MM3Z2V4ST1 SERIES

Product Preview

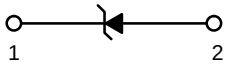
Zener Voltage Regulators

200 mW SOD–323 Surface Mount

ON Semiconductor®

http://onsemi.com

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.

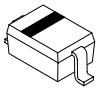


Specification Features:

- Standard Zener Breakdown Voltage Range – 3.9 V to 18 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
- 2% Tolerance V_Z

Mechanical Characteristics

- **CASE:** Void-free, transfer-molded plastic
- **FINISH:** All external surfaces are corrosion resistant
- **MAXIMUM CASE TEMPERATURE FOR SOLDERING PURPOSES:** 2605C for 10 Seconds
- **LEADS:** Plated with Pb/Sn for ease of solderability
- **POLARITY:** Cathode indicated by polarity band
- **FLAMMABILITY RATING:** UL 94 V–0
- **MOUNTING POSITION:** Any



SOD–323
CASE 477
STYLE 1

MARKING DIAGRAM

xx = Specific Device Code
M = Date Code

ORDERING INFORMATION

Device†	Package	Shipping
MM3ZxxxST1	SOD–323	3000/Tape & Reel

DEVICE MARKING INFORMATION

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

†The “T1” suffix refers to an 8 mm, 7 inch reel.

This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.

MAXIMUM RATINGS

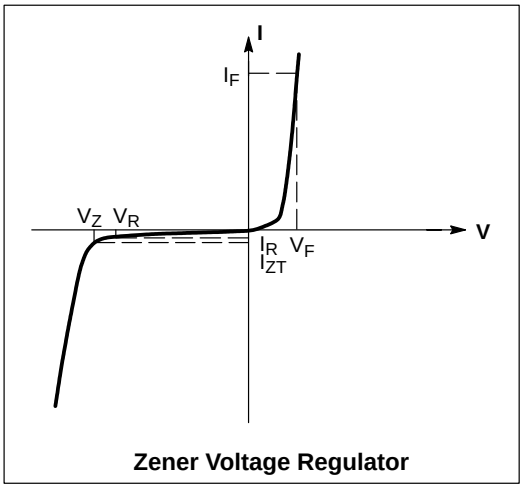
Rating	Symbol	Max	Unit
Total Device Dissipation FR–5 Board, (Note 1) @ T_A = 25°C Derate above 25°C	P_D	 200 1.5	 mW mW/°C
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	635	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	–65 to +150	°C

1. FR–4 Minimum Pad

ELECTRICAL CHARACTERISTICS

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

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 (V_F = 0.9 Max @ I_F = 10 mA for all types)

Device	Device Marking	Test Current Izt mA	Zener Voltage VZ (±2%)			Z_{ZK} I_Z = 0.5 mA Ω Max	Z_{ZT} I_Z = IZT @ 10% Mod Ω Max	Max IR @ VR		d_{VZ}/dt (mV/k) @ I_{ZT1} = 5 mA		C pF Max @ V_R = 0 f = 1 MHz
			Min	Nom (Note 2)	Max			μA	V	Min	Max	
MM3Z2V4ST1	T2	5.0	2.43	2.5	2.63	1000	100	120	1.0	–3.5	0	450
MM3Z2V7ST1	T3	5.0	2.67	2.8	2.91	1000	100	100	1.0	–3.5	0	450
MM3Z3V6ST1	T6	5.0	3.60	3.7	3.85	1000	90	5.0	1.0	–3.5	0	450
MM3Z3V9ST1	T7	5.0	3.89	3.6	4.16	1000	90	3.0	1.0	–3.5	–2.5	450
MM3Z4V3ST1	T8	5.0	4.17	4.3	4.43	1000	90	3.0	1.0	–3.5	0	450
MM3Z4V7ST1	T9	5.0	4.55	4.7	4.75	800	80	3.0	2.0	–3.5	0.2	260
MM3Z5V1ST1	TA	5.0	4.98	5.1	5.2	500	60	2.0	2.0	–2.7	1.2	225
MM3Z5V6ST1	TC	5.0	5.49	5.6	5.73	200	40	1.0	2.0	–2.0	2.5	200
MM3Z6V2ST1	TE	5.0	6.06	6.2	6.33	100	10	3.0	4.0	0.4	3.7	185
MM3Z6V8ST1	TF	5.0	6.65	6.8	6.93	160	15	2.0	4.0	1.2	4.5	155
MM3Z7V5ST1	TG	5.0	7.28	7.5	7.6	160	15	1.0	5.0	2.5	5.3	140
MM3Z8V2ST1	TH	5.0	8.02	8.2	8.36	160	15	0.7	5.0	3.2	6.2	1358
MM3Z9V1ST1	TK	5.0	8.85	9.1	9.23	160	15	0.5	6.0	3.8	7.0	130

