

**SURFACE MOUNT ZENER DIODE**

**VOLTAGE RANGE 1.8 to 43 Volts POWER RATING 500 mWatts**

**FEATURES**

- \* Wide Zener Reverse Voltage Range : 1.8V to 43V
- \* 500mW Rating on FR-4 or FR-5 Board
- \* Small Package Size for High Density Applications
- \* Ideally Suited for Automated Assembly Processes
- \* ESD Rating of Class 3 (>16kV) per Human Body Model

**MECHANICAL DATA**

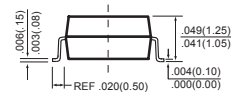
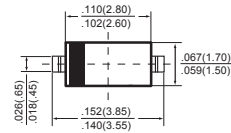
- \* Case: Molded plastic
- \* Epoxy: UL 94V-O rate flame retardant
- \* Lead: MIL-STD-202E method 208C guaranteed
- \* Mounting position: Any
- \* Weight: 0.01 gram

**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

Ratings at 25 °C ambient temperature unless otherwise specified.



**SOD-123**



Dimensions in inches and (millimeters)

**MAXIMUM RATINGS** ( @ TA = 25°C unless otherwise noted )

RATINGS	SYMBOL	VALUE	UNITS
Max. Power Dissipation on FR-5 Board, @T <sub>L</sub> =75°C (Note 1) Derated above 75°C	P <sub>D</sub>	500 6.7	mW mW/°C
Max. Operating Temperature Range	T <sub>J</sub>	150	°C
Storage Temperature Range	T <sub>STG</sub>	-65 to +150	°C

**ELECTRICAL CHARACTERISTICS** ( @ TA = 25°C unless otherwise noted )

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Thermal Resistance Junction to Ambient (Note 2)	R <sub>θJA</sub>	-	-	340	°C/W
Thermal Resistance Junction to Lead (Note 2)	R <sub>θJL</sub>	-	-	150	°C/W
Max. Instantaneous Forward Voltage at I <sub>F</sub> = 10mA	V <sub>F</sub>	-	-	0.95	Volts

Note 1. FR-5 = 3.5 X 1.5 inches, using the minimum recommended footprint.  
 2. Thermal Resistance measurement obtained via infrared Scan Method.

## ELECTRICAL CHARACTERISTICS (@TA=25°C unless otherwise specified)

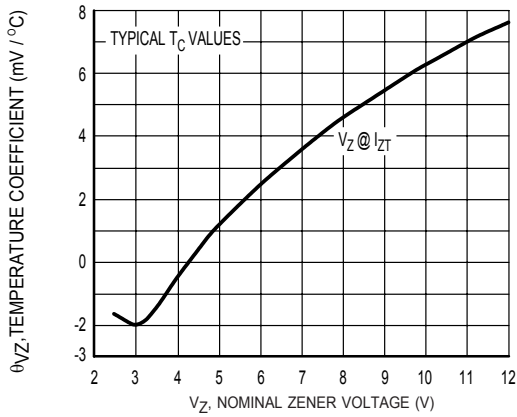
Device	Device Marking	Zener Voltage (Note 3)			Leakage Current		
		V <sub>Z</sub> (Volts)			@ I <sub>ZT</sub>	I <sub>R</sub> @ V <sub>R</sub>	
		Min	Nom	Max	uA	uA	Volts
MMSZ4678T1, G	CC	1.71	1.8	1.89	50	7.5	1
MMSZ4679T1, G	CD	1.90	2.0	2.10	50	5	1
MMSZ4680T1, G	CE	2.09	2.2	2.31	50	4	1
MMSZ4681T1, G	CF	2.28	2.4	2.52	50	2	1
MMSZ4682T1, G	CH	2.565	2.7	2.835	50	1	1
MMSZ4683T1	CJ	2.85	3.0	3.15	50	0.8	1
MMSZ4684T1, G	CK	3.13	3.3	3.47	50	7.5	1.5
MMSZ4685T1, G	CM	3.42	3.6	3.78	50	7.5	2
MMSZ4686T1	CN	3.70	3.9	4.10	50	5	2
MMSZ4687T1, G	CP	4.09	4.3	4.52	50	4	2
MMSZ4688T1	CT	4.47	4.7	4.94	50	10	3
MMSZ4689T1, G	CU	4.85	5.1	5.36	50	10	3
MMSZ4690T1, G	CV	5.32	5.6	5.88	50	10	4
MMSZ4691T1	CA	5.89	6.2	6.51	50	10	5
MMSZ4692T1, G	CX	6.46	6.8	7.14	50	10	5.1
MMSZ4693T1	CY	7.13	7.5	7.88	50	10	5.7
MMSZ4694T1	CZ	7.79	8.2	8.61	50	1	6.2
MMSZ4695T1, G	DC	8.27	8.7	9.14	50	1	6.6
MMSZ4696T1, G	DD	8.65	9.1	9.56	50	1	6.9
MMSZ4697T1, G	DE	9.50	10	10.50	50	1	7.6
MMSZ4698T1	DF	10.45	11	11.55	50	0.05	8.4
MMSZ4699T1, G	DH	11.40	12	12.60	50	0.05	9.1
MMSZ4700T1	DJ	12.35	13	13.65	50	0.05	9.8
MMSZ4701T1	DK	13.30	14	14.70	50	0.05	10.6
MMSZ4702T1, G	DM	14.25	15	15.75	50	0.05	11.4
MMSZ4703T1, G*	DN	15.20	16	16.80	50	0.05	12.1
MMSZ4704T1	DP	16.15	17	17.85	50	0.05	12.9
MMSZ4705T1	DT	17.10	18	18.90	50	0.05	13.6
MMSZ4706T1	DU	18.05	19	19.95	50	0.05	14.4
MMSZ4707T1	DV	19.00	20	21.00	50	0.01	15.2
MMSZ4708T1	DA	20.90	22	23.10	50	0.01	16.7
MMSZ4709T1, G	DX	22.80	24	25.20	50	0.01	18.2
MMSZ4710T1, G	DY	23.75	25	26.25	50	0.01	19.0
MMSZ4711T1*	EA	25.65	27	28.35	50	0.01	20.4
MMSZ4712T1	EC	26.60	28	29.40	50	0.01	21.2
MMSZ4713T1, G	ED	28.50	30	31.50	50	0.01	22.8
MMSZ4714T1	EE	31.35	33	34.65	50	0.01	25.0
MMSZ4715T1	EF	34.20	36	37.80	50	0.01	27.3
MMSZ4716T1	EH	37.05	39	40.95	50	0.01	29.6
MMSZ4717T1, G	EJ	40.85	43	45.15	50	0.01	32.6

