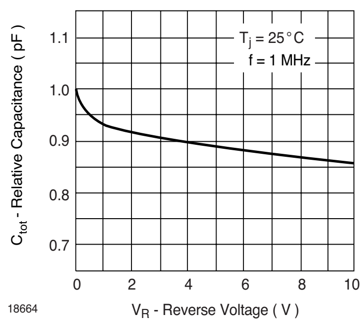


Figure 4. Relative Capacitance vs. Reverse Voltage

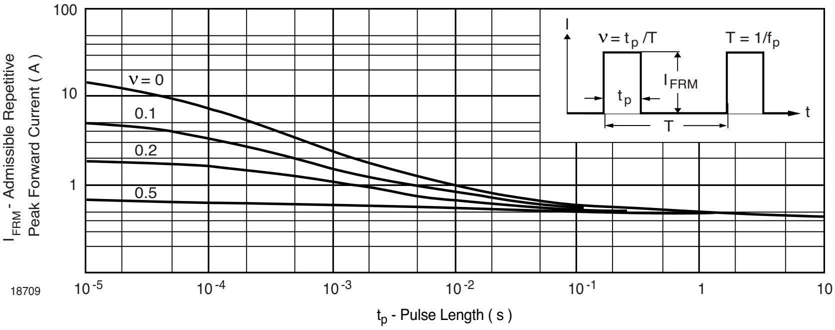


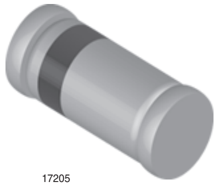
Figure 5. Admissible Repetitive Peak Forward Current vs. Pulse Duration

SOT-23 Package Dimension see Package Section

Small Signal Schottky Diode

Features

- For general purpose applications
- This diode features low turn-on voltage and high break-down voltage.
- This device is protected by a PN junction guard ring against excessive voltage, such as electro-static discharges.
- This diode is also available in the DO-35 case with type designation BAT41.



17205

Mechanical Data

Case: MiniMELF Glass case (SOD-80)

Weight: approx. 31 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Ordering code	Marking	Remarks
LL41	LL41-GS18 or LL41-GS08	-	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	100	V
Forward continuous current	T_{amb} = 25 °C	I_F	100[1)]	mA
Repetitive peak forward current	t_p < 1 s, δ < 0.5, T_{amb} = 25 °C	I_{FRM}	350[1)]	mA
Surge forward current	t_p = 10 ms, T_{amb} = 25 °C	I_{FSM}	750[1)]	mA
Power dissipation[1)]	T_{amb} = 25 °C	P_{tot}	400[1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	300[1)]	°C/W
Junction temperature		T_j	125	°C
Ambient operating temperature range		T_{amb}	- 65 to + 125	°C
Storage temperature range		T_S	- 65 to + 150	°C

1) Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

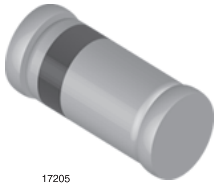
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	100 µA/ 300 µs pulses	$V_{(BR)R}$	100	110		V
Leakage current	Pulse test t_p = 300 µs, V_R = 50 V, T_j = 25 °C	I_R			100	nA
	Pulse test t_p = 300 µs, V_R = 50 V, T_j = 100 °C	I_R			20	µA
Forward voltage	Pulse test t_p = 300 µs, I_F = 1 mA	V_F		0.40	0.45	V
	Pulse test t_p = 300 µs, I_F = 200 mA	V_F			1.0	V
Capacitance	V_R = 1 V, f = 1 MHz			2		pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, I_{rr} = 1 mA, R_L = 100 Ω	t_{rr}		5		pF

MiniMELF SOD-80 Package Dimension see Package Section

Small Signal Schottky Diodes

Features
- For general purpose applications
- These diodes feature very low turn-on voltage and fast switching.
- These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.
- These diodes are also available in the DO-35 case with type designations BAT42 to BAT43 and in the SOD-123 case with type designations BAT42W to BAT43W.


17205

Mechanical Data
Case: MiniMELF Glass case (SOD-80)

Weight: approx. 31 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Ordering code	Marking	Remarks
LL42	LL42-GS18 or LL42-GS08	-	Tape and Reel
LL43	LL43-GS18 or LL43-GS08	-	Tape and Reel

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	30	V
Forward continuous current	T_{amb} = 25 °C	I_F	200[1)]	mA
Repetitive peak forward current	t_p < 1 s, δ < 0.5, T_{amb} = 25 °C	I_{FRM}	500[1)]	mA
Surge forward current	t_p = 10 ms, T_{amb} = 25 °C	I_{FSM}	4[1)]	A
Power dissipation[1)]	T_{amb} = 65 °C	P_{tot}	200[1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	0.3[1)]	°C/W
Junction temperature		T_j	125	°C
Ambient operating temperature range		T_{amb}	- 55 to + 125	°C
Storage temperature range		T_S	- 65 to + 150	°C

[1)] Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

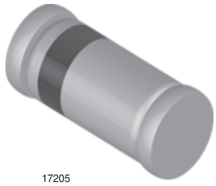
Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	100 μA pulses		$V_{(BR)}$	30			V
Leakage current	Pulse test t_p < 300 μs, V_R = 25 V, δ < 2 %		I_R			0.5	μA
	Pulse test t_p < 300 μs, V_R = 25 V, T_j = 100 °C, δ < 2 %		I_R			100	μA
Forward voltage	Pulse test t_p = 300 μs, I_F = 200 mA, δ < 2 %		V_F			1	V
	Pulse test t_p = 300 μs, I_F = 10 mA, δ < 2 %	LL42	V_F			0.4	V
	Pulse test t_p = 300 μs, I_F = 50 mA, δ < 2 %	LL42	V_F			0.65	V
	Pulse test t_p = 300 μs, I_F = 2 mA, δ < 2 %	LL43	V_F	0.26		0.33	V
	Pulse test t_p = 300 μs, I_F = 15 mA, δ < 2 %	LL43	V_F			0.45	V
Diode capacitance	V_R = 1 V, f = 1 MHz		C_{tot}		7		pF
Reverse recovery time	I_F = 10 mA, I_R = 10 mA, I_{rr} = 1 mA, R_L = 100 Ω		t_{rr}			5	pF
Rectification efficiency	R_L = 15 kΩ, C_L = 300 pF, f = 45 MHz, V_{RF} = 2 V		η_v	80			%

MiniMELF SOD-80 Package Dimension see Package Section

Small Signal Schottky Diode

Features

- For general purpose applications
- This diode features low turn-on voltage and high break-down voltage. This device is protected by a PN junction guardring against excessive voltage, such as electrostatic discharges.
- This diode is also available in the DO-35 case with type designation BAT46 and in the SOD-123 case with type designation BAT46W.



17205

Mechanical Data

Case: MiniMELF Glass case (SOD-80)

Weight: approx. 31 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Ordering code	Marking	Remarks
LL46	LL46-GS18 or LL46-GS08	-	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	100	V
Forward continuous current	T_{amb} = 25 °C	I_F	150[1)]	mA
Repetitive peak forward current	t_p < 1 s, δ < 0.5, T_{amb} = 25 °C	I_{FRM}	350[1)]	mA
Surge forward current	t_p = 10 ms, T_{amb} = 25 °C	I_{FSM}	750[1)]	A
Power dissipation[1)]	T_{amb} = 80 °C	P_{tot}	200[1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	0.3[1)]	°C/mW
Junction temperature		T_j	125	°C
Ambient operating temperature range		T_{amb}	- 55 to + 125	°C
Storage temperature range		T_S	- 65 to + 150	°C

[1)] Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	100 μA pulses	$V_{(BR)R}$	100			V
Leakage current	Pulse test t_p = 300 μs, V_R = 1.5 V, δ < 2 %	I_R			0.5	μA
	Pulse test t_p = 300 μs, V_R = 1.5 V, T_j= 60 °C, δ < 2 %	I_R			5	μA
	Pulse test t_p = 300 μs, V_R = 10 V, δ < 2 %	I_R			0.8	μA
	Pulse test t_p = 300 μs, V_R = 10 V, T_j= 60 °C, δ < 2 %	I_R			7.5	μA
	Pulse test t_p = 300 μs, V_R = 50 V, δ < 2 %	I_R			2	μA
	Pulse test t_p = 300 μs, V_R = 50 V, T_j= 60 °C, δ < 2 %	I_R			15	μA
	Pulse test t_p = 300 μs, V_R = 75 V, δ < 2 %	I_R			5	μA
	Pulse test t_p = 300 μs, V_R = 75 V, T_j= 60 °C, δ < 2 %	I_R			20	μA
Forward voltage	Pulse test t_p = 300 μs, I_F = 0.1 mA, δ < 2 %	V_F			0.25	V
	Pulse test t_p = 300 μs, I_F = 10 mA, δ < 2 %	V_F			0.45	V
	Pulse test t_p = 300 μs, I_F = 250 mA, δ < 2 %	V_F			1	V
Diode capacitance	V_R = 0 V, f = 1 MHz	C_{tot}		10		pF
	V_R = 1 V, f = 1 MHz	C_{tot}		6		pF

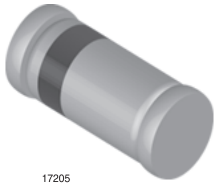
MiniMELF SOD-80 Package Dimension
see Package Section

Document Number 85673
Rev. 1.2, 18-Nov-03

Small Signal Schottky Diode

Features

- For general purpose applications
- This diode features very low turn-on voltage and high break-down voltage.
- This devices are protected by a PN junction guard ring against excessive voltage, such as electro-static discharges.
- This diode are also available in the DO-35 case with type designations BAT48.


17205

Mechanical Data

Case: MiniMELF Glass case (SOD-80)

Weight: approx. 31 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Ordering code	Marking	Remarks
LL48	LL48-GS18 or LL48-GS08	-	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	40	V
Forward continuous current	T_{amb} = 25 °C	I_F	350[1)]	A
Repetitive peak forward current	t_p < 1 s, δ < 0.5, T_{amb} = 25 °C	I_{FRM}	1.0[1)]	mA
Surge forward current	t_p = 10 ms, T_{amb} = 25 °C	I_{FSM}	7.5[1)]	A
Power dissipation[1)]	T_{amb} = 80 °C	P_{tot}	330[1)]	mW

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	300[1)]	°C/W
Junction temperature		T_j	125	°C
Ambient operating temperature range		T_{amb}	- 65 to + 125	°C
Storage temperature range		T_S	- 65 to + 150	°C

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

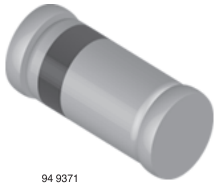
Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	100 µA pulses	$V_{(BR)R}$	40			V
Leakage current	Pulse test t_p = 300 µs, V_R = 10 V, δ < 2 %	I_R			2	µA
	Pulse test t_p = 300 µs, V_R = 10 V, T_j= 60 °C, δ < 2 %	I_R			15	µA
	Pulse test t_p = 300 µs, V_R = 20 V, δ < 2 %	I_R			5	µA
	Pulse test t_p = 300 µs, V_R = 20 V, T_j= 60 °C, δ < 2 %	I_R			25	µA
	Pulse test t_p = 300 µs, V_R = 40 V, δ < 2 %	I_R			25	µA
	Pulse test t_p = 300 µs, V_R = 40 V, T_j= 60 °C, δ < 2 %	I_R			50	µA
Forward voltage	Pulse test t_p = 300 µs, I_F = 0.1 mA, δ < 2 %	V_F			0.25	V
	Pulse test t_p = 300 µs, I_F = 1 mA, δ < 2 %	V_F			0.30	V
	Pulse test t_p = 300 µs, I_F = 10 mA, δ < 2 %	V_F			0.40	V
	Pulse test t_p = 300 µs, I_F = 50 mA, δ < 2 %	V_F			0.50	V
	Pulse test t_p = 300 µs, I_F = 200 mA, δ < 2 %	V_F			0.75	V
	Pulse test t_p = 300 µs, I_F = 500 mA, δ < 2 %	V_F			0.90	V
Diode capacitance	V_R = 1 V, f = 1 MHz	C_{tot}		12		pF

MiniMELF SOD-80 Package Dimension see Package Section

Small Signal Schottky Diodes

Features

- For general purpose applications
- The LL101 series is a metal-on-silicon Schottky barrier device which is protected by a PN junction guard ring.
- The low forward voltage drop and fast switching make it ideal for protection of MOS devices, steering, biasing and coupling diodes for fast switching and low logic level applications.
- Integrated protection ring against static discharge
- Low capacitance
- Low leakage current
- This diode is also available in the DO-35 case with type designation SD101A, B, C and in the SOD-123 case with type designation SD101AW, SD101BW, SD101CW.



94 9371

Applications

HF-Detector

Protection circuit

Diode for low currents wits a low supply voltage

Small battery charger

Power supplies

DC / DC converter for notebooks

Mechanical Data

Case: MiniMELF Glass case (SOD-80)

Weight: approx. 31 mg

Cathode Band Color: Black

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
LL101A	V_R = 60 V, V_F @ I_F 1 mA max. 0.41 V	LL101A-GS08 or LL101A-GS18	Tape and Reel
LL101B	V_R = 50 V, V_F @ I_F 1 mA max. 0.4 V	LL101B-GS08 or LL101B-GS18	Tape and Reel
LL101C	V_R = 40 V, V_F @ I_F 1 mA max. 0.39 V	LL101C-GS08 or LL101C-GS18	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Peak inverse voltage		LL101A	V_{RRM}	60	V
		LL101B	V_{RRM}	50	V
		LL101C	V_{RRM}	40	V
Power dissipation (infinite heatsink)			P_{tot}	400[1)]	mW
Maximum single cycle surge 10 µs square wave			I_{FSM}	2	A

1) Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction temperature		T_j	125	°C
Storage temperature range		T_S	- 65 to + 150	°C
Junction ambien	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	320	K/W

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse Breakdown Voltage	I_R = 10 µA	LL101A	$V_{(BR)R}$	60			V
		LL101B	$V_{(BR)R}$	50			V
		LL101C	$V_{(BR)R}$	40			V
Leakage current	V_R = 50 V	LL101A	I_R			200	nA
	V_R = 50V	LL101B	I_R			200	nA
	V_R = 50 V	LL101C	I_R			200	nA
Forward voltage drop	I_F = 1 mA	LL101A	V_F			0.41	V
	I_F = 1mA	LL101B	V_F			0.4	V
	I_F = 1 mA	LL101C	V_F			0.39	V
	I_F = 15 mA	LL101A	V_F			1	V
		LL101B	V_F			0.95	V
		LL101C	V_F			0.9	V
Diode capacitance	V_R = 0 V, f = 1 MHz	LL101A	C_D			2.0	pF
	V_R = 0 V, f = 1 MHz	LL101B	C_D			2.1	pF
		LL101C	C_D			2.2	pF
Reverse recovery time	I_F = I_R = 5 mA, recover to 0.1 I_R		t_{rr}			1	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

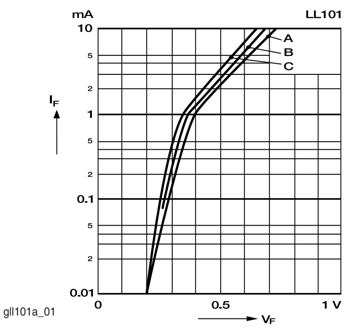


Figure 1. Typ. I_F vs. V_F for primary conduction through the Schottky barrier

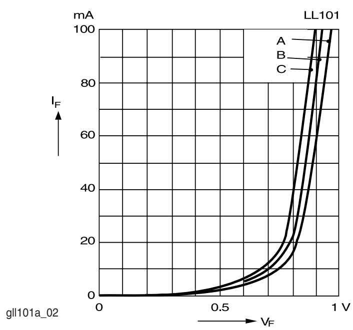


Figure 2. Typ. I_F of combination Schottky barrrier and PN junction guard ring

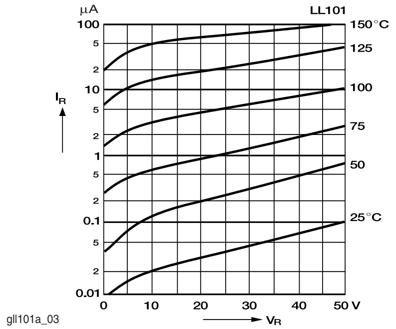


Figure 3. Typical Variation of Reverse Current at Various Temperatures

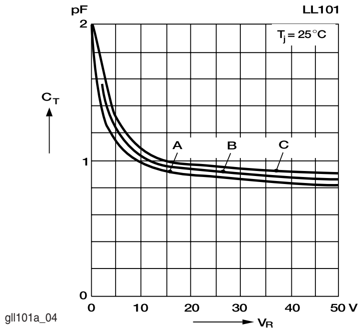


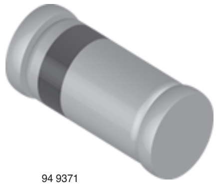
Figure 4. Typical Capacitance Curve as a Function of Reverse Voltage

MiniMELF SOD-80 Package Dimension see Package Section

Small Signal Schottky Diodes

Features

- Integrated protection ring against static discharge
- Low capacitance
- Low leakage current
- Low forward voltage drop


94 9371

Applications

HF-Detector
Protection circuit
Small battery charger
AC-DC/ DC-Dc converters

Mechanical Data

Case: MiniMELF Glass case (SOD-80)
Weight: approx. 31 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
LL103A	V_R = 40 V, V_F @ I_F = 20 mA max. 0.37 V	LL103A-GS08 or LL103A-GS18	Tape and Reel
LL103B	V_R = 30 V, V_F @ I_F = 20 mA max. 0.37 V	LL103B-GS08 or LL103B-GS18	Tape and Reel
LL103C	V_R = 20 V, V_F @ I_F = 20 mA max. 0.37 V	LL103C-GS08 or LL103C-GS18	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Reverse voltage		LL103A	V_R	40	V
		LL103B	V_R	30	V
		LL103C	V_R	20	V
Forward current			I_{FAV}	200	mA
Peak forward surge curent	t_p = 300 µs, square pulse		I_{FSM}	15	mW
Power dissipation	l = 4 mm, T_L = constant		P_{tot}	400	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	250	K/W

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 50 µA	LL103A	I_R	40			V
		LL103B	I_R	30			V
		LL103C	I_R	20			V
Leakage current	V_R = 30 V	LL103A	I_R			5	µA
	V_R = 20 V	LL103B	I_R			5	µA
	V_R = 10 V	LL103C	I_R			5	µA
Forward voltage drop	I_F = 20 mA		V_F			0.37	V
	I_F = 200 mA		V_F			0.6	V
Junction capacitance	V_R = 0 V, f = 1 MHz		C_{tot}		50		pF
Reverse recovery time	I_F = I_R = 50 to 200 mA, recover to 0.1 I_R		t_{rr}		10		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

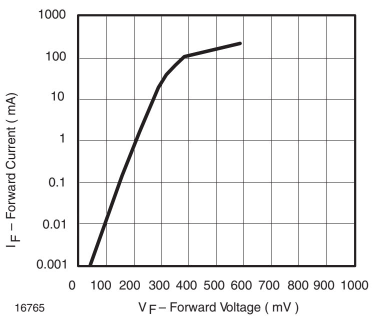


Figure 1. Forward Current vs. Forward Voltage

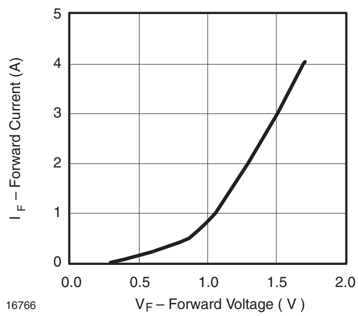


Figure 2. Forward Current vs. Forward Voltage

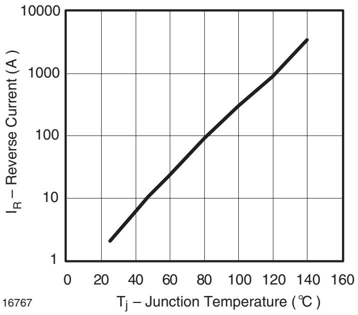


Figure 3. Reverse Current vs. Junction Temperature

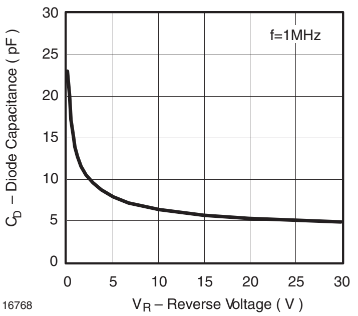


Figure 4. Diode Capacitance vs. Reverse Voltage

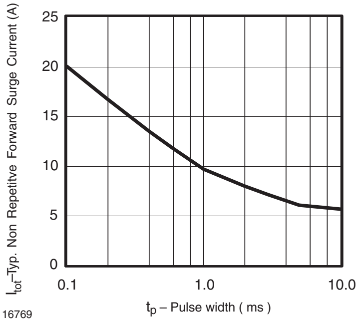
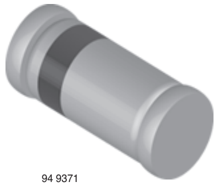


Figure 5. Typ. Non Repetitive Forward Surge Current vs. Pulse width

MiniMELF SOD-80 Package Dimension see Package Section

Small Signal Fast Switching Diodes

Features
- Silicon Epitaxial Planar Diodes
- Electrical data identical with the devices 1N4148 and 1N4448 respectively



Applications
Extreme fast switches

Mechanical Data
Case: MiniMELF Glass case (SOD-80C)
Weight: approx. 31 mg

Cathode Band Color:
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
LL4148	V_{RRM} = 100 V, V_F @ I_F 50 mA < 1 V, Single Diodes	LL4148-GS18 or LL4148-GS08	Tape and Reel
LL4448	V_{RRM} = 100 V, V_F @ I_F 100 mA < 1 V, Single Diodes	LL4448-GS18 or LL4448-GS08	Tape and Reel

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	100	V
Reverse voltage		V_R	75	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2	A
Repetitive peak forward current		I_{FRM}	500	mA
Forward current		I_F	300	mA
Average forward current	V_R = 0	I_{FAV}	150	mA
Power dissipation		P_V	500	mW

Thermal Characteristics
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 5 mA	LL4448	V_F	0.62		0.72	V
	I_F = 50 mA	LL4148	V_F		0.86	1	V
	I_F = 100 mA	LL4448	V_F		0.93	1	V
Reverse current	V_R = 20 V		I_R			25	nA
	V_R = 20 V, T_j = 150 °C		I_R			50	µA
	V_R = 75 V		I_R			5	µA
Breakdown voltage	I_R = 100 µA, t_p/T = 0.01, t_p = 0.3 ms		$V_{(BR)}$	100			V
Diode capacitance	V_R = 0, f = 1MHz, V_{HF} = 50 mV		C_D			4	pF
Rectification efficiency	V_{HF} = 2 V, f = 100 MHz		η_r	45			%
Reverse recovery time	$I_F = I_R$ = 10 mA, i_R = 1 mA		t_{rr}			8	ns
	I_F = 10 mA, V_R = 6 V, i_R = 0.1 x I_R, R_L = 100 Ω		t_{rr}			4	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

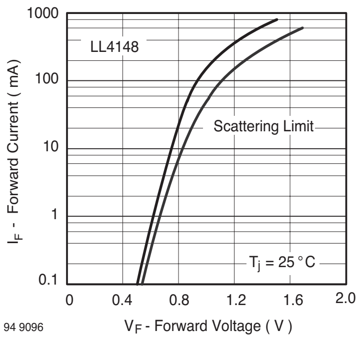


Figure 1. Forward Current vs. Forward Voltage

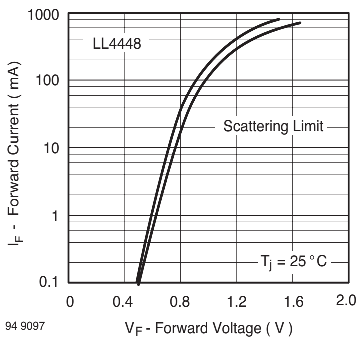


Figure 2. Forward Current vs. Forward Voltage

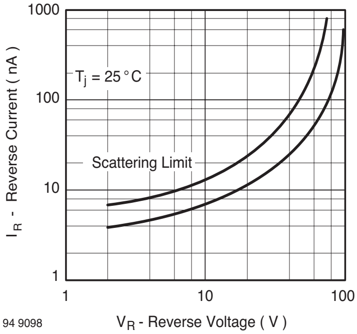


Figure 3. Reverse Current vs. Reverse Voltage

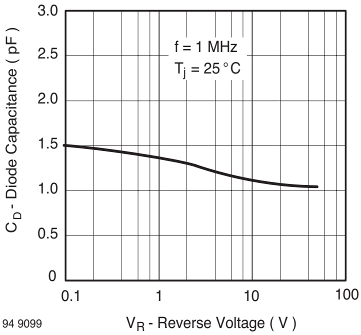
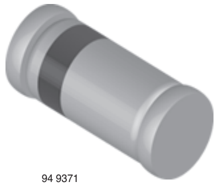


