

500 mW SOD-123 Surface Mount

This device 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 – 2.4 V to 56 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
- AEC-Q101 Qualified and PPAP Capable
- SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- Pb-Free Packages are Available*

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

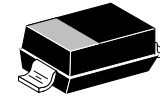
MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Total Power Dissipation on FR-5 Board, (Note 1) @ $T_L = 75^\circ\text{C}$ 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

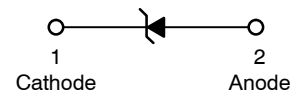
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. FR-5 = 3.5 X 1.5 inches.

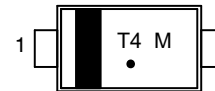
2. Thermal Resistance measurement obtained via infrared Scan Method.



SOD-123
CASE 425
STYLE 1



MARKING DIAGRAM



T4 = Device Code

M = Date Code

▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

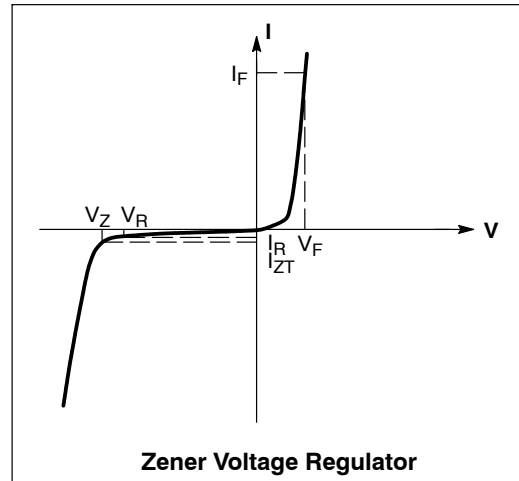
Device	Package	Shipping
MMSZ3V3T1G	SOD-123 (Pb-Free)	3,000 / Tape & Reel

DEVICE MARKING INFORMATION

See specific marking information in the device marking column of the Electrical Characteristics table on page 2 of this data sheet.

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted, $V_F = 0.95\text{ V Max. @ } I_F = 10\text{ mA}$)

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



ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted, $V_F = 0.9\text{ V Max. @ } I_F = 10\text{ mA}$)

Device*	Device Marking	V_{Z1} (Volts) (Notes 3 and 4)			Z_{ZT1} (Note 5)	V_{Z2} (Volts) (Notes 3 and 4)		Z_{ZT2} (Note 5)	Max Reverse Leakage Current	
		@ $I_{ZT1} = 5\text{ mA}$			Ω	@ $I_{ZT2} = 1\text{ mA}$		Ω	$I_R @ V_R$	
		Min	Nom	Max		Min	Max		μA	Volts
MMSZ3V3T1G	T4	3.14	3.3	3.47	95	2.3	2.9	600	5	1

3. The type numbers shown have a standard tolerance of $\pm 5\%$ on the nominal Zener Voltage.
4. Tolerance and Voltage Designation: Zener Voltage (V_Z) is measured with the Zener Current applied for $PW = 1\text{ ms}$.
5. Z_{ZT} and Z_{ZK} are measured by dividing the AC voltage drop across the device by the AC current applied.
The specified limits are for $I_{Z(AC)} = 0.1 I_{Z(DC)}$, with the AC frequency = 1 kHz.
6. The type numbers shown have a standard tolerance of $\pm 5\%$ on the nominal Zener Voltage.
7. Tolerance and Voltage Designation: Zener Voltage (V_Z) is measured with the Zener Current applied for $PW = 1\text{ ms}$.
8. Z_{ZT} and Z_{ZK} are measured by dividing the AC voltage drop across the device by the AC current applied.
The specified limits are for $I_{Z(AC)} = 0.1 I_{Z(DC)}$, with the AC frequency = 1 kHz.

*Include SZ-prefix devices where applicable.

