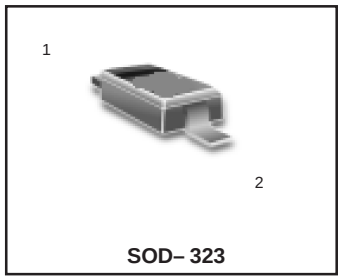
Zener Voltage Regulators

200 mW SOD–323 Surface Mount

M3Zxx SERIES

- We declare that the material of product compliance with RoHS requirements.



SOD– 323

MARKING DIAGRAM

xx= Specific Device Code
M =Date Code

CATHODE ANODE

ORDERING INFORMATION

Device*	Package	Shipping
M3Zxx	SOD-323	3000/Tape&Reel

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 package is 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
POLARITY: Cathode indicated by polarity band
FLAMMABILITY RATING: UL94 V-0
MOUNTING POSITION: Any

MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Total Device Dissipation FR–5 Board, (Note 1.) @ TA = 25°C	P_D	200	mW
Derate above 25°C		1.5	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

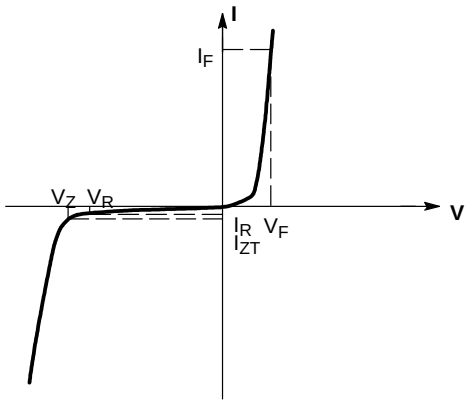
1. FR–4 Minimum Pad

M3Zxx SERIES

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

M3Zxx SERIES

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
M3Z2V4	00	2.2	2.4	2.6	5	100	1000	0.5	50	1.0	–3.5	0	450
M3Z2V7	01	2.5	2.7	2.9	5	100	1000	0.5	20	1.0	–3.5	0	450
M3Z3V0	02	2.8	3.0	3.2	5	100	1000	0.5	10	1.0	–3.5	0	450
M3Z3V3	05	3.1	3.3	3.5	5	95	1000	0.5	5	1.0	–3.5	0	450
M3Z3V6	06	3.4	3.6	3.8	5	90	1000	0.5	5	1.0	–3.5	0	450
M3Z3V9	07	3.7	3.9	4.1	5	90	1000	0.5	3	1.0	–3.5	–2.5	450
M3Z4V3	08	4.0	4.3	4.6	5	90	1000	0.5	3	1.0	–3.5	0	450
M3Z4V7	09	4.4	4.7	5.0	5	80	800	0.5	3	2.0	–3.5	0.2	260
M3Z5V1	0A	4.8	5.1	5.4	5	60	800	0.5	2	2.0	–2.7	1.2	225
M3Z5V6	0C	5.2	5.6	6.0	5	40	700	0.5	1	2.0	–2.0	2.5	200
