MM3Z2V4T1 SERIES

Zener Voltage Regulators

200 mW SOD−323 Surface Mount

This series of Zener diodes is packaged in a SOD−323 surface mount package that has a power dissipation of 200 mW. They are designed to provide voltage regulation protection and are especially attractive in situations where space is at a premium. They are well suited for applications such as cellular phones, hand held portables, and high density PC boards.

Specification Features:

- Standard Zener Breakdown Voltage Range − 2.4 V to 75 V
- Steady State Power Rating of 200 mW
- Small Body Outline Dimensions:
  0.067” x 0.049” (1.7 mm x 1.25 mm)
- Low Body Height: 0.035” (0.9 mm)
- Package Weight: 4.507 mg/Unit
- ESD Rating of Class 3 (>16 kV) per Human Body Model
- Pb−Free Packages are Available

Mechanical Characteristics:

CASE: Void-free, Transfer-Molded Plastic
FINISH: All External Surfaces are Corrosion Resistant
MAXIMUM CASE TEMPERATURE FOR SOLDERING PURPOSES:
260°C for 10 Seconds
LEADS: Plated with Pb−Sn or Sn Only (Pb−Free)
POLARITY: Cathode Indicated by Polarity Band
FLAMMABILITY RATING: UL 94 V−0
MOUNTING POSITION: Any

MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Total Device Dissipation FR−5 Board, (Note 1) @ T_A = 25°C Derate above 25°C	P_D	200 1.5	mW mW/°C
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	635	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−65 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−4 Minimum Pad

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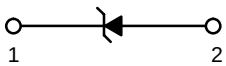
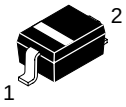
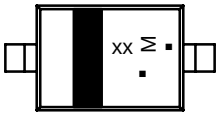




SOD−323
CASE 477
STYLE 1

MARKING DIAGRAM



xx = Specific Device Code
M = Date Code*
▪ = Pb−Free Package
(Note: Microdot may be in either location)
*Date Code orientation may vary depending upon manufacturing location.

ORDERING INFORMATION

Device	Package	Shipping†
MM3ZxxxT1	SOD−323	3000/Tape & Reel
MM3ZxxxT1G	SOD−323 (Pb−Free)	3000/Tape & Reel

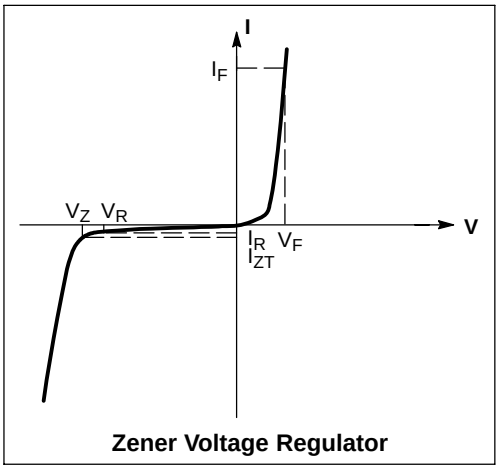
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

DEVICE MARKING INFORMATION

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

ELECTRICAL CHARACTERISTICS

Symbol	Parameter
V_Z	Reverse Zener Voltage @ I_{ZT}
I_{ZT}	Reverse Current
Z_{ZT}	Maximum Zener Impedance @ I_{ZT}
I_{ZK}	Reverse Current
Z_{ZK}	Maximum Zener Impedance @ I_{ZK}
I_R	Reverse Leakage Current @ V_R
V_R	Reverse Voltage
I_F	Forward Current
V_F	Forward Voltage @ I_F
ΘV_Z	Maximum Temperature Coefficient of V_Z
C	Max. Capacitance @V_R = 0 and f = 1 MHz