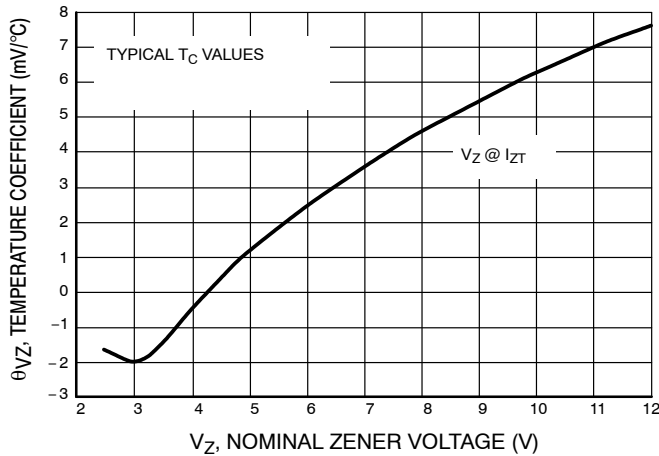


Figure 1. Temperature Coefficients (Temperature Range -55°C to +150°C)

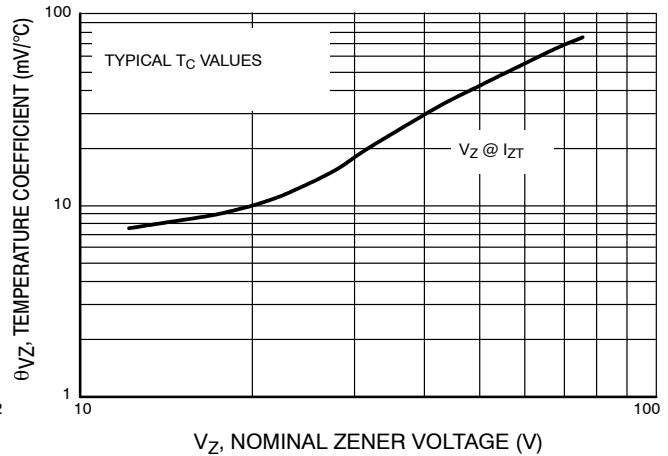


Figure 2. Temperature Coefficients (Temperature Range -55°C to +150°C)

