MMSZ4678T1 Series

Zener Voltage Regulators

500 mW SOD−123 Surface Mount

Three complete series of Zener diodes are offered in the convenient, surface mount plastic SOD−123 package. These devices provide a convenient alternative to the leadless 34−package style.

Features:

- 500 mW Rating on FR−4 or FR−5 Board
- Wide Zener Reverse Voltage Range − 1.8 V to 43 V
- Package Designed for Optimal Automated Board Assembly
- Small Package Size for High Density Applications
- ESD Rating of Class 3 (>16 KV) per Human Body Model
- Pb−Free Package May be Available. The G−Suffix Denotes a Pb−Free Lead Finish

Mechanical Characteristics:

CASE: Void-free, transfer-molded, thermosetting plastic case
FINISH: Corrosion resistant finish, easily solderable
MAXIMUM CASE TEMPERATURE FOR SOLDERING PURPOSES: 260°C for 10 Seconds
POLARITY: Cathode indicated by polarity band
FLAMMABILITY RATING: UL 94 V−0

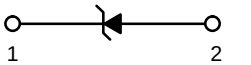
MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Total Power Dissipation on FR−5 Board, (Note 1) @ T_L = 75°C Derated above 75°C	P_D	500 6.7	mW mW/°C
Thermal Resistance − Junction to Ambient (Note 2)	$R_{\theta JA}$	340	°C/W
Thermal Resistance − Junction to Lead (Note 2)	$R_{\theta JL}$	150	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C

1. FR−5 = 3.5 X 1.5 inches, using the On minimum recommended footprint as shown in Figure 11
2. Thermal Resistance measurement obtained via infrared Scan Method

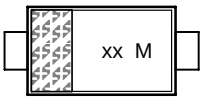
ON Semiconductor®

http://onsemi.com



SOD−123
CASE 425
Style 1

MARKING DIAGRAM



xx = Specific Device Code
M = Date Code

ORDERING INFORMATION

Device**	Package	Shipping†
MMSZ4xxxT1	SOD−123	3000/Tape & Reel
MMSZ4xxxT3*	SOD−123	10,000/Tape & Reel

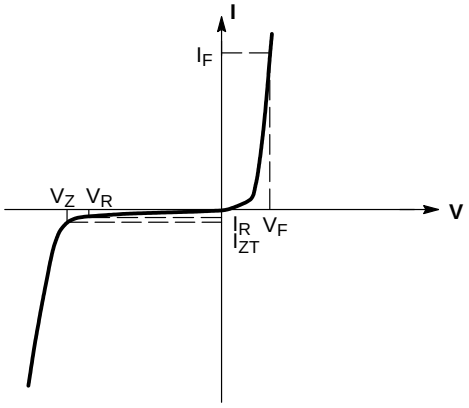
*MMSZ4703T1 and MMSZ4711T1 Not Available in 10,000/Tape & Reel
**The “T1” suffix refers to an 8 mm, 7 inch reel. The “T3” suffix refers to an 8 mm, 13 inch reel.
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

DEVICE MARKING INFORMATION

See specific marking information in the device marking column of the Electrical Characteristics table on page 3 of this data sheet.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted, V_F = 0.95 V Max. @ I_F = 10 mA)

Symbol	Parameter
V_Z	Reverse Zener Voltage @ I_{ZT}
I_{ZT}	Reverse Current
I_R	Reverse Leakage Current @ V_R
V_R	Reverse Voltage
I_F	Forward Current
V_F	Forward Voltage @ I_F



Zener Voltage Regulator

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted, V_F = 0.9 V Max. @ I_F = 10 mA)

Device	Device Marking	Zener Voltage (Notes 3)				Leakage Current	
		V_Z (Volts)			@ I_{ZT}	I_R @ V_R	
		Min	Nom	Max	μA	μA	Volts
MMSZ4678T1	CC	1.71	1.8	1.89	50	7.5	1
MMSZ4678TG1	CC	1.71	1.8	1.89	50	7.5	1
MMSZ4679T1	CD	1.90	2.0	2.10	50	5	1
MMSZ4680T1	***CE***	***2.09***	***2.2***	***2.31***	***50***	***4***	***1***
MMSZ4681T1	CF	2.28	2.4	2.52	50	2	1
MMSZ4682T1	CH	2.565	2.7	2.835	50	1	1
MMSZ4683T1	CJ	2.85	3.0	3.15	50	0.8	1
MMSZ4684T1	CK	3.13	3.3	3.47	50	7.5	1.5
MMSZ4685T1	***CM***	***3.42***	***3.6***	***3.78***	***50***	***7.5***	***2***
MMSZ4686T1	CN	3.70	3.9	4.10	50	5	2
MMSZ4687T1	CP	4.09	4.3	4.52	50	4	2
MMSZ4688T1	CT	4.47	4.7	4.94	50	10	3
MMSZ4689T1	CU	4.85	5.1	5.36	50	10	3
MMSZ4690T1	***CV***	***5.32***	***5.6***	***5.88***	***50***	***10***	***4***
MMSZ4691T1	CA	5.89	6.2	6.51	50	10	5
MMSZ4692T1	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	DC	8.27	8.7	9.14	50	1	6.6
MMSZ4696T1	DD	8.65	9.1	9.56	50	1	6.9
MMSZ4697T1	DE	9.50	10	10.50	50	1	7.6
MMSZ4698T1	DF	10.45	11	11.55	50	0.05	8.4
MMSZ4699T1	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	DM	14.25	15	15.75	50	0.05	11.4
MMSZ4703T1*	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	DX	22.80	24	25.20	50	0.01	18.2
MMSZ4710T1	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	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	EJ	40.85	43	45.15	50	0.01	32.6

