



Continental Device India Pvt. Limited

An IATF 16949, ISO9001 and ISO 14001/ISO 45001 Certified Company



Plastic-Encapsulate Zener Diode (500mW)

Zener Voltage Range 2.4 - 51V

MMSZ52XXB



SOD-123

SOD-123
Surface Mount
Plastic Package
RoHS compliant

FEATURES:

1. Planar die construction
2. Standard Zener voltage tolerance is $\pm 5\%$
3. Ultra-small surface mount device
4. Ideally suited for automated assembly processes
5. Lead plating and body according with RoHS standard
6. This product is available in AEC-Q101 Compliant and PPAP Capable also.

Note: For AEC-Q101 compliant products, please use suffix -AQ in the part number while ordering.

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Power Dissipation ¹	P_D	500	mW
Type Thermal Resistance Thermal Resistance ¹	$R_{\theta JA}$	330	$^\circ\text{C/W}$
Forward Voltage @ $I_F=10\text{mA}$	V_{FM}	0.9	V
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

Note:

1. Valid Provided that Device Terminals are Kept at Ambient Temperature.



Continental Device India Pvt. Limited

An IATF 16949, ISO9001 and ISO 14001/ISO 45001 Certified Company



ELECTRICAL CHARACTERISTICS ($T_A=25\text{ }^\circ\text{C}$ unless otherwise noted)

Part Number	Marking Code	$V_Z @ I_{ZT}$			Z_{ZT}		Z_{ZK}		IR	
		Nom.	Min	Max	Max	@ I_{ZT}	Max	@ I_{ZK}	Max	@ V_R
		V			Ω	mA	Ω	mA	μA	V
MMSZ5221B	C1	2.4	2.28	2.52	30	20	1200	0.25	100	1.0
MMSZ5222B	C2	2.5	2.38	2.63	30	20	1250	0.25	100	1.0
MMSZ5223B	C3	2.7	2.57	2.84	30	20	1300	0.25	75	1.0
MMSZ5225B	C5	3.0	2.85	3.15	30	20	1600	0.25	50	1.0
MMSZ5226B	G1	3.3	3.14	3.47	28	20	1600	0.25	25	1.0
MMSZ5227B	G2	3.6	3.42	3.78	24	20	1700	0.25	15	1.0
MMSZ5228B	G3	3.9	3.71	4.10	23	20	1900	0.25	10	1.0
MMSZ5229B	G4	4.3	4.09	4.52	22	20	2000	0.25	5	1.0
MMSZ5230B	G5	4.7	4.47	4.94	19	20	1900	0.25	5	2.0
MMSZ5231B	E1	5.1	4.85	5.36	17	20	1600	0.25	5	2.0
MMSZ5232B	E2	5.6	5.32	5.88	11.0	20	1600	0.25	5	3.0
MMSZ5234B	E4	6.2	5.89	6.51	7.0	20	1000	0.25	5	4.0
MMSZ5235B	E5	6.8	6.46	7.12	5.0	20	750	0.25	3	5.0
MMSZ5236B	F1	7.5	7.13	7.88	6.0	20	500	0.25	3	6.0
MMSZ5237B	F2	8.2	7.79	8.61	8.0	20	500	0.25	3	6.5
MMSZ5238B	F3	8.7	8.27	9.14	8.0	20	600	0.25	3	6.5
MMSZ5239B	F4	9.1	8.65	9.56	10	20	600	0.25	3	7.0
MMSZ5240B	F5	10	9.5	10.50	17	20	600	0.25	3	8.0
MMSZ5241B	H1	11	10.45	11.55	22	20	600	0.25	2	8.4
MMSZ5242B	H2	12	11.4	12.60	30	20	600	0.25	1	9.1
MMSZ5243B	H3	13	12.35	13.65	13	9.5	600	0.25	0.5	9.9
MMSZ5244B	H4	14	13.3	14.70	15	9.0	600	0.25	0.1	10.5
MMSZ5245B	H5	15	14.25	15.75	16	8.5	600	0.25	0.1	11.0
MMSZ5246B	J1	16	15.2	16.80	17	7.8	600	0.25	0.1	12.0
MMSZ5247B	J2	17	16.15	17.85	19	7.5	600	0.25	0.1	13.0
MMSZ5248B	J3	18	17.1	18.90	21	7.0	600	0.25	0.1	14.0
MMSZ5249B	J4	19	18.05	19.95	23	6.6	600	0.25	0.1	14.0
MMSZ5250B	J5	20	19	21.00	25	6.0	600	0.25	0.1	15.0
MMSZ5251B	K1	22	20.9	23.10	29	5.6	600	0.25	0.1	17.0
MMSZ5252B	K2	24	22.8	25.20	33	5.2	600	0.25	0.1	18.0
MMSZ5254B	K4	27	25.65	28.35	41	4.6	600	0.25	0.1	21.0
MMSZ5255B	K5	28	26.6	29.40	44	4.5	600	0.25	0.1	21.0
MMSZ5256B	M1	30	28.5	31.50	49	4.2	600	0.25	0.1	23.0
MMSZ5257B	M2	33	31.35	34.65	58	3.8	700	0.25	0.1	25.0
MMSZ5258B	M3	36	34.2	37.80	70	3.4	700	0.25	0.1	27.0
MMSZ5259B	M4	39	37.05	40.95	80	3.2	800	0.25	0.1	30.0
MMSZ5260B	M5	43	40.85	45.15	93	3.0	900	0.25	0.1	33.0
MMSZ5261B	N1	47	44.65	49.35	105	2.7	1000	0.25	0.1	36.0
MMSZ5262B	N2	51	48.45	53.55	125	2.5	1100	0.25	0.1	39.0

