Diotec Semiconductor

1.5KE6.8 ... 1.5KE440CA

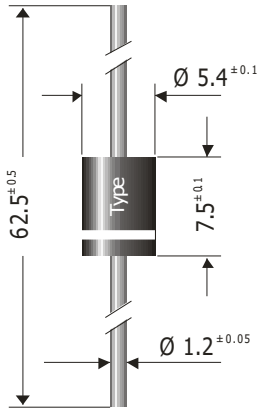
Transient Voltage Suppressor Diodes
Spannungs-Begrenzer-Dioden

P_{PPM} = 1500W
$P_{M(AV)}$ = 6.5 W
T_{jmax} = 175°C

V_{WM} = 5.0 ... 376 V
V_{BR} = 6.8 ... 440 V

Version 2016-11-24

Ø 5.4 x 7.5



Dimensions - Maße [mm]

Typical Applications
Over-voltage protection
ESD protection
Free-wheeling diodes
Commercial grade [1])

Typische Anwendungen
Schutz gegen Überspannung
ESD-Schutz
Freilauf-Dioden
Standardausführung [1])

Features
Uni- and Bidirectional versions
Peak pulse power of 1500 W (10/1000 µs waveform)
Very fast response time
Compliant to RoHS, REACH, Conflict Minerals [1])

Besonderheiten
Uni- und Bidirektionale Versionen
1500 W Impuls-Verlustleistung (10/1000 µs Strom-Impuls)
Sehr schnelle Ansprechzeit
Konform zu RoHS, REACH, Konfliktmineralien [1])

Mechanical Data [1])		**Mechanische Daten [1])**
Taped in ammo pack	1250	Gegurtet in Ammo-Pack
Weight approx.	1 g	Gewicht ca.
Case material	UL 94V-0	Gehäusematerial
Solder & assembly conditions	260°C/10s MSL N/A	Löt- und Einbaubedingungen

For bidirectional types (add suffix "B"), electrical characteristics apply in both directions.
Für bidirektionale Dioden (ergänze Suffix "B") gelten die elektrischen Werte in beiden Richtungen.

Datasheet.Directory

Maximum ratings [2]) — **Grenzwerte [2])**

Peak pulse power dissipation (10/1000 µs waveform) Impuls-Verlustleistung (Strom-Impuls 10/1000 µs)		P_{PPM}	1500 W [3])
Steady state power dissipation Verlustleistung im Dauerbetrieb	T_A = 75°C	$P_{M(AV)}$	6.5 W [4])
Peak forward surge current, 60 Hz half sine-wave Stoßstrom für eine 60 Hz Sinus-Halbwelle		I_{FSM}	200 A [5])
Operating junction temperature – Sperrschichttemperatur Storage temperature – Lagerungstemperatur		T_j T_S	-50...+175°C -50...+175°C

Characteristics — **Kennwerte**

Max. instantaneous forward voltage Augenblickswert der Durchlass-Spannung	I_F = 25 A T_j = 25°C	$V_{BR} \leq 200$ V $V_{BR} > 200$ V	V_F V_F	< 3.5 V [5]) < 5.0 V [5])
Thermal resistance junction to ambient Wärmewiderstand Sperrschicht – Umgebung			R_{thA}	<19 K/W [4])
Thermal resistance junction to lead Wärmewiderstand Sperrschicht – Anschlussdraht			R_{thL}	< 8 K/W

1 Please note the detailed information on our website or at the beginning of the data book
Bitte beachten Sie die detaillierten Hinweise auf unserer Internetseite bzw. am Anfang des Datenbuches
2 T_A = 25°C unless otherwise specified – T_A = 25°C wenn nicht anders angegeben
3 Non-repetitive pulse see curve I_{PP} = f (t) / P_{PP} = f (t)
Höchstzulässiger Spitzenwert eines einmaligen Impulses, siehe Kurve I_{PP} = f (t) / P_{PP} = f (t)
4 Valid, if leads are kept at ambient temperature at a distance of 10 mm from case
Gültig, wenn die Anschlussdrähte in 10 mm Abstand vom Gehäuse auf Umgebungstemperatur gehalten werden
5 Unidirectional diodes only – Nur für unidirektionale Dioden

