



## DESCRIPTION

This series of Zener Diodes is packaged in a SOD-323 surface mount package that has a power dissipation of 200mW. 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.

The M3Z2V4~M3Z75V are available in SOD-323 Package.

## ORDERING INFORMATION

Package Type	Part Number
SOD-323	M3Z2V4
	M3Z2V7
	M3Z3V0
	M3Z3V3
	M3Z3V6
	M3Z3V9
	M3Z4V3
	M3Z4V7
	M3Z5V1
	M3Z5V6
	M3Z6V2
	M3Z6V8
	M3Z7V5
	M3Z8V2
	M3Z9V1
	M3Z10V
	M3Z11V
	M3Z12V
	M3Z13V
	M3Z15V
	M3Z16V
	M3Z18V
	M3Z20V
	M3Z22V
	M3Z24V
	M3Z27V
	M3Z30V
	M3Z33V
	M3Z36V
	M3Z39V
	M3Z43V
	M3Z47V
	M3Z51V
M3Z56V	
M3Z62V	
M3Z68V	
M3Z75V	
Note	3,000pcs / Reel
AiT provides all RoHS Compliant Products	

## FEATURES

- Standard Zener Breakdown Voltage Range: 2.4V to 75V
- Steady State Power Rating of 200mW
- Maximum case temperature for soldering purposes: 260°C for 10 Seconds
- ESD Rating of Class 3(>16kV) per Human Body Model
- Available in SOD-323 Package

## MECHANICAL CHARACTERISTICS

Case: Void-free, transfer-molded plastic

Finish: All external surfaces are corrosion resistant

Polarity: Cathode indicated by polarity band

Flammability Rating: UL94 V-0

Mounting Position: Any

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

## PIN DESCRIPTION





## ABSOLUTE MAXIMUM RATINGS

T<sub>A</sub> = 25°C unless otherwise noted

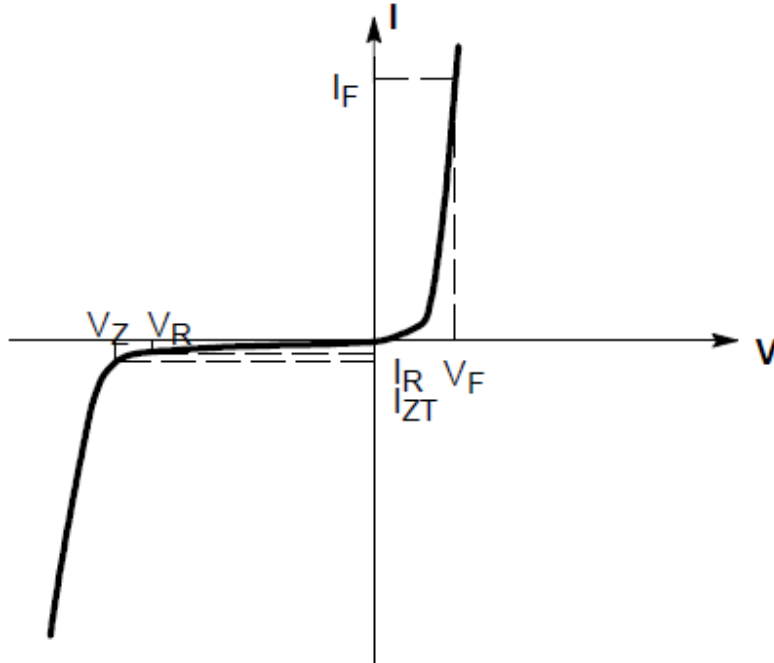
P <sub>D</sub> , Total Device Dissipation FR-5 Board <sup>NOTE1</sup>	
@ T <sub>A</sub> = 25°C	200mW
Derate above 25°C	1.5mW/°C
R <sub>θJA</sub> , Thermal Resistance from Junction to Ambient	635°C/W
T <sub>J</sub> , T <sub>STG</sub> , Junction and Storage Temperature Range	-65°C to + 150°C

NOTE1: FR-4 Minimum Pad



## ELECTRICAL PARAMETER

$T_A = 25^\circ\text{C}$  unless otherwise noted,  $V_F = 0.9\text{V Max.}$  @  $I_F = 10\text{mA}$  for all types



**Zener Voltage Regulator**

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 @ $I_F$
$\theta_{V_Z}$	Maximum Temperature Coefficient of $V_Z$
C	Max. Capacitance @ $V_R = 0$ and $f = 1\text{MHz}$



## ELECTRICAL CHARACTERISTICS

T<sub>A</sub> = 25°C unless otherwise noted, V<sub>F</sub> = 0.9V Max. @I<sub>F</sub> = 10mA for all types.