Zener Voltage Regulator

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

Device*	Device Marking	Zener Voltage (Note 2) V_Z (Volts) Min	Nom	Max	@ I_{ZT} mA	Zener Impedance Z_{ZT} @ I_{ZT} Ω	Z_{ZK} @ I_{ZK} Ω	mA	Leakage Current I_R @ V_R µA	Volts	ΘV_Z (mV/k) @ I_{ZT} Min	Max	C @ V_R = 0 f = 1 MHz pF
MM3Z2V4T1, G	00	2.2	2.4	2.6	5	100	1000	0.5	50	1.0	−3.5	0	450
MM3Z2V7T1, G	01	2.5	2.7	2.9	5	100	1000	0.5	20	1.0	−3.5	0	450
MM3Z3V0T1, G	02	2.8	3.0	3.2	5	100	1000	0.5	10	1.0	−3.5	0	450
MM3Z3V3T1, G	05	3.1	3.3	3.5	5	95	1000	0.5	5	1.0	−3.5	0	450
MM3Z3V6T1, G	06	3.4	3.6	3.8	5	90	1000	0.5	5	1.0	−3.5	0	450
MM3Z3V9T1, G	07	3.7	3.9	4.1	5	90	1000	0.5	3	1.0	−3.5	−2.5	450
MM3Z4V3T1, G	08	4.0	4.3	4.6	5	90	1000	0.5	3	1.0	−3.5	0	450
MM3Z4V7T1, G	09	4.4	4.7	5.0	5	80	800	0.5	3	2.0	−3.5	0.2	260
MM3Z5V1T1, G	0A	4.8	5.1	5.4	5	60	500	0.5	2	2.0	−2.7	1.2	225
MM3Z5V6T1, G	0C	5.2	5.6	6.0	5	40	200	0.5	1	2.0	−2.0	2.5	200
MM3Z6V2T1, G	0E	5.8	6.2	6.6	5	10	100	0.5	3	4.0	0.4	3.7	185
MM3Z6V8T1, G	0F	6.4	6.8	7.2	5	15	160	0.5	2	4.0	1.2	4.5	155
MM3Z7V5T1, G	0G	7.0	7.5	7.9	5	15	160	0.5	1	5.0	2.5	5.3	140
MM3Z8V2T1, G	0H	7.7	8.2	8.7	5	15	160	0.5	0.7	5.0	3.2	6.2	135
MM3Z9V1T1, G	0K	8.5	9.1	9.6	5	15	160	0.5	0.2	7.0	3.8	7.0	130
MM3Z10VT1, G	0L	9.4	10	10.6	5	20	160	0.5	0.1	8.0	4.5	8.0	130
MM3Z11VT1, G	0M	10.4	11	11.6	5	20	160	0.5	0.1	8.0	5.4	9.0	130
MM3Z12VT1, G	0N	11.4	12	12.7	5	25	80	0.5	0.1	8.0	6.0	10	130
MM3Z13VT1, G	0P	12.4	13.25	14.1	5	30	80	0.5	0.1	8.0	7.0	11	120
MM3Z15VT1, G	0T	14.3	15	15.8	5	30	80	0.5	0.05	10.5	9.2	13	110
MM3Z16VT1, G	0U	15.3	16.2	17.1	5	40	80	0.5	0.05	11.2	10.4	14	105
MM3Z18VT1, G	0W	16.8	18	19.1	5	45	80	0.5	0.05	12.6	12.4	16	100
MM3Z20VT1, G	0Z	18.8	20	21.2	5	55	100	0.5	0.05	14.0	14.4	18	85
MM3Z22VT1, G	10	20.8	22	23.3	5	55	100	0.5	0.05	15.4	16.4	20	85
MM3Z24VT1, G	11	22.8	24.2	25.6	5	70	120	0.5	0.05	16.8	18.4	22	80
MM3Z27VT1, G	12	25.1	27	28.9	2	80	300	0.5	0.05	18.9	21.4	25.3	70
MM3Z30VT1, G	14	28	30	32	2	80	300	0.5	0.05	21.0	24.4	29.4	70
MM3Z33VT1, G	18	31	33	35	2	80	300	0.5	0.05	23.2	27.4	33.4	70
MM3Z36VT1, G	19	34	36	38	2	90	500	0.5	0.05	25.2	30.4	37.4	70
MM3Z39VT1, G	20	37	39	41	2	130	500	0.5	0.05	27.3	33.4	41.2	45
MM3Z43VT1, G	21	40	43	46	2	150	500	0.5	0.05	30.1	37.6	46.6	40
MM3Z47VT1, G	1A	44	47	50	2	170	500	0.5	0.05	32.9	42.0	51.8	40
MM3Z51VT1, G	1C	48	51	54	2	180	500	0.5	0.05	35.7	46.6	57.2	40
MM3Z56VT1, G	1D	52	56	60	2	200	500	0.5	0.05	39.2	52.2	63.8	40
MM3Z62VT1	1E	58	62	66	2	215	500	0.5	0.05	43.4	58.8	71.6	35
MM3Z68VT1, G	1F	64	68	72	2	240	500	0.5	0.05	47.6	65.6	79.8	35
MM3Z75VT1, G	1G	70	75	79	2	255	500	0.5	0.05	52.5	73.4	88.6	35

*The “G’’ suffix indicates Pb−Free package available.