MMSZ52XXB
Rev1_16022024EFZ



TYPICAL CHARACTERISTICS CURVES

Fig :1 Power Derating Curve

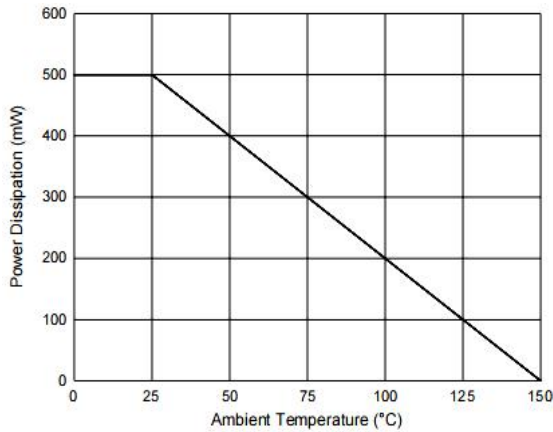


Fig :3 Typical Zener Breakdown Characteristics

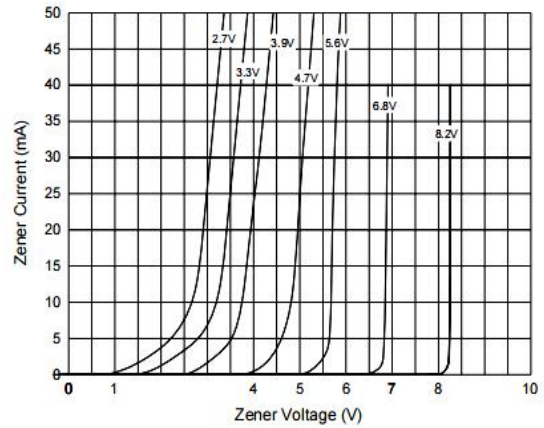


Fig : 2 Typical Zener Breakdown Characteristics

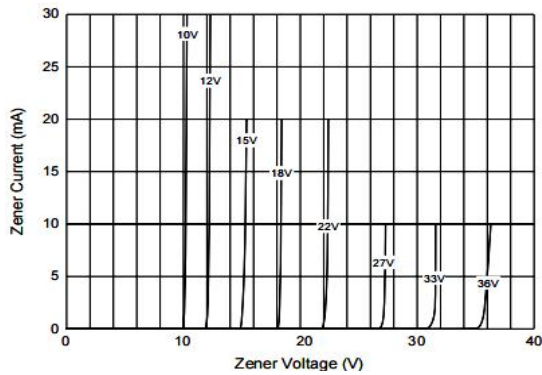
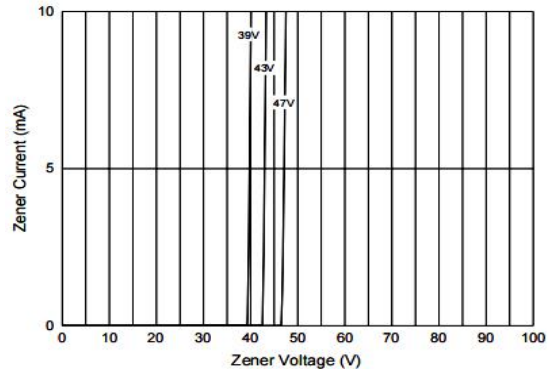
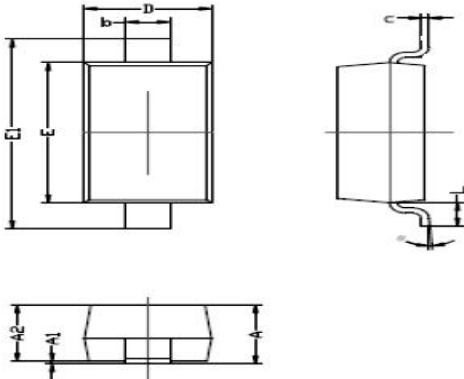


Fig : 4 Typical Zener Breakdown Characteristics