3. Nominal Zener voltage is measured with the device junction in thermal equilibrium at T_L = 30°C ±1°C
4. Devices listed in ***bold, italic*** are ON Semiconductor **Preferred** devices. **Preferred** devices are recommended choices for future use and best overall value.

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

TYPICAL CHARACTERISTICS

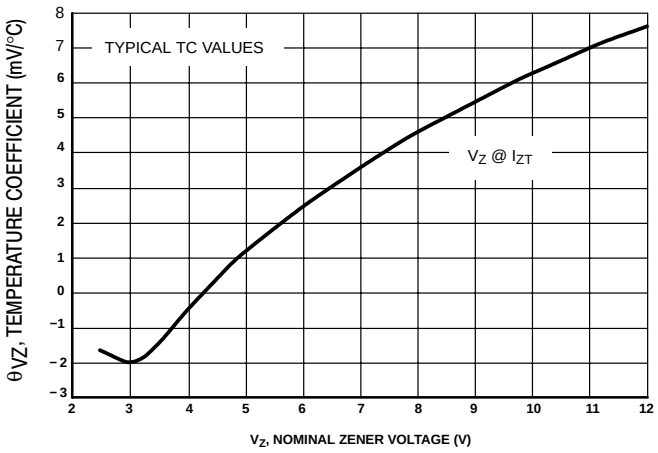


Figure 1. Temperature Coefficients (Temperature Range −55°C to +150°C)

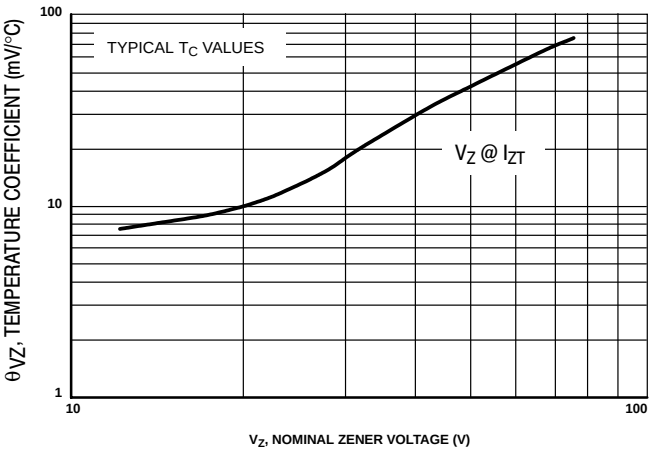


Figure 2. Temperature Coefficients (Temperature Range −55°C to +150°C)