Figure 4. Diode Capacitance vs. Reverse Voltage

MiniMELF SOD-80 Package Dimension see Package Section

Small Signal Fast Switching Diode

Features
- Silicon Epitaxial Planar Diodes
- Low forward voltage drop
- High forward current capability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Applications
High speed switch and general purpose use in computer and industrial applications

Mechanical Data
Case: MiniMELF Glass case (SOD-80)

Weight: approx. 31 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
LL4150	V_{RRM} = 50 V	LL4150-GS18 or LL4150-GS08	Tape and Reel

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	50	V
Reverse voltage		V_R	50	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	4	A
Forward current		I_F	600	mA
Average forward current	V_R = 0	I_{FAV}	300	mA
Power dissipation		P_V	500	mW

Thermal Characteristics
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 1 mA	V_F	0.54		0.62	V
	I_F = 10 mA	V_F	0.66		0.74	V
	I_F = 50 mA	V_F	0.76		0.86	V
	I_F= 100 mA	V_F	0.82		0.92	V
	I_F = 200 mA	V_F	0.87		1.0	V
Reverse current	V_R = 50 V	I_R			100	nA
	V_R = 50 V, T_j = 150 °C	I_R			100	µA
Diode capacitance	V_R = 0, f = 1 MHz, V_{HF} = 50 mV	C_D			2.5	pF
Reverse recovery time	I_F = I_R = 10 to 100 mA, i_R = 0.1 x I_R, R_L = 100 Ω	t_{rr}			4	ns

Typical Characteristics (T$_{amb}$ = 25 °C unless otherwise specified)

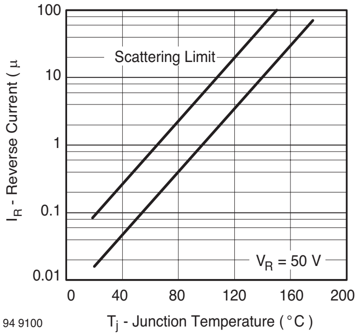


Figure 1. Reverse Current vs. Junction Temperature

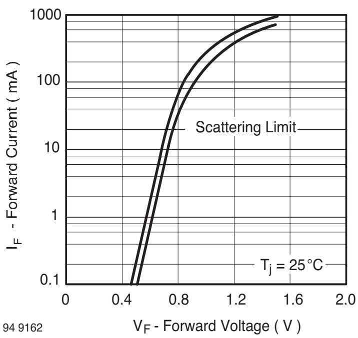


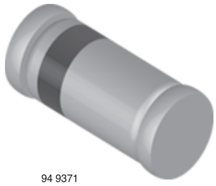
Figure 2. Forward Current vs. Forward Voltage

MiniMELF SOD-80 Package Dimension see Package Section

Small Signal Fast Switching Diode

Features

- Silicon Epitaxial Planar Diodes
- Electrical data identical with the device 1N4151



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Applications

Extreme fast switches

Mechanical Data

Case: MiniMELF Glass case (SOD-80)
Weight: approx. 31 mg
Cathode Band Color: Black

Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
LL4151	V_{RRM} = 75 V	LL4151-GS18 or LL4151-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	75	V
Reverse voltage		V_R	50	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2	A
Repetitive peak forward current		I_{FRM}	500	mA
Forward current		I_F	300	mA
Average forward current	V_R = 0	I_{FAV}	150	mA
Power dissipation		P_V	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	-65 to +175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 50 mA	V_F		0.88	1	V
Reverse current	V_R = 50 V	I_R			50	nA
	V_R = 50 V, T_j = 150 °C	I_R			50	µA
Breakdown voltage	I_R = 5 µA, t_p/T = 0.01, t_p = 0.3 ms	$V_{(BR)}$	75			V
Diode capacitance	V_R = 0, f = 1MHz, V_{HF} = 50 mV	C_D			2	pF
Reverse recovery time	$I_F = I_R$ = 10 mA, i_R = 1 mA	t_{rr}			4	ns
	I_F = 10 mA, V_R = 6 V, i_R = 0.1 x I_R, R_L = 100 Ω	t_{rr}			2	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

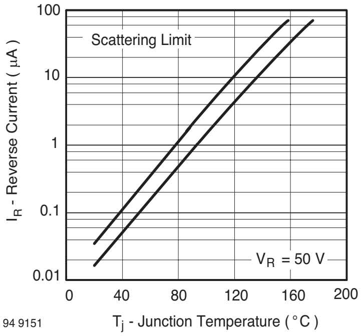


Figure 1. Reverse Current vs. Junction Temperature

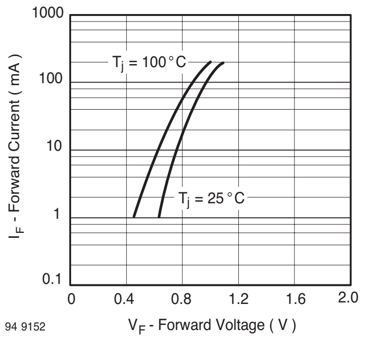


Figure 2. Forward Current vs. Forward Voltage

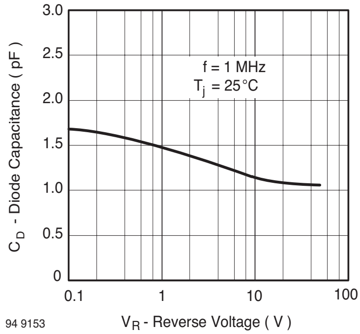


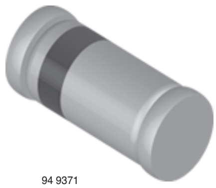
Figure 3. Diode Capacitance vs. Reverse Voltage

MiniMELF SOD-80 Package Dimension see Package Section

Small Signal Fast Switching Diode

Features

- Silicon Epitaxial Planar Diodes
- Electrical data identical with the device 1N4154



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Applications

Extreme fast switchess

Mechanical Data

Case: MiniMELF Glass case (SOD-80)
Weight: approx. 31 mg
Cathode Band Color: Black

Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
LL4154	V_{RRM} = 35 V	LL4154-GS18 or LL4154-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	35	V
Reverse voltage		V_R	25	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2	A
Repetitive peak forward current		I_{FRM}	500	mA
Forward current		I_F	300	mA
Average forward current	V_R = 0	I_{FAV}	150	mA
Power dissipation		P_V	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 30 mA	V_F			1	V
Reverse current	V_R = 25 V	I_R			100	nA
	V_R = 25 V, T_j = 150 °C	I_R			100	µA
Breakdown voltage	I_R = 5 µA, t_p/T = 0.01, t_p = 0.3 ms	$V_{(BR)}$	35			V
Diode capacitance	V_R = 0, f = 1 MHz, V_{HF} = 50 mV	C_D			4	pF
Reverse recovery time	I_F = I_R = 10 mA, i_R = 1mA	t_{rr}			4	ns
	I_F = 10 mA, V_R = 6 V, i_R = 0.1 x I_R, R_L = 100 Ω	t_{rr}			2	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

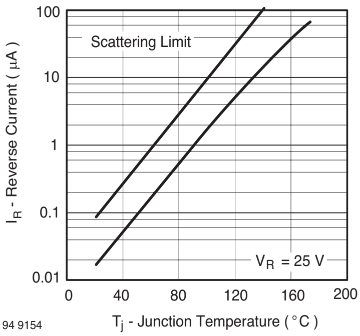


Figure 1. Reverse Current vs. Junction Temperature

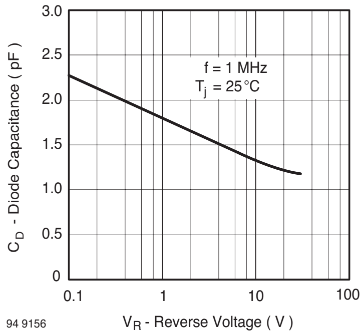


Figure 3. Diode Capacitance vs. Reverse Voltage

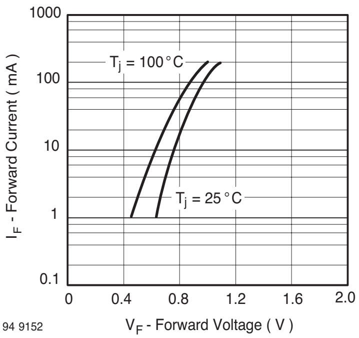


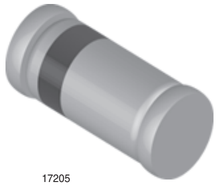
Figure 2. Forward Current vs. Forward Voltage

MiniMELF SOD-80 Package Dimension see Package Section

Small Signal Schottky Diodes

Features

- For general purpose applications
- Metal-on-silicon Schottky barrier device which is protected by a PN junction guard ring.
- The low forward voltage drop and fast switching make it ideal for protection of MOS devices, steering, biasing and coupling diodes for fast switching and low logic level applications.
- This diode is also available in the DO-35 case with type designation 1N5711 and 1N6263.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Mechanical Data

Case: MiniMELF Glass case (SOD-80)
Weight: approx. 31 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Ordering code	Marking	Remarks
LL5711	LL5711-GS18 or LL5711-GS08	-	Tape and Reel
LL6263	LL6263-GS18 or LL6263-GS08	-	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Peak inverse voltage		LL5711	V_{RRM}	70	V
		LL6263	V_{RRM}	60	V
Power dissipation (infinite heatsink)			P_{tot}	400[1)]	mW
Maximum single cycle surge 10 µs square wave			I_{FSM}	2.0	A

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction temperature		T_j	125	°C
Storage temperature range		T_S	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 µA	LL5711	$V_{(BR)R}$	70			
		LL6263	$V_{(BR)R}$	60			
Leakage current	V_R = 50 V		I_R			200	nA
Forward voltage drop	I_F = 1.0 mA		V_F			0.41	V
	I_F = 15 mA		V_F			1.0	V
Diode capacitance	V_R = 0 V, f = 1.0 MHz	LL5711	C_D		2.0		pF
		LL6263	C_D		2.2		pF
Reverse recovery time	$I_F = I_R$ = 5 mA, recover to 0.1 I_R		t_{rr}		1.0		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

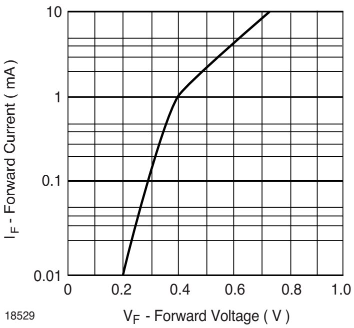


Figure 1. Typical Variation of Forward Current vs. Forward Voltage

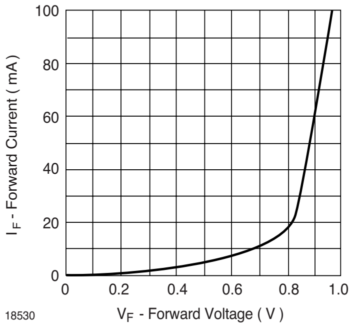


Figure 2. Typical Forward Conduction Curve

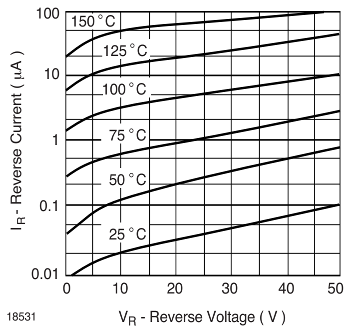


Figure 3. Typical Variation of Reverse Current at Various Temperatures

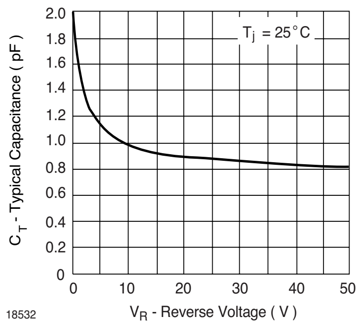


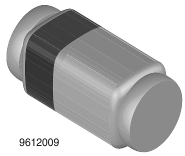
Figure 4. Typical Capacitance Curve as a Function of Reverse Voltage

MiniMELF SOD-80 Package Dimension see Package Section

Small Signal Schottky Diodes

Features

- Integrated protection ring against static discharge
- Low capacitance
- Low leakage current
- Low forward voltage drop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Applications

HF-Detector
Protection circuit
Diode for low currents with a low supply voltage
Small battery charger

Power supplies
DC / DC converter for notebooks

Mechanical Data

Case: QuadroMELF Glass case (SOD-80)
Weight: approx. 34 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
LS101A	V_R = 60 V, V_F @ I_F1 mA max. 0.41 V	LS101A-GS18 or LS101A-GS08	Tape and Reel
LS101B	V_R = 50 V, V_F @ I_F1 mA max. 0.4 V	LS101B-GS18 or LS101B-GS08	Tape and Reel
LS101C	V_R = 40 V, V_F @ I_F1 mA max. 0.39 V	LS101C-GS18 or LS101C-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Reverse voltage		LS101A	V_R	60	V
		LS101B	V_R	50	V
		LS101C	V_R	40	V
Peak forward surge current	t_p = 10 µs		I_{FSM}	2	A
Repetitive peak forward current			I_{FRM}	150	mA
Forward current			I_F	30	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	320	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse Breakdown Voltage	I_R = 10 µA	LS101A	$V_{(BR)R}$	60			V
		LS101B	$V_{(BR)R}$	50			V
		LS101C	$V_{(BR)R}$	40			V
Leakage current	V_R = 50 V	LS101A	I_R			200	nA
	V_R = 40 V	LS101B	I_R			200	nA
	V_R = 30 V	LS101C	I_R			200	nA
Forward voltage drop	I_F = 1 mA	LS101A	V_F			0.41	V
		LS101B	V_F			0.4	V
		LS101C	V_F			0.39	V
	I_F = 15 mA	LS101A	V_F			1	V
		LS101B	V_F			0.95	V
		LS101C	V_F			0.9	V
Diode capacitance	V_R = 0 V, f = 1 MHz	LS101A	C_D			2.0	pF
		LS101B	C_D			2.1	pF
		LS101C	C_D			2.2	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

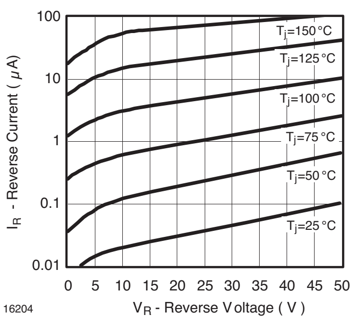


Figure 1. Reverse Current vs. Reverse Voltage

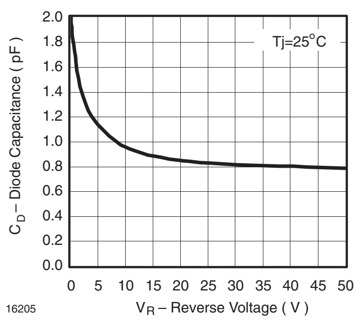


Figure 2. Diode Capacitance vs. Reverse Voltage

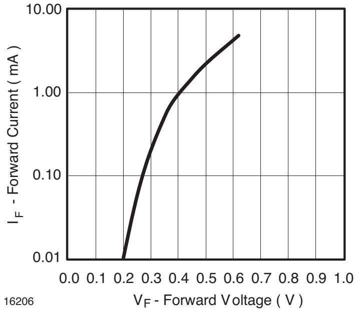
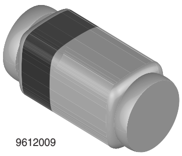


Figure 3. Forward Current vs. Forward Voltage

QuadroMELF SOD-80 Package Dimension see Package Section

Small Signal Schottky Diodes

Features
- Integrated protection ring against static discharge
- Low capacitance
- Low leakage current
- Low forward voltage drop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Applications
HF-Detector
Protection circuit
Small battery charger
AC-DC / DC-DC converters

Mechanical Data
Case: QuadroMELF Glass case (SOD-80)
Weight: approx. 34 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
LS103A	V_R = 40 V, V_F @ I_F 20 mA max. 0.37 V	LS103A-GS18 or LS103A-GS08	Tape and Reel
LS103B	V_R = 30 V, V_F @ I_F 20 mA max. 0.37 V	LS103B-GS18 or LS103B-GS08	Tape and Reel
LS103C	V_R = 20 V, V_F @ I_F 20 mA max. 0.37 V	LS103C-GS18 or LS103C-GS08	Tape and Reel

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Reverse voltage		LS103A	V_R	40	V
		LS103B	V_R	30	V
		LS103C	V_R	20	V
Peak forward surge current	t_p = 300 µs, square pulse		I_{FSM}	15	A
Power dissipation	l = 4 mm, T_L = constant		P_{tot}	400	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	250	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse Breakdown Voltage	I_R = 10 µA	LS103A	$V_{(BR)R}$	40			V
		LS103B	$V_{(BR)R}$	30			V
		LS103C	$V_{(BR)R}$	20			V
Leakage current	V_R = 30 V	LS103A	I_R			5	µA
	V_R = 20 V	LS103B	I_R			5	µA
	V_R = 10 V	LS103C	I_R			5	µA
Forward voltage drop	I_F = 20 mA		V_F			0.37	V
	I_F = 200 mA		V_F			0.6	V
Diode capacitance	V_R = 0 V, f = 1 MHz		C_D		50		pF
Reverse recovery time	I_F = I_R = 50 to 200 mA, recover to 0.1 I_R		t_{rr}		10		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

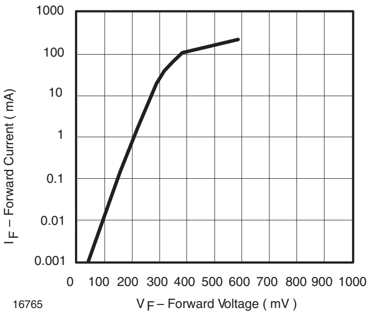


Figure 1. Forward Current vs. Forward Voltage

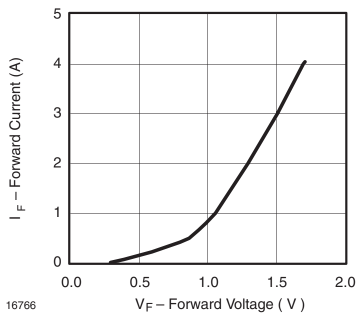


Figure 2. Forward Current vs. Forward Voltage

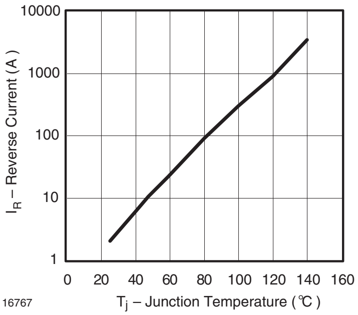


Figure 3. Reverse Current vs. Junction Temperature

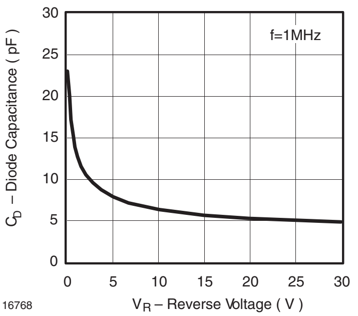


Figure 4. Diode Capacitance vs. Reverse Voltage

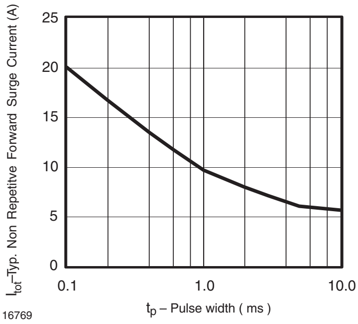


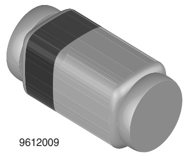
Figure 5. Typ. Non Repetitive Forward Surge Current vs. Pulse width

QuadroMELF SOD-80
Package Dimension
see Package Section

Small Signal Switching Diode, High Voltage

Applications

General purposes



Mechanical Data

Case: QuadroMELF Glass case (SOD-80)
Weight: approx. 34 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
LS485S	V_{RRM} = 200 V	LS485S-GS18 or LS485S-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Peak reverse voltage	I_R = 100 µA	V_{RRM}	200	V
Reverse voltage		V_R	180	V
Forward current		I_F	200	mA
Forward peak current	f = 50 Hz	I_{FM}	500	mA
Peak forward surge current	t_p = 1 µs	I_{FSM}	4	A

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 55 to +150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 10 mA, T_j = - 40 °C	V_F			1.2	V
	I_F = 10 mA, T_j = 25 °C	V_F			1.1	V
	I_F = 10 mA, T_j= 125 °C	V_F			1.1	V
Reverse current	V_R = 10 V, T_j = - 40 °C	I_R			25	nA
	V_R = 10 V, T_j= 25 °C	I_R			25	nA
	V_R = 10 V, T_j = 125 °C	I_R			150	nA
Breakdown voltage	I_R = 100 µA, T_j = - 40 °C	$V_{(BR)}$	200			V
	I_R = 100 µA, T_j= 25 °C	$V_{(BR)}$	200			V
	I_R = 100 µA, T_j = 125 °C	$V_{(BR)}$	200			V
Diode capacitance	V_R = 0 V, f = 1 MHz	C_D			5	pF

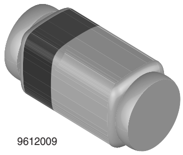
QuadroMELF SOD-80
Package Dimension
see Package Section

Document Number 85565
Rev. 1.4, 13-Apr-04

Small Signal Fast Switching Diodes

Features

- Silicon Epitaxial Planar Diodes
- Electrical data identical with the devices 1N4148 and 1N4448 respectively
- Quadro Melf package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Applications

Extreme fast switches

Mechanical Data

Case: QuadroMELF Glass case (SOD-80)

Weight: approx. 34 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
LS4148	V_{RRM} = 100 V, V_F @ I_F 50 mA = 1 V	LS4148-GS18 or LS4148-GS08	Tape and Reel
LS4448	V_{RRM} = 100 V, V_F @ I_F 100 mA = 1 V	LS4448-GS18 or LS4448-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	100	V
Reverse voltage		V_R	75	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2	A
Repetitive peak forward current		I_{FRM}	500	mA
Forward current		I_F	300	mA
Average forward current	V_R = 0	I_{FAV}	150	mA
Power dissipation		P_V	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6mm	R_{thJA}	500	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 5 mA	LS4448	V_F	0.62		0.72	V
	I_F = 50 mA	LS4148	V_F		0.86	1	V
	I_F = 100 mA	LS4448	V_F		0.93	1	V
Reverse current	V_R = 20 V		I_R			25	nA
	V_R = 20 V, T_j = 150 °C		I_R			50	µA
	V_R = 75 V		I_R			5	µA
Breakdown voltage	I_R = 100 µA, t_p/T = 0.01, t_p = 0.3 ms		$V_{(BR)}$	100			V
Diode capacitance	V_R = 0, f = 1 MHz, V_{HF} = 50 mV		C_D			4	pF
Rectification efficiency	V_{HF} = 2 V, f = 100 MHz		η_r	45			%
Reverse recovery time	$I_F = I_R$ = 10 mA, i_R = 1 mA		t_{rr}			8	ns
	I_F = 10 mA, V_R = 6 V, i_R = 0.1 x I_R, R_L = 100 Ω		t_{rr}			4	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

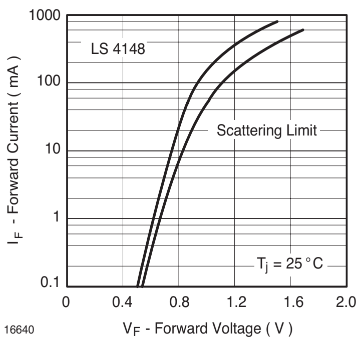


Figure 1. Forward Current vs. Forward Voltage

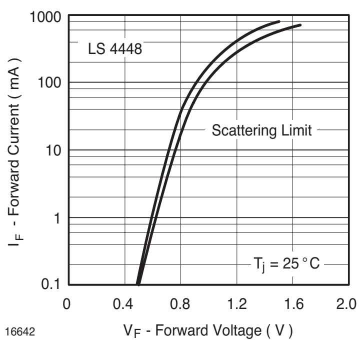


Figure 2. Forward Current vs. Forward Voltage

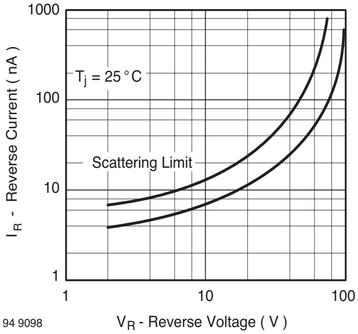


Figure 3. Reverse Current vs. Reverse Voltage

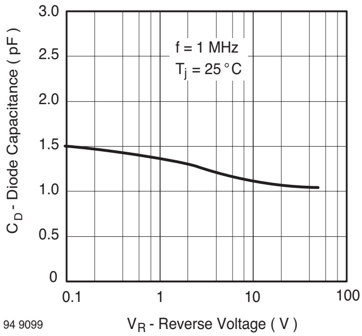


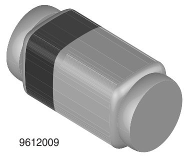
Figure 4. Diode Capacitance vs. Reverse Voltage