Characteristics (T_j = 25°C) **Kennwerte (T_j = 25°C)**

Type Typ		Breakdown voltage at I_T = 1 mA Abbruch-Spannung bei I_T = 1 mA *) at / bei I_T = 10 mA		Stand-off voltage Sperrspannung	Max. rev. current Max. Sperrstrom at / bei V_{WM}	Max. clamping voltage Max. Begrenzer-Spannung at / bei I_{PPM} (10/1000 µs)	
unidirectional	bidirectional	V_{BR} [V]		V_{WM} [V]	I_D [µA]	V_C [V]	I_{PPM} [A]
1.5KE6.8	1.5KE6.8C	6.8 ± 10%	6.12...7.48 *)	5.5	1000	10.8	145
1.5KE6.8A	1.5KE6.8CA	6.8 ± 5%	6.45...7.14 *)	5.8	1000	10.5	150
1.5KE7.5	1.5KE7.5C	7.5 ± 10%	6.75...8.25 *)	6.0	500	11.7	134
1.5KE7.5A	1.5KE7.5CA	7.5 ± 5%	7.13...7.88 *)	6.4	500	11.3	139
1.5KE8.2	1.5KE8.2C	8.2 ± 10%	7.38...9.02 *)	6.6	200	12.5	126
1.5KE8.2A	1.5KE8.2CA	8.2 ± 5%	7.79...8.61 *)	7.0	200	12.1	130
1.5KE9.1	1.5KE9.1C	9.1 ± 10%	8.19...10.0	7.3	50	13.8	114
1.5KE9.1A	1.5KE9.1CA	9.1 ± 5%	8.65...9.55	7.7	50	13.4	117
1.5KE10	1.5KE10C	10 ± 10%	9.0...11.0	8.1	10	15.0	105
1.5KE10A	1.5KE10CA	10 ± 5%	9.5...10.5	8.5	10	14.5	108
1.5KE11	1.5KE11C	11 ± 10%	9.9...12.1	8.9	5	16.2	97
1.5KE11A	1.5KE11CA	11 ± 5%	10.5...11.6	9.4	5	15.6	100
1.5KE12	1.5KE12C	12 ± 10%	10.8...13.2	9.7	5	17.3	91
1.5KE12A	1.5KE12CA	12 ± 5%	11.4...12.6	10.2	5	16.7	94
1.5KE13	1.5KE13C	13 ± 10%	11.7...14.3	10.5	5	19.0	82
1.5KE13A	1.5KE13CA	13 ± 5%	12.4...13.7	11.1	5	18.2	86
1.5KE15	1.5KE15C	15 ± 10%	13.5...16.5	12.1	5	22.0	71
1.5KE15A	1.5KE15CA	15 ± 5%	14.3...15.8	12.8	5	21.2	74
1.5KE16	1.5KE16C	16 ± 10%	14.4...17.6	12.9	5	23.5	67
1.5KE16A	1.5KE16CA	16 ± 5%	15.2...16.8	13.6	5	22.5	70
1.5KE18	1.5KE18C	18 ± 10%	16.2...19.8	14.5	5	26.5	59
1.5KE18A	1.5KE18CA	18 ± 5%	17.1...18.9	15.3	5	25.2	60
1.5KE20	1.5KE20C	20 ± 10%	18.0...22.0	16.2	5	29.1	54
1.5KE20A	1.5KE20CA	20 ± 5%	19.0...21.0	17.1	5	27.7	56
1.5KE22	1.5KE22C	22 ± 10%	19.8...24.2	17.8	5	31.9	49
1.5KE22A	1.5KE22CA	22 ± 5%	20.9...23.1	18.8	5	30.6	51
1.5KE24	1.5KE24C	24 ± 10%	21.6...26.4	19.4	5	34.7	45
1.5KE24A	1.5KE24CA	24 ± 5%	22.8...25.2	20.5	5	33.2	47
1.5KE27	1.5KE27C	27 ± 10%	24.3...29.7	21.8	5	39.1	40
1.5KE27A	1.5KE27CA	27 ± 5%	25.7...28.4	23.1	5	37.5	42
1.5KE30	1.5KE30C	30 ± 10%	27.0...33.0	24.3	5	43.5	36
1.5KE30A	1.5KE30CA	30 ± 5%	28.5...31.5	25.6	5	41.4	38
1.5KE33	1.5KE33C	33 ± 10%	29.7...36.3	26.8	5	47.7	33
1.5KE33A	1.5KE33CA	33 ± 5%	31.4...34.7	28.2	5	45.7	34
1.5KE36	1.5KE36C	36 ± 10%	32.4...39.6	29.1	5	52.0	30
1.5KE36A	1.5KE36CA	36 ± 5%	34.2...37.8	30.8	5	49.9	31
1.5KE39	1.5KE39C	39 ± 10%	35.1...42.9	31.6	5	56.4	27
1.5KE39A	1.5KE39CA	39 ± 5%	37.1...41.0	33.3	5	53.9	29
1.5KE43	1.5KE43C	43 ± 10%	38.7...47.3	34.8	5	61.9	25
1.5KE43A	1.5KE43CA	43 ± 5%	40.9...45.2	36.8	5	59.3	26
1.5KE47	1.5KE47C	47 ± 10%	42.3...51.7	38.1	5	67.8	23
1.5KE47A	1.5KE47CA	47 ± 5%	44.7...49.4	40.2	5	64.8	24
1.5KE51	1.5KE51C	51 ± 10%	45.9...56.1	41.3	5	73.5	21
1.5KE51A	1.5KE51CA	51 ± 5%	48.5...53.6	43.6	5	70.1	22