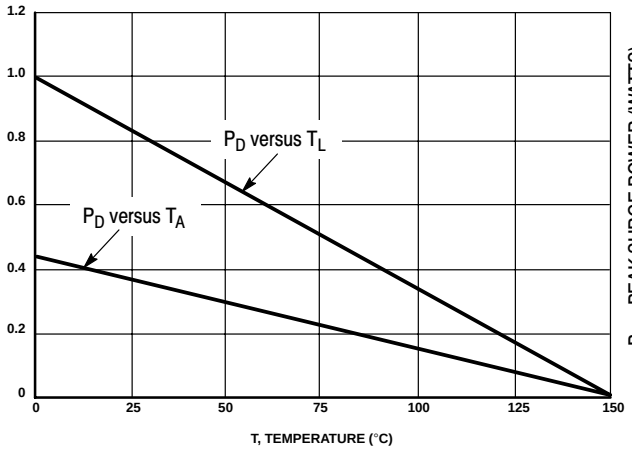


Figure 3. Steady State Power Derating

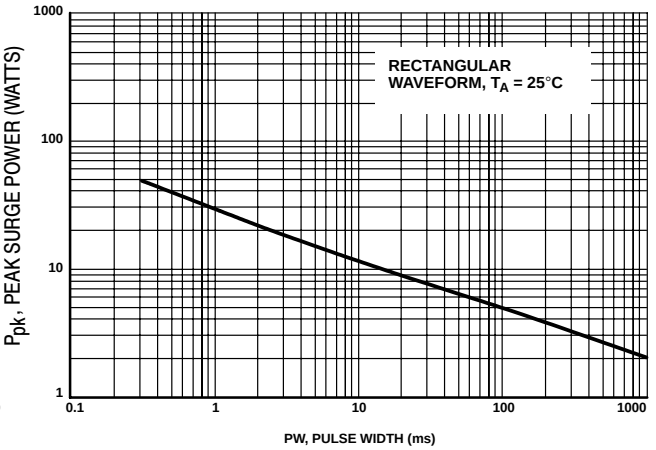


Figure 4. Maximum Nonrepetitive Surge Power

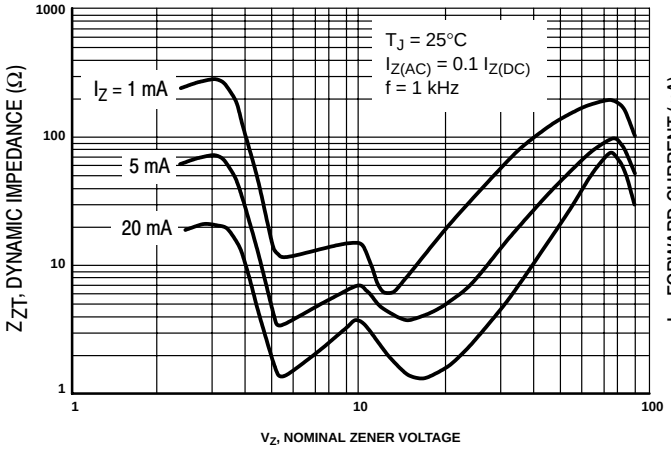


Figure 5. Effect of Zener Voltage on Zener Impedance

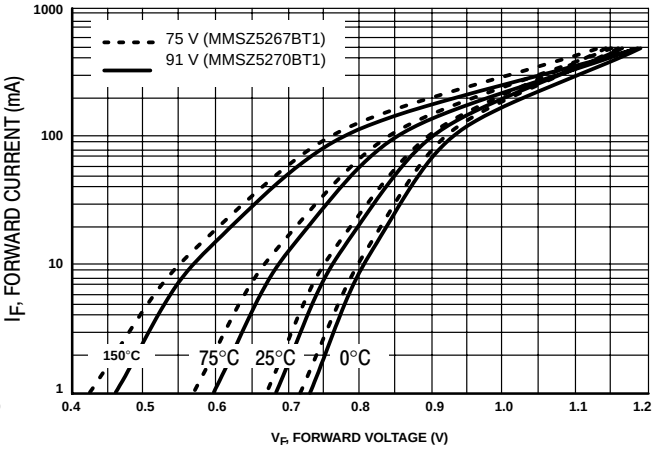


Figure 6. Typical Forward Voltage

TYPICAL CHARACTERISTICS

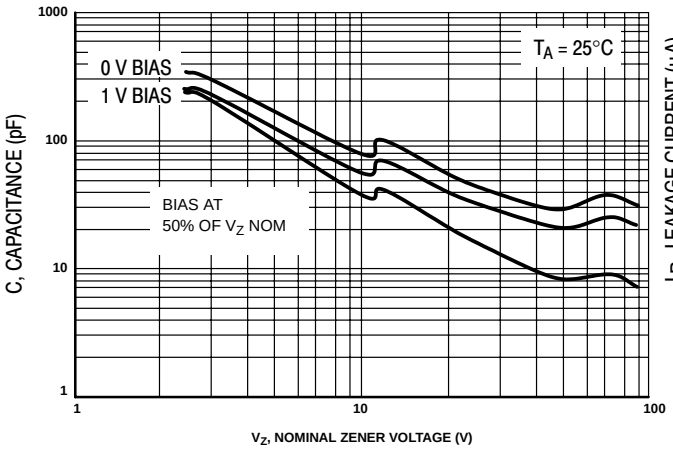


Figure 7. Typical Capacitance

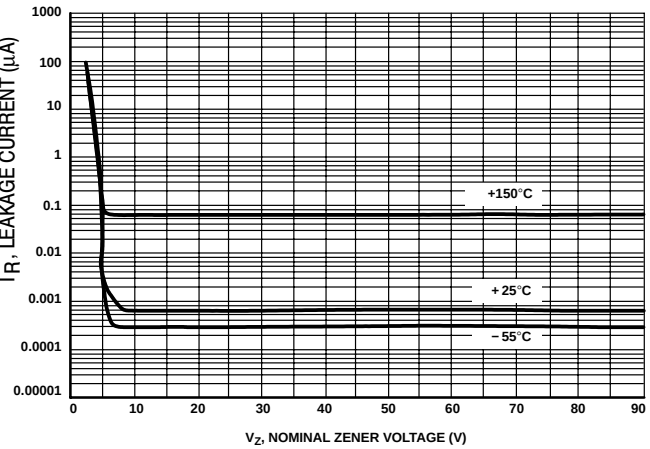


Figure 8. Typical Leakage Current

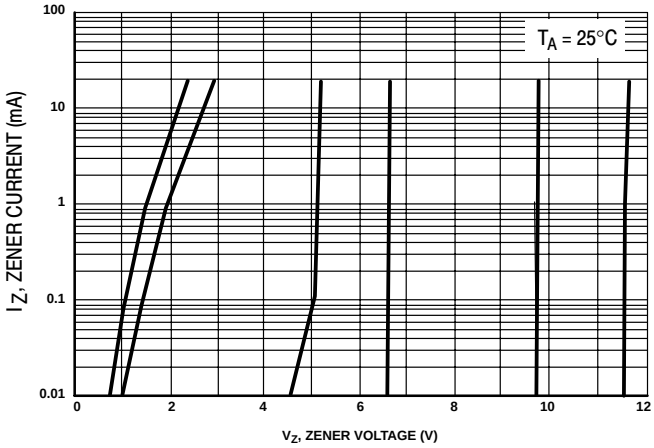


Figure 9. Zener Voltage versus Zener Current (V_Z Up to 12 V)