QuadroMELF SOD-80 Package Dimension see Package Section

Small Signal Fast Switching Diode

Features

- Silicon Epitaxial Planar Diode
- Electrical data identical with the device 1N4150
- Quadro Melf package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Applications

High speed switch and general purpose
use in computer and industrial applications

Mechanical Data

Case: QuadroMELF Glass case (SOD-80)

Weight: approx. 34 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
LS4150	V_{RRM} = 50 V	LS4150-GS18 or LS4150-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	50	V
Reverse voltage		V_R	50	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	4	A
Forward current		I_F	600	mA
Average forward current	V_R = 0	I_{FAV}	300	mA
Power dissipation		P_V	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 1 mA	V_F	0.54		0.62	V
	I_F = 10 mA	V_F	0.66		0.74	V
	I_F = 50 mA	V_F	0.76		0.86	V
	I_F = 100 mA	V_F	0.82		0.92	V
	I_F = 200 mA	V_F	0.87		1.0	V
Reverse current	V_R = 50 V	I_R			100	nA
	V_R = 50 V, T_j = 150 °C	I_R			100	nA
Diode capacitance	V_R = 0, f = 1 MHz, V_{HF} = 50 mV	C_D			2.5	pF
Reverse recovery time	$I_F = I_R$ = 10 to 100 mA, i_R = 0.1 x I_R, R_L = 100 Ω	t_{rr}			4	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

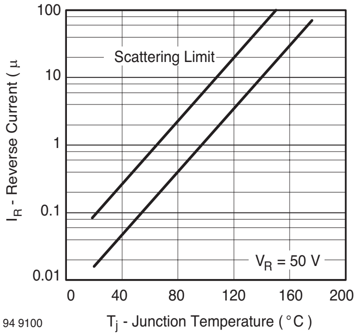


Figure 1. Reverse Current vs. Junction Temperature

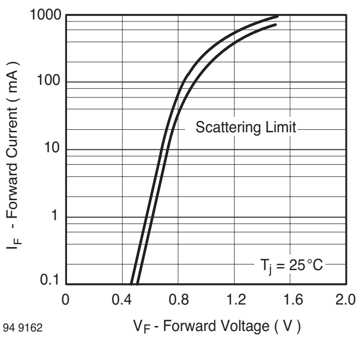


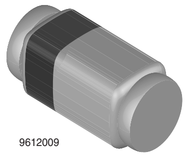
Figure 2. Forward Current vs. Forward Voltage

QuadroMELF SOD-80 Package Dimension see Package Section

Small Signal Fast Switching Diode

Features

- Silicon Epitaxial Planar Diode
- Electrical data identical with the device 1N4151
- Quadro Melf package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Applications

Extreme fast switches

Mechanical Data

Case: QuadroMELF Glass case (SOD-80)
Weight: approx. 34 mg

Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
LS4151	V_{RRM} = 75 V	LS4151-GS18 or LS4151-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	75	V
Reverse voltage		V_R	50	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2	A
Repetitive peak forward current		I_{FRM}	500	mA
Forward current		I_F	300	mA
Average forward current	V_R = 0	I_{FAV}	150	mA
Power dissipation		P_V	500	mW
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	-65 to +175	°C

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 50 mA	V_F		0.88	1	V
Reverse voltage	V_R = 50 V	I_R			50	nA
	V_R = 50 V, T_j = 150 °C	I_R			50	µA
Breakdown voltage	I_R = 5 µA, t_p/T = 0.01, t_p = 0.3 ms	$V_{(BR)}$	75			V
Diode capacitance	V_R = 0, f = 1 MHz, V_{HF} = 50 mV	C_D			2	pF
Reverse recovery time	I_F = I_R = 10 mA, i_R = 1 mA	t_{rr}			4	ns
	I_F = 10 mA, V_R = 6 V, i_R = 0.1 x I_R, R_L = 100 Ω	t_{rr}			2	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

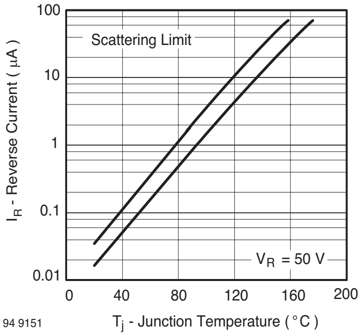


Figure 1. Reverse Current vs. Junction Temperature

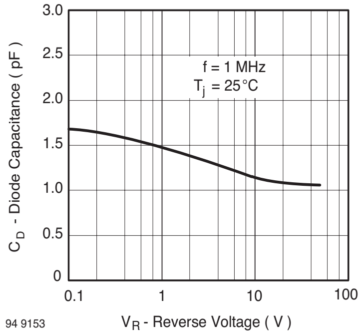


Figure 3. Diode Capacitance vs. Reverse Voltage

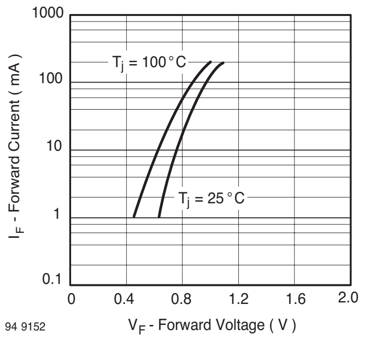
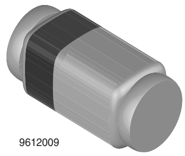


Figure 2. Forward Current vs. Forward Voltage

QuadroMELF SOD-80
Package Dimension
see Package Section

Small Signal Fast Switching Diode

Features
- Silicon Epitaxial Planar Diode
- Electrical data identical with the device 1N4154
- Quadro Melf package



Applications
Extreme fast switches

Mechanical Data
Case: QuadroMELF Glass case (SOD-80)
Weight: approx. 34 mg

Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
LS4154	V_{RRM} = 35 V	LS4154-GS18 or LS4154-GS08	Tape and Reel

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	35	V
Reverse voltage		V_R	25	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2	A
Repetitive peak forward current		I_{FRM}	500	mA
Forward current		I_F	300	mA
Average forward current	V_R = 0	I_{FAV}	150	mA
Power dissipation		P_V	500	mW

Thermal Characteristics
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 30 mA	V_F			1	V
Reverse current	V_R = 25 V	I_R			100	nA
	V_R = 25 V, T_j = 150 °C	I_R			100	μA
Breakdown voltage	I_R = 5 μA, t_p/T = 0.01, t_p = 0.3 ms	$V_{(BR)}$	35			V
Diode capacitance	V_R = 0, f = 1MHz, V_{HF} = 50 mV	C_D			4	pF
Reverse recovery time	I_F = I_R = 10 mA, i_R = 1 mA	t_{rr}			4	ns
	I_F = 10 mA, V_R = 6 V, i_R = 0.1 x I_R, R_L = 100 Ω	t_{rr}			2	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

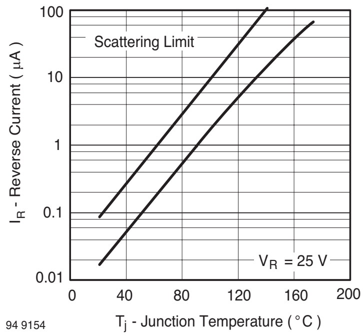


Figure 1. Reverse Current vs. Junction Temperature

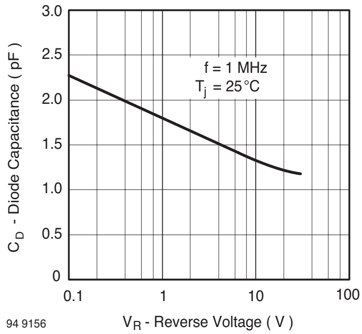


Figure 3. Diode Capacitance vs. Reverse Voltage

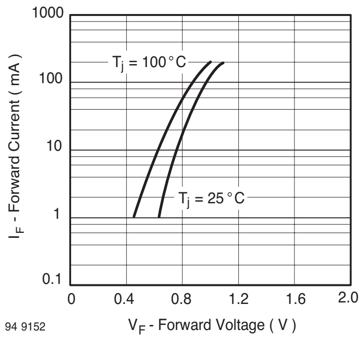


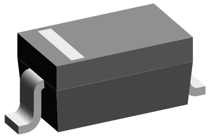
Figure 2. Forward Current vs. Forward Voltage

QuadroMELF SOD-80
Package Dimension
see Package Section

Small Signal Schottky Diode, Low

Features

- For surface mounted applications
- Low profile package
- Ideal for automated placement
- Low power loss, high efficiency
- High temperature soldering:
  250 °C/10 seconds at terminals


17431

Mechanical Data

Case: SOD-123 Plastic case
Polarity: Band denotes cathode end

Weight: approx. 9.3 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
MBR0520L	MBR0520L-GS18 or MBR0520L-GS08	B2	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Maximum repetitive peak reverse voltage		V_{RRM}	20	V
Working peak reverse voltage		V_{RWM}	20	V
Maximum DC blocking voltage		V_R	20	V
Max. average forward rectified current at rated V_R	T_{amb} = 115 °C	I_{FAV}	0.5	A
Peak forward surge current	8.3 ms single half sine-wave T_L = 25 °C	I_{FSM}	5.5	A
Voltage rate of change at rated V_R	T_j = 25 °C	dv/dt	1,000	V/µs

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Typical thermal resistance junction to lead		R_{thJL}	118	°C/W
Typical thermal resistance junction to ambient		R_{thJA}	206	°C/W
Operating junction and storage temperature		T_j, T_{stg}	- 55 to + 125	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Maximum instantaneous forward voltage[1)]	I_F = 0.1 A, T_j = 25 °C	V_F			0.300	V
	I_F = 0.1 A, T_j = 100 °C	V_F			0.220	V
	I_F = 0.5 A, T_j = 25 °C	V_F			0.385	V
	I_F = 0.5 A, T_j = 100 °C	V_F			0.330	V
Maximum DC reverse current	V_R = 10 V, T_j = 25 °C	I_R			75	μA
	V_R = 10 V, T_j = 100 °C	I_R			5	mA
	V_R = 20 V, T_j = 25 °C	I_R			250	μA
	V_R = 20 V, T_j = 100 °C	I_R			8	mA

[1)] Pulse test: 300 ms pulse width, 1 % duty cycle

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

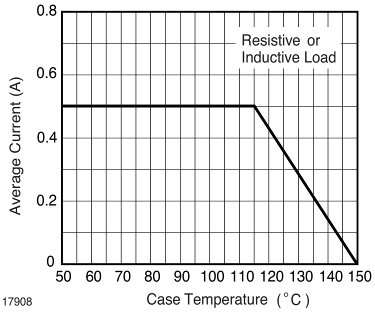


Figure 1. Derating Curve Output Rectified Current

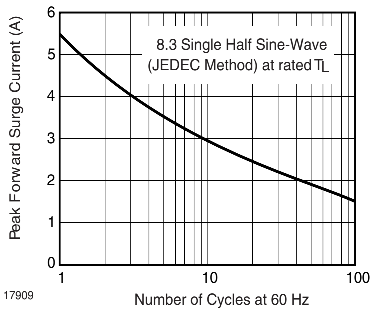


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

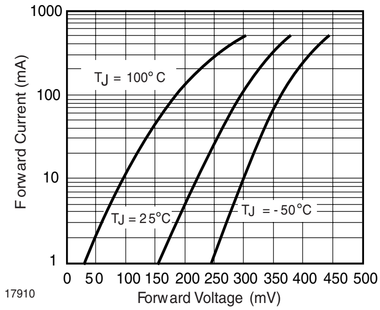


Figure 3. Typical Instantaneous Forward Characteristics

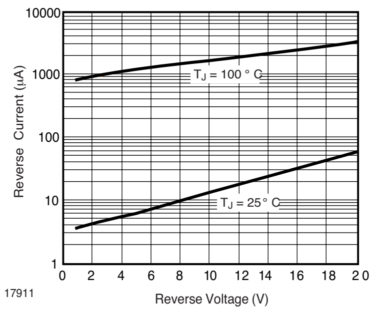


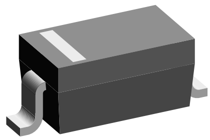
Figure 4. Typical Reverse Characteristics

SOD-123 Package Dimension see Package Section

Small Signal Schottky Diode

Features

- For surface mounted applications
- Low profile package
- Ideal for automated placement
- Low power loss, high efficiency
- High temperature soldering:
  250 °C/10 seconds at terminals



17431

Mechanical Data

Case: SOD-123 Plastic case
Polarity: Band denotes cathode end

Weight: approx. 9.3 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
MBR0530	MBR0530-GS18 or MBR0530-GS08	B3	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Maximum repetitive peak reverse voltage		V_{RRM}	30	V
Working peak reverse voltage		V_{RWM}	30	V
Maximum DC blocking voltage		V_R	30	V
Max. average forward rectified current at rated V_R	T_C = 115 °C	I_{FAV}	0.5	A
Peak forward surge current	8.3 ms single half sine-wave T_L = 25 °C	I_{FSM}	5.5	A
Voltage rate of change at rated V_R	T_J = 25 °C	dv/dt	1,000	V/µs

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Typical thermal resistance junction to lead		R_{thJL}	118	°C/W
Typical thermal resistance junction to ambient		R_{thJA}	206	°C/W
Operating junction and storage temperature		T_j, T_{stg}	- 55 to + 125	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Maximum instantaneous forward voltage[1)]	I_F = 0.1 A, T_j = 25 °C	V_F			0.375	V
	I_F = 0.1 A, T_j = 100 °C	V_F			0.340	V
	I_F = 0.5 A, T_j = 25 °C	V_F			0.43	V
	I_F = 0.5 A, T_j = 100 °C	V_F			0.420	V
Maximum DC reverse current	V_R = 30 V, T_j = 25 °C	I_R			130	µA
	V_R = 30 V, T_j = 100 °C	I_R			5	mA
	V_R = 15 V, T_j = 25 °C	I_R			20	µA

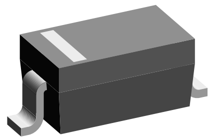
[1)] Pulse test: 300 ms pulse width, 1 % duty cycle

SOD-123 Package Dimension
see Package Section

Small Signal Schottky Diode

Features

- For surface mounted applications
- Low profile package
- Ideal for automated placement
- Low power loss, high efficiency
- High temperature soldering:
  250 °C/10 seconds at terminals



Mechanical Data

Case: SOD-123 Plastic case
Polarity: Band denotes cathode end

Weight: approx. 9.3 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
MBR0540	MBR0540-GS18 or MBR0540-GS08	B4	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Maximum repetitive peak reverse voltage		V_{RRM}	40	V
Working peak reverse voltage		V_{RWM}	40	V
Maximum DC blocking voltage		V_R	40	V
Max. average forward rectified current at rated V_R	V_C = 115 °C	I_{FAV}	0.5	A
Repetitive peak forward current at rated V_R	20 kHz square wave, T_C = 115 °C	I_{FRM}	1.0	A
Peak forward surge current	8.3 ms single half sine-wave T_L = 25 °C	I_{FSM}	5.5	A
Voltage rate of change at rated V_R	T_j = 25 °C	dv/dt	1,000	V/µs

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Typical thermal resistance j unction to lead		R_{thJL}	118	°C/W
Typical thermal resistance junction to ambient		R_{thJA}	206	°C/W
Operating junction and storage temperature		T_j, T_{stg}	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Maximum instantaneous forward voltage[1)]	I_F = 0.5 A, T_j = 25 °C	V_F			0.51	V
	I_F = 0.5 A, T_j = 100 °C	V_F			0.46	V
	I_F = 1.0 A, T_j = 25 °C	V_F			0.62	V
	I_F = 1.0 A, T_j = 100 °C	V_F			0.61	V
Maximum DC reverse current	V_R = 40 V, T_j = 25 °C	I_R			20	μA
	V_R = 40 V, T_j = 100 °C	I_R			5.0	mA
	V_R = 20 V, T_j = 25 °C	I_R			10	μA

[1)] Pulse test: 300 ms pulse width, 1 % duty cycle

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

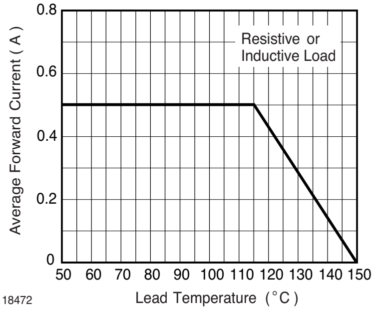


Figure 1. Derating Curve Output Rectified Current

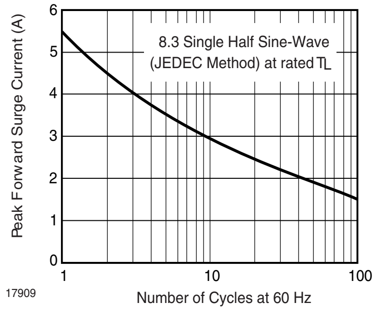


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

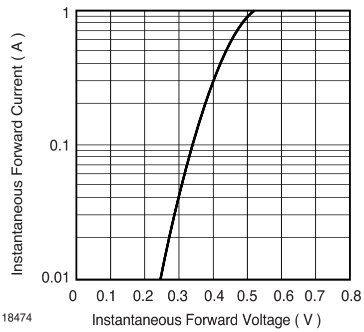


Figure 3. Typical Instantaneous Forward Characteristics

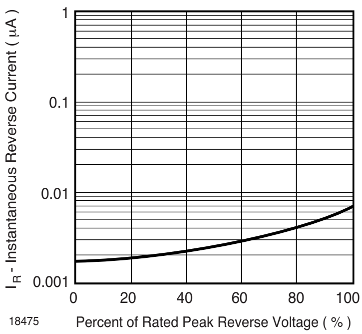


Figure 4. Typical Reverse Characteristics

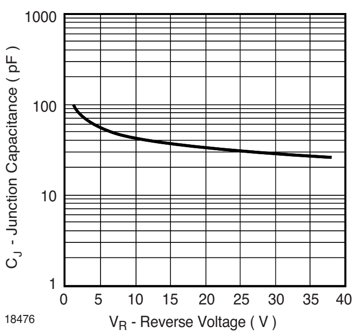


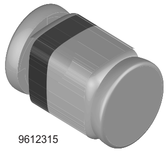
Figure 5. Typical Junction Capacitance

SOD-123 Package Dimension see Package Section

Small Signal Schottky Diodes

Features

- Integrated protection ring against static discharge
- Low capacitance
- Low leakage current
- Low forward voltage drop


9612315

Applications

HF-Detector
Protection circuit
Diode for low currents with a low supply voltage
Small battery charger

Power supplies
DC / DC converter for notebooks

Mechanical Data

Case: MicroMELF Glass case
Weight: approx. 12 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
MCL101A	V_R = 60 V, V_F @ I_F 1 mA max. 0.41 V	MCL101A-GS18 or MCL101A-GS08	Tape and Reel
MCL101B	V_R = 50 V, V_F @ I_F 1 mA max. 0.4 V	MCL101B-GS18 or MCL101B-GS08	Tape and Reel
MCL101C	V_R = 40 V, V_F @ I_F 1 mA max. 0.39 V	MCL101C-GS18 or MCL101C-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Reverse voltage		MCL101A	V_R	60	V
		MCL101B	V_R	50	V
		MCL101C	V_R	40	V
Peak forward surge current	t_p = 10 µs		I_{FSM}	2	A
Repetitive peak forward current			I_{FRM}	150	mA
Forward current			I_F	30	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	320	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse Breakdown Voltage	I_R = 10 μA	MCL101A	$V_{(BR)R}$	60			V
		MCL101B	$V_{(BR)R}$	50			V
		MCL101C	$V_{(BR)R}$	40			V
Leakage current	V_R = 50 V	MCL101A	I_R			200	nA
	V_R = 40 V	MCL101B	I_R			200	nA
	V_R = 30 V	MCL101C	I_R			200	nA
Forward voltage drop	I_F = 1 mA	MCL101A	V_F			0.41	V
		MCL101B	V_F			0.4	V
		MCL101C	V_F			0.39	V
	I_F = 15 mA	MCL101A	V_F			1	V
		MCL101B	V_F			0.95	V
		MCL101C	V_F			0.9	V
Diode capacitance	V_R = 0 V, f = 1 MHz	MCL101A	C_D			2.0	pF
		MCL101B	C_D			2.1	pF
		MCL101C	C_D			2.2	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

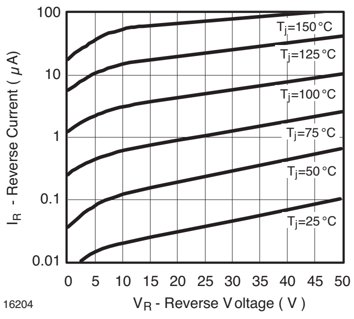


Figure 1. Reverse Current vs. Reverse Voltage

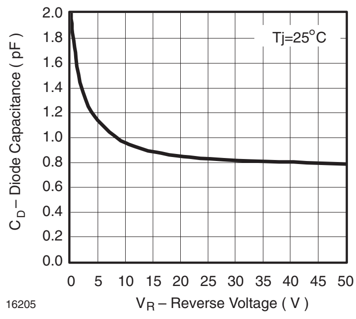


Figure 2. Diode Capacitance vs. Reverse Voltage

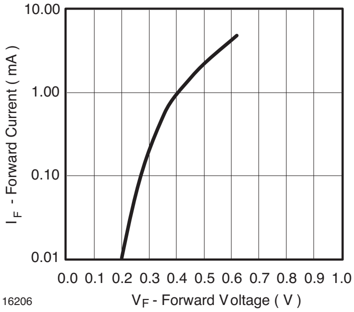
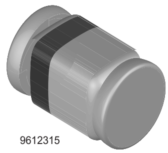


Figure 3. Forward Current vs. Forward Voltage

MicroMELF Package Dimension see Package Section

Small Signal Schottky Diodes

Features
- Integrated protection ring against static discharge
- Low capacitance
- Low leakage current
- Low forward voltage drop


9612315

Applications
HF-Detector
Protection circuit
Small battery charger
AC-DC / DC-DC converters

Mechanical Data
Case: MicroMELF Glass case
Weight: approx. 12 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
MCL103A	V_R = 40 V, V_F @ I_F 20 mA max. 0.37 V	MCL103A-GS18 or MCL103A-GS08	Tape and Reel
MCL103B	V_R = 30 V, V_F @ I_F 20 mA max. 0.37 V	MCL103B-GS18 or MCL103B-GS08	Tape and Reel
MCL103C	V_R = 20 V, V_F@ I_F 20 mA max. 0.37 V	MCL103C-GS18 or MCL103C-GS08	Tape and Reel

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Reverse voltage		MCL103A	V_R	40	V
		MCL103B	V_R	30	V
		MCL103C	V_R	20	V
Peak forward surge current	t_p = 300 µs, square pulse		I_{FSM}	15	A
Power dissipation	l = 4 mm, T_L = constant		P_{tot}	400	mW

Thermal Characteristics
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	l = 4 mm, T_L = constant	R_{thJA}	250	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse Breakdown Voltage	I_R = 10 µA	MCL103A	$V_{(BR)R}$	40			V
		MCL103B	$V_{(BR)R}$	30			V
		MCL103C	$V_{(BR)R}$	20			V
Leakage current	V_R = 30 V	MCL103A	I_R			5	µA
	V_R = 20 V	MCL103B	I_R			5	µA
	V_R = 10 V	MCL103C	I_R			5	µA
Forward voltage drop	I_F = 20 mA		V_F			0.37	V
	I_F = 200 mA		V_F			0.6	V
Diode capacitance	V_R = 0 V, f = 1 MHz		C_D		50		pF
Reverse recovery time	$I_F = I_R$ = 50 to 200 mA, recover to 0.1 I_R		t_{rr}		10		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