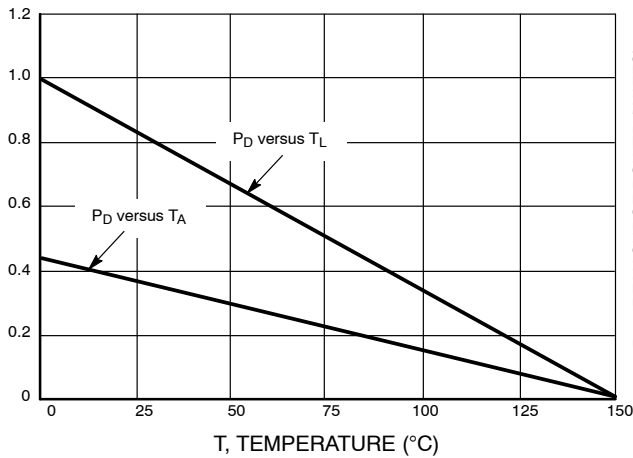


Figure 3. Steady State Power Derating

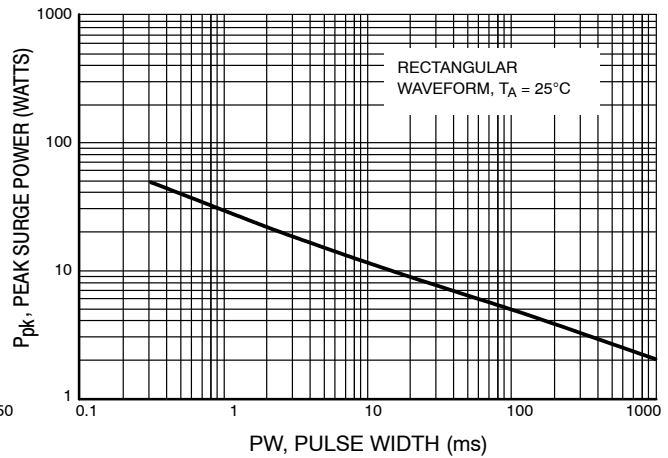


Figure 4. Maximum Nonrepetitive Surge Power

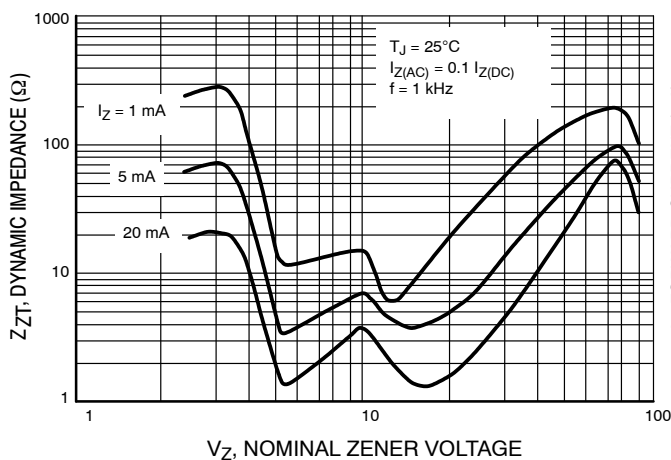


Figure 5. Effect of Zener Voltage on Zener Impedance

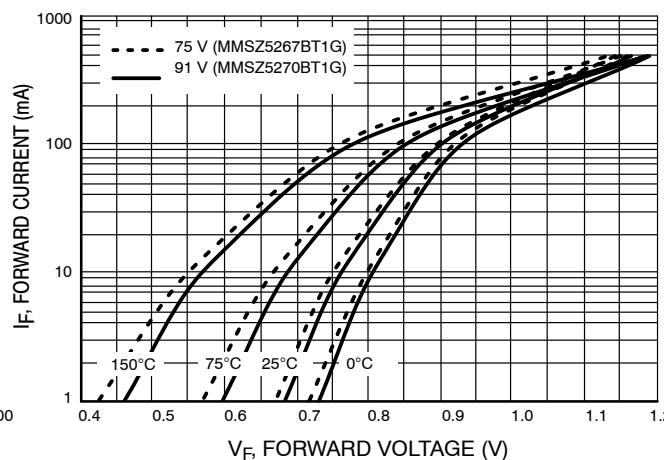


Figure 6. Typical Forward Voltage

TYPICAL CHARACTERISTICS

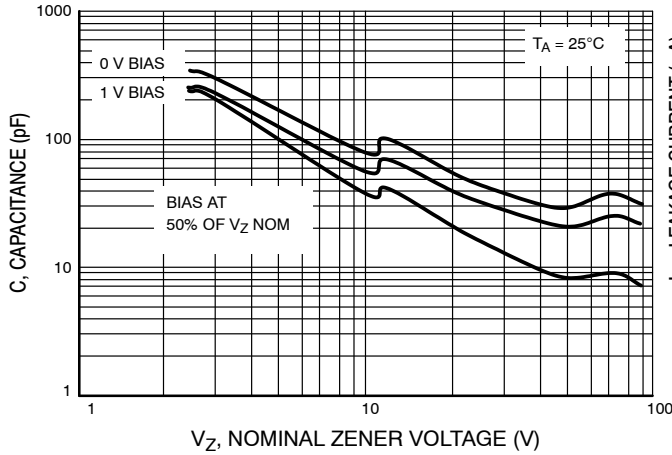


Figure 7. Typical Capacitance

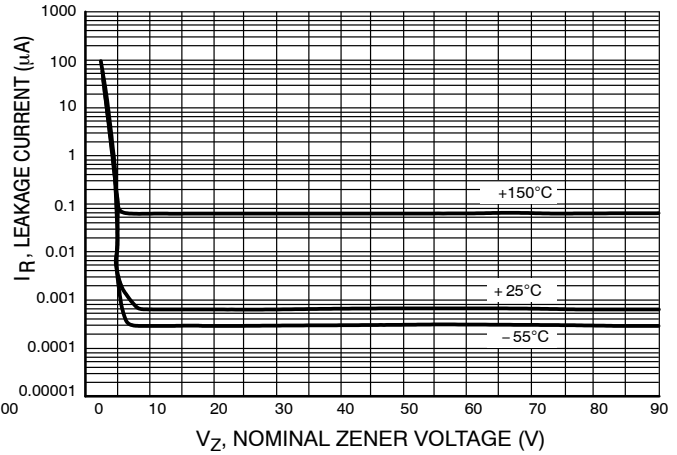


Figure 8. Typical Leakage Current

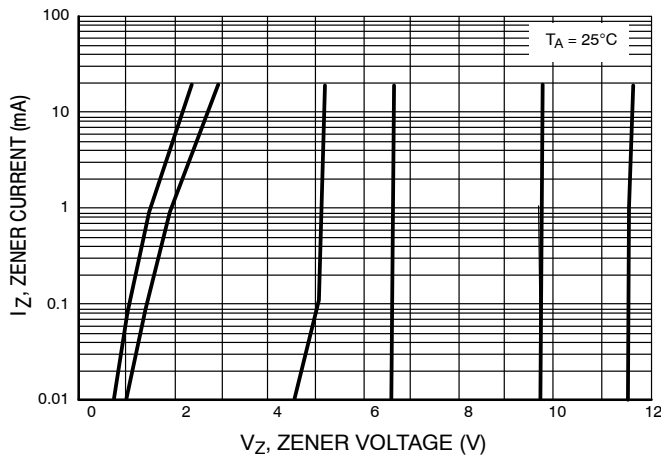


Figure 9. Zener Voltage versus Zener Current (V_Z Up to 12 V)

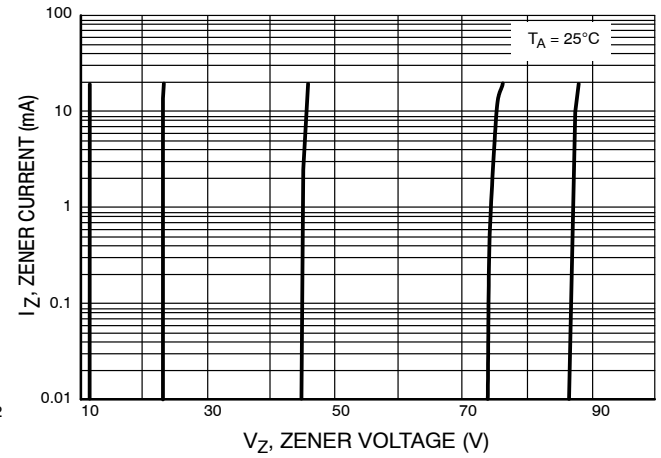