M3Z6V2	0E	5.8	6.2	6.6	5	10	100	0.5	3	4.0	0.4	3.7	185
M3Z6V8	0F	6.4	6.8	7.2	5	15	160	0.5	2	4.0	1.2	4.5	155
M3Z7V5	0G	7.0	7.5	7.9	5	15	160	0.5	1	5.0	2.5	5.3	140
M3Z8V2	0H	7.7	8.2	8.7	5	15	160	0.5	0.7	5.0	3.2	6.2	135
M3Z9V1	0K	8.5	9.1	9.6	5	15	160	0.5	0.2	7.0	3.8	7.0	130
M3Z10V	0L	9.4	10	10.6	5	20	160	0.5	0.1	8.0	4.5	8.0	130
M3Z11V	0M	10.4	11	11.6	5	20	160	0.5	0.1	8.0	5.4	9.0	130
M3Z12V	0N	11.4	12	12.7	5	25	80	0.5	0.1	8.0	6.0	10	130
M3Z13V	0P	12.4	13.25	14.1	5	30	80	0.5	0.1	8.0	7.0	11	120
M3Z15V	0T	14.3	15	15.8	5	30	400	0.5	0.05	10.5	9.2	13	110
M3Z16V	0U	15.3	16.2	17.1	5	40	400	0.5	0.05	11.2	10.4	14	105
M3Z18V	0W	16.8	18	19.1	5	45	400	0.5	0.05	12.6	12.4	16	100
M3Z20V	0Z	18.8	20	21.2	5	55	500	0.5	0.05	14.0	14.4	18	85
M3Z22V	10	20.8	22	23.3	5	55	500	0.5	0.05	15.4	16.4	20	85
M3Z24V	11	22.8	24.2	25.6	5	70	120	0.5	0.05	16.8	18.4	22	80
M3Z27V	12	25.1	27	28.9	2	80	300	0.5	0.05	18.9	21.4	25.3	70
M3Z30V	14	28	30	32	2	80	300	0.5	0.05	21.0	24.4	29.4	70
M3Z33V	18	31	33	35	2	80	300	0.5	0.05	23.2	27.4	33.4	70
M3Z36V	19	34	36	38	2	90	500	0.5	0.05	25.2	30.4	37.4	70
M3Z39V	20	37	39	41	2	130	500	0.5	0.05	27.3	33.4	41.2	45
M3Z43V	21	40	43	46	2	150	500	0.5	0.05	30.1	37.6	46.6	40
M3Z47V	1A	44	47	50	2	170	500	0.5	0.05	32.9	42.0	51.8	40
M3Z51V	1C	48	51	54	2	180	500	0.5	0.05	35.7	46.6	57.2	40
M3Z56V	1D	52	56	60	2	200	500	0.5	0.05	39.2	52.2	63.8	40
M3Z62V	1E	58	62	66	2	215	500	0.5	0.05	43.4	58.8	71.6	35
M3Z68V	1F	64	68	72	2	240	500	0.5	0.05	47.6	65.6	79.8	35
M3Z75V	1G	70	75	79	2	255	500	0.5	0.05	52.5	73.4	88.6	35