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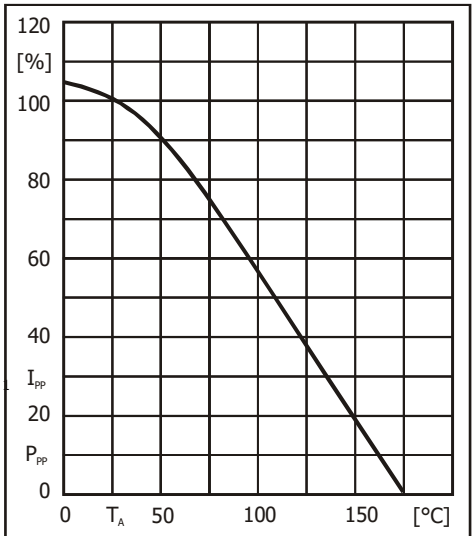
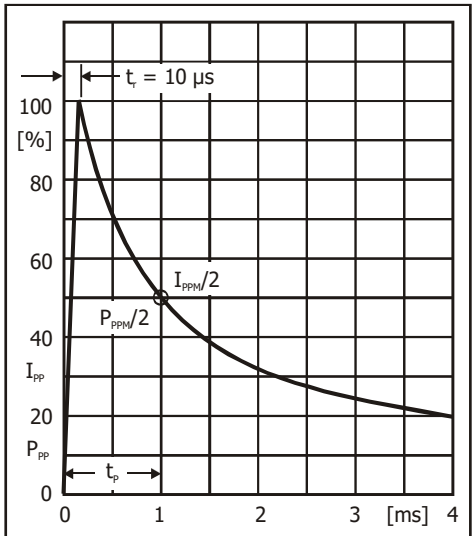
Characteristics (T_j = 25°C) **Kennwerte (T_j = 25°C)**