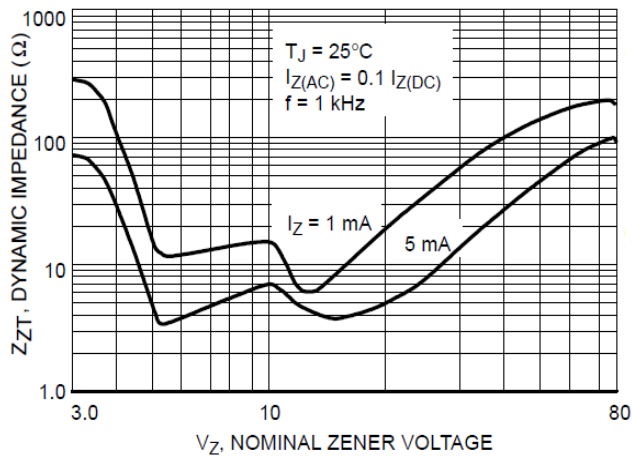
Part Number	Zener Voltage <sup>NOTE2</sup>			Zener Impedance			Leakage Current		θV <sub>Z</sub> (mV/k) @ I <sub>ZT</sub>		C @V <sub>R</sub> =0 f = 1MHz pF	
	V <sub>Z</sub> (Volts)			Z <sub>ZT</sub> @I <sub>ZT</sub>	Z <sub>ZK</sub> @I <sub>ZK</sub>		I <sub>R</sub> @V <sub>R</sub>		Min	Max		
	Min	Nom	Max	mA	Ω	Ω	mA	μA	Volts	Min		Max
M3Z2V4	2.2	2.4	2.6	5	100	1000	0.5	50	1.0	-3.5	0	450
M3Z2V7	2.5	2.7	2.9	5	100	1000	0.5	20	1.0	-3.5	0	450
M3Z3V0	2.8	3.0	3.2	5	100	1000	0.5	10	1.0	-3.5	0	450
M3Z3V3	3.1	3.3	3.5	5	95	1000	0.5	5	1.0	-3.5	0	450
M3Z3V6	3.4	3.6	3.8	5	90	1000	0.5	5	1.0	-3.5	0	450
M3Z3V9	3.7	3.9	4.1	5	90	1000	0.5	3	1.0	-3.5	-2.5	450
M3Z4V3	4.0	4.3	4.6	5	90	1000	0.5	3	1.0	-3.5	0	450
M3Z4V7	4.4	4.7	5.0	5	80	800	0.5	3	2.0	-3.5	0.2	260
M3Z5V1	4.8	5.1	5.4	5	60	800	0.5	2	2.0	-2.7	1.2	225
M3Z5V6	5.2	5.6	6.0	5	40	700	0.5	1	2.0	-2.0	2.5	200
M3Z6V2	5.8	6.2	6.6	5	10	100	0.5	3	4.0	0.4	3.7	185
M3Z6V8	6.4	6.8	7.2	5	15	160	0.5	2	4.0	1.2	4.5	155
M3Z7V5	7.0	7.5	7.9	5	15	160	0.5	1	5.0	2.5	5.3	140
M3Z8V2	7.7	8.2	8.7	5	15	160	0.5	0.7	5.0	3.2	6.2	135
M3Z9V1	8.5	9.1	9.6	5	15	160	0.5	0.2	7.0	3.8	7.0	130
M3Z10V	9.4	10	10.6	5	20	160	0.5	0.1	8.0	4.5	8.0	130
M3Z11V	10.4	11	11.6	5	20	160	0.5	0.1	8.0	5.4	9.0	130
M3Z12V	11.4	12	12.7	5	25	80	0.5	0.1	8.0	6.0	10	130
M3Z13V	12.4	13.25	14.1	5	30	80	0.5	0.1	8.0	7.0	11	120
M3Z15V	14.3	15	15.8	5	30	400	0.5	0.05	10.5	9.2	13	110
M3Z16V	15.3	16.2	17.1	5	40	400	0.5	0.05	11.2	10.4	14	105
M3Z18V	16.8	18	19.1	5	45	400	0.5	0.05	12.6	12.4	16	100
M3Z20V	18.8	20	21.2	5	55	500	0.5	0.05	14.0	14.4	18	85
M3Z22V	20.8	22	23.3	5	55	500	0.5	0.05	15.4	16.4	20	85
M3Z24V	22.8	24.2	25.6	5	70	120	0.5	0.05	16.8	18.4	22	80
M3Z27V	25.1	27	28.9	2	80	300	0.5	0.05	18.9	21.4	25.3	70
M3Z30V	28	30	32	2	80	300	0.5	0.05	21.0	24.4	29.4	70
M3Z33V	31	33	35	2	80	300	0.5	0.05	23.2	27.4	33.4	70
M3Z36V	34	36	38	2	90	500	0.5	0.05	25.2	30.4	37.4	70
M3Z39V	37	39	41	2	130	500	0.5	0.05	27.3	33.4	41.2	45
M3Z43V	40	43	46	2	150	500	0.5	0.05	30.1	37.6	46.6	40
M3Z47V	44	47	50	2	170	500	0.5	0.05	32.9	42.0	51.8	40
M3Z51V	48	51	54	2	180	500	0.5	0.05	35.7	46.6	57.2	40
M3Z56V	52	56	60	2	200	500	0.5	0.05	39.2	52.2	63.8	40
M3Z62V	58	62	66	2	215	500	0.5	0.05	43.4	58.8	71.6	35
M3Z68V	64	68	72	2	240	500	0.5	0.05	47.6	65.6	79.8	35
M3Z75V	70	75	79	2	255	500	0.5	0.05	52.5	73.4	88.6	35