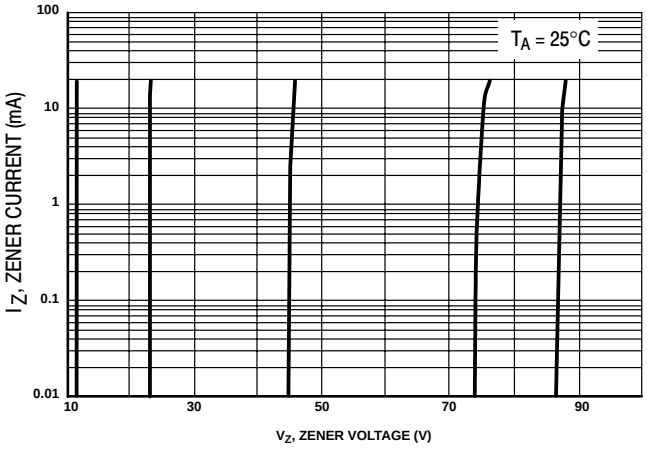
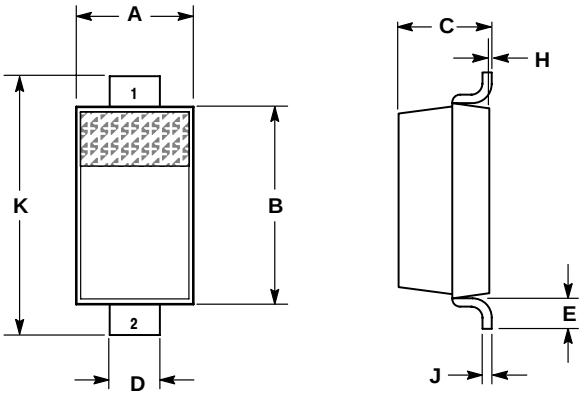


Figure 10. Zener Voltage versus Zener Current (12 V to 91 V)

PACKAGE DIMENSIONS

SOD−123
CASE 425−04
ISSUE C



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.055	0.071	1.40	1.80
B	0.100	0.112	2.55	2.85
C	0.037	0.053	0.95	1.35
D	0.020	0.028	0.50	0.70
E	0.01	−−−	0.25	−−−
H	0.000	0.004	0.00	0.10
J	−−−	0.006	−−−	0.15
K	0.140	0.152	3.55	3.85

STYLE 1:
PIN 1. CATHODE
2. ANODE

SOLDERING FOOTPRINT*

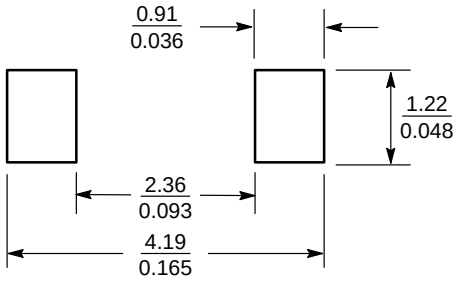


Figure 11. SOD−123

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
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