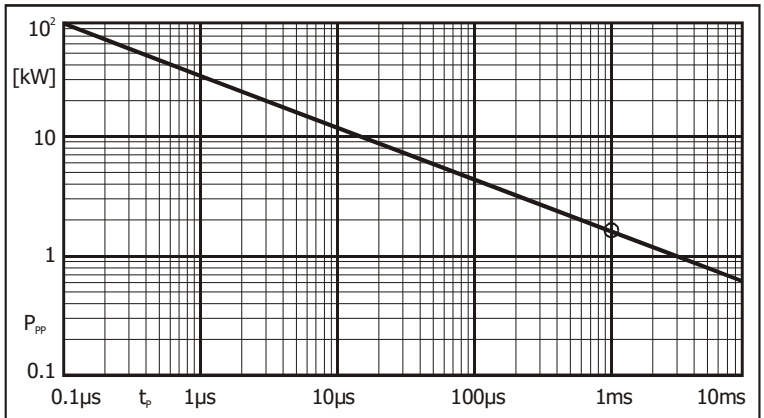
Type Typ		Breakdown voltage at I_T = 1 mA Abbruch-Spannung bei I_T = 1 mA *) at / bei I_T = 10 mA		Stand-off voltage Sperrspannung	Max. rev. current Max. Sperrstrom at / bei V_{WM}	Max. clamping voltage Max. Begrenzer-Spannung at / bei I_{PPM} (10/1000 µs)	
unidirectional	bidirectional	V_{BR} [V]		V_{WM} [V]	I_D [µA]	V_C [V]	I_{PPM} [A]
1.5KE56	1.5KE56C	56 ± 10%	50.4...61.6	45.4	5	81	19
1.5KE56A	1.5KE56CA	56 ± 5%	53.2...58.8	47.8	5	77	20
1.5KE62	1.5KE62C	62 ± 10%	55.8...68.8	50.2	5	89	17
1.5KE62A	1.5KE62CA	62 ± 5%	58.9...65.1	53.0	5	85	18
1.5KE68	1.5KE68C	68 ± 10%	61.2...74.8	55.1	5	98	16.0
1.5KE68A	1.5KE68CA	68 ± 5%	64.6...71.4	58.1	5	92	17.0
1.5KE75	1.5KE75C	75 ± 10%	67.5...82.5	60.7	5	108	14.0
1.5KE75A	1.5KE75CA	75 ± 5%	71.3...78.8	64.1	5	103	15.0
1.5KE82	1.5KE82C	82 ± 10%	73.8...90.2	66.4	5	118	13.0
1.5KE82A	1.5KE82CA	82 ± 5%	77.9...86.1	70.1	5	113	13.9
1.5KE91	1.5KE91C	91 ± 10%	81.9...100	73.7	5	131	12.0
1.5KE91A	1.5KE91CA	91 ± 5%	86.5...95.5	77.8	5	125	12.6
1.5KE100	1.5KE100C	100 ± 10%	90.0...110	81.0	5	144	10.9
1.5KE100A	1.5KE100CA	100 ± 5%	95.0...105	85.5	5	137	11.4
1.5KE110	1.5KE110C	110 ± 10%	99.0...121	89.2	5	158	9.9
1.5KE110A	1.5KE110CA	110 ± 5%	105...116	94.0	5	152	10.3
1.5KE120	1.5KE120C	120 ± 10%	108...132	97.2	5	173	9.1
1.5KE120A	1.5KE120CA	120 ± 5%	114...126	102	5	165	9.5
1.5KE130	1.5KE130C	130 ± 10%	117...143	105	5	187	8.4
1.5KE130A	1.5KE130CA	130 ± 5%	124...137	111	5	179	8.7
1.5KE150	1.5KE150C	150 ± 10%	135...165	121	5	215	7.3
1.5KE150A	1.5KE150CA	150 ± 5%	143...158	128	5	207	7.6
1.5KE160	1.5KE160C	160 ± 10%	144...176	130	5	230	6.8
1.5KE160A	1.5KE160CA	160 ± 5%	152...168	136	5	219	7.1
1.5KE170	1.5KE170C	170 ± 10%	153...187	138	5	244	6.4
1.5KE170A	1.5KE170CA	170 ± 5%	162...179	145	5	234	6.7
1.5KE180	1.5KE180C	180 ± 10%	162...198	146	5	258	6.1
1.5KE180A	1.5KE180CA	180 ± 5%	171...189	154	5	246	6.4
1.5KE200	1.5KE200C	200 ± 10%	180...220	162	5	287	5.4
1.5KE200A	1.5KE200CA	200 ± 5%	190...210	171	5	274	5.7
1.5KE220	1.5KE220C	220 ± 10%	198...242	175	5	344	4.5
1.5KE220A	1.5KE220CA	220 ± 5%	209...231	185	5	328	4.8
1.5KE250	1.5KE250C	250 ± 10%	225...275	202	5	360	4.3
1.5KE250A	1.5KE250CA	250 ± 5%	237...263	214	5	344	4.5
1.5KE300	1.5KE300C	300 ± 10%	270...330	243	5	430	3.6
1.5KE300A	1.5KE300CA	300 ± 5%	285...315	256	5	414	3.8
1.5KE350	1.5KE350C	335 ± 10%	315...385	284	5	504	3.1
1.5KE350A	1.5KE350CA	350 ± 5%	332...368	300	5	482	3.2
1.5KE400	1.5KE400C	400 ± 10%	360...440	324	5	574	2.7
1.5KE400A	1.5KE400CA	400 ± 5%	380...420	342	5	548	2.8
1.5KE440	1.5KE440C	440 ± 10%	396...484	356	5	631	2.4
1.5KE440A	1.5KE440CA	440 ± 5%	418...462	376	5	602	2.6