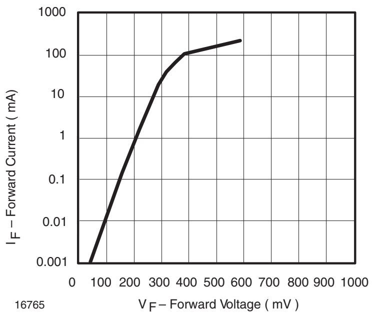


Figure 1. Forward Current vs. Forward Voltage

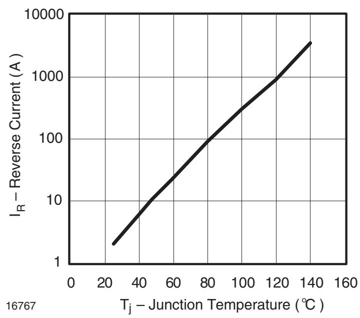


Figure 3. Reverse Current vs. Junction Temperature

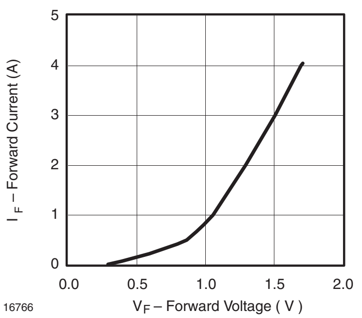


Figure 2. Forward Current vs. Forward Voltage

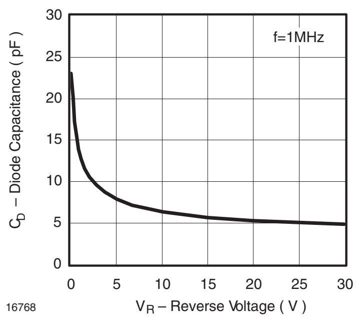


Figure 4. Diode Capacitance vs. Reverse Voltage

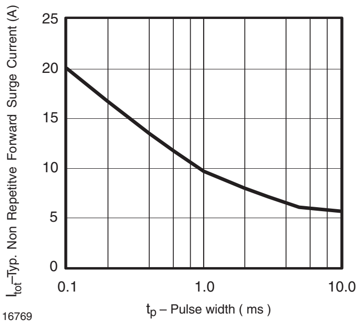
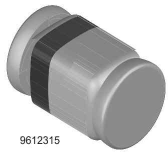


Figure 5. Typ. Non Repetitive Forward Surge Current vs. Pulse width

MicroMELF Package Dimension see Package Section

Small Signal Fast Switching Diodes

Features
- Silicon Epitaxial Planar Diodes
- Saving space
- Hermetic sealed parts
- Fits onto SOD-323 / SOT-23 footprints
- Electrical data identical with the devices 1N4148 and 1N4448 respectively
- Micro Melf package


9612315

Applications
Extreme fast switches

Mechanical Data
Case: MicroMELF Glass case
Weight: approx. 12 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
MCL4148	V_{RRM} = 100 V, V_F @ I_F 50 mA = 1 V	MCL4148-GS18 or MCL4148-GS08	Tape and Reel
MCL4448	V_{RRM} = 100 V, V_F @ I_F 100 mA = 1 V	MCL4448-GS18 or MCL4448-GS08	Tape and Reel

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	100	V
Reverse voltage		V_R	75	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2	A
Repetitive peak forward current		I_{FRM}	450	mA
Forward current		I_F	200	mA
Average forward current	V_R = 0	I_{FAV}	150	mA
Power dissipation		P_V	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	mounted on epoxy-glass hard tissue, Fig. 5, 35 µm copper clad, 0.9 mm² copper area per electrode	R_{thJA}	500	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 5 mA	MCL4448	V_F	0.62		0.72	V
	I_F = 50 mA	MCL4148	V_F		0.86	1	V
	I_F = 100 mA	MCL4448	V_F		0.93	1	V
Reverse current	V_R = 20 V		I_R			25	nA
	V_R = 20 V, T_j = 150 °C		I_R			50	µA
	V_R = 75 V		I_R			5	µA
Breakdown voltage	I_R = 100 µA, t_p/T = 0.01, t_p = 0.3 ms		$V_{(BR)}$	100			V
Diode capacitance	V_R = 0, f = 1 MHz, V_{HF} = 50 mV		C_D			4	pF
Rectification efficiency	V_{HF} = 2 V, f = 100 MHz		η_r	45			%
Reverse recovery time	$I_F = I_R$ =10 mA, i_R = 1 mA		t_{rr}			8	ns
	I_F = 10 mA, V_R = 6 V, $i_R = 0.1 \times I_R$, R_L = 100 Ω		t_{rr}			4	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

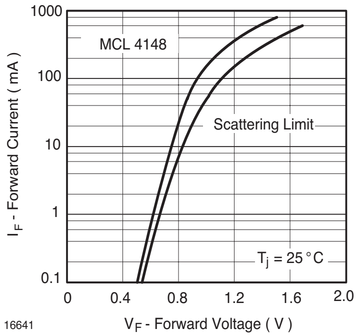


Figure 1. Forward Current vs. Forward Voltage

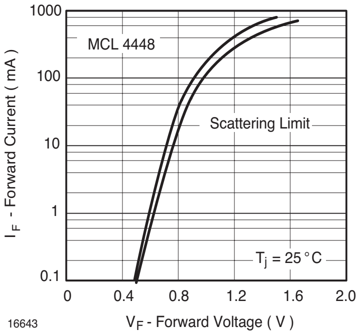


Figure 2. Forward Current vs. Forward Voltage

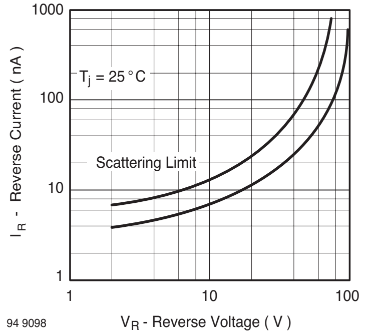


Figure 3. Reverse Current vs. Reverse Voltage

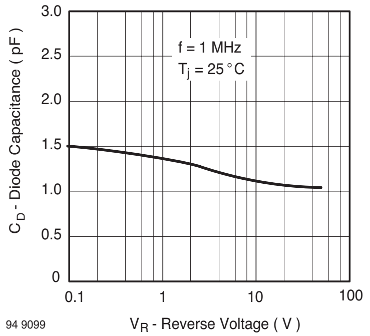


Figure 4. Diode Capacitance vs. Reverse Voltage

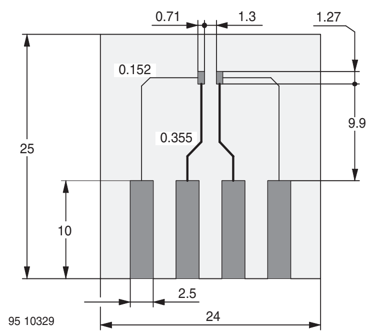


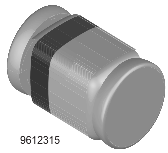
Figure 5. Board for R_{thJA} definition (in mm)

MicroMELF Package Dimension see Package Section

Small Signal Fast Switching Diode

Features

- Silicon Epitaxial Planar Diodes
- Electrical data identical with the device 1N4151
- Micro Melf package



9612315

Applications

Extreme fast switches

Mechanical Data

Case: MicroMELF Glass case
Weight: approx. 12 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
MCL4151	V_{RRM} = 75 V	MCL4151-GS18 or MCL4151-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	75	V
Reverse voltage		V_R	50	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2	A
Repetitive peak forward current		I_{FRM}	450	mA
Forward current		I_F	200	mA
Average forward current	V_R = 0	I_{FAV}	150	mA
Power dissipation		P_V	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	mounted on epoxy-glass hard tissue, Fig. 4, 35 µm copper clad, 0.9 mm^2 copper area per electrode	R_{thJA}	500	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 50 mA	V_F		0.88	1	V
Reverse voltage	V_R = 50 V	I_R			50	nA
	V_R = 50 V, T_j = 150 °C	I_R			50	µA
Breakdown voltage	I_R = 5 µA, t_p/T = 0.01, t_p = 0.3 ms	$V_{(BR)}$	75			V
Diode capacitance	V_R = 0, f = 1 MHz, V_{HF} = 50 mV	C_D			2	pF
Reverse recovery time	$I_F = I_R$ = 10 mA, i_R = 1 mA	t_{rr}			4	ns
	I_F = 10 mA, V_R = 6 V, i_R = 0.1 x I_R, R_L = 100 Ω	t_{rr}			2	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

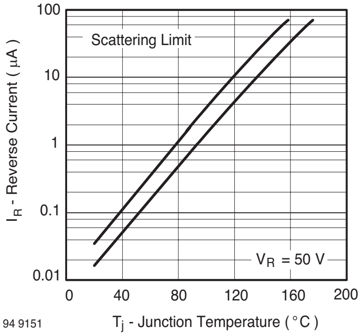


Figure 1. Reverse Current vs. Junction Temperature

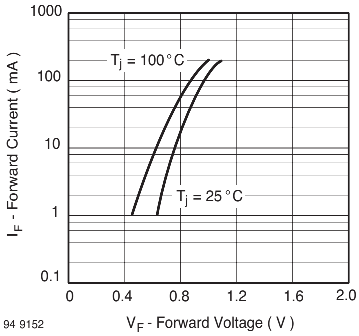


Figure 2. Forward Current vs. Forward Voltage

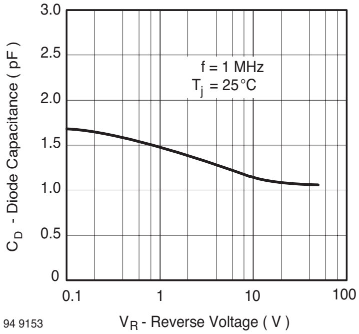


Figure 3. Diode Capacitance vs. Reverse Voltage

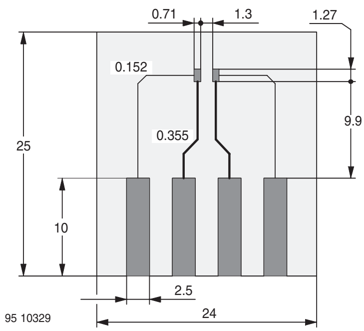


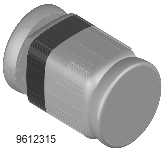
Figure 4. Board for R_{thJA} definition (in mm)

MicroMELF Package Dimension see Package Section

Small Signal Fast Switching Diode

Features

- Silicon Epitaxial Planar Diodes
- Electrical data identical with the device 1N4154
- Micro Melf package


9612315

Applications

Extreme fast switches

Mechanical Data

Case: MicroMELF Glass case
Weight: approx. 12 mg
Cathode Band Color: Black
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
MCL4154	V_{RRM} = 35 V	MCL4154-GS18 or MCL4154-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Repetitive peak reverse voltage		V_{RRM}	35	V
Reverse voltage		V_R	25	V
Peak forward surge current	t_p = 1 µs	I_{FSM}	2	A
Repetitive peak forward current		I_{FRM}	450	mA
Forward current		I_F	200	mA
Average forward current	$V_R = 0$	I_{FAV}	150	mA
Power dissipation		P_V	500	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	mounted on epoxy-glass hard tissue, Fig. 4, 35 µm copper clad, 0.9 mm^2 copper area per electrode	R_{thJA}	500	K/W
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 30 mA	V_F			1	V
Reverse current	V_R = 25 V	I_R			100	nA
	V_R = 25 V, T_j = 150 °C	I_R			100	µA
Breakdown voltage	I_R = 5 µA, t_p/T = 0.01, t_p = 0.3 ms	$V_{(BR)}$	35			V
Diode capacitance	V_R = 0, f = 1 MHz, V_{HF} = 50 mV	C_D			4	pF
Reverse recovery time	I_F = I_R = 10 mA, i_R = 1 mA	t_{rr}			4	ns
	I_F = 10 mA, V_R = 6 V, i_R = 0.1 x I_R, R_L = 100 Ω	t_{rr}			2	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

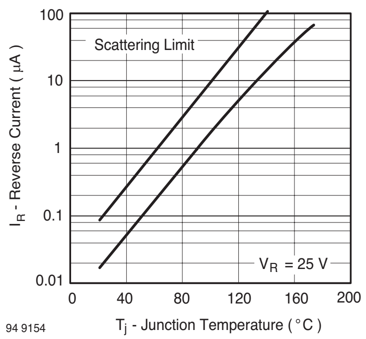


Figure 1. Reverse Current vs. Junction Temperature

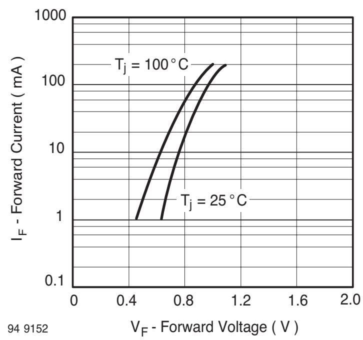


Figure 2. Forward Current vs. Forward Voltage

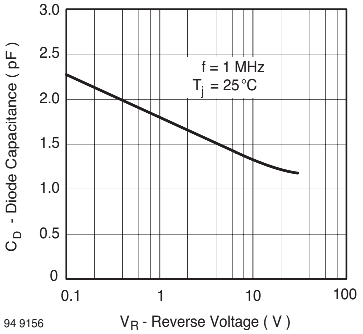


Figure 3. Diode Capacitance vs. Reverse Voltage

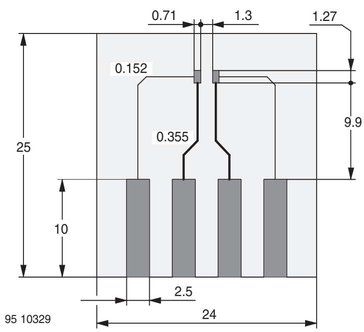


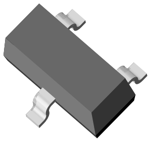
Figure 4. Board for R_{thJA} definition (in mm)

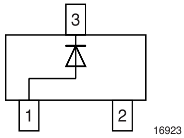
MicroMELF Package Dimension see Package Section

Small Signal Switching Diode

Features

- Silicon Epitaxial Planar Diode
- Fast switching diode in case SOT-23, especially suited for automatic insertion.





Mechanical Data

Case: SOT-23 Plastic case

Weight: approx. 8.8 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
MMBD914	MMBD914-GS18 or MMBD914-GS08	5D	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Peak reverse voltage		V_{RM}	100	V
Maximum average forward rectified current		$I_{F(AV)}$	200	mA
Maximum power dissipation	T_{amb} = 25 °C	P_{tot}	225	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Maximum junction temperature		T_j	150	°C
Storage temperature range		T_S	- 55 to +150	°C

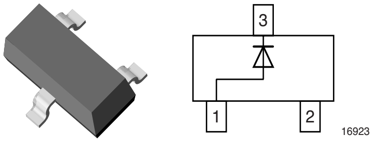
Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage drop	I_F = 10 mA	V_F			1.0	V
Reverse current	V_R = 20 V	I_R			25	nA
	V_R = 75 V	I_R			5.0	µA
Reverse recovery time	$I_F = I_R$ = 10 mA, V_R = 6 V, R_L = 100 Ω, to I_{rr} = 1 mA	t_{rr}			4.0	ns
Diode capacitance	V_R = 0, f = 1.0 MHz	C_{tot}			4.0	pF

SOT-23 Package Dimension
see Package Section

Small Signal Switching Diode



Features

- Silicon Epitaxial Planar Diode
- Fast switching diode in case SOT-23, especially suited for automatic insertion.

Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.8 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
MMBD6050	MMBD6050-GS18 or MMBD6050-GS08	5AM	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	70	V
Forward current		I_F	200	mA
Peak forward surge current		I_{FSM}	500	mA
Maximum power dissipation on FR-5 board [1]	T_A = 25 °C	P_{tot}	225	mW
	Derate above 25 °C	P_{tot}	1.8	mW/°C
Maximum power dissipation on Alumina substrate [2]	T_A = 25 °C	P_{tot}	300	mW
	Derate above 25 °C	P_{tot}	2.4	mW/°C

[1] FR-5 = 1.0 x 0.75 x 0.062 in.

[2] Alumina = 0.4 x 0.3 x 0.024 in. 99.5 % alumina

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance FR-5		R_{thJA}	556	°C;/W
Junction to ambient Alumina		R_{thJA}	417	°C/W
Maximum junction temperature		T_j	150	°C
Storage temperature range		T_S	- 55 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 100 µA	$V_{(BR)R}$	70			V
Forward voltage	I_F = 1 mA	V_F	0.55		0.7	V
	I_F = 100 mA	V_F	0.85		1.1	V
Reverse leakage current	V_R = 50 V	I_R			0.1	µA
Reverse recovery time	$I_F = I_R$ = 10 mA, I_{rr} = 1 mA	t_{rr}			4	ns
Diode capacitance	V_R = 0	C_{tot}			2.5	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

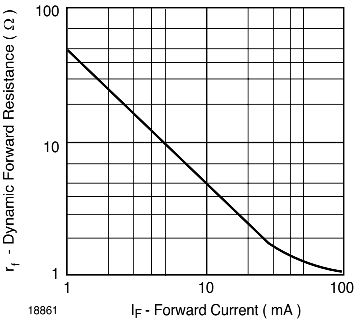


Figure 1. Dynamic Forward Resistance vs. Forward Current

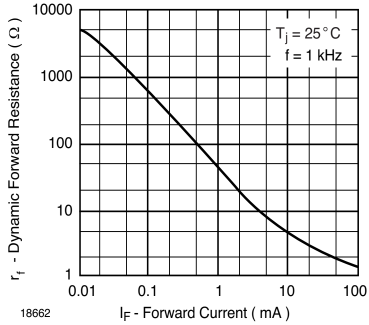


Figure 3. Dynamic Forward Resistance vs. Forward Current

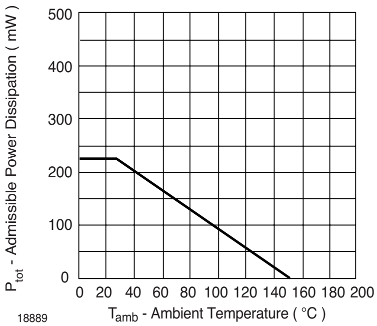


Figure 2. Admissible Power Dissipation vs. Ambient Temperature

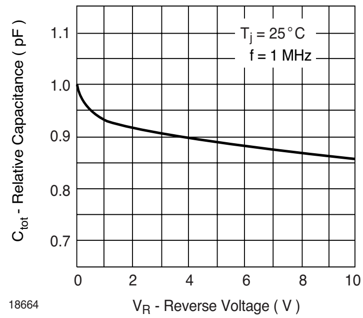


Figure 4. Relative Capacitance vs. Reverse Voltage

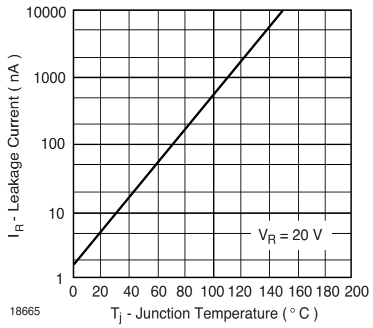


Figure 5. Leakage Current vs. Junction Temperature

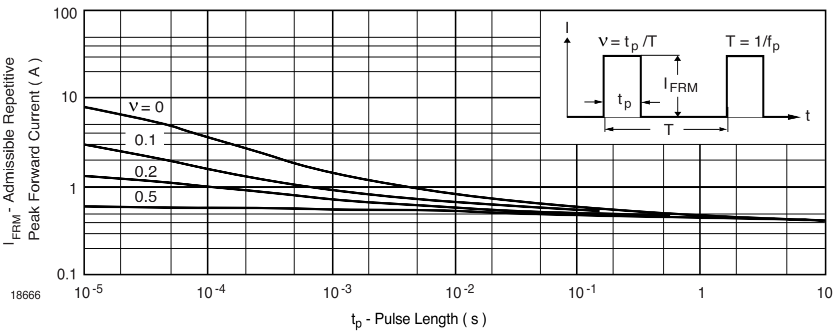


Figure 6. Admissible Repetitive Peak Forward Current vs. Pulse Duration

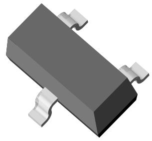
SOT-23 Package Dimension see Package Section

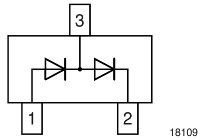
Small Signal Switching Diode, Dual

Description

Silicon Epitaxial Planar Diode

Fast switching dual diode, especially suited for automatic insertion





Mechanical Data

Case: SOT-23 Plastic case

Weight: approx. 8.8 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
MMBD7000	MMBD7000-GS18 or MMBD7000-GS08	M5C	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	100	V
Forward current (continuous)		I_F	200	mA
Non-repetitive peak forward current	t = 1 s	I_{FSM}	500	mA
Power dissipation on FR-5 board	T_A = 25 °C	P_{tot}	225	mW
	Derate above 25 °C	P_{tot}	1.8	mW/°C
Total device dissipation on Alumina substrate	T_A = 25 °C	P_{tot}	300	mW
	Derate above 25 °C	P_{tot}	2.4	mW/°C

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Typical thermal resistance		R_{thJA}	417[1)]	°C/W
Junction to ambient air		R_{thJA}	556[2)]	mW/°/W
Maximum junction temperature		T_j	150	°C
Storage temperature range		T_S	- 55 to + 150	°C

1) Device on alumina substrate

2) On FR-5 board

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 100 μA	V_{BR}	100			V
Leakage current	V_R = 50 V	I_R			1.0	μA
	V_R = 100 V	I_R			3.0	μA
	V_R = 50 V, T_j = 125 ° C	I_R			100	μA
Forward voltage	I_F = 1 mA	V_F	0.55		0.70	V
	I_F = 10 mA	V_F	0.67		0.82	V
	I_F = 100 mA	V_F	0.75		1.10	V
Diode capacitance	V_R = 0, f = 1 MHz	C_{tot}			1.5	pF
Reverse recovery time	I_F = 10 mA to I_R = 10 mA, I_{rr} = 1 mA, R_L = 100 Ω	I_{rr}			4.0	ns

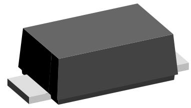
SOT-23 Package Dimension see Package Section

Document Number 85736
Rev. 1.3, 08-Jul-04

Small Signal Fast Switching Diode, High Voltage

Features

- For surface mounted applications
- Low profile package
- Ideal for automated placement
- Glass passivated
- High temperature soldering:
  260 °C/ 10 seconds at terminals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Mechanical Data

Case: JEDEC DO-219AB (SMF®) Plastic case
Polarity: Band denotes cathode end

Weight: approx. 15 mg
Packaging codes-options:
GS18 / 10 K per 13" reel (8 mm tape), 50 k/box
GS08 / 3 K per 7" reel (8 mm tape), 30 k/box

Parts Table

Part	Ordering code	Marking	Remarks
RS07B	RS07B-GS18 or RS07B-GS08	RB	Tape and Reel
RS07D	RS07D-GS18 or RS07D-GS08	RD	Tape and Reel
RS07G	RS07G-GS18 or RS07G-GS08	RG	Tape and Reel
RS07J	RS07J-GS18 or RS07J-GS08	RJ	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Maximum repetitive peak reverse voltage		RS07B	V_{RRM}	100	V
		RS07D	V_{RRM}	200	V
		RS07G	V_{RRM}	400	V
		RS07J	V_{RRM}	600	V
Maximum RMS voltage		RS07B	V_{RMS}	70	V
		RS07D	V_{RMS}	140	V
		RS07G	V_{RMS}	280	V
		RS07J	V_{RMS}	420	V

Parameter	Test condition	Part	Symbol	Value	Unit
Maximum DC blocking voltage		RS07B	V_{DC}	100	V
		RS07D	V_{DC}	200	V
		RS07G	V_{DC}	400	V
		RS07J	V_{DC}	600	V
Maximum average forward rectified current	T_{tp} = 65 °C		$I_{F(AV)}$	1.4	A
	T_A = 45 °C		$I_{F(AV)}$	0.5	A

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air[1)]		R_{thJA}	180	K/W
Operating junction and storage temperature range		T_J, T_{STG}	- 55 to + 150	°C

1) Mounted on epoxy glass PCB with 3 x 3 mm, Cu pads (≥ 40 µm thick)

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Maximum instantaneous forward voltage	0.7 A[2)]		V_F			1.15	V
Maximum DC reverse current at rated DC blocking voltage	T_A = 25°C		I_R			10	µA
	T_A = 125°C		I_R			50	µA
Reverse recovery time	I_F = 0.5 A, I_R = 1 A, I_{rr} = 0.25 A	RS07B	t_{rr}			150	ns
		RS07D	t_{rr}			150	ns
		RS07G	t_{rr}			150	ns
		RS07J	t_{rr}			250	ns
Typical capacitance	4 V, 1 MHz		C_j		9		pF