2. Zener voltage is measured with a pulse test current I_Z at an ambient temperature of 25°C.

TYPICAL CHARACTERISTICS

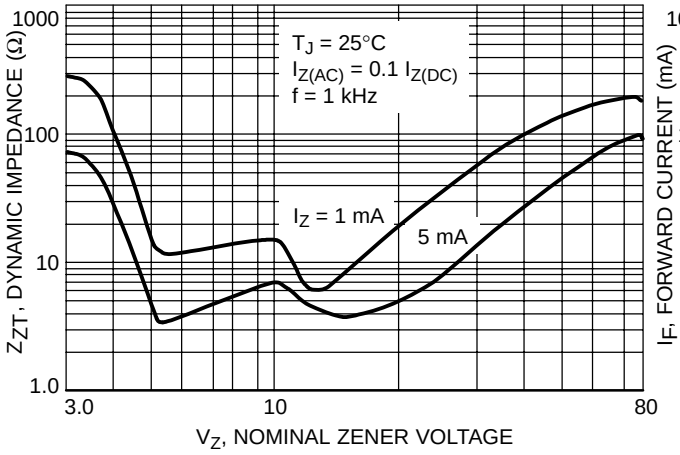


Figure 1. Effect of Zener Voltage on Zener Impedance

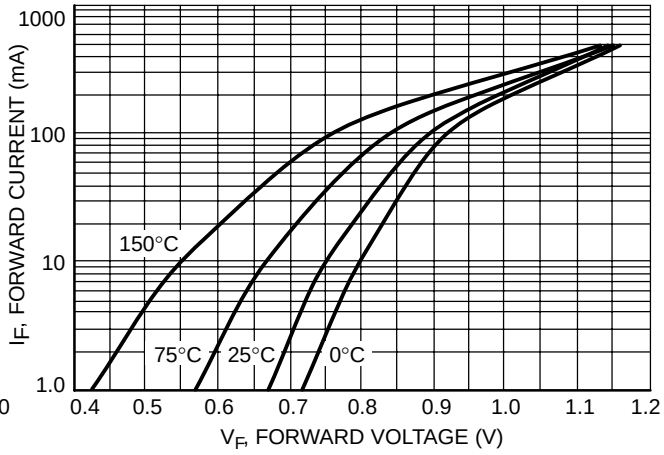


Figure 2. Typical Forward Voltage

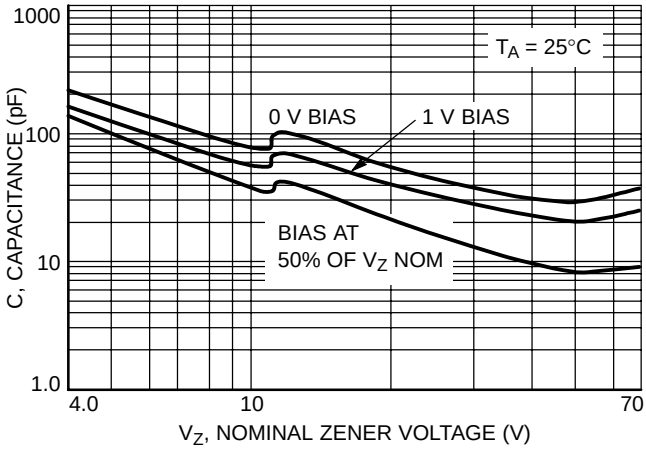


Figure 3. Typical Capacitance

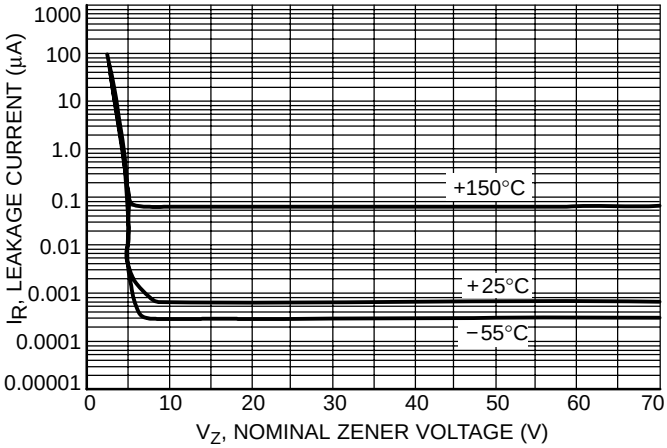


Figure 4. Typical Leakage Current

TYPICAL CHARACTERISTICS

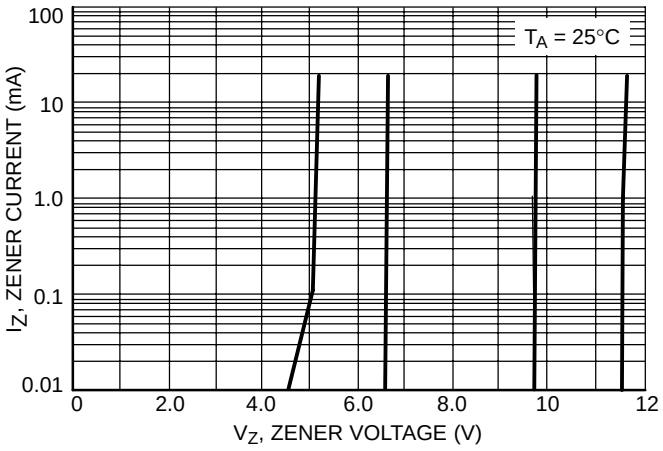


Figure 5. Zener Voltage versus Zener Current (V_Z Up to 12 V)