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

Typical Characteristics

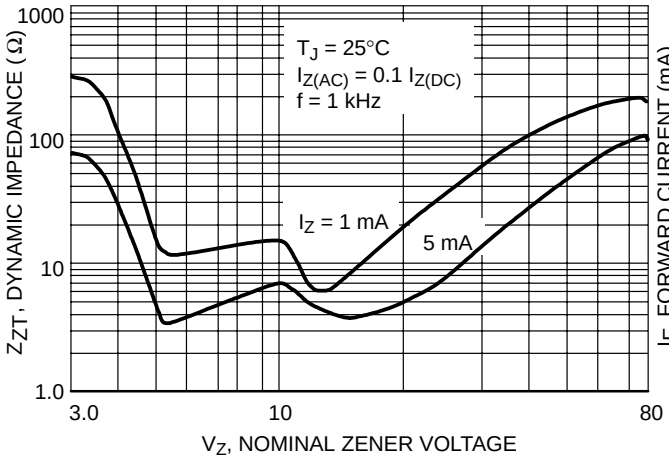


Figure 1. Effect of Zener Voltage on Zener Impedance

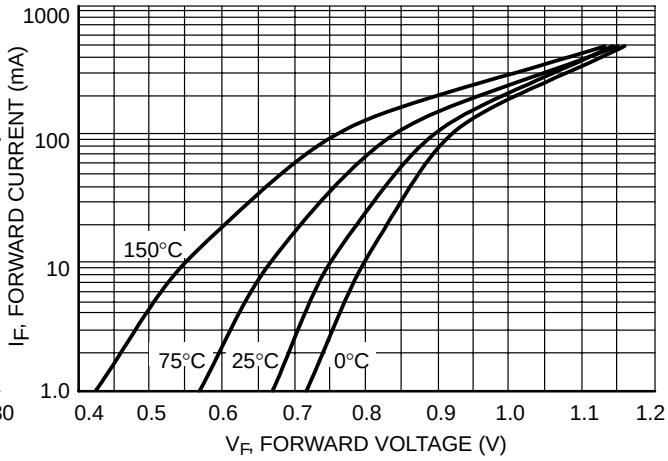


Figure 2. Typical Forward Voltage

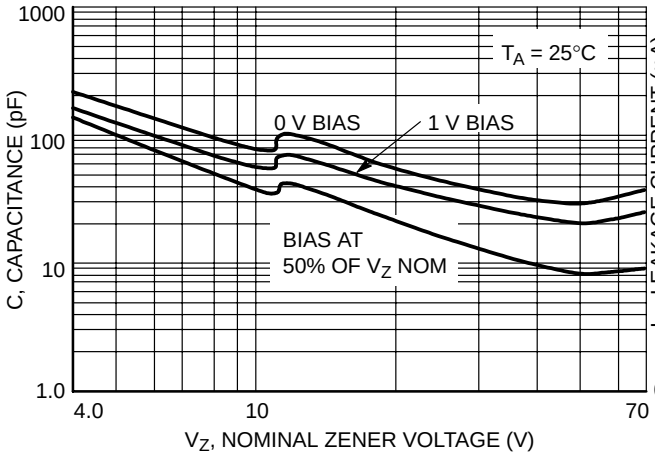


Figure 3. Typical Capacitance

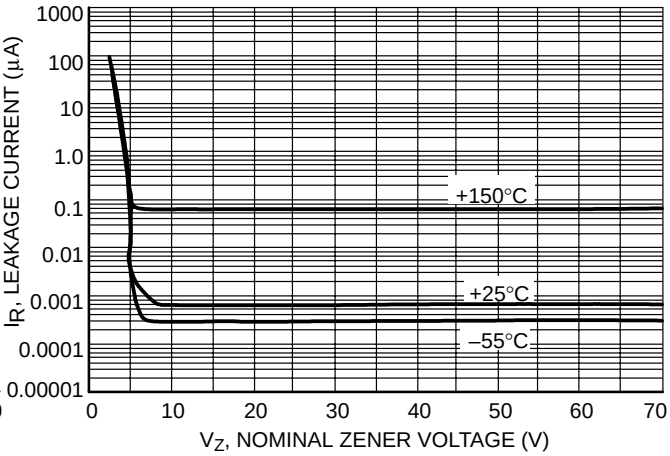


Figure 4. Typical Leakage Current

Typical Characteristics

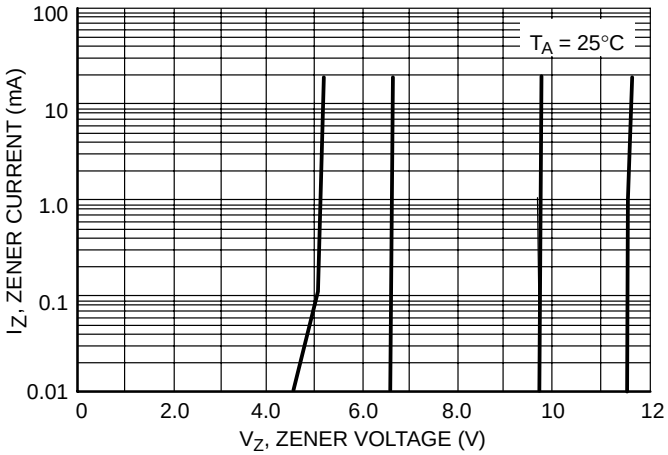


Figure 5. Zener Voltage versus Zener Current (V_Z Up to 12 V)

