

MM3Z2V4ST1 SERIES

Product Preview

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 – 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

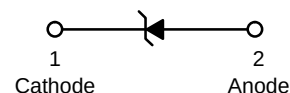
Mechanical Characteristics

- **CASE:** Void-free, transfer-molded plastic
- **FINISH:** All external surfaces are corrosion resistant
- **MAXIMUM CASE TEMPERATURE FOR SOLDERING PURPOSES:** 260°C 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



ON Semiconductor®

<http://onsemi.com>



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.

MM3Z2V4ST1 SERIES

MAXIMUM RATINGS

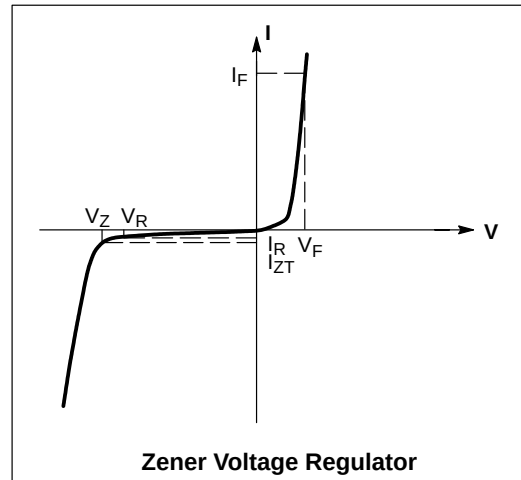
Rating	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, (Note 1) @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	200 1.5	mW mW/ $^\circ\text{C}$
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	635	$^\circ\text{C/W}$
Junction and Storage Temperature Range	T_J, T_{stg}	-65 to +150	$^\circ\text{C}$

1. FR-4 Minimum Pad

ELECTRICAL CHARACTERISTICS

($T_A = 25^\circ\text{C}$ unless otherwise noted,
 $V_F = 0.9\text{ V Max.}$ @ $I_F = 10\text{ mA}$ 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 $f = 1\text{ MHz}$



MM3Z2V4ST1 SERIES

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

Device	Device Marking	Test Current I_{zt} mA	Zener Voltage $V_Z (\pm 2\%)$			$Z_{ZK} I_Z = 0.5$ mA Ω Max	$Z_{ZT} I_Z = I_{ZT}$ @ 10% Mod Ω Max	Max IR @ V_R		dV_Z/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.