Note 3. Nominal Zener voltage is measured with the device junction in thermal equilibrium at T<sub>L</sub> = 30°C ±1°C.

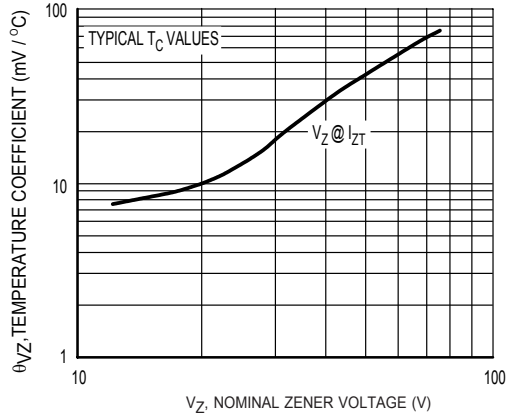
\*Not Available in the 10,000/Tape & Reel.

\*\*The "G" suffix indicates Pb-Free package available.

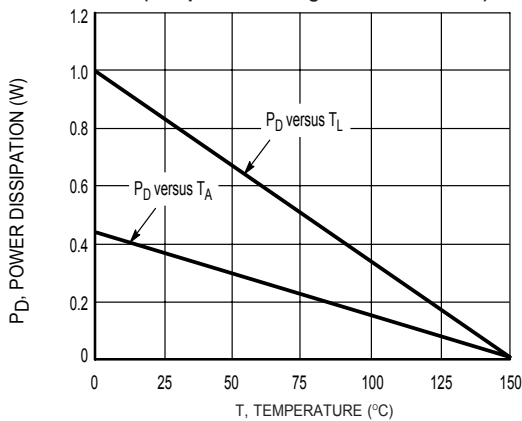
# RATING AND CHARACTERISTICS CURVES ( MMSZ4687T1-MMSZ4717T1 )



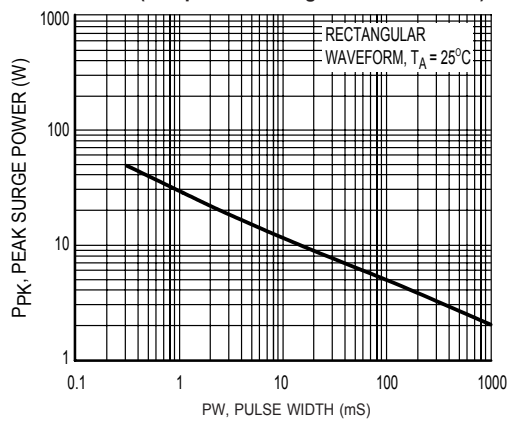
**Figure 1 Temperature Coefficients (Temperature Range -55°C to +150°C)**