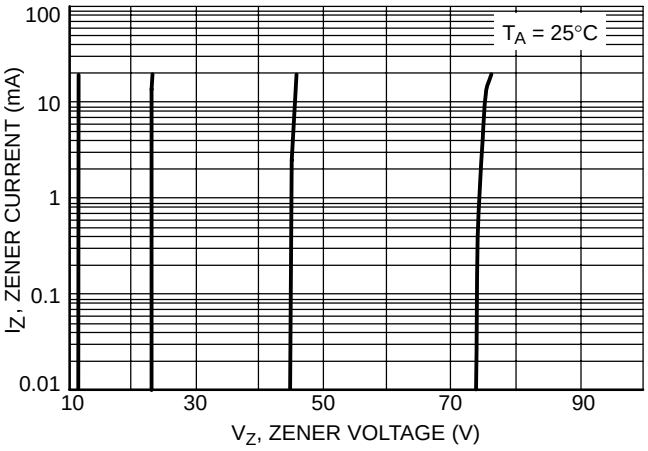


Figure 6. Zener Voltage versus Zener Current (12 V to 75 V)

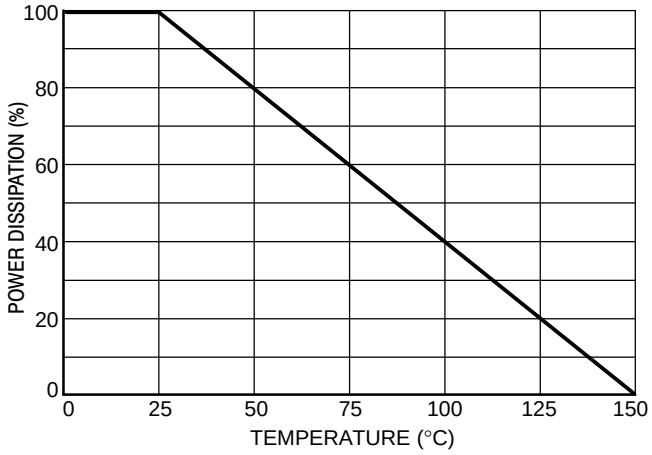
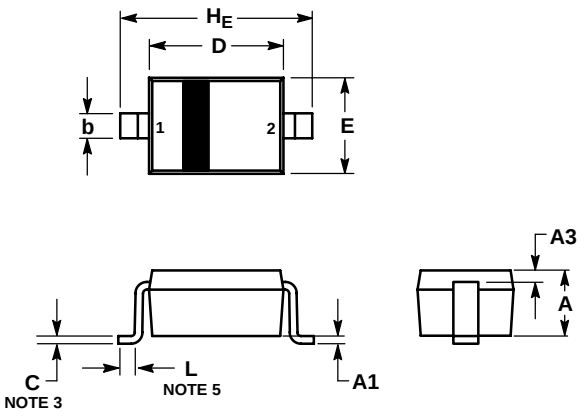


Figure 7. Steady State Power Derating

MM3Z2V4T1 SERIES

PACKAGE DIMENSIONS

SOD−323
CASE 477−02
ISSUE G

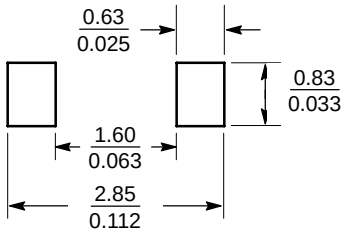


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. LEAD THICKNESS SPECIFIED PER L/F DRAWING WITH SOLDER PLATING.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
5. DIMENSION L IS MEASURED FROM END OF RADIUS.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.90	1.00	0.031	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A3	0.15 REF			0.006 REF		
b	0.25	0.32	0.4	0.010	0.012	0.016
C	0.089	0.12	0.177	0.003	0.005	0.007
D	1.60	1.70	1.80	0.062	0.066	0.070
E	1.15	1.25	1.35	0.045	0.049	0.053
L	0.08			0.003		
H_E	2.30	2.50	2.70	0.090	0.098	0.105

STYLE 1:
PIN 1. CATHODE
2. ANODE

SOLDERING FOOTPRINT*



*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
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
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