MM5ZxxxT1G Series, SZMM5ZxxxT1G Series

Zener Voltage Regulators

300 mW SOD−523 Surface Mount

This series of Zener diodes is packaged in a SOD−523 surface mount package. 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 300 mW
- Small Body Outline Dimensions: 0.047″ x 0.032″ (1.20 mm x 0.80 mm)
- Low Body Height: 0.028″ (0.7 mm)
- ESD Rating of Class 3 (> 16 kV) per Human Body Model
- AEC−Q101 Qualified and PPAP Capable − SZMM5ZxxxT1G
- SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- These are Pb−Free Devices*

Mechanical Characteristics:

CASE: Void-free, transfer-molded, thermosetting plastic Epoxy Meets UL 94 V−0
LEAD FINISH: 100% Matte Sn (Tin)
MOUNTING POSITION: Any
QUALIFIED MAX REFLOW TEMPERATURE: 260°C
Device Meets MSL 1 Requirements

MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Total Device Dissipation FR−5 Board, @ T_A = 25°C	P_D	300	mW
Thermal Resistance, Junction−to−Ambient (Note 1)	$R_{\theta JA}$	390	°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. EIA/JEDEC51.3 board design and EIA/JEDEC51.2 still air test method (25 mm^2, 2 oz., 3.8 μm plating).

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

ON Semiconductor®

http://onsemi.com

SOD−523
CASE 502
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†
MM5ZxxxxT1G	SOD−523 (Pb−Free)	3,000 / Tape & Reel
SZMM5ZxxxT1G	SOD−523 (Pb−Free)	3,000 / 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 tables starting on page 3 of this data sheet.

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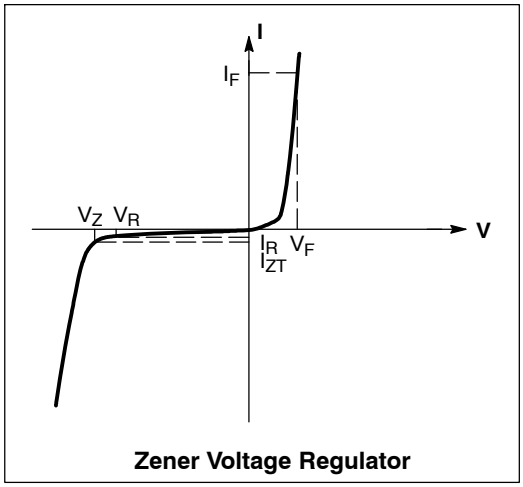
ELECTRICAL CHARACTERISTICS

(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

TYPICAL CHARACTERISTICS

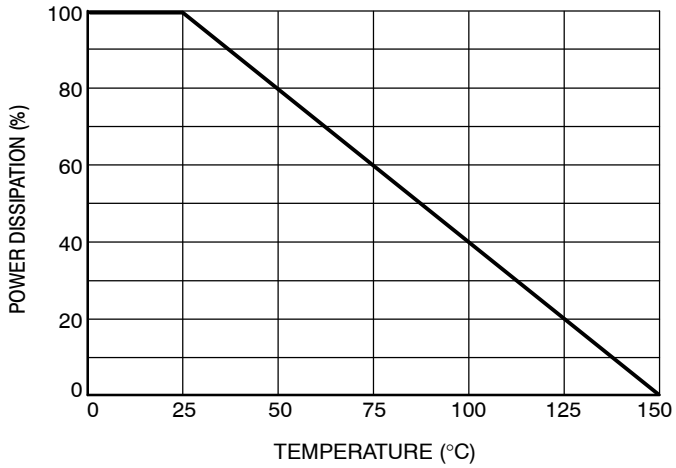


Figure 1. Steady State Power Derating

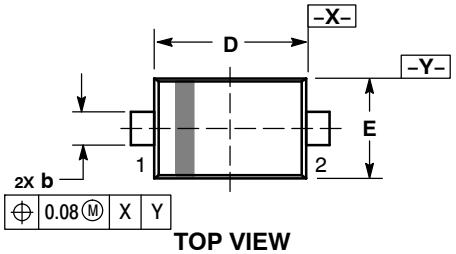
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted, V_F = 0.9 V Max. @ I_F = 10 mA for all types)