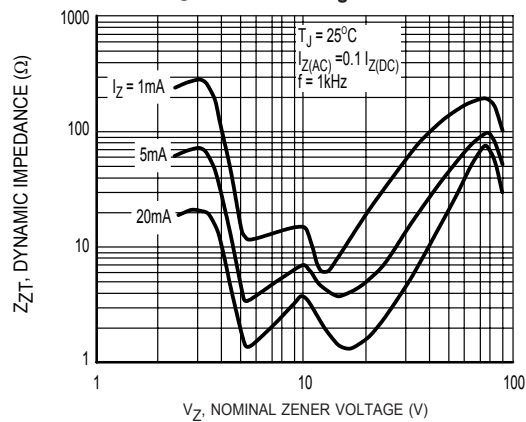
**Figure 2 Temperature Coefficients (Temperature Range -55°C to +150°C)**



**Figure 3 Steady State Power Derating**



**Figure 4 Maximum Nonrepetitive Surge Power**



**Figure 5 Effect of Zener Voltage on Zener Impedance**

## RATING AND CHARACTERISTICS CURVES ( MMSZ4687T1-MMSZ4717T1 )

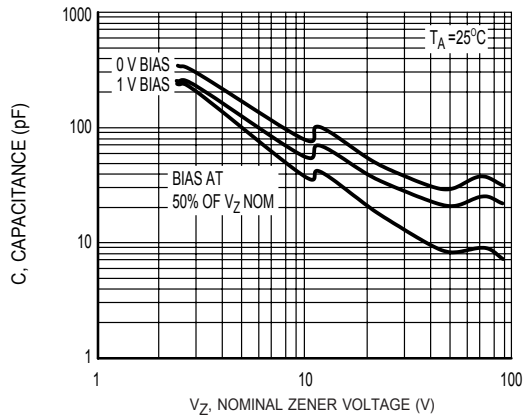


Figure 7 Typical Capacitance

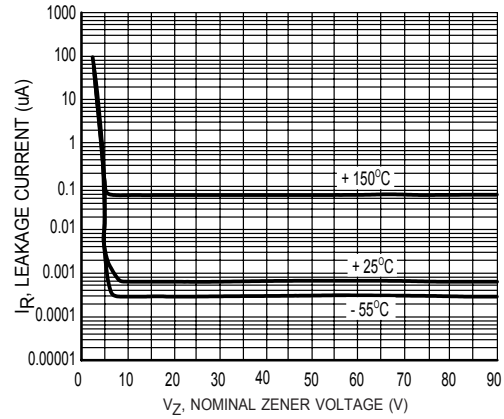


Figure 8 Typical Leakage Current

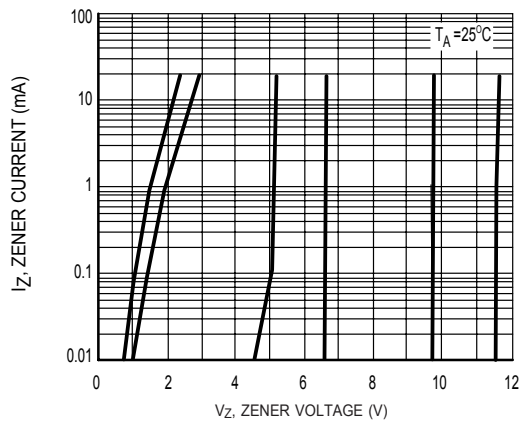


Figure 9 Zener Voltage vs. Zener Current  
( $V_Z$  Up to 12V)

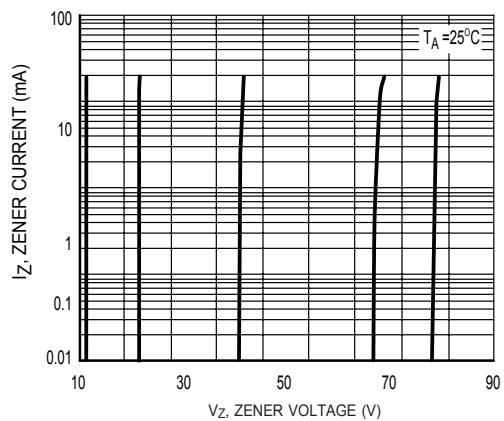


Figure 10 Zener Voltage vs. Zener Current  
(12 V to 43V)

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