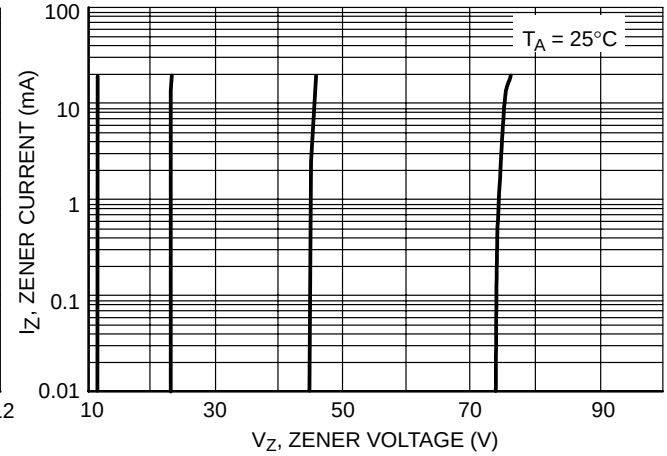


Figure 6. Zener Voltage versus Zener Current (12 V to 75 V)

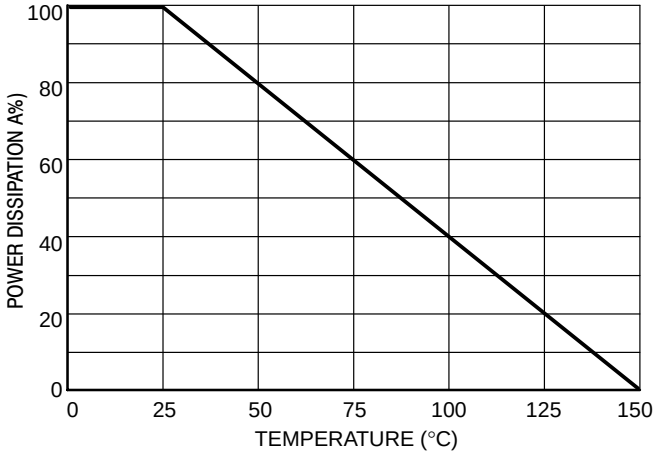


Figure 7. Steady State Power Derating

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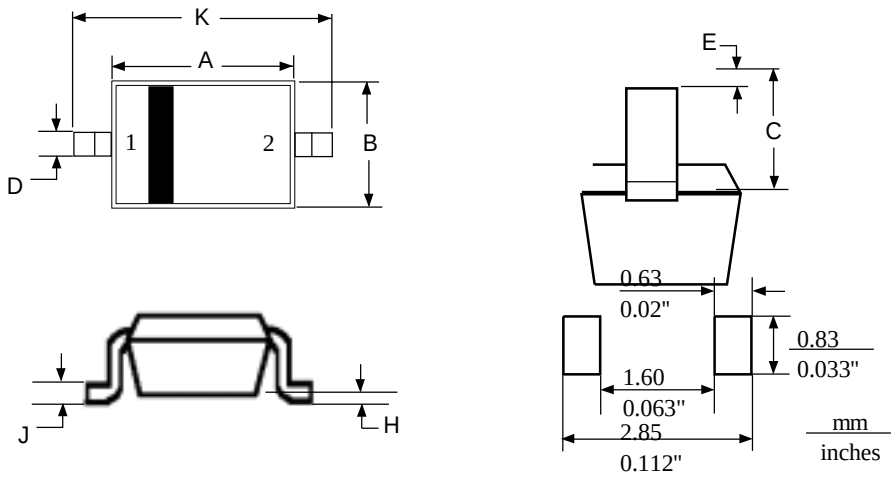
PACKAGE DIMENSIONS
SOD-323



NOTES:

1. CONTROLLING DIMENSION: MILLIMETERS
2. LEAD THICKNESS SPECIFIED PER L / F DRAWING WITH SOLDER PLATING.

DIN	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	0.0000	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