NOTE2: ZENER voltage is measured with a pulse test current I<sub>Z</sub> at an ambient temperature of 25°C.

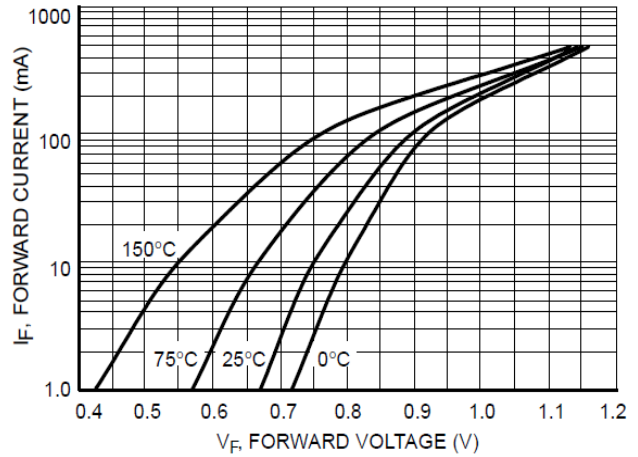


## TYPICAL PERFORMANCE CHARACTERISTICS

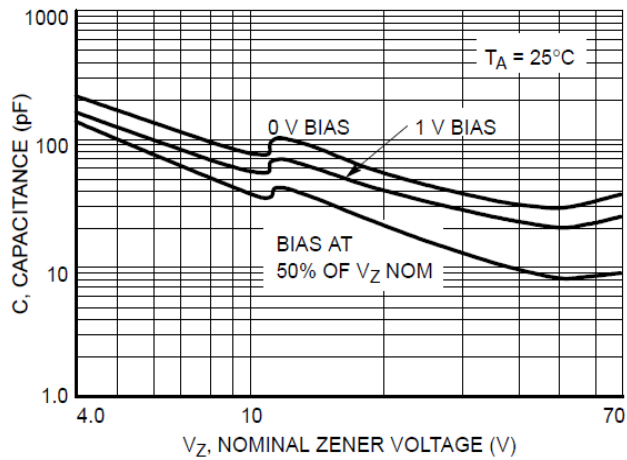
### 1. Effect of Zener Voltage on ZENER Impedance