2) Pulse test, 300 µs pulse width 1 % duty cycle

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

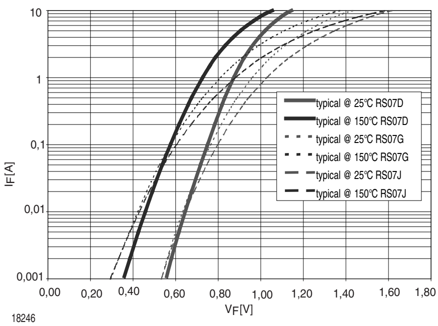


Figure 1. Typical Forward Characteristics

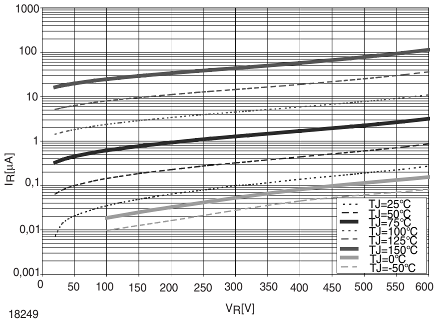


Figure 4. Typical Reverse Characteristics

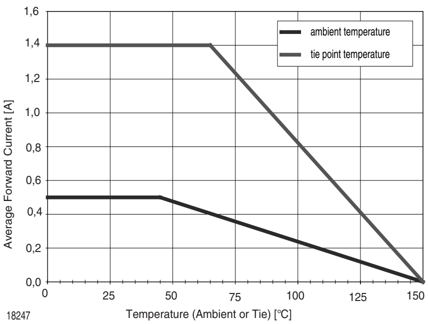


Figure 2. Forward Current Derating Curve

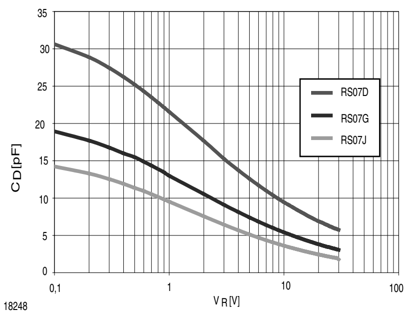


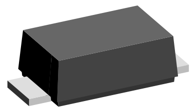
Figure 3. Typ. Diode Capacitance vs. Reverse Voltage

DO-219AB (SMF) Package Dimension see Package Section

Small Signal Fast Switching Diode, High Voltage

Features

- For surface mounted applications
- Low profile package
- Ideal for automated placement
- Glass passivated
- High temperature soldering:
  260 °C/ 10 seconds at terminals



17249

Mechanical Data

Case: JEDEC DO-219AB (SMF®) Plastic case
Polarity: Band denotes cathode end

Weight: approx. 15 mg
Packaging codes-options:
GS18 / 10 k per 13" reel (8 mm tape), 50 k/box
GS08 / 3 k per 7" reel (8 mm tape), 30 k/box

Parts Table

Part	Ordering code	Marking	Remarks
S07B	S07B-GS18 or S07B-GS08	SB	Tape and Reel
S07D	S07D-GS18 or S07D-GS08	SD	Tape and Reel
S07G	S07G-GS18 or S07G-GS08	SG	Tape and Reel
S07J	S07J-GS18 or S07J-GS08	SJ	Tape and Reel
S07M	S07M-GS18 or S07M-GS08	SM	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Maximum repetitive peak reverse voltage		S07B	V_{RRM}	100	V
		S07D	V_{RRM}	200	V
		S07G	V_{RRM}	400	V
		S07J	V_{RRM}	600	V
		S07M	V_{RRM}	1000	V
Maximum RMS voltage		S07B	V_{RMS}	70	V
		S07D	V_{RMS}	140	V
		S07G	V_{RMS}	280	V
		S07J	V_{RMS}	420	V
		S07M	V_{RMS}	700	V
Maximum DC blocking voltage		S07B	V_{DC}	100	V
		S07D	V_{DC}	200	V
		S07G	V_{DC}	400	V
		S07J	V_{DC}	600	V
		S07M	V_{DC}	1000	V
Maximum average forward rectified current	T_{tp} = 75 °C[1]		$I_{F(AV)}$	1.5	A
	T_A = 65 °C[1]		$I_{F(AV)}$	0.7	A
Peak forward surge current 8.3 ms single half sine-wave	T_L = 25 °C		I_{FSM}	25	A

[1] Averaged over any 20 ms period

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air[2]		R_{thJA}	180	K/W
Operating junction and storage temperature range		T_J, T_{STG}	- 55 to + 150	°C

[2] Mounted on epoxy substrate with 3 x 3 mm CU pads (≥ 40 µm thick)

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Maximum instantaneous forward voltage	1.0 A[3]	V_F			1.1	V
Maximum DC reverse current at rated DC blocking voltage	T_A = 25 °C	I_R			10	µA
	T_A = 125 °C	I_R			50	µA
Reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A	t_{rr}			1.8	µs
Typical capacitance at 4 V, MHz		C_j		4		pF

[3] Pulse test: 300 µ pulse width, 1 % duty cycle

Document Number 85733
Rev. 1.8, 14-May-04

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

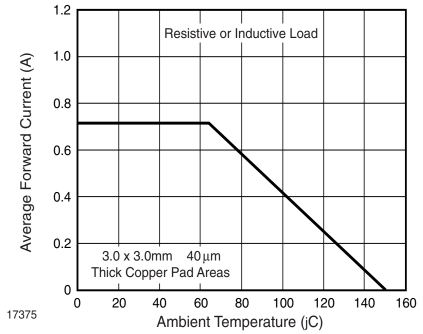


Figure 1. Forward Current Derating Curve

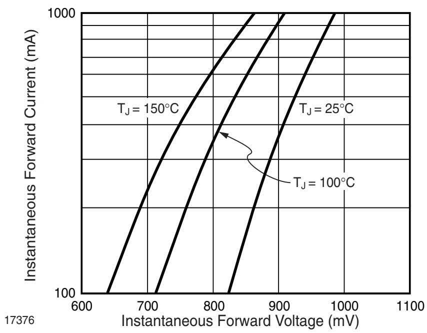


Figure 2. Typical Instantaneous Forward Characteristics

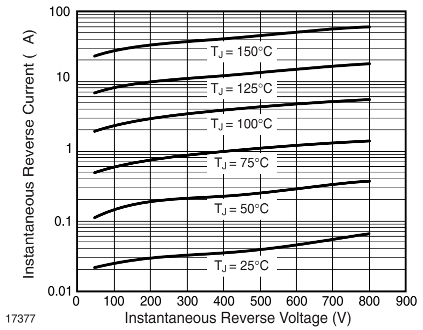


Figure 3. Typical Instantaneous Reverse Characteristics

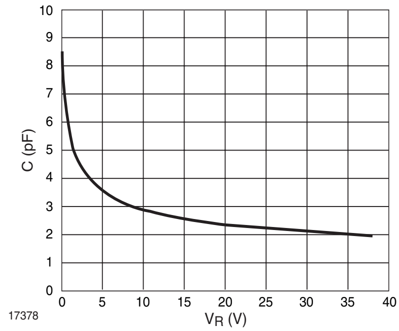


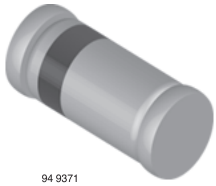
Figure 4. Capacitance vs. Reverse Voltage

DO-219AB (SMF) Package Dimension see Package Section

RF PIN Diode - Single in MiniMELF SOD-80

Features

- Wide frequency range 10 MHz to 1 GHz



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Applications

Current controlled HF resistance in adjustable attenuators

Mechanical Data

Case: MiniMELF Glass case (SOD-80)

Weight: approx. 31 mg

Cathode Band Color: Black

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
S391D	V_R = 30 V	LL4150-GS18 or LL4150-GS08	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	30	V
Forward current		I_F	50	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 55 to + 125	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 20 mA	V_F			1	V
Reverse current	V_R = 30 V	I_R			50	nA
Diode capacitance	f = 100 MHz, V_R = 0	C_D			0.5	pF

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Differential forward resistance	f = 100 MHz, I_F = 1.5 mA	r_f	40		60	Ω
Reverse impedance	f = 100 MHz, V_R = 0	z_r	5			kΩ
Minority carrier lifetime	I_F = 10 mA, I_R = 10 mA	τ		4		µs

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

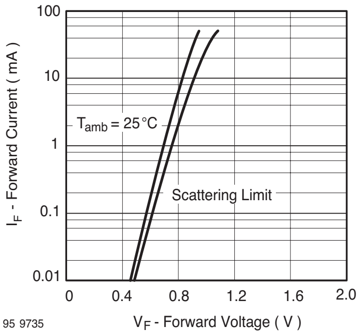


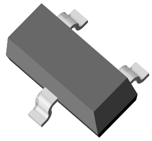
Figure 1. Forward Current vs. Forward Voltage

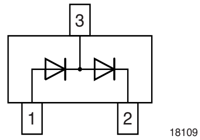
MiniMELF SOD-80 Package Dimension see Package Section

RF PIN Diode - Dual in SOT-23

Features

- Wide frequency range 10 MHz to 1 GHz





Applications

Current controlled HF resistance in adjustable attenuators

Mechanical Data

Case: SOT-23 Plastic case

Weight: approx. 8.1 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
S392D	S392D-GS18 or S392D-GS08	-	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	30	V
Forward current		I_F	50	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 55 to + 125	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 20 mA	V_F			1	V
Reverse current	V_R = 30 V	I_R			50	nA
Diode capacitance	f = 100 MHz, V_R = 0	C_D			0.5	pF

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Differential forward resistance	f = 100 MHz, I_F = 1.5 mA	r_f	40		60	Ω
Reverse impedance	f = 100 MHz, V_R = 0	z_r	5			kΩ
Minority carrier lifetime	I_F = 10 mA, I_R = 10 mA	τ		4		µs

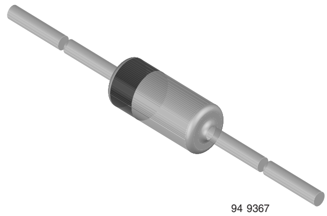
SOT-23 Package Dimension
see Package Section

Document Number 85570
Rev. 1.5, 09-Jul-04

Small Signal Schottky Diodes

Features

- Integrated protection ring against static discharge
- Low capacitance
- Low leakage current
- Low forward voltage drop



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Applications

HF-Detector
Protection circuit
Diode for low currents with a low supply voltage
Small battery charger

Power supplies
DC / DC converter for notebooks

Mechanical Data

Case: DO-35 Glass case
Weight: approx. 125 mg
Packaging Codes/Options:
TR / 10 k per 13 " reel (52 mm tape), 50 k/box
TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
SD101A	V_R = 60 V, V_F @ I_F = 1 mA max. 0.41 V	SD101A-TAP or SD101A-TR	Ammopack / Tape and Reel
SD101B	V_R = 50 V, V_F @ I_F = 1 mA max. 0.4 V	SD101B-TAP or SD101B-TR	Ammopack / Tape and Reel
SD101C	V_R = 40 V, V_F @ I_F = 1 mA max. 0.39 V	SD101B-TAP or SD101B-TR	Ammopack / Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Reverse voltage		SD101B	V_R	60	V
		SD101B	V_R	50	V
		SD101C	V_R	40	V
Forward current			I_{FAV}	30	mA
Peak forward surge current	t_p = 10 µs		I_{FSM}	2	A
Repetitive peak forward current			I_{FRM}	150	mA
Forward current			I_F	30	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	320	K/W

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse Breakdown Voltage	I_R = 10 µA	SD101A	$V_{(BR)R}$	60			V
		SD101B	$V_{(BR)R}$	50			V
		SD101C	$V_{(BR)R}$	40			V
Leakage current	V_R = 50 V	SD101A	I_R			200	nA
	V_R = 40 V	SD101B	I_R			200	nA
	V_R = 30 V	SD101C	I_R			200	nA
Forward voltage drop	I_F = 1 mA	SD101A	V_F			0.41	V
		SD101B	V_F			0.4	V
		SD101C	V_F			0.39	V
	I_F = 15 mA	SD101A	V_F			1	V
		SD101B	V_F			0.95	V
		SD101C	V_F			0.9	V
Diode capacitance	V_R = 0 V, f = 1 MHz	SD101A	C_{tot}			2.0	pF
		SD101B	C_{tot}			2.1	pF
	V_R = 0 V, f = 1 MHz	SD101C	C_{tot}			2.2	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

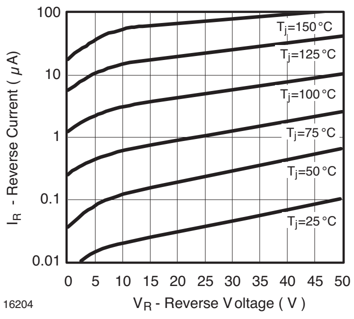


Figure 1. Reverse Current vs. Reverse Voltage

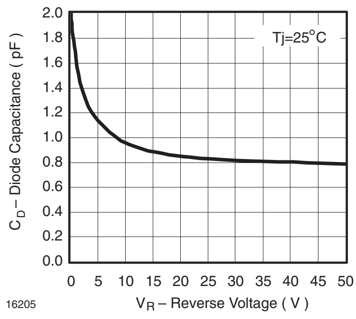


Figure 2. Diode Capacitance vs. Reverse Voltage

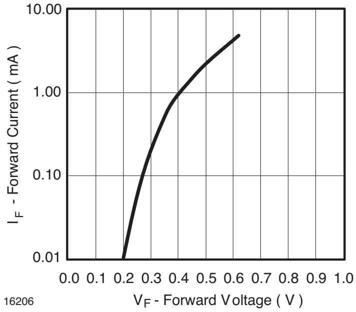


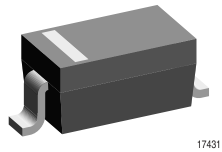
Figure 3. Forward Current vs. Forward Voltage

DO-35 Package Dimension
see Package Section

Small Signal Schottky Diodes

Features

- For general purpose applications
- The low forward voltage drop and fast switching make it ideal for protection of MOS devices, steering, biasing and coupling diodes for fast switching and low logic level applications.
- The SD101 series is a Metal-on-silicon Schottky barrier device which is protected by a PN junction guard ring.
- These diodes are also available in the Mini-MELF case with type designations LL101A to LL101C, in the DO-35 case with type designations SD101A through SD101C and in the SOD-323 case with type designations SD101AWS through SD101CWS.



Mechanical Data

Case: SOD-123 Plastic case
Weight: approx. 9.3 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
SD101AW	SD101AW-GS18 or SD101AW-GS08	SA	Tape and Reel
SD101BW	SD101BW-GS18 or SD101BW-GS08	SB	Tape and Reel
SD101CW	SD101CW-GS18 or SD101CW-GS08	SC	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Peak inverse voltage		SD101AW	V_{RRM}	60	V
		SD101BW	V_{RRM}	50	V
		SD101CW	V_{RRM}	40	V
Power dissipation (Infinite heatsink)			P_{tot}	400[1)]	mW
Maximum single cycle surge	10 µs square wave		I_{FSM}	2	A

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	300[1)]	°C/W
Junction temperature		T_j	125[1)]	°C
Storage temperature range		T_S	- 65 to + 150	°C

[1)] Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 µA	SD101AW	$V_{(BR)R}$	60			V
		SD101BW	$V_{(BR)R}$	50			V
		SD101CW	$V_{(BR)R}$	40			V
Leakage current	V_R = 50 V	SD101AW	I_R			200	nA
	V_R = 40 V	SD101BW	I_R			200	nA
	V_R = 30 V	SD101CW	I_R			200	nA
Forward voltage drop	I_F = 1 mA	SD101AW	V_F			0.41	V
		SD101BW	V_F			0.40	V
		SD101CW	V_F			0.39	V
	I_F = 15 mA	SD101AW	V_F			1.0	V
		SD101BW	V_F			0.95	V
		SD101CW	V_F			0.90	V
Diode capacitance	V_R = 0 V, f = 1 MHz	SD101AW	C_{tot}			2.0	pF
		SD101BW	C_{tot}			2.1	pF
		SD101CW	C_{tot}			2.2	pF
Reverse recovery time	$I_F = I_R$ = 5 mA, recover to 0.1 I_R		t_{rr}			1	

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

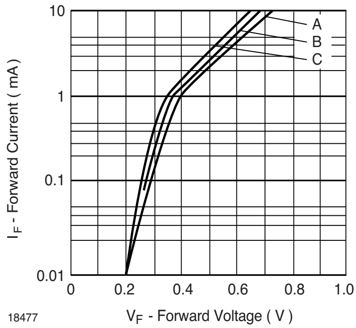


Figure 1. Typical Variation of Forward Current vs. Forward Voltage

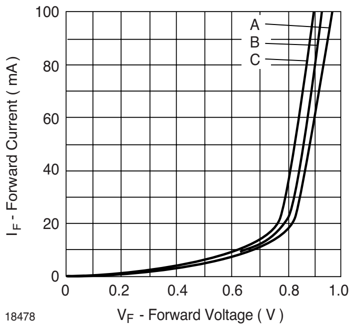


Figure 2. Typical Forward Conduction Curve

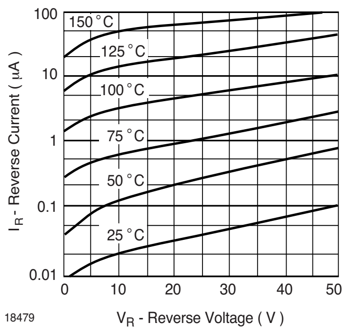


Figure 3. Typical Variation of Reverse Current at Various Temperatures

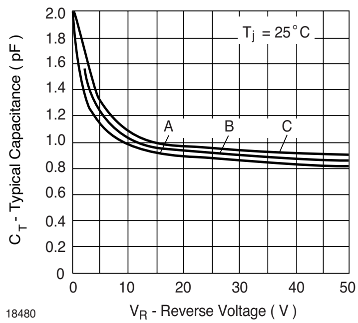


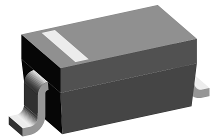
Figure 4. Typical Capacitance Curve as a Function of Reverse Voltage

SOD-123 Package Dimension see Package Section

Small Signal Schottky Diodes

Features

- For general purpose applications
- The SD101 series is a Metal-on-silicon Schottky barrier device which is protected by a PN junction guard ring.
- The low forward voltage drop and fast switching make it ideal for protection of MOS devices, steering, biasing and coupling diodes for fast switching and low logic level applications.
- These diodes are also available in the Mini-MELF case with type designations LL101A thru LL101C, in the DO-35 case with type designations SD101A through SD101C and in the SOD-323 case with type designations SD101AWS through SD101CWS.



Mechanical Data

Case: SOD-323 Plastic case

Weight: approx. 5.0 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
SD101AWS	SD101AWS-GS18 or SD101AWS-GS08	SA	Tape and Reel
SD101BWS	SD101BWS-GS18 or SD101BWS-GS08	SB	Tape and Reel
SD101CWS	SD101CWS-GS18 or SD101CWS-GS08	SC	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Peak inverse voltage		SD101AWS	V_{RRM}	60	V
		SD101BWS	V_{RRM}	50	V
		SD101CWS	V_{RRM}	40	V
Power dissipation (Infinite Heat Sink)			P_{tot}	150[1)]	mW
Maximum single cycle surge	10 µs square wave		I_{FSM}	2	A

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	650[1)]	°C/W
Junction temperature		T_j	125[1)]	°C
Storage temperature range		T_S	- 65 to 150	°C

[1)] Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 µA	SD101AWS	$V_{(BR)R}$	60			V
		SD101BWS	$V_{(BR)R}$	50			V
		SD101CWS	$V_{(BR)R}$	40			V
Leakage current	V_R = 50 V	SD101AWS	I_R			200	nA
	V_R = 40 V	SD101BWS	I_R			200	nA
	V_R = 30 V	SD101CWS	I_R			200	nA
Forward voltage drop	I_F = 1 mA	SD101AWS	V_F			0.41	V
		SD101BWS	V_F			0.40	V
		SD101CWS	V_F			0.39	V
	I_F = 15 mA	SD101AWS	V_F			1	V
		SD101BWS	V_F			0.95	V
		SD101CWS	V_F			0.90	V
Junction capacitance	V_R = 0 V, f = 1 MHz	SD101AWS	C_{tot}			2.0	ns
		SD101BWS	C_{tot}			2.1	ns
		SD101CWS	C_{tot}			2.2	ns
Reverse recovery time	I_F = I_R = 5 mA, recover to 0.1 I_R		t_{rr}			1	ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

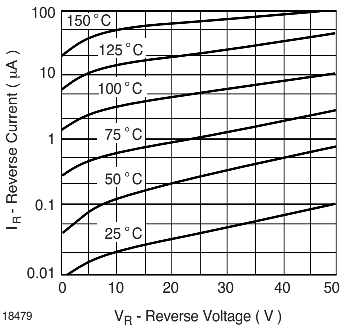


Figure 1. Typical Variation of Reverse Current at Various Temperatures

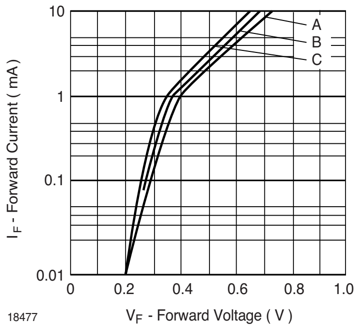


Figure 2. Typical Variation of Forward Current vs. Forward Voltage

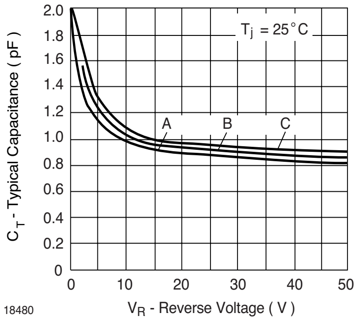


Figure 3. Typical Capacitance Curve as a Function of Reverse Voltage

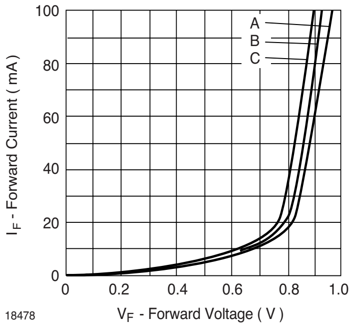


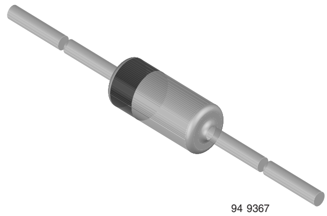
Figure 4. Typical Forward Conduction Curve

SOD-323 Package Dimension see Package Section

Small Signal Schottky Diodes

Features

- The SD103 series is a Metal-on-silicon Schottky barrier device which is protected by a PN junction guard ring.
- The low forward voltage drop and fast switching make it ideal for protection of MOS devices, steering, biasing and coupling diodes for fast switching and low logic level applications.
- Other applications are click suppression, efficient full wave bridges in telephone subsets, and blocking diodes in rechargeable low voltage battery systems.
- These diodes are also available in the SOD-123 case with type designations SD103AW...SD103CW and in the MiniMELF case with type designations LL103A thru LL103C.
- For general purpose applications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Applications

HF-Detector
Protection circuit
Small battery charger
AC-DC / DC-DC converters

Mechanical Data

Case: DO-35 Glass case
Weight: approx. 125 mg
Packaging Codes/Options:
TR / 10 k per 13 " reel (52 mm tape), 50 k/box
TAP / 10 k per Ammopack (52 mm tape), 50 k/box

Parts Table

Part	Type differentiation	Ordering code	Remarks
SD103A	V_R = 40 V, V_F@ I_F 20 mA max. 0.37 V	SD103A-TAP or SD103A-TR	Tape and Reel / Ammopack
SD103B	V_R = 30 V, V_F @ I_F 20 mA max. 0.37 V	SD103B-TAP or SD103B-TR	Tape and Reel / Ammopack
SD103C	V_R = 20 V, V_F @ I_F 20 mA max. 0.37 V	SD103C-TAP or SD103C-TR	Tape and Reel / Ammopack

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Peak inverse voltage		SD103A	V_R	40	V
		SD103B	V_R	30	V
		SD103C	V_R	20	V
Power dissipation (infinite heatsink)			P_{tot}	400[1)]	mW
Single cycle surge 60 Hz sine wave			I_{FSM}	15	A

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	0.3[1)]	K/W
Junction temperature		T_j	125[1)]	°C
Storage temperature range		T_S	- 55 to + 150[1)]	°C

[1)] Valid provided that leads at a distance of 4 mm from case are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse Breakdown Voltage	I_R = 50 µA	SD103A	$V_{(BR)R}$	40			V
		SD103B	$V_{(BR)R}$	30			V
		SD103C	$V_{(BR)R}$	20			V
Leakage current	V_R = 30 V	SD103A	I_R			5	µA
	V_R = 20 V	SD103B	I_R			5	µA
	V_R = 10 V	SD103C	I_R			5	µA
Forward voltage drop	I_F = 20 mA		V_F			0.37	V
	I_F = 200 mA		V_F			0.6	V
Diode capacitance	V_R = 0 V, f = 1 MHz		C_D		50		pF
Reverse recovery time	I_F = I_R = 50 to 200 mA, recover to 0.1 I_R		t_{rr}		10		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

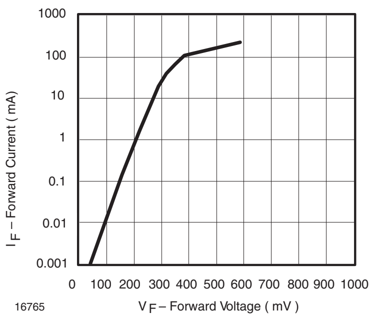


Figure 1. Forward Current vs. Forward Voltage

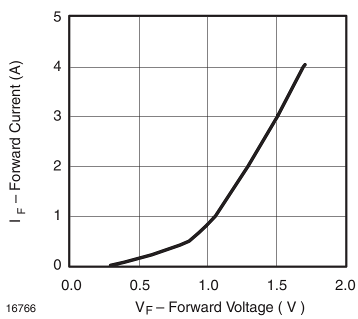


Figure 2. Forward Current vs. Forward Voltage

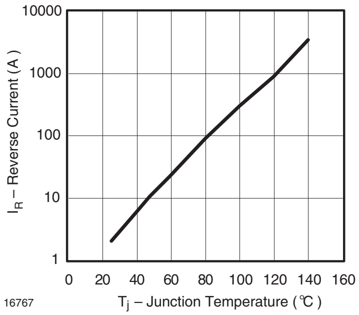


Figure 3. Reverse Current vs. Junction Temperature

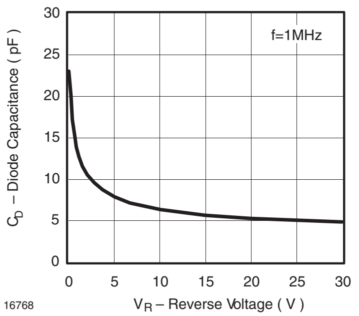


Figure 4. Diode Capacitance vs. Reverse Voltage

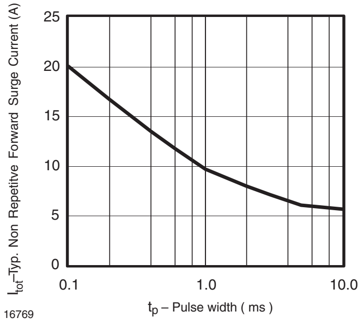


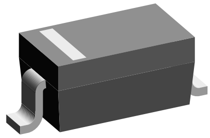
Figure 5. Typ. Non Repetitive Forward Surge Current vs. Pulse width

DO-35 Package Dimension see Package Section

Small Signal Schottky Diodes

Features

- The low forward voltage drop and fast switching make it ideal for protection of MOS devices, steering, biasing, and coupling diodes for fast switching and low logic level applications.
- Other applications are click suppression, efficient full wave bridges in telephone subsets, and blocking diodes in rechargeable low voltage battery systems.
- The SD103 series is a metal-on-silicon Schottky barrier device which is protected by a PN junction guard ring.
- This diode is also available in the MiniMELF case with the type designations LL103A to LL103C, DO-35 case with the type designations SD103A to SD103C and SOD-323 case with type designations SD103AWS to SD103CWS.
- For general purpose applications.