Device*	Device Marking	Zener Voltage (Note 1) 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
MM5Z2V4T1G	00	2.2	2.4	2.6	5	100	1000	1.0	50	1.0	–3.5	0	450
MM5Z2V7T1G	01	2.5	2.7	2.9	5	100	1000	1.0	20	1.0	–3.5	0	450
MM5Z3V0T1G	02	2.8	3.0	3.2	5	100	1000	1.0	10	1.0	–3.5	0	450
MM5Z3V3T1G	05	3.1	3.3	3.5	5	95	1000	1.0	5	1.0	–3.5	0	450
MM5Z3V6T1G	06	3.4	3.6	3.8	5	90	1000	1.0	5	1.0	–3.5	0	450
MM5Z4V3T1G	08	4.0	4.3	4.6	5	90	1000	1.0	3	1.0	–3.5	0	450
MM5Z4V7T1G	09	4.4	4.7	5.0	5	80	800	1.0	3	2.0	–3.5	0.2	260
MM5Z5V1T1G	0A	4.8	5.1	5.4	5	60	500	1.0	2	2.0	–2.7	1.2	225
MM5Z5V6T1G	0C	5.2	5.6	6.0	5	40	200	1.0	1	2.0	–2.0	2.5	200
MM5Z6V2T1G	0E	5.8	6.2	6.6	5	10	100	1.0	3	4.0	0.4	3.7	185
MM5Z6V8T1G	0F	6.4	6.8	7.2	5	15	160	1.0	2	4.0	1.2	4.5	155
MM5Z7V5T1G	0G	7.0	7.5	7.9	5	15	160	1.0	1	5.0	2.5	5.3	140
MM5Z8V2T1G	0H	7.7	8.2	8.7	5	15	160	1.0	0.7	5.0	3.2	6.2	135
MM5Z9V1T1G	0K	8.5	9.1	9.6	5	15	160	1.0	0.2	7.0	3.8	7.0	130
MM5Z10VT1G	0L	9.4	10	10.6	5	20	160	1.0	0.1	8.0	4.5	8.0	130
MM5Z11VT1G	0M	10.4	11	11.6	5	20	160	1.0	0.1	8.0	5.4	9.0	130
MM5Z12VT1G	0N	11.4	12	12.7	5	25	80	1.0	0.1	8.0	6.0	10	130
MM5Z13VT1G	0P	12.4	13.25	14.1	5	30	80	1.0	0.1	8.0	7.0	11	120
MM5Z15VT1G	0T	14.3	15	15.8	5	30	80	1.0	0.05	10.5	9.2	13	110
MM5Z16VT1G	0U	15.3	16.2	17.1	5	40	80	1.0	0.05	11.2	10.4	14	105
MM5Z18VT1G	0W	16.8	18	19.1	5	45	80	1.0	0.05	12.6	12.4	16	100
MM5Z20VT1G	0Z	18.8	20	21.2	5	55	100	1.0	0.05	14.0	14.4	18	85
MM5Z22VT1G	10	20.8	22	23.3	5	55	100	1.0	0.05	15.4	16.4	20	85
MM5Z24VT1G	11	22.8	24.2	25.6	5	70	120	1.0	0.05	16.8	18.4	22	80
MM5Z27VT1G	12	25.1	27	28.9	2	80	300	1.0	0.05	18.9	21.4	25.3	70
MM5Z30VT1G	14	28	30	32	2	80	300	1.0	0.05	21.0	24.4	29.4	70
MM5Z33VT1G	18	31	33	35	2	80	300	1.0	0.05	23.2	27.4	33.4	70
MM5Z36VT1G	19	34	36	38	2	90	500	1.0	0.05	25.2	30.4	37.4	70
MM5Z39VT1G	20	37	39	41	2	130	500	1.0	0.05	27.3	33.4	41.2	45
MM5Z43VT1G	21	40	43	46	2	150	500	1.0	0.05	30.1	37.6	46.6	40
MM5Z47VT1G	1A	44	47	50	2	170	500	1.0	0.05	32.9	42.0	51.8	40
MM5Z51VT1G	1C	48	51	54	2	180	500	1.0	0.05	35.7	46.6	57.2	40
MM5Z56VT1G	1D	52	56	60	2	200	500	1.0	0.05	39.2	52.2	63.8	40
MM5Z62VT1G	1E	58	62	66	2	215	500	1.0	0.05	43.4	58.8	71.6	35
MM5Z68VT1G	1F	64	68	72	2	240	500	1.0	0.05	47.6	65.6	79.8	35
MM5Z75VT1G	1G	70	75	79	2	255	500	1.0	0.05	52.5	73.4	88.6	35

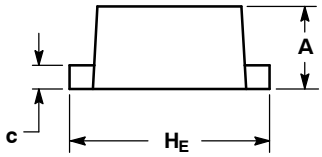
1. Zener voltage is measured with a pulse test current I_Z at an ambient temperature of 25°C.
*Include SZ-prefix devices where applicable.

PACKAGE DIMENSIONS

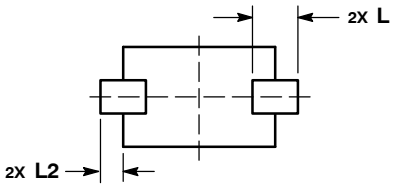
SOD−523
CASE 502
ISSUE E



TOP VIEW



SIDE VIEW



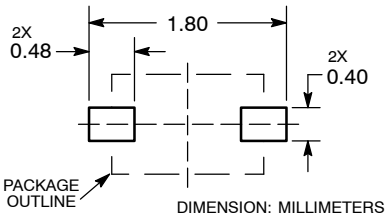
BOTTOM VIEW

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

	MILLIMETERS		
DIM	MIN	NOM	MAX
A	0.50	0.60	0.70
b	0.25	0.30	0.35
c	0.07	0.14	0.20
D	1.10	1.20	1.30
E	0.70	0.80	0.90
H_E	1.50	1.60	1.70
L	0.30 REF		
L2	0.15	0.20	0.25

STYLE 1:
PIN 1. CATHODE (POLARITY BAND)
2. ANODE

RECOMMENDED 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.

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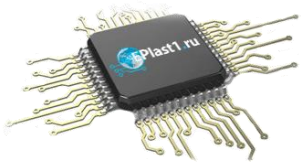

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