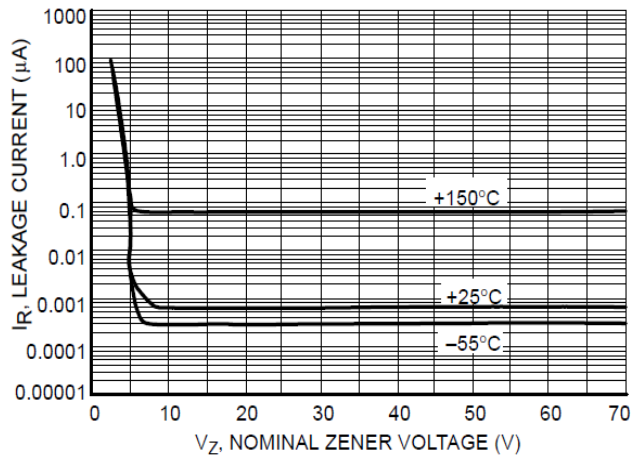
### 2. Typical Forward Voltage



### 3. Typical Capacitance

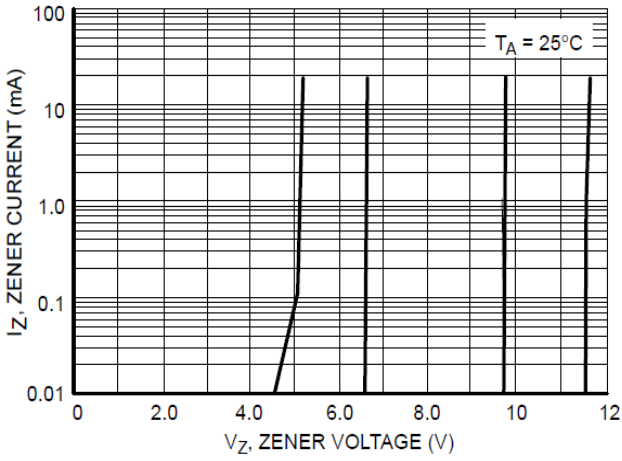


### 4. Typical Leakage Current

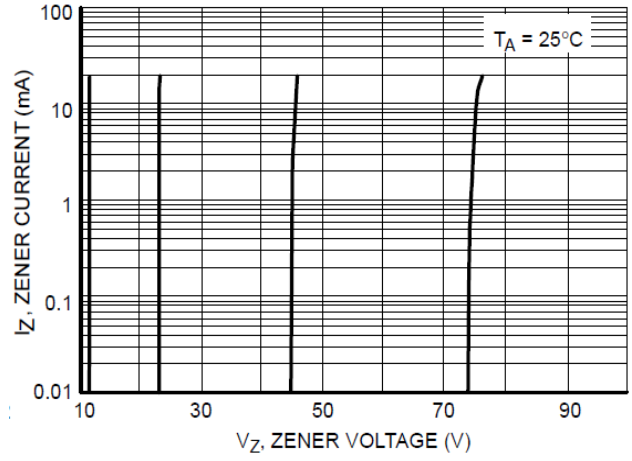




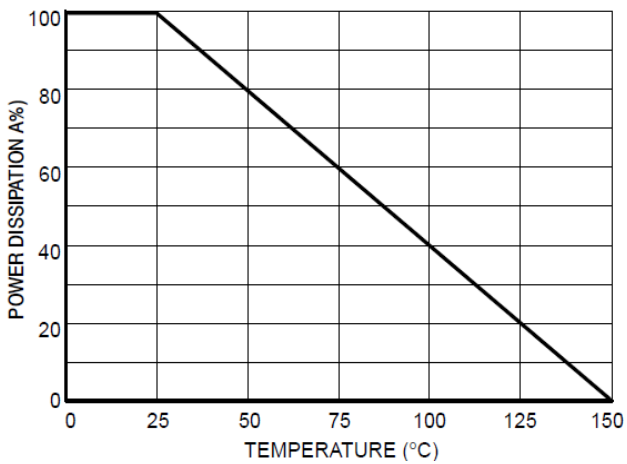
5. ZENER Voltage vs. Zener Current ( $V_Z$  Up to 12V)



6. Zener Voltage vs. Zener Current (12V to 75V)



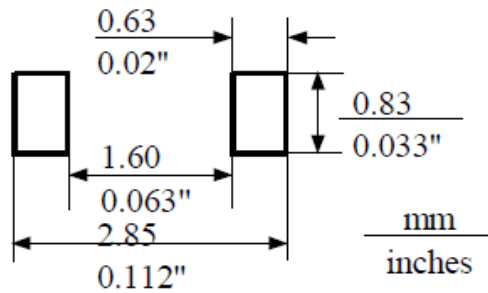
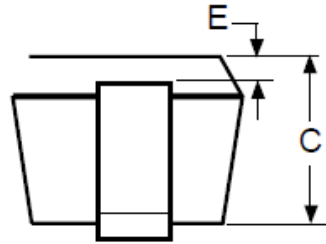
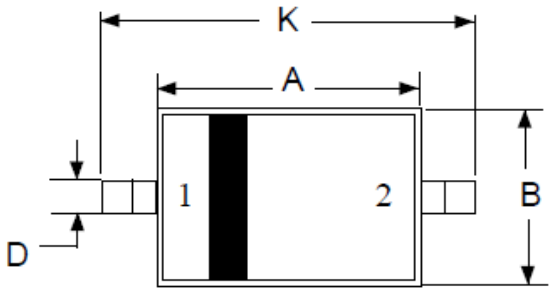
7. Steady State Power Derating





**PACKAGE INFORMATION**

Dimension in SOD-323 Package (Unit: mm)



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.600	1.800	0.063	0.071
B	1.150	1.350	0.045	0.053
C	0.800	1.000	0.031	0.039
D	0.250	0.400	0.010	0.016
E	0.15 REF		0.006 REF	
H	0.000	0.100	0.000	0.004
J	0.089	0.177	0.0035	0.0070
K	2.300	2.700	0.091	0.106



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