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Mechanical Data

Case: SOD-123 Plastic case

Weight: approx. 9.3 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
SD103AW	SD103AW-GS18 or SD103AW-GS08	S6	Tape and Reel
SD103BW	SD103BW-GS18 or SD103BW-GS08	S7	Tape and Reel
SD103CW	SD103CW-GS18 or SD103CW-GS08	S8	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Peak inverse voltage		SD103AW	V_{RRM}	40	V
		SD103BW	V_{RRM}	30	V
		SD103BW	V_{RRM}	20	V
Power dissipation (Infinite heat sink)			P_{tot}	400[1)]	mW
Single cycle surge	10 µs square wave		I_{FSM}	2	A

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	300[1)]	°C/W
Junction temperature		T_j	125[1)]	°C
Storage temperature range		T_S	- 55 to + 150[1)]	°C

[1)] Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Leakage current	V_R = 30 V	SD103AW	I_R			5	µA
	V_R = 20 V	SD103BW	I_R			5	µA
	V_R = 10 V	SD103CW	I_R			5	µA
Forward voltage drop	I_F = 20 mA		V_F			0.37	V
	I_F = 200 mA		V_F			0.6	V
Diode capacitance	V_R = 0 V, f = 1 MHz		C_{tot}		50		pF
Reverse recovery time	$I_F = I_R$ = 50 mA to 200 mA, recover to 0.1 I_R		t_{rr}		10		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

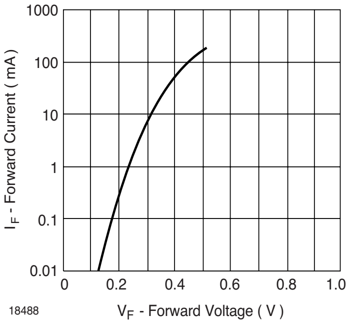


Figure 1. Typical Variation of Forward Current vs. Forward Voltage

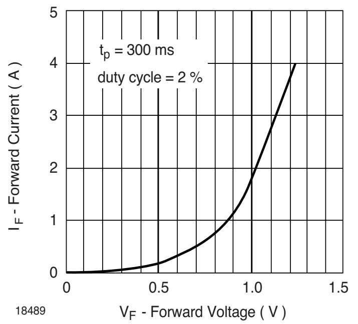


Figure 2. Typical High Current Forward Conduction Curve

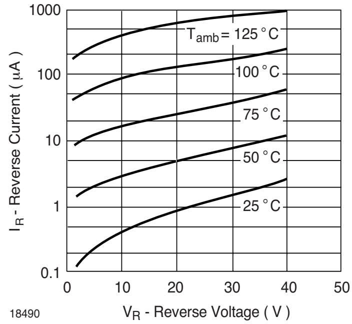


Figure 3. Typical Variation of Reverse Current at Various Temperatures

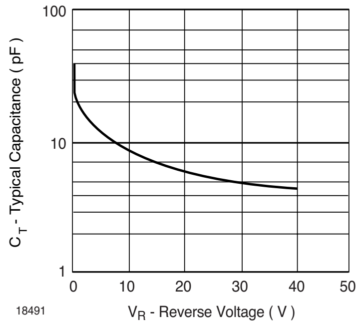


Figure 4. Typical Capacitance vs. Reverse Voltage

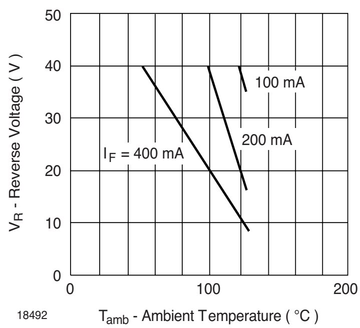


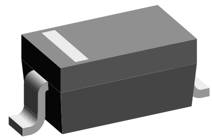
Figure 5. Blocking Voltage Deration vs. Temperature at Various Average Forward Currents

SOD-123 Package Dimension see Package Section

Small Signal Schottky Diodes

Features

- The SD103 series is a metal-on-silicon Schottky barrier device which is protected by a PN junction guard ring.
- This diode is also available in the MiniMELF case with the type designations LL103A to LL103C, DO-35 case with the type designations SD103A SD103C and SOD-123 case with type designations SD103AW to SD103CW.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- The low forward voltage drop and fast switching make it ideal for protection of MOS devices, steering, biasing, and coupling diodes for fast switching and low logic level applications.
- For general purpose applications.

Mechanical Data

Case: SOD-323 Plastic case
Weight: approx. 5.0 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
SD103AWS	SD103AWS-GS18 or SD103AWS-GS08	S6	Tape and Reel
SD103BWS	SD103BWS-GS18 or SD103BWS-GS08	S7	Tape and Reel
SD103CWS	SD103CWS-GS18 or SD103CWS-GS08	S8	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Peak inverse voltage		SD103AWS	V_{RRM}	40	V
		SD103BWS	V_{RRM}	30	V
		SD103CWS	V_{RRM}	20	V
Power dissipation (Infinite heat sink)			P_{tot}	150[1)]	mW
Single cycle surge	10 µs square wave		I_{FSM}	2	A

1) Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	650[1)]	°C/W
Junction temperature		T_j	125[1)]	°C
Storage temperature range		T_S	- 55 to + 150[1)]	°C

[1)] Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Leakage current	V_R = 30 V	SD103AWS	I_R			5	μA
	V_R = 20 V	SD103BWS	I_R			5	μA
	V_R = 10 V	SD103CWS	I_R			5	μA
Forward voltage drop	I_F = 20 mA		V_F			0.37	V
	I_F = 200 mA		V_F			0.6	V
Diode capacitance	V_R = 0 V, f = 1 MHz		C_{tot}		50		pF
Reverse recovery time	$I_F = I_R$ = 50 mA to 200 mA, recover to 0.1 I_R		t_{rr}		10		ns

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

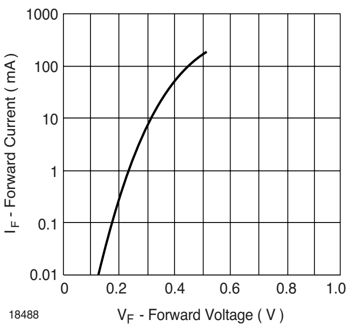


Figure 1. Typical Variation of Forward Current vs. Forward Voltage

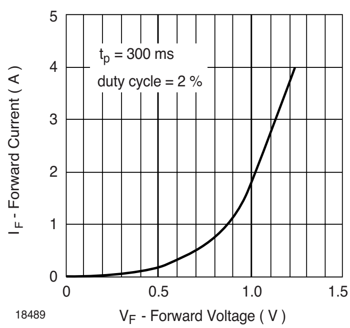


Figure 2. Typical High Current Forward Conduction Curve

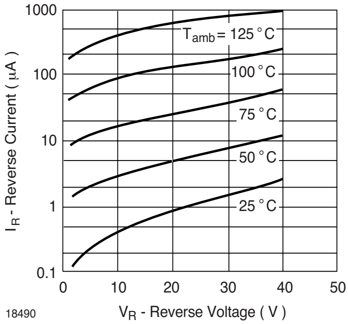


Figure 3. Typical Variation of Reverse Current at Various Temperatures

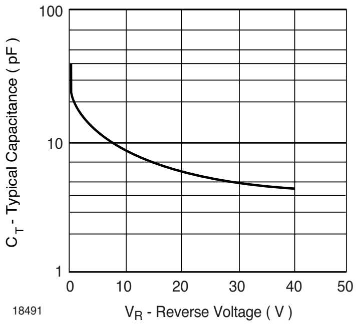


Figure 4. Typical Capacitance vs. Reverse Voltage

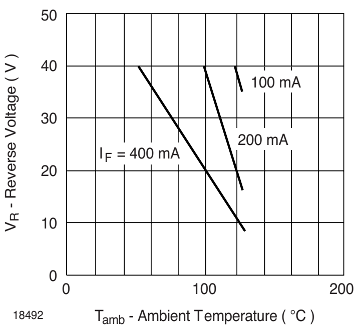
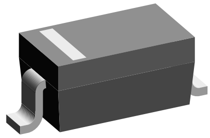


Figure 5. Blocking Voltage Deration vs. Temperature at Various Average Forward Currents

SOD-323 Package Dimension see Package Section

Schottky Diodes



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Features

- Low turn-on voltage
- Low capacitance
- Ultrafast switching
- Single, double, and ring balanced mixer in narrowband receivers up to 1 GHz.
- Microminiature plastic package
- Detectors and fast switching up to 1 GHz
- Phase detectors
- Suitable for radios, TV, CTV, and hyper band tuners

Mechanical Data

Case: SOD-323 Plastic case

Weight: approx. 5.0 mg

Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
SD104AWS	SD104AWS-GS18 or SD104AWS-GS08	S3	Tape and Reel
SD104BWS	SD104BWS-GS18 or SD104BWS-GS08	S4	Tape and Reel
SD104CWS	SD104CWS-GS18 or SD104CWS-GS08	S5	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Continuous reverse voltage		SD104AWS	V_R	20	V
		SD104BWS	V_R	15	V
		SD104CWS	V_R	10	V
Forward current			I_F	30	mA
Power dissipation	T_C = 25 °C		P_{tot}	150[1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	650[1)]	°C/W
Junction temperature		T_j	125[1)]	°C
Storage temperature range		T_S	- 55 to + 150[1)]	°C

[1)] Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 10 µA	SD104AWS	V_R			20	V
		SD104BWS	V_R			15	V
		SD104CWS	V_R			10	V
Leakage current	V_R = 15 V	SD104AWS	I_R			500	nA
	V_R = 10 V	SD104BWS	I_R			500	nA
	V_R = 5 V	SD104CWS	I_R			500	nA
Forward voltage drop	I_F = 0.1 mA	SD104AWS	V_F			350	mV
		SD104BWS	V_F			325	mV
		SD104CWS	V_F			310	mV
	I_F = 1.0 mA	SD104AWS	V_F			450	mV
		SD104BWS	V_F			425	mV
		SD104CWS	V_F			400	mV
	I_F = 10 mA	SD104AWS	V_F			600	mV
		SD104BWS	V_F			580	mV
		SD104CWS	V_F			565	mV
Diode capacitance	V_R = 0 V, f = 1 MHz	SD104AWS	C_D			0.8	pF
		SD104BWS	C_D			0.9	pF
		SD104CWS	C_D			1.0	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

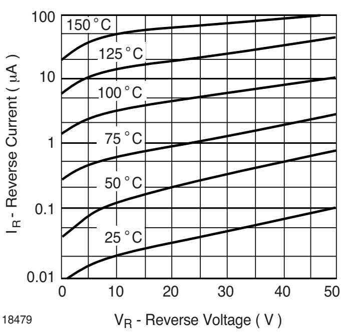


Figure 1. Typical Variation of Reverse Current at Various Temperatures

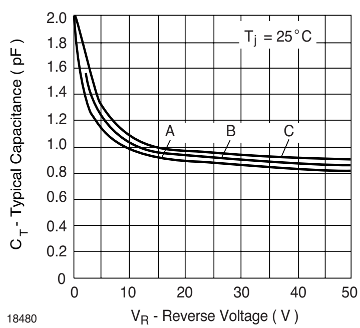


Figure 2. Typical Capacitance Curve as a Function of Reverse Voltage

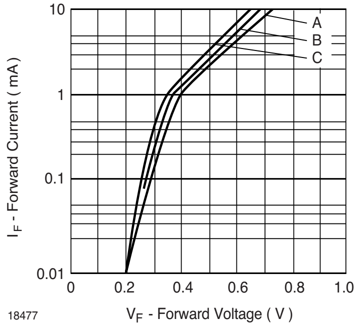


Figure 3. Typical Variation of Forward Current vs. Forward Voltage

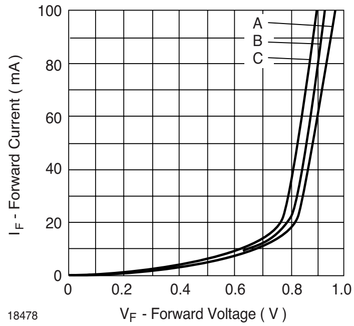


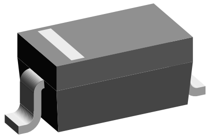
Figure 4. Typical Forward Conduction Curve

SOD-323 Package Dimension see Package Section

Small Signal Schottky Diode

Features

- Low turn-on voltage
- Fast switching
- This device is protected by a PN junction guard ring against excessive voltage, such as electrostatic discharge
- Ideal for precaution of MOS devices, steering, biasing, and coupling diodes for fast switching and low logic level application.
- Microminiature plastic package



Mechanical Data

Case: SOD-323 Plastic case

Weight: approx. 5.0 mg

Packaging Codes/options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
SD106WS	SD106WS-GS18 or SD106WS-GS08	S2	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	30	V
Forward current		I_F	200	mA
Forward surge current	t_p = 10 ms	I_{FSM}	1.0	A
Power dissipation	T_C = 25 °C	P_{tot}	250 [1)]	mW

[1)] Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		T_{thJA}	500[1)]	°C/W
Junction temperature		T_J	150	°C
Storage temperature range		T_S	- 65 to + 150	°C

[1)] Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 100 µA	V_R	30			V
Leakage current	V_R = 30 V	I_R			5.0	µA
Forward voltage	I_F = 2.0 mA	V_F		260		mW
	I_F = 15 mA	V_F		320		mW
	I_F = 100 mA	V_F		420		mW
	I_F = 200 mA	V_F		490	550	mW
Diode capacitance	V_R = 10 V, f = 1.0 MHz	C_{tot}			15	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

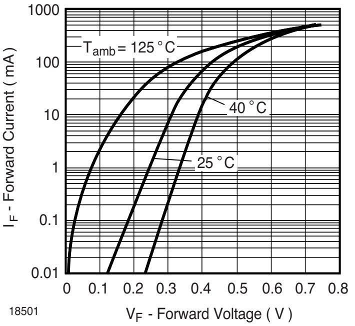


Figure 1. Forward Current vs. Forward Voltage

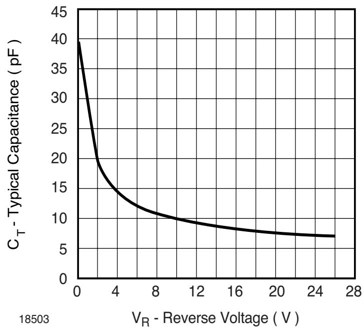


Figure 3. Typical Capacitance °C vs. Reverse Applied Voltage V_R

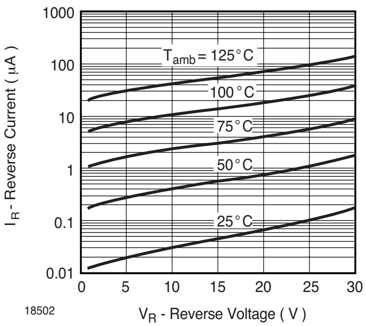


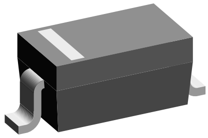
Figure 2. Typical Variation of Reverse Current at Various Temperatures

SOD-323 Package Dimension see Package Section

Small Signal Schottky Diode

Features

- Low turn-on voltage
- Fast switching
- This device is protected by a PN junction guard ring against excessive voltage, such as electrostatic discharge.
- Microminiature plastic package
- Ideal for protection of MOS devices, steering, biasing, and coupling diodes for fast switching and low logic level applications.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Mechanical Data

Case: SOD-323 Plastic case
Weight: approx. 5.0 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
SD107WS	SD107WS-GS18 or SD107WS-GS08	S1	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	30	V
Forward current		I_F	100	mA
Forward surge current	t_p = 10 ms	I_{FSM}	0.75	A
Power dissipation	T_C = 25 °C	P_{tot}	250 1)	mW

1) Valid provided that electrodes are kept at ambient temperature

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		$T_{\theta JA}$	500	°C/W
Junction temperature		T_J	150	°C
Storage temperature range		T_S	- 65 to + 150	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 100 µA	V_R	30			V
Leakage current	V_R = 25 V	I_R			1000	nA
Forward voltage	I_F = 2.0 mA	V_F		300		mW
	I_F = 15 mA	V_F		360		mW
	I_F = 50 mA	V_F		470	550	mW
	I_F = 100 mA	V_F		580	800	mW
Diode capacitance	V_R = 10 V, f = 1.0 MHz	C_{tot}			7.0	pF

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

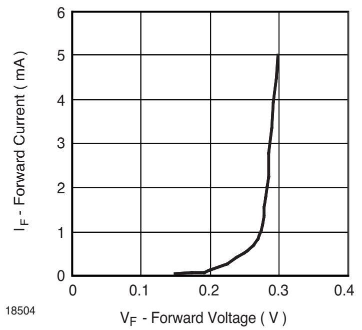


Figure 1. Typical Variation of $I_F$for Primary Conduction

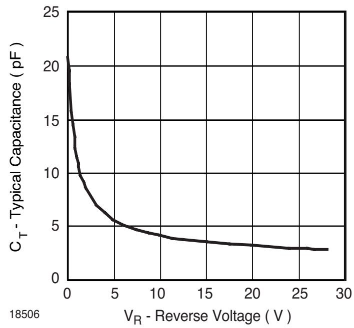


Figure 3. Typical Capacitance vs. Reverse Voltage

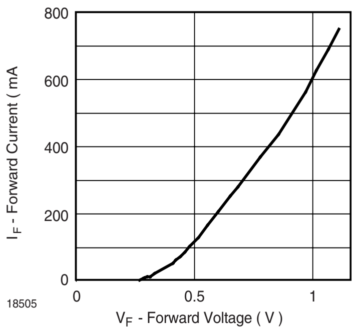


Figure 2. Typical Forward Conduction Curve

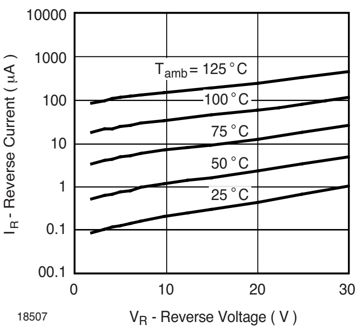


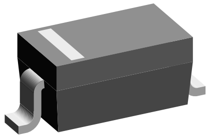
Figure 4. Typical Variation of Reverse Current at Various Temperatures

SOD-323 Package Dimension see Package Section

Small Signal Schottky Diode

Features

- Low turn-on voltage
- Fast switching
- Microminiature plastic package
- This device is protected by a PN junction guard ring against excessive voltage, such as electrostatic discharge.
- Ideal for protection of MOS devices, steering, biasing, and coupling diodes for fast switching and low logic level applications.


17431

Mechanical Data

Case: SOD-323 Plastic case
Weight: approx. 5.0 mg
Packaging Codes/options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
SD0230LWS	SD0230LWS-GS18 or SD0230LWS-GS08	SD	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	30	V
Forward current		I_F	200	mA
Forward surge current	t_p = 10 ms	I_{FSM}	2	A
Power dissipation	T_C = 25 °C	P_{tot}	150	mW

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	650	°C/W
Junction temperature		T_J	125	°C
Storage temperature range		T_S	- 55 to + 150	°C

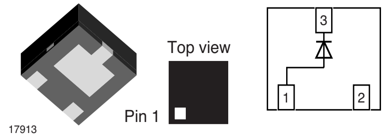
Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Reverse breakdown voltage	I_R = 100 μA	V_{BR}	30			V
Leakage current	V_R = 30 V	I_R			5.0	μA
Forward current	I_F = 15 mA			320	350	mV
	I_F = 50 mA			370	400	mV
	I_F = 150 mA			440	460	mV
	I_F = 200 mA			470	500	mV
Junction capacitance	V_R = 1 V, f = 1.0 MHz			25	30	pF

SOD-323 Package Dimension
see Package Section

Small Signal Schottky Diode, Low



Features

- For surface mounted applications
- Low profile package
- Ideal for automated placement
- Low power loss, high efficiency
- Space saving LLP package

Mechanical Data

Case: LLP75-3A Plastic case

Molding Compound Flammability Rating:
UL 94 V-0

Terminals: High temperature soldering guaranteed:
260 °C/10 sec. at terminals

Weight: approx. 5.2 mg

Parts Table

Part	Ordering code	Marking	Remarks
SD0520-HT3	SD0520-HT3-GS08	20	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Maximum repetitive peak reverse voltage		V_{RRM}	20	V
Working peak reverse voltage		V_{RWM}	20	V
Maximum DC blocking voltage		V_R	20	V
Max. average forward rectified current at rated V_R	T_J = 115 °C	I_{FAV}	0.5	A
Peak forward surge current	8.3 ms single half sine-wave T_L = 25 °C	I_{FSM}	5.5	A
Voltage rate of change at rated V_R	T_J = 25 °C	dv/dt	1,000	V/µs

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Operating junction and storage temperature		T_J, T_{STG}	- 55 to + 125	°C

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Maximum instantaneous forward voltage[1)]	I_F = 0.1 A, T_J = 25 °C	V_F			0.300	V
	I_F = 0.1 A, T_J = 100 °C	V_F			0.220	V
	I_F = 0.5 A, T_J = 25 °C	V_F			0.385	V
	I_F = 0.5 A, T_J = 100 °C	V_F			0.330	V
Maximum DC reverse current	V_R = 10 V, T_J = 25 °C	I_R			75	µA
	V_R = 10 V, T_J = 100 °C	I_R			5	mA
	V_R = 20 V, T_J = 25 °C	I_R			250	µA
	V_R = 20 V, T_J = 100 °C	I_R			8	mA

1) Pulse test: 300 ms pulse width, 1 % duty cycle

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

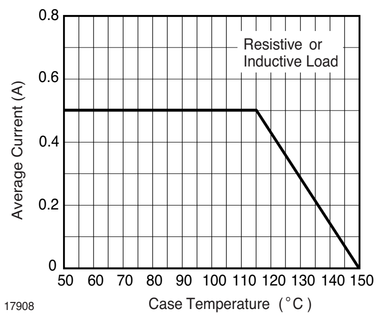


Figure 1. Derating Curve Output Rectified Current

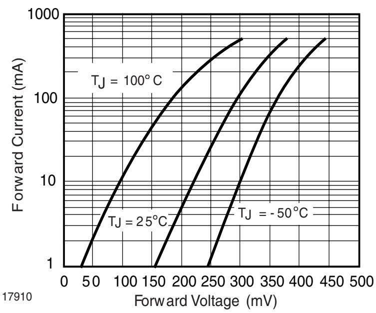


Figure 3. Typical Instantaneous Forward Characteristics

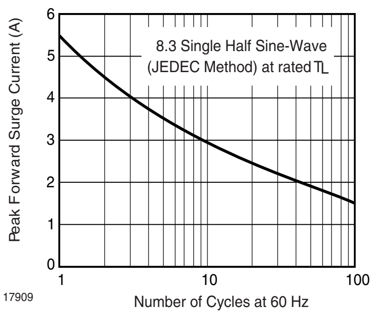


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

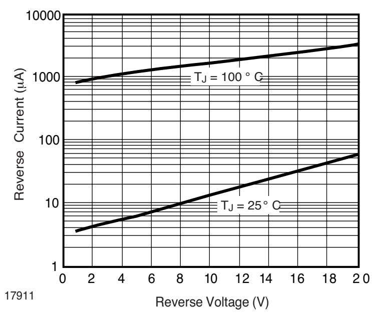


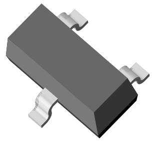
Figure 4. Typical Reverse Characteristics