MM3Z2V4ST1 SERIES

Typical Characteristics

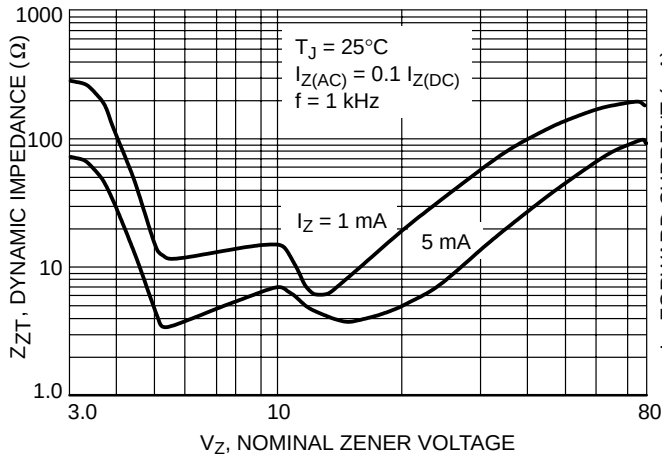


Figure 1. Effect of Zener Voltage on Zener Impedance

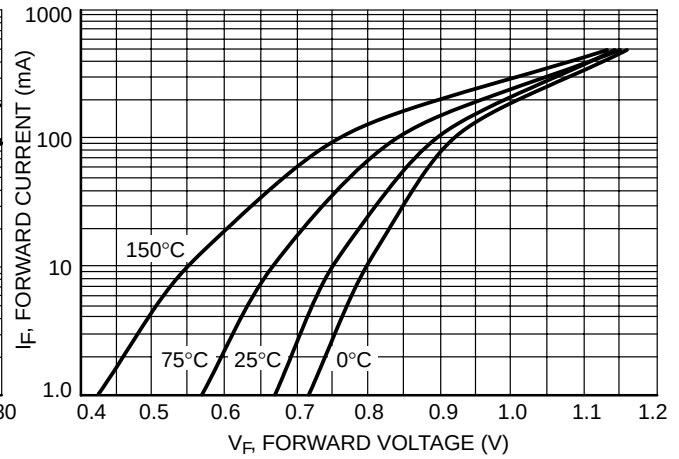


Figure 2. Typical Forward Voltage

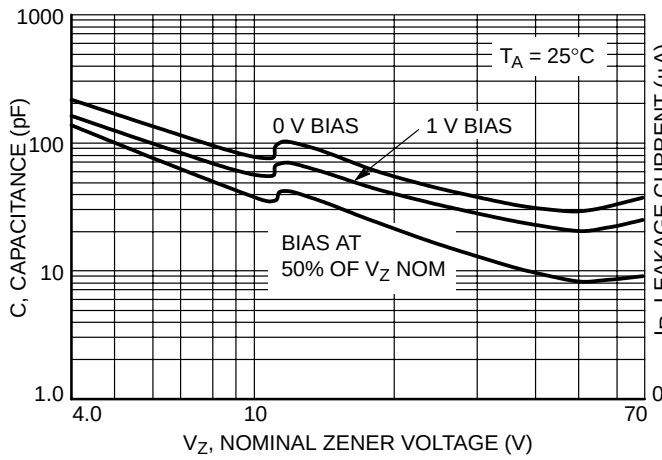


Figure 3. Typical Capacitance

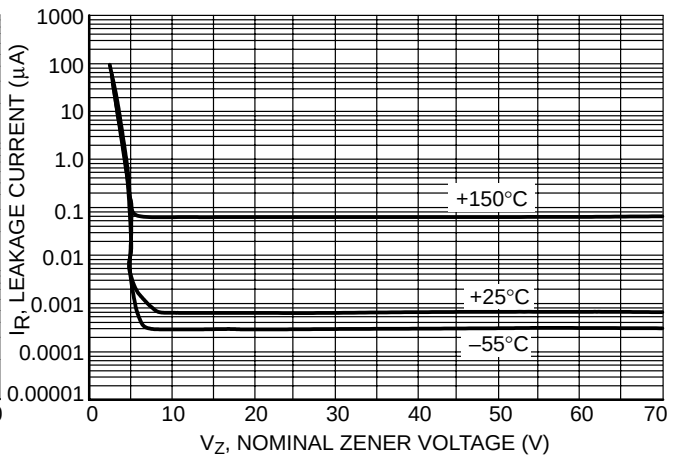


Figure 4. Typical Leakage Current

MM3Z2V4ST1 SERIES

Typical Characteristics

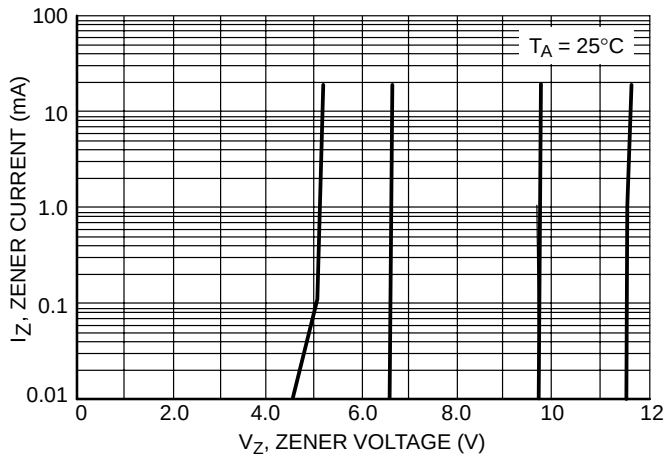


Figure 5. Zener Voltage versus Zener Current (V_Z Up to 12 V)