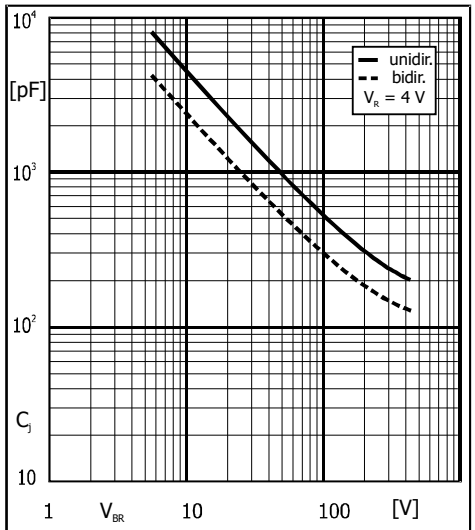
Peak pulse power/current vs. ambient temperature[1])
Impuls-Spitzenleistung/Strom vs. Umgebungstemp.[1])



10/1000µs - pulse waveform
10/1000µs - Impulsform



Non repetitive peak pulse power versus pulse width (10/1000 wave form)
Einzel-Impuls-Spitzenleistung in Abh. von der Pulsdauer (10/1000-Impuls)



Junction capacitance vs. breakdown voltage (typ.)
Sperrschichtkapazität in Abh. v.d. Abbruchspg. (typ.)

The range of type numbers is graded to the international E 24 standard. The standard tolerance of the breakdown voltage for each type is ± 10%. Suffix "A" denotes a tolerance of ± 5% for the breakdown voltage.

e.g.: 1.5KE51C = bidirectional diode, V_{BR} = 51 V (± 10%), V_{WM} ≥ 41.3 V at I_D = 5 µA
1.5KE9.1A = unidirectional diode, V_{BR} = 9.1 V (± 5%), V_{WM} ≥ 7.7 V at I_D = 50 µA

Die Abstufung der Typen innerhalb der Reihe entspricht dem internationalen E 24-Standard. Die Toleranz der Abbruchspannung jedes einzelnen Typs beträgt in der Standardausführung ± 10%. Suffix "A" kennzeichnet eine Toleranz der Abbruchspannung von ± 5%.

Disclaimer: See data book page 2 or website
Haftungssauschluss: Siehe Datenbuch Seite 2 oder Internet

1 Valid, if leads are kept at ambient temperature at a distance of 10 mm from case
Gültig, wenn die Anschlussdrähte in 10 mm Abstand von Gehäuse auf Umgebungstemperatur gehalten werden

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