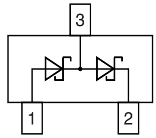
LLP75-3A Package Dimension see Package Section

Small Signal Schottky Diode, Dual

Features

- Low forward voltage drop
- Ultrafast switching
- Ideal for hard-disk drive applications





19080

Mechanical Data

Case: SOT-23 Plastic case
Weight: approx. 8.8 mg
Packaging Codes/Options:
GS18 / 10 k per 13" reel (8 mm tape), 10 k/box
GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

Parts Table

Part	Ordering code	Marking	Remarks
SD0520LS	SD0520-GS18 or SD0520-GS08	S20	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Continuous reverse voltage		V_R	20	V
Forward current		I_F	500	mA

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		R_{thJA}	500[1)]	°C/W
Maximum junction temperature		T_j	150	°C
Storage temperature range		T_S	- 65 to + 150	°C

[1)] Valid provided that electrodes are kept at ambient temperature

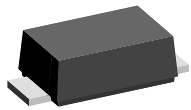
Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Minimum reverse breakdown voltage	I_R = 100 µA	V_{BR}		20		V
Maximum leakage current	V_R = 10 V	I_R		20		µA
Maximum forward voltage	I_F = 50 mA	V_F		400		mV
	I_F = 150 mA	V_F		500		mV
Diode capacitance	V_R = 0 V, f = 1 MHz	C_D		370		pF
Typ. reverse recovery time	$I_F = I_R$ = 100 mA	t_{rr}		32		ns

SOT-23 Package Dimension
see Package Section

Small Signal Schottky Diodes


17249

Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Low power loss, high efficiency
- High temperature soldering:
  260 °C/10 seconds at terminals

Mechanical Data

Case: JEDEC DO-219AB (SMF) Plastic case
Polarity: Color band denotes cathode end

Weight: approx. 15 mg
Packaging codes-options:
G18 / 10 k per 13" reel (8 mm tape), 50 k/box
G08 / 3 k per 7" reel (8 mm tape), 30 k/box

Parts Table

Part	Ordering code	Marking	Remarks
SL02	SL02-GS18 or SL02-GS08	S2	Tape and Reel
SL03	SL03-GS18 or SL03-GS08	S3	Tape and Reel
SL04	SL04-GS18 or SL04-GS08	S4	Tape and Reel

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Maximum repetitive peak reverse voltage		SL02	V_{RRM}	20	V
		SL03	V_{RRM}	30	V
		SL04	V_{RRM}	40	V
Maximum RMS voltage		SL02	V_{RMS}	14	V
		SL03	V_{RMS}	21	V
		SL04	V_{RMS}	28	V
Maximum DC blocking voltage		SL02	V_{DC}	20	V
		SL03	V_{DC}	30	V
		SL04	V_{DC}	40	V
Maximum average forward rectified current	T_{tp} = 109 °C		$I_{F(AV)}$	1.1	A
Peak forward surge current 8.3 ms single half sine-wave			I_{FSM}	40	A

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air[2)]		R_{thJA}	180	K/W
Maximum operating junction temperature		T_J	125	°C
Storage temperature range		T_{STG}	- 55 to 150	°C

[2)]Mounted on epoxy substrate with 3 x 3 mm Cu pads (≥ 40 µm thick)

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Instaneous forward voltage at 0.5[1)]		SL02	V_F		0.360	0.385	V
		SL03	V_F		0.395	0.43	V
		SL04	V_F		0.450	0.51	V
Typical instantaneous forward voltage	1.1 A	SL02	V_F		0.420		V
		SL03	V_F		0.450		V
		SL04	V_F		0.530		V
Maximum DC reverse current at rated DC blocking voltage	T_A = 25 °C	SL02	I_R			250	µA
	T_A = 100 °C	SL02	I_R			8.0	mA
	T_A = 25 °C	SL03	I_R			130	µA
	T_A = 100 °C	SL03	I_R			6.0	mA
	T_A = 25 °C	SL04	I_R			20	µA
	T_A = 100 °C	SL04	I_R			6.0	mA

[1)] Pulse test: 300 µs pulse width, 1 % duty cycle

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

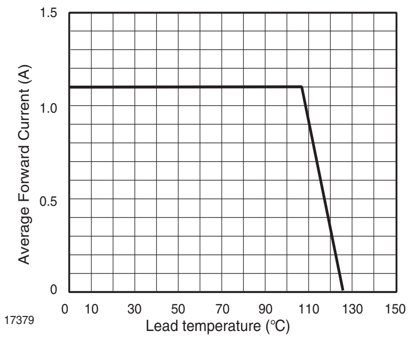


Figure 1. Forward Current Derating Curve

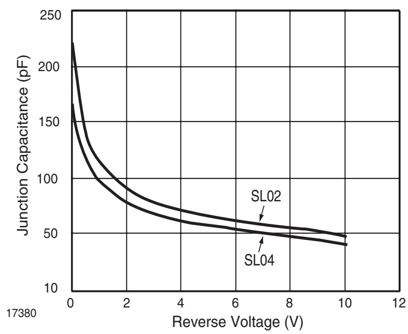


Figure 2. Typical Junction Capacitance

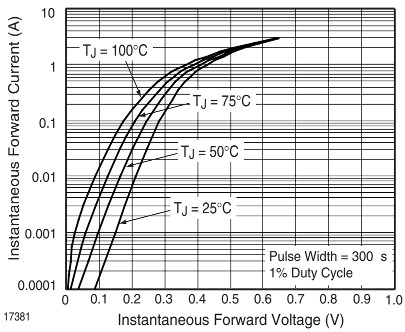


Figure 3. Typical Instantaneous Forward Characterisics - SL02

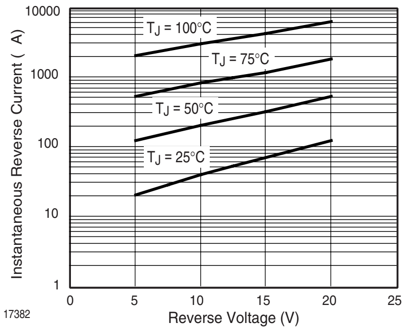


Figure 4. Typical Reverse Current Characteristics - SL02

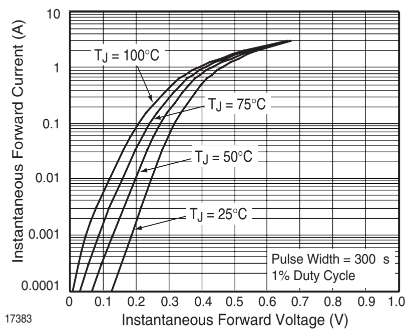


Figure 5. Typical Instantaneous Forward Characteristics - SL03

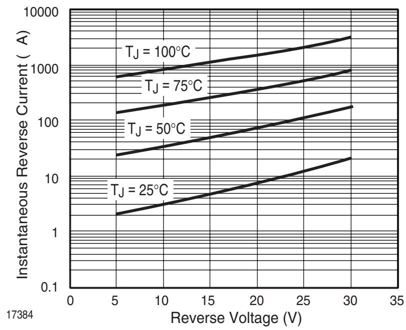
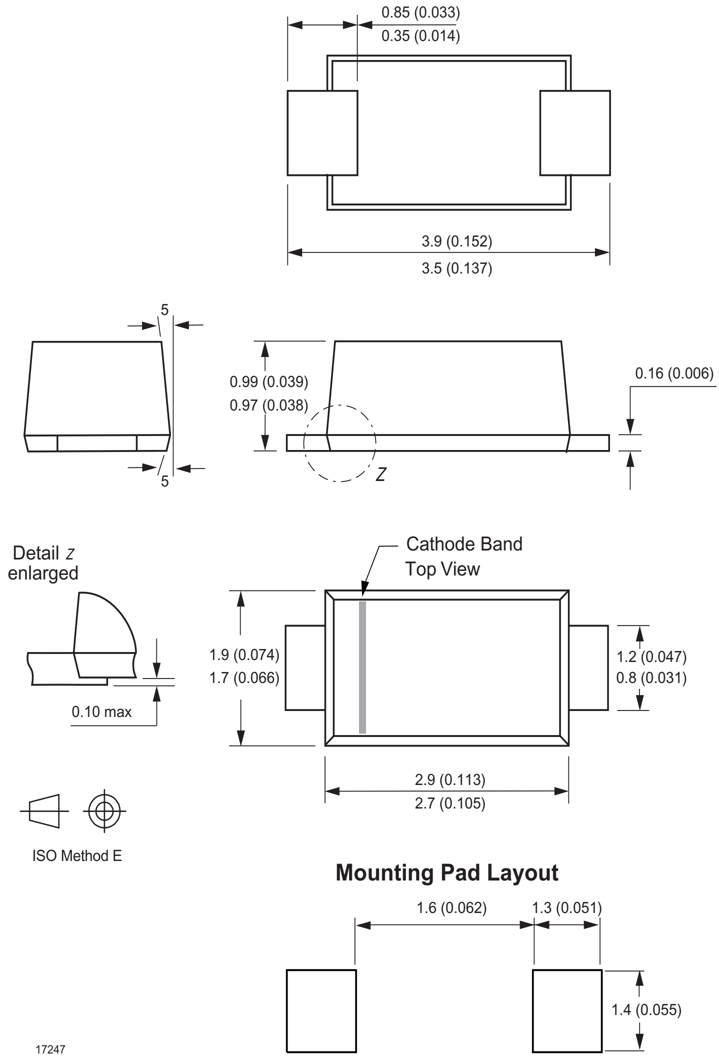


Figure 6. Typical Reverse Current Characteristics - SL03

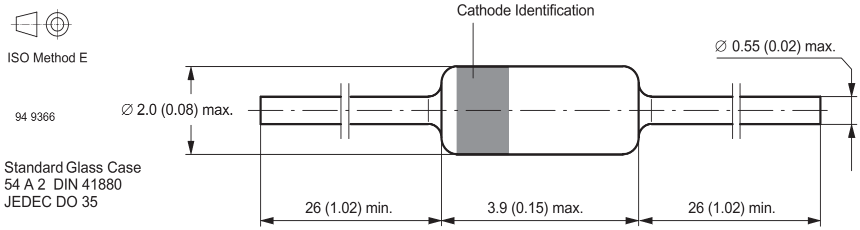
DO-219AB (SMF) Package Dimension see Package Section

Packages

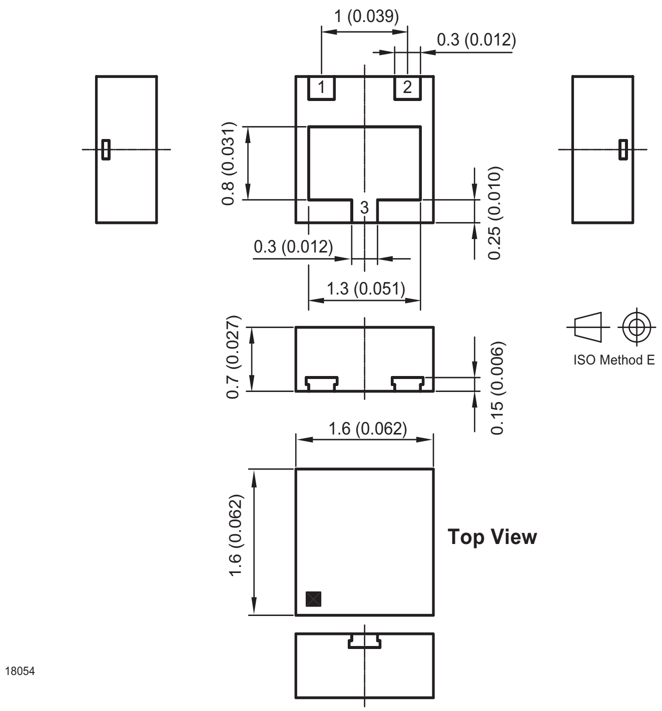
DO-219AB (SMF), Package Dimensions in mm (Inches)



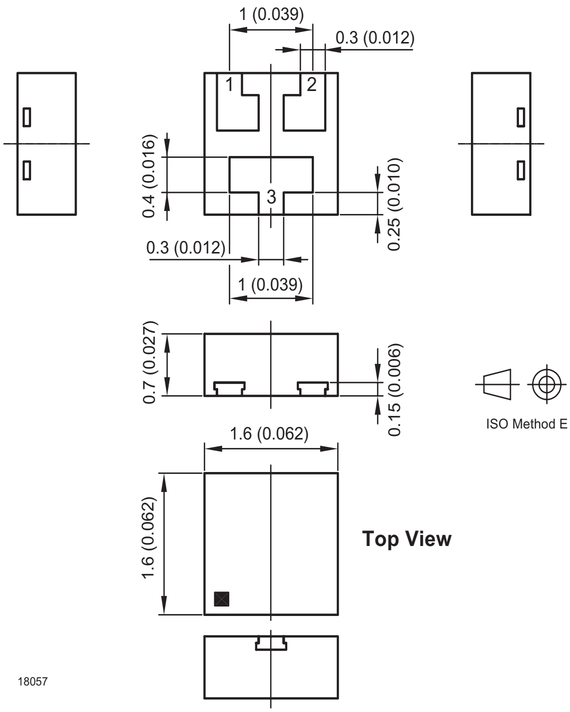
DO-35, Package Dimensions in mm (Inches)



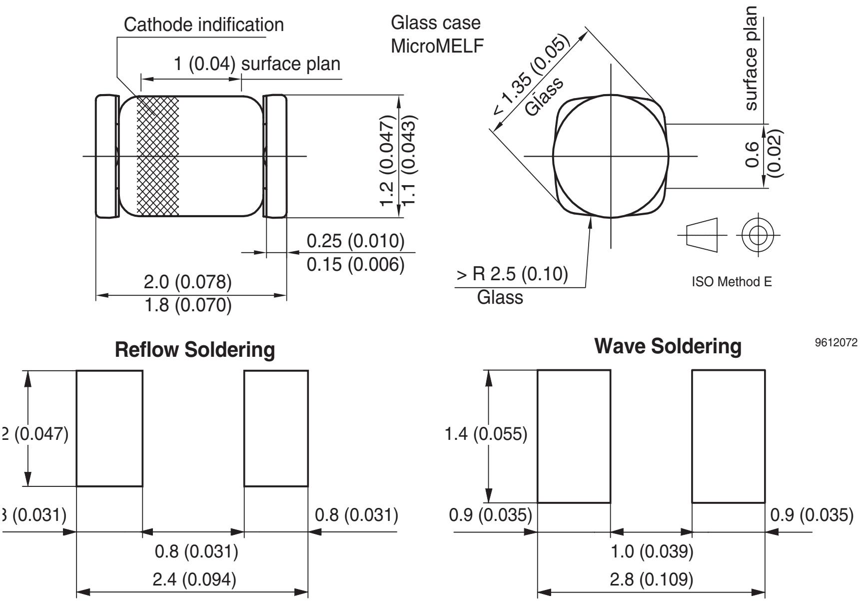
LLP75-3A, Package Dimensions in mm (Inches)



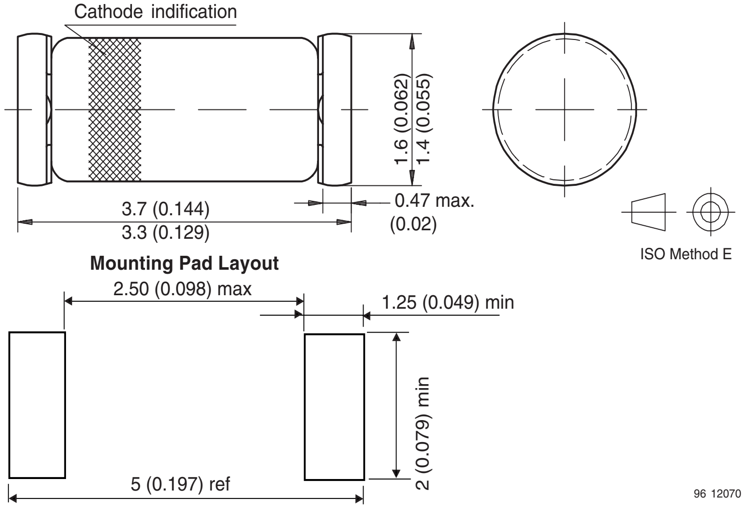
LLP75-3B, Package Dimensions in mm (Inches)



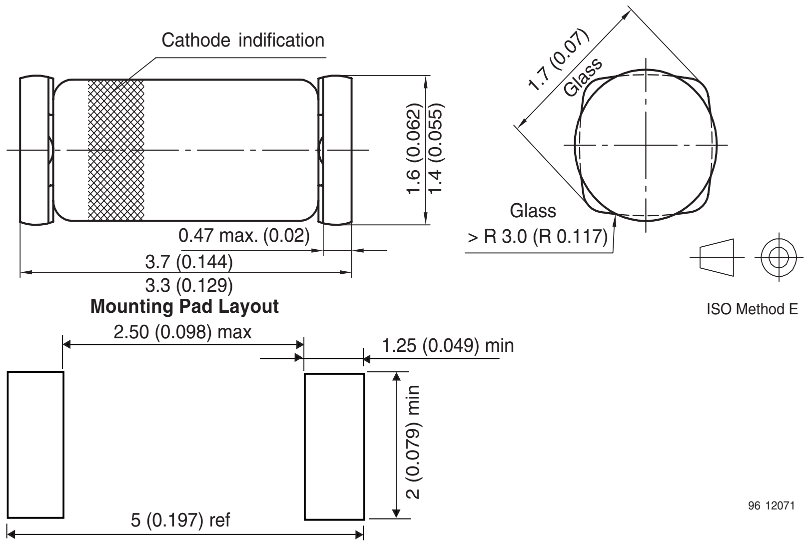
MicroMELF, Package Dimensions in mm (Inches)



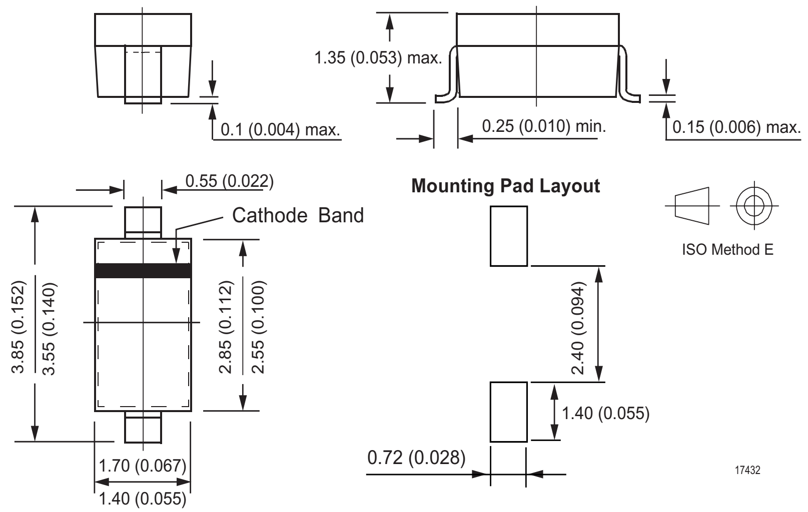
MiniMELF SOD-80, Package Dimensions in mm (Inches)



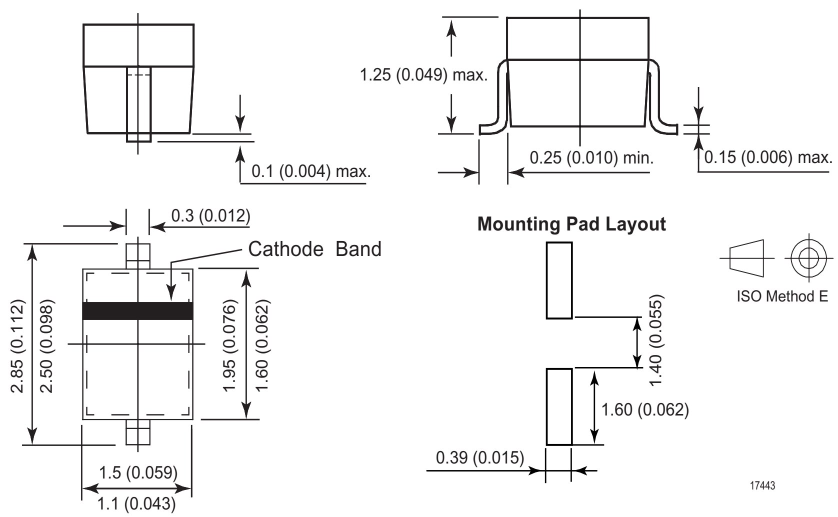
QuadroMELF SOD-80, Package Dimensions in mm (Inches)



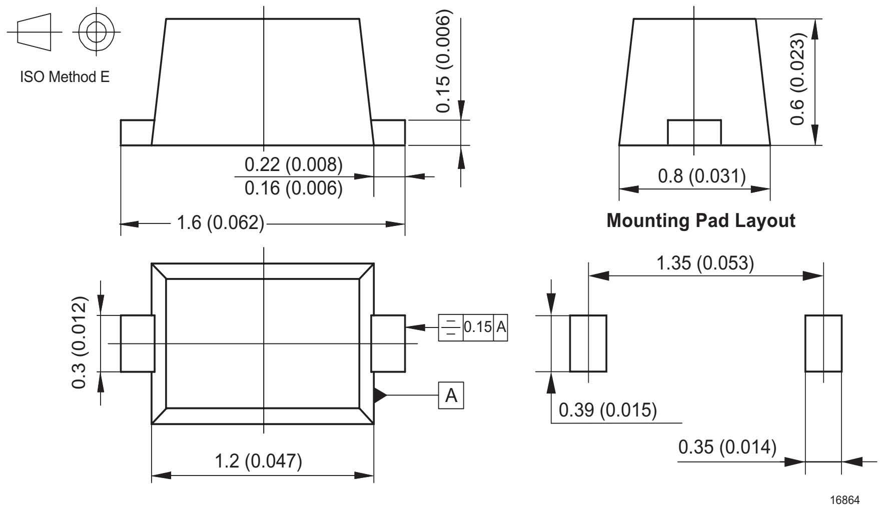
SOD-123, Package Dimensions in mm (Inches)



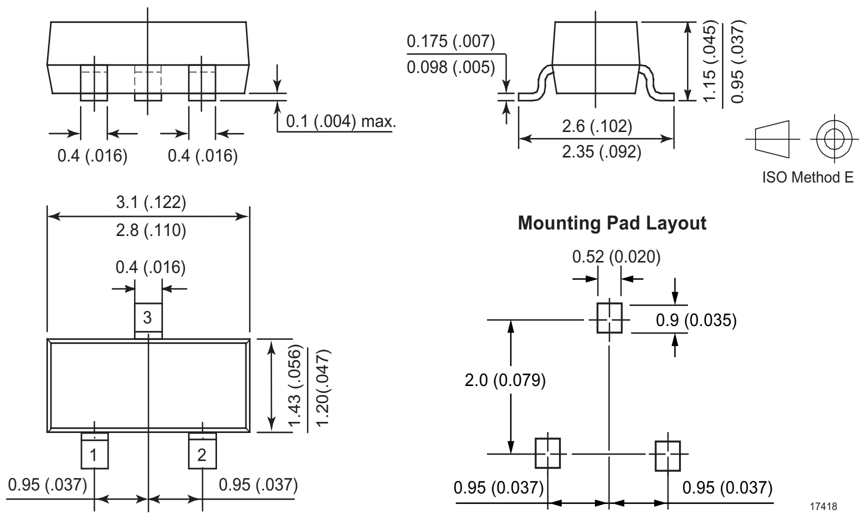
SOD-323, Package Dimensions in mm (Inches)



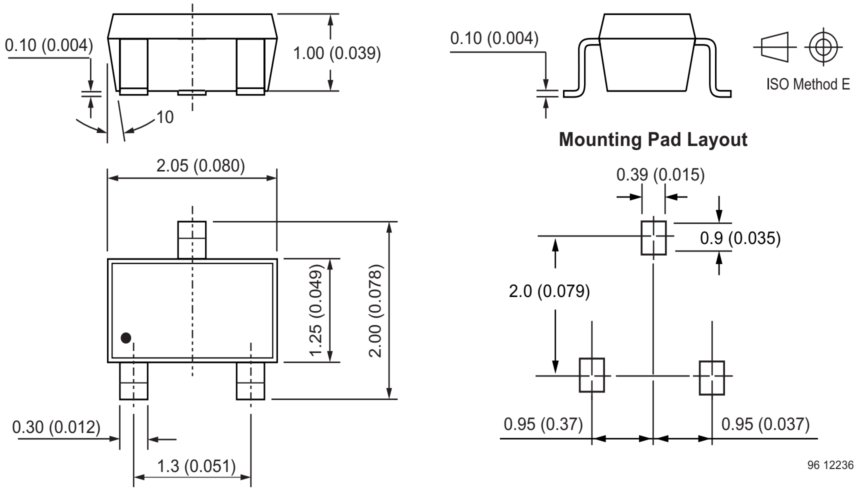
SOD-523, Package Dimensions in mm (Inches)



SOT-23, Package Dimensions in mm (Inches)



SOT-323, Package Dimensions in mm (Inches)



Selector Guides

General Information

Datasheets

Packages

Application Notes

Glossary

Power Ratings

Diode Power Dissipation

The admissible dissipation of diodes, rectifiers and Zener diodes which operate from sinusoidal supplies is based on the arithmetic mean value of junction temperature and power dissipation. Devices which handle pulses are capable of passing short-term currents far in excess of the maximum admissible static dissipation, and in this case it is admissible to exceed the continuous dissipation curve for the duration of each pulse. The magnitude of the admissible current is then inversely proportional to the pulse duty factor, because power is dissipated only intermittently, and the thermal capacity of the system and heat conduction prevent an undue rise in junction temperature. Some of the data sheets contain diagrams which allow the rating of a device operating under pulsed conditions to be determined.