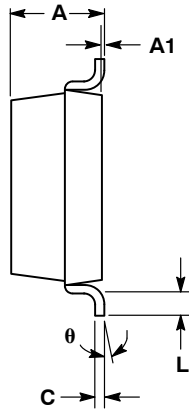
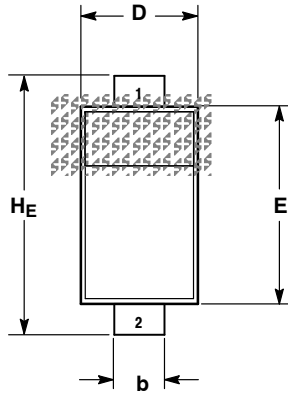


Figure 10. Zener Voltage versus Zener Current (12 V to 91 V)

PACKAGE DIMENSIONS

SOD-123
CASE 425-04
ISSUE G

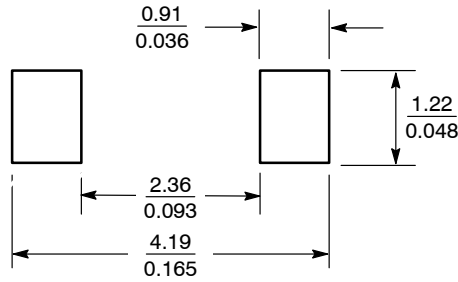


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.94	1.17	1.35	0.037	0.046	0.053
A1	0.00	0.05	0.10	0.000	0.002	0.004
b	0.51	0.61	0.71	0.020	0.024	0.028
c	---	---	0.15	---	---	0.006
D	1.40	1.60	1.80	0.055	0.063	0.071
E	2.54	2.69	2.84	0.100	0.106	0.112
HE	3.56	3.68	3.86	0.140	0.145	0.152
L	0.25	---	---	0.010	---	---
theta	0°	---	10°	0°	---	10°

STYLE 1:
PIN 1. CATHODE
2. ANODE

SOLDERING FOOTPRINT*



SCALE 10:1 (mm/inches)