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

Typical Characteristics

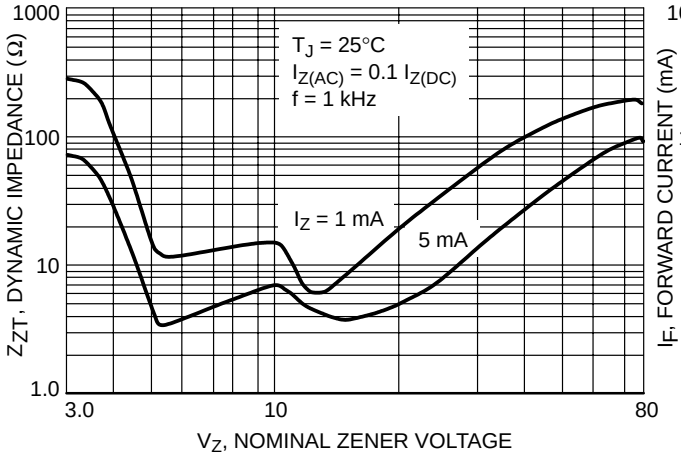


Figure 1. Effect of Zener Voltage on Zener Impedance

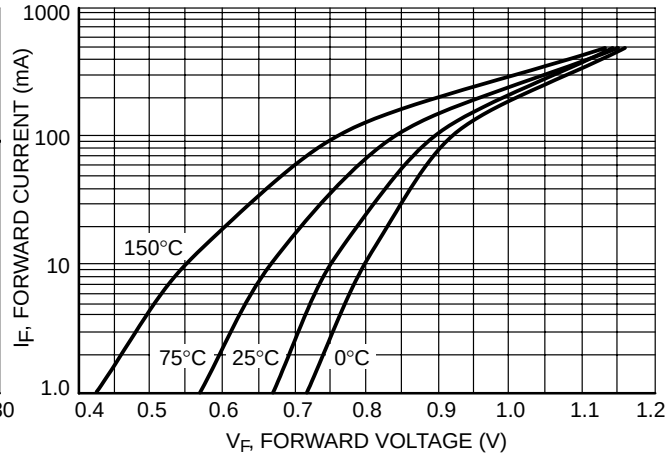


Figure 2. Typical Forward Voltage

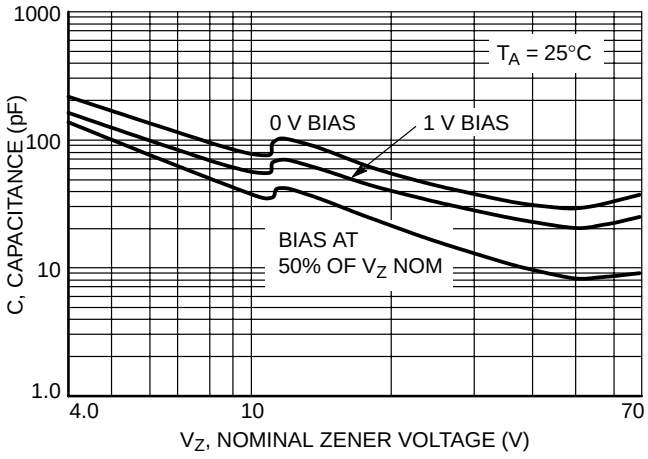


Figure 3. Typical Capacitance

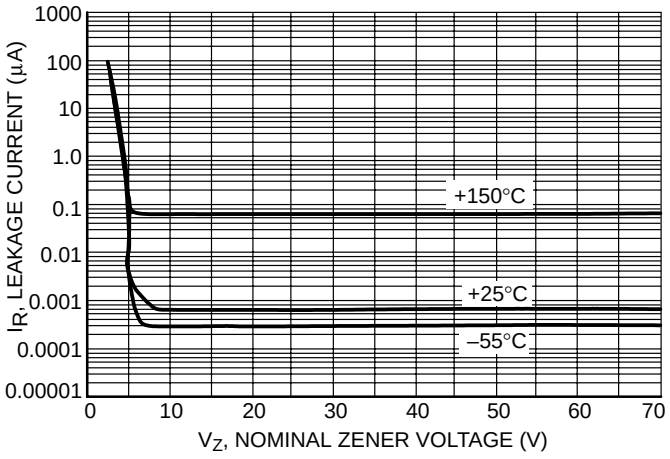


Figure 4. Typical Leakage Current

Typical Characteristics

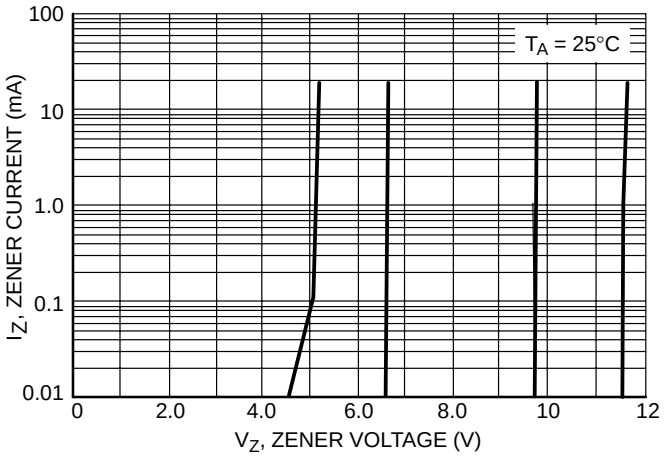


Figure 5. Zener Voltage versus Zener Current (V_Z Up to 12 V)

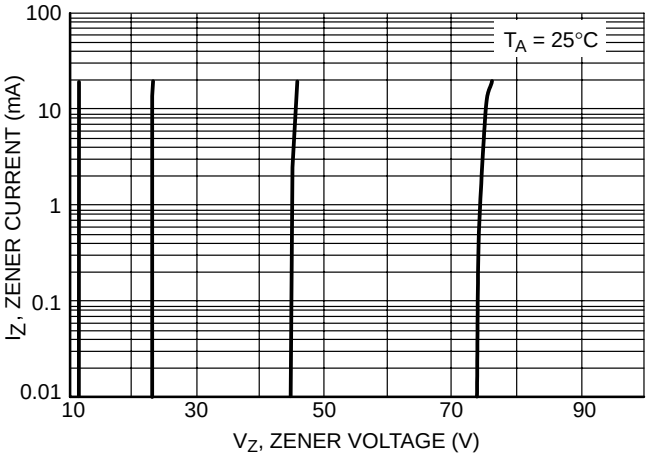


Figure 6. Zener Voltage versus Zener Current (12 V to 75 V)

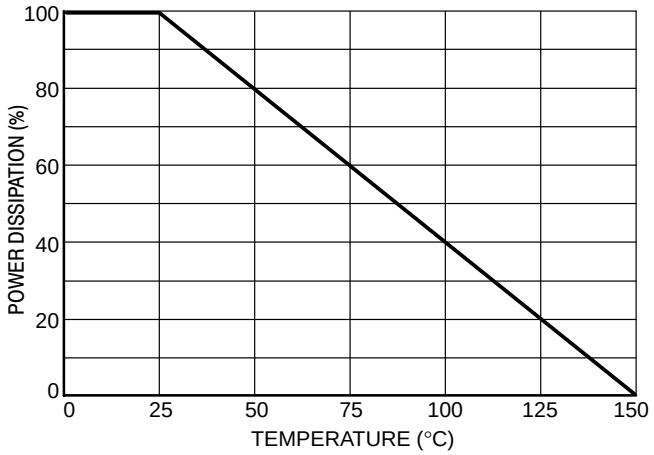