In Figure 1, which applies to diodes and rectifiers, the maximum admissible pulse current amplitude is plotted as a function of pulse duration for an ambient (or case) temperature of + 25 °C. If the device is to operate at higher ambient temperatures, then it is necessary to derate the current values derived from this diagram in accordance with the "admissible dissipation versus temperature" curve. For Zener diodes it is preferable to provide a plot which gives the terminal pulse resistance rather than the admissible current amplitude as a function of t_p (the duration of the rectangular pulse which causes power to be dissipated), as shown in Figure 2. The operational junction temperature can then be calculated by use of the formula

$$T_j = T_{amb} + P_I \cdot r_{thA}$$

Or, if additional power P_D is continuously dissipated, by use of the formula

$$T_j = T_{amb} + P_D \cdot R_{thA} + P_I \cdot r_{thA}$$

If the diode is fitted to a heat sink, then the equation becomes

$$T_j = T_{amb} + P_{tot} \cdot R_{thS} + P_I \cdot r_{thC},$$

where P_{tot} is the mean value of P_I (= pulse dissipation).

If additional power is continuously dissipated, then the above equation must be extended to

$$T_j = T_{amb} + P_{tot} \cdot R_{thS} + P_D \cdot R_{thC} + P_I \cdot r_{thC}$$

where P_{tot} is the mean value of the total dissipated power.

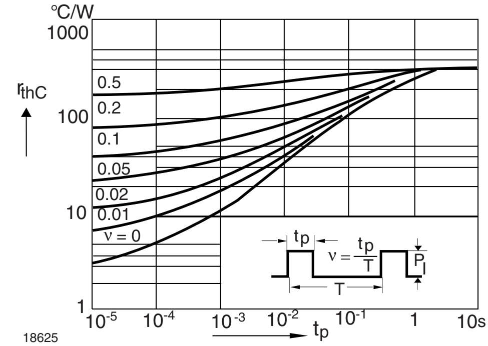


Figure 1. Thermal resistance versus pulse width

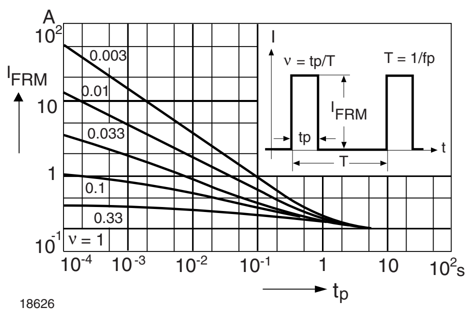


Figure 2. Admissible repetitive peak forward current versus pulse duration

Heat Removal from Components

The operation of any semiconductor device involves the dissipation of power with a consequent rise in junction temperature. Because the maximum admissible junction temperature must not be exceeded, careful circuit design with due regard not only to the electrical, but also the thermal performance of a semiconductor circuit, is essential.

If the dissipated power is low, then sufficient heat is radiated from the surface of the case; if the dissipation is high, however, additional steps may have to be taken to promote this process by reducing the thermal resistance between the junction and the ambient air. This can be achieved either by pushing a star or flag shaped heat dissipator over the case, or by bolting the semiconductor device to a heat sink.

P, the power to be dissipated, T_j, the junction temperature, and T_{amb}, the ambient temperature, are related by the formula

$$P = \frac{T_j - T_{amb}}{R_{thA}} = \frac{T_j - T_{amb}}{R_{thC} + R_{thS}}$$

where R_{thA} is the total thermal resistance between junction and ambient air. The total thermal resistance in turn comprises an internal thermal resistance R_{thC} between the junction and the mounting base, and an outer thermal resistance R_{thS} between the case and the surrounding air (or any other cooling medium). It should be noted that only the outer thermal resistance is affected by the design of the heat sink.

To determine the size of the heat sink required to meet given operating conditions, proceed as follows: First calculate the outer thermal resistance by use of the formula

$$R_{thS} < \frac{T_j - T_{amb}}{P} - R_{thC}$$

and then, by use of the diagrams, determine the size of the heat sink which provides the calculated R_{thS}-value.

To determine the maximum admissible device dissipation and ambient temperature limit for a given heat sink, proceed in the reverse order to that described above

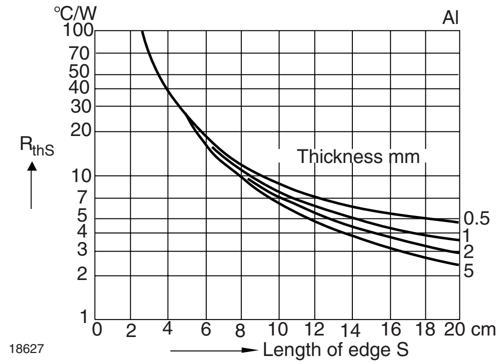


Figure 1. Aluminium Cooling Fin

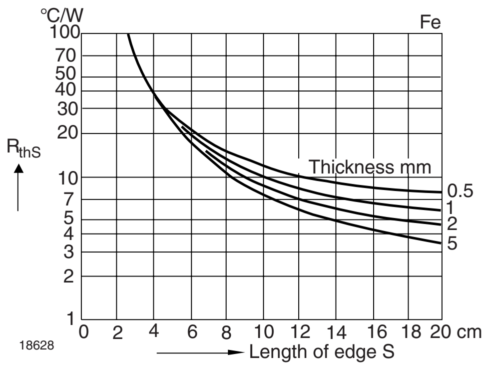


Figure 2. Steel Cooling Fin

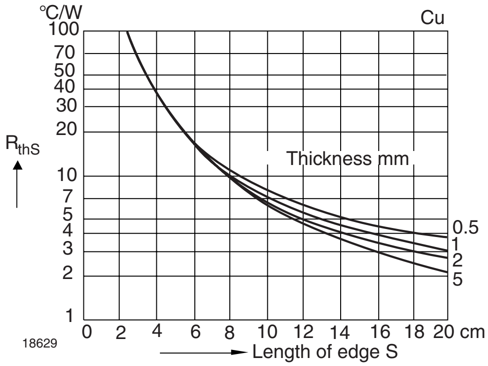


Figure 3. Copper Cooling Fin

The calculations are based on the following assumptions:

- Use of a square shaped heat sink without any finish, mounted in a vertical position
- Semiconductor device located in the center of the sink
- Heat sink operated in still air and not subjected to any additional heat radiation.

The calculated area should be increased by a factor of 1.3 if the sink is mounted horizontally, and can be reduced by a factor of approximately 0.7 if a black finish is used.

The curves give the thermal to ambient resistance of square vertical heat sinks as a function of side length. It is assumed that the heat is applied at the center of the square.

Small Signal Diodes

Silicon Diodes

Silicon is a particularly suitable material for the manufacture of diodes because of the small leakage currents, high breakdown voltages, and steep forward characteristics that may be attained. Admissible junction temperatures of up to T_j = + 200 °C allow a relatively high level of power to be dissipated in a package of small dimensions. Silicon diodes are manufactured as junction diodes by a diffusion process, preferably using the epitaxial planar technique.

The admissible power dissipation P_{tot}, junction temperature T_j, and ambient temperature T_{amb} are related as follows:

$$P_{tot} = \frac{T_j - T_{amb}}{R_{thA}}$$

Since a certain amount of the generated heat must be conducted away from the junction via the connecting leads, the following proviso is often quoted in data sheets: Valid provided that leads are kept at ambient temperature at a distance of 4 mm (p. ex.) from case.

Silicon Capacitance Diodes

Silicon capacitance diodes are used for electronic tuning purposes, automatic frequency control (AFC), frequency modulation, mixing, frequency multiplication, and for controlling the bandwidth of capacitively coupled bandpass filters; they also have applications in dielectric and parametric amplifiers. In all these applications, advantage is taken of the fact that the depletion layer capacitance is dependent on the applied reverse voltage.

Basically, a silicon capacitance diode has the same construction as any normal alloyed or diffused semiconductor diode: the depletion layer of the PN junction contains only very few free charge carriers and can be considered as the dielectric of a capacitor whose plates are formed by the high conductivity regions. Silicon capacitance diodes are normally operated under reverse bias conditions. If the applied reverse voltage is increased, then the thickness of the depletion layer increases and the depletion layer capacitance consequently decreases.

For example, referred to a reverse voltage of 3 V, depletion layer capacitance and reverse voltage are related by the following equation:

$$C = C_{3V} \cdot \left(\frac{3V + V_D}{V_R + V_D}\right)^n$$

where V_D is the diffusion potential (0.7 V for silicon).

The value of the exponent "n" depends on the manufacturing process, and is 0.33 for diffused diodes with a linear PN junction, 0.5 for alloyed diodes, or diodes with a steep diffusion profile and can be 0.75 and more if a special diffusion technique involving several superimposed diffusion processes is used.

These so-called "large capacitance ratio" or tuner diodes have a hyper abrupt (retrograded) PN junction giving a steep capacitance characteristic. This makes it possible for the first time to cover the entire frequency range of a VHF or UHF television tuner, or that of an MW receiver, without any band switching. Because the exponent "n" in the capacitance formula is not a constant, but varies with reverse voltage, the capacitance variation of these tuner diodes does not follow a mathematically definable law. To ensure accurate tracking, therefore, diodes intended for incorporation into tuners are supplied in matched groups.

Another important parameter of a capacitance diode is the Q factor, which should be high. At high frequencies, the Q factor of a capacitance diode is where C_{tot} is the diode capacitance, r_s the series resistance of the diode. The series resistance r_s is virtually the same as the bulk resistance of the diode.

As can be deduced from the Q formula, the Q factor of a capacitance diode varies with reverse bias; this is because the diode capacitance decreases as the reverse voltage is increased; the Q factor is also dependent on frequency.

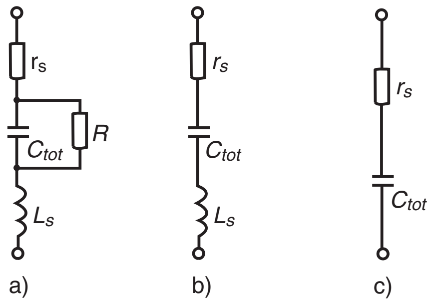
The "cut-off" frequency, f_{Q1}, of a capacitance diode is that frequency at which the Q factor is reduced to 1, i.e.

$$Q = \frac{f_{Q1}}{f}$$

Another important factor, which cannot be altogether ignored, is the series inductance L_s. This comprises the inductance of the connecting leads and the internal inductance of the diode. The inductance L_S together with the diode capacitance C_{tot} forms a series-tuned circuit which resonates at a frequency of:

$$f_0 = \frac{1}{2\pi\sqrt{L_S \cdot C_{tot}}}$$

Depending on the application, a capacitance diode can be represented by the following equivalent circuits:



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The complete equivalent circuit a) comprises, apart from the diode capacitance C_{tot}, a series resistance r_s, a series inductance L_S and a reverse resistance $R = V_R/I_R$. Since the reverse resistance of a silicon diode is extremely high, it is usually ignored, and the circuit then reduces to circuit b). At low and medium frequencies the series inductance L_S can also be ignored; this results in the circuit shown in c).

Junction capacitance, series resistance and reverse resistance are temperature dependent. The temperature coefficient of the junction capacitance is due to the effect of temperature on the diffusion voltage V_D, which is –2 mV/°C. This means that a reverse voltage reduction of approximately 2 mV has the same effect on the junction capacitance as a junction temperature increase of 1°C. The temperature coefficient of the junction capacitance is therefore positive, and decreases as the reverse bias is increased. The reverse resistance decreases by about 6 % and the series resistance by about 1 % if the junction temperature is increased by 1°C.

To ensure that the reverse bias does not vary appreciably with temperature, it is good practice to make the value of the diode series resistor through which the reverse bias is applied as low as practicable (approx.30 to 100 kW).

In all tuning applications it is important that the AC signal amplitude is small in comparison with the lowest reverse bias voltage applied, as otherwise the nonlinearity of the capacitance characteristic will cause signal distortion and an apparent change of capacitance. By the use of two diodes in a push-pull arrangement it is possible to obtain a considerable reduction in distortion, even at large signal amplitudes, because the diodes are then driven in antiphase and thus tend to cancel any distortion.

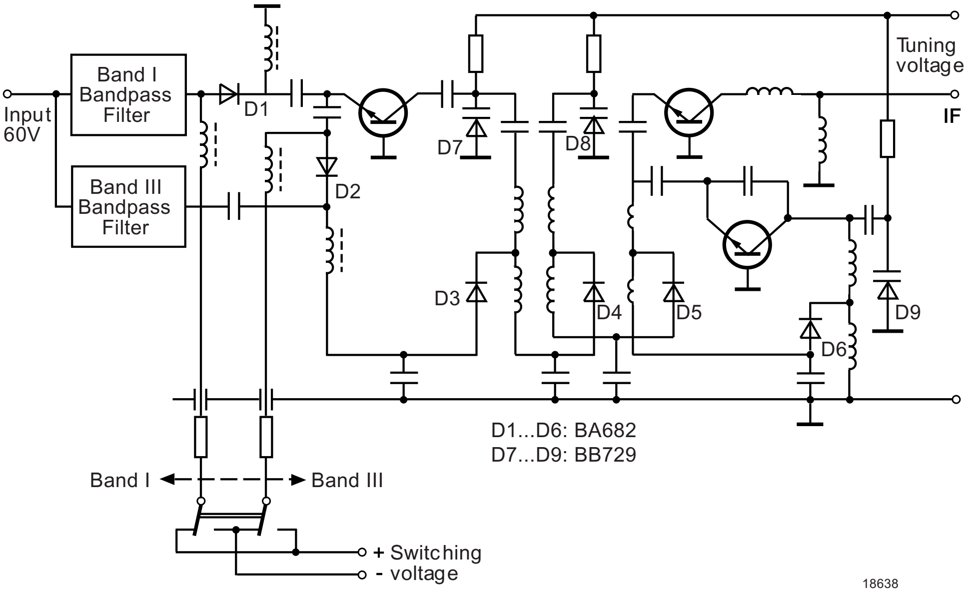
Silicon Diode Band-Switches

These diodes were developed for electronic band switching in television and radio tuners operating at MW to UHF. Diode switches, unlike the switching diodes normally used for logic applications (for example, 1N4148 or similar), are intended as an electronic equivalent to the contacts of mechanical range switches.

Diode switches exhibit either a very high reverse impedance (approx. 1 MW in parallel with approx. 1.3 pF) when they are non-conducting (switch open), or a very low dynamic forward impedance (approx. 0.5 W in series with approx. 2.5 nH) when they are conducting (switch closed).

The construction of the diode switches ensures that full advantage can be taken of their inherently small series inductance, since connecting leads or electrodes may be soldered directly to the case.

The following circuit diagram illustrates the use of type BA782 diode switches in an electronically tuned VHF television tuner.



Silicon Schottky Barrier Diodes

Schottky diode current flow is due to majority carrier conduction. It is not affected by reverse recovery transients as are conventional PN diodes due to stored charge and minority carrier injection.

The low forward voltage drop and fast switching make the diodes ideal for protection of MOS devices, steering, biasing and coupling for fast switching and low logic level applications.

Assembly and Soldering Recommendations

All semiconductor devices are extremely sensitive to their maximum admissible junction temperature being exceeded. When planning the layout of the equipment, the distance between heat sources and semiconductor elements should be sufficiently large.

Semiconductor elements may be mounted in any desired position.

The leads of devices with glass seals or in plastic package must not be bent and soldered close to the case. The distances noted below must be observed, otherwise any stresses set up in the material could produce cracks in the case. It should be noted that the effect of these cracks might become apparent only later and could result in the failure of the device. When bending the leads a suitable tool should be used to hold the leads thus keeping away any mechanical stresses from the case.

The following soldering recommendations are the result of experience gained in the treatment of semiconductor devices:

The minimum soldering time is 2 ± 0.5 s at a minimum soldering temperature of 235 °C and the maximum soldering time is 10s at a maximum soldering temperature of 260 °C (MIL–STD 883 B Meth. 2003.2 and Meth. 750/2031.1). The devices should not be subjected to any mechanical stresses during the soldering process.

Glass-encapsulated devices (e.g. DO-35 or DO-41): The joints of devices fitted in a horizontal position must be spaced not less than 4mm from the case, and those of devices fitted in a vertical position must be spaced not less than 1.5 mm from the printed circuit board.

Plastic-encapsulated devices (e.g. DO-41): The soldered joint should be spaced not less than 1.5 mm from the case.

Soldered connections to tuner diodes and diodes switches in DO-35 glass encapsulations and all devices with cases MELF and MiniMELF may be made directly to the case, thereby permitting full advantage to be taken of the low series inductance of these diodes.

For transistors in plastic TO-92 cases the maximum soldering time is 8 s, at soldering temperatures between 230 and 260 °C. Here, the distance between soldered joint and case should be at least 4 mm. During soldering, the leads should not be subjected to mechanical stress.

For transistors in SOT-23 plastic cases the maximum soldering time is 5 sec., at a maximum soldering temperature of 240 °C.

Selector Guides

General Information

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Symbols

Arrangement of Symbols

Letter symbols for current, voltage and power
(according to DIN 41 785, sheet 1)

To represent current, voltage and power, a system of basic letter symbols are used. Capital letters are used for the representation of peak, mean, dc or root-mean-square values. Lower case letters are used for the representation of instantaneous values which vary with time.

Capital letters are used as subscripts to represent continuous or total values, while lower case letters are used to represent varying values.

The following table summarizes the rules given above.

Basic letter	
Upper-case	Upper-case
Instantaneous values which vary with time	Maximum (peak) average (mean) continuous (dc) or root-mean-square (RMS) values

Subscript(s)	
Upper-case	Upper-case
Varying component alone,i.e.,instantaneous, root-mean-square, maximum or average values	Continuous (without signal) or total (instantaneous, average or maximum) values

Letter symbols for impedance, admittances, two-port parameters etc.

For impedance, admittance, two-port parameters, etc., capital letters are used for the representation of external circuits of which the device is only a part.

Lower case letters are used for the representation of electrical parameters inherent in the device.

The rules are not valid for inductance and capacitance. Both these quantities are denoted with capital letters.

Capital letters are used as subscripts for the designation of static (dc) values, while lower case letters are used for the designation of small-signal values.

If more than one subscript is used (h_{FE}, h_{fe}), the letter symbols are either all capital or all lower case.

If the subscript has numeric (single, double, etc.) as well as letter symbol(s) (such as h_{21E} or h_{21e}), the differentiation between static and small-signal value is made only by a subscript letter symbol.

Other quantities (values) which deviate from the above rules are given in the list of letter symbols.

The following table summarizes the rules given above.

Basic letter	
Upper-case	Upper-case
Electrical parameters inherent in the semiconductor devices except inductances and capacitances	Electrical parameters of external circuits and of circuits in which the semiconductor device forms only a part; all inductances and capacitances

Subscript(s)	
Upper-case	Upper-case
Small-signal values	Static (dc) values

Examples:

R_G	Generator resistance
G_P	Power gain
h_{FE}	DC forward current transfer ratio in common emitter configuration
r_P	Parallel resistance, damping resistance

Example for the use of Symbols

according to 41785 and IEC 148

b) Diode

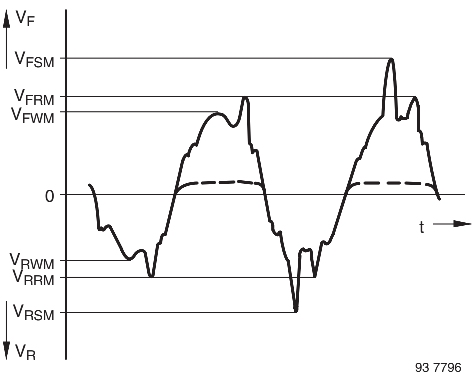

Figure 1.

V_F	Forward voltage
V_R	Reverse voltage
V_{FSM}	Surge forward voltage (non-repetitive)
V_{RSM}	Surge reverse voltage (non-repetitive)
V_{FRM}	Repetitive peak forward voltage
V_{RRM}	Repetitive peak reverse voltage
V_{FWM}	Crest working forward voltage
V_{RWM}	Crest working reverse voltage

List of Symbols

A	Anode
a	Distance (in mm)
C	Capacitance, general
C_{case}	Case capacitance
C_D	Diode capacitance
C_i	Junction capacitance
C_L	Load capacitance
C_P	Parallel capacitance
F	Noise figure
f	Frequency
f_g	Cut-off-frequency
I_F	Forward current
i_F	Forward current, instantaneous total value
I_{FAV}	Average forward current, rectified current
I_{FRM}	Repetitive peak forward current
I_{FSM}	Surge forward current, non-repetitive
I_{FWM}	Crest working forward current
I_R	Reverse current
i_R	Reverse current, instantaneous total value
I_{RAV}	Average reverse current
I_{RRM}	Repetitive peak reverse current
I_{RSM}	Non-repetitive peak reverse current
I_{RWM}	Crest working reverse current
I_S	Supply current
I_Z	Z-operating current
I_{ZM}	Z-maximum current
l	Length (in mm), (case-holder/soldering point)
LOCEP	(local epitaxy)

A registrated trade mark of Vishay for a process ofepitaxial deposition on silicon. Applications occur in planer Z-diodes. It has an advantage compared to the normal process, with reduced reverse current.

P	Power
P_{tot}	Total power dissipation
P_V	Power dissipation, general
P_{vp}	Pulse-power dissipation
Q	Quality
Q_{rr}	Reverse recovery charge
R_F	Forward resistance
r_f	Differential forward resistance
R_L	Load resistor
r_P	Parallel resistance, damping resistance
R_R	Reverse resistance
r_r	Differential reverse resistance
r_s	Series resistance
R_{thJA}	Thermal resistance between junction and ambient
R_{thJC}	Thermal reistance between junction and case
r_z	Differential Z-resistance in breakdown region (range) $r_z = r_{zj} + r_{zth}$
r_{zj}	Z-resistance at constant junction temperature, inherent Z-resistance
r_{zth}	Thermal part of the Z-resistance
T	Temperature, measured in centigrade
T	Absolute temperature, Kelvin temperature
T	Period duration
T_{amb}	Ambient temperature (range)
T_{case}	Case temperature
t_{fr}	Forward recovery time
T_j	Junction temperature
T_K	Temperature coefficient
T_L	Connecting lead temperature in the holder (soldering point) at the distance/(mm) from case
t_P	Pulse duration (time)
t_p/T	Duty cycle
t_r	Rise time
t_{rr}	Reverse recovery time
t_s	Storage time
T_{sd}	Soldering temperature
T_{stg}	Storage temperature (range)
$V_{(BR)}$	Breakdown voltage
V_F	Forward voltage
V_F	Forward voltage, instantaneous total value
V_{FAV}	Average forward voltage
V_o	Rectified voltage
V_{FSM}	Surge forward voltage, non-repetitive
V_{FRM}	Repetitive peak forward voltage
V_{FWM}	Crest working forward voltage
V_R	Reverse voltage
V_R	Reverse voltage, instantaneous total value
V_{RSM}	Surge reverse voltage, non-repetitive
V_{RRM}	Repetitive peak reverse voltage
V_{RWM}	Crest working reverse voltage
V_Z	Z-operating voltage
Z_{thp}	Thermal resistance – pulse operation
η_r	Rectification efficiency
ΔC_D	Capacitance deviation

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