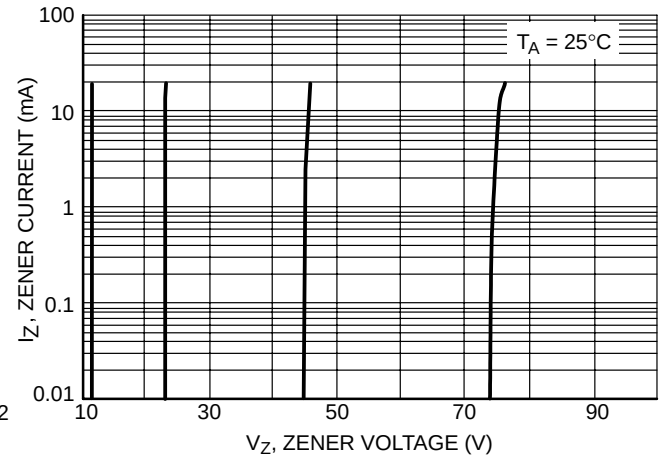


Figure 6. Zener Voltage versus Zener Current (12 V to 75 V)

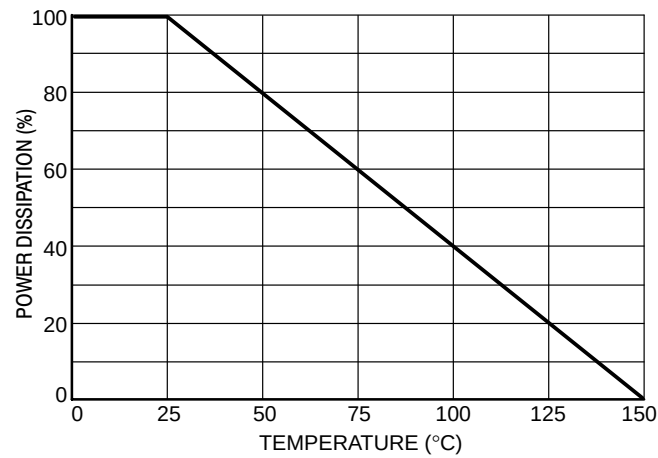
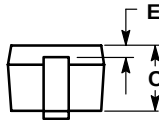
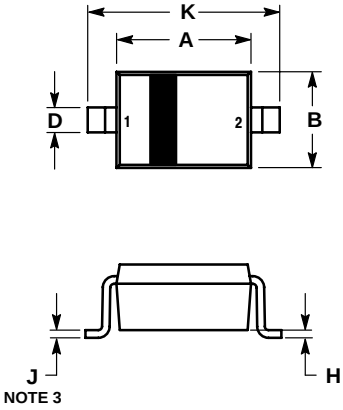


Figure 7. Steady State Power Derating

MM3Z2V4ST1 SERIES

PACKAGE DIMENSIONS

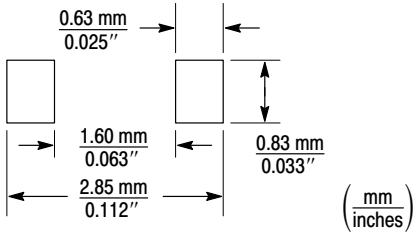
SOD-323 CASE 477-02 ISSUE C



- 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.

DIM	MILLIMETERS		INCHES	
	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

MM3Z2V4ST1 SERIES

ON Semiconductor and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer.

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
Email: ONlit@hibbertco.com

N. American Technical Support: 800-282-9855 Toll Free USA/Canada

JAPAN: ON Semiconductor, Japan Customer Focus Center
2-9-1 Kamimeguro, Meguro-ku, Tokyo, Japan 153-0051
Phone: 81-3-5773-3850
Email: r14525@onsemi.com

ON Semiconductor Website: <http://onsemi.com>

For additional information, please contact your local Sales Representative.