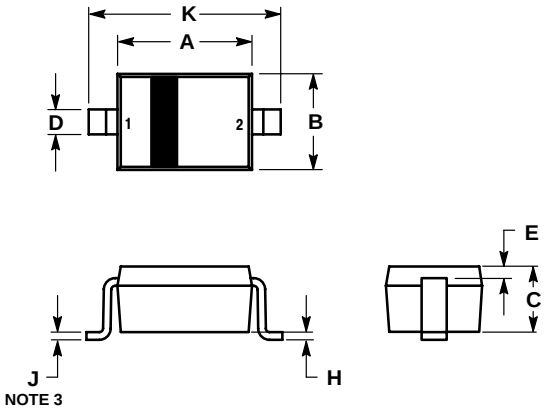


Figure 7. Steady State Power Derating

PACKAGE DIMENSIONS

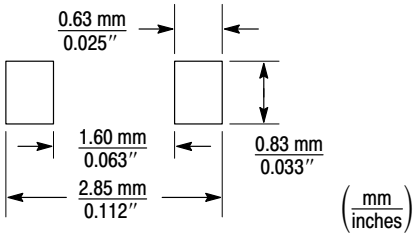
SOD–323
CASE 477–02
ISSUE C



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. 477–01 OBSOLETE, NEW STANDARD 477–02.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	1.60	1.80	0.063	0.071
B	1.15	1.35	0.045	0.053
C	0.80	1.00	0.031	0.039
D	0.25	0.40	0.010	0.016
E	0.15 REF		0.006 REF	
H	0.00	0.10	0.000	0.004
J	0.089	0.177	0.0035	0.0070
K	2.30	2.70	0.091	0.106

STYLE 1:
PIN 1. CATHODE
2. ANODE



SOD–323

Notes

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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