PACKAGE DETAILS

SOD-123 Surface Mount Package



Symbol	Dimensions	
	Min.	Max.
A	0.95	1.35
A1	-	0.12
A2	0.95	1.23
b	0.50	0.70
c	-	0.20
D	1.40	1.80
E	2.50	2.80
E1	3.60	3.90
L	0.40	-

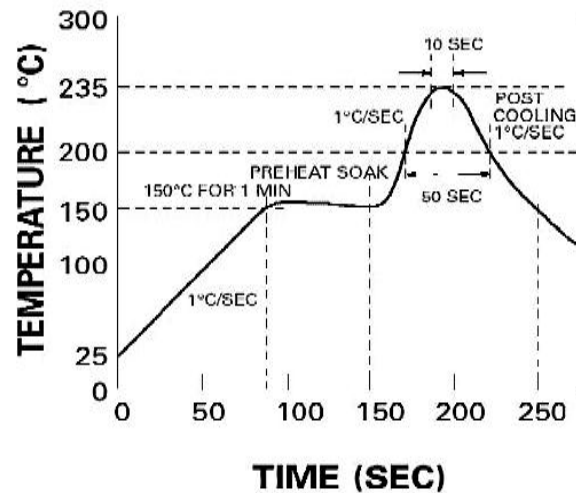
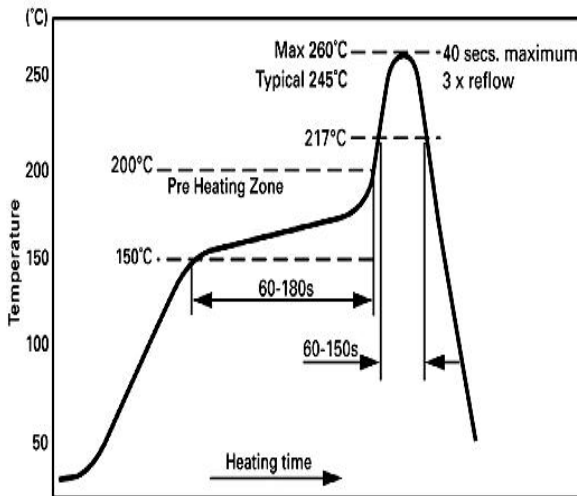
All Dimensions are in (mm)

Recommended Reflow Solder Profiles

The recommended reflow solder profiles for Pb and Pb-free devices are shown below.

Figure 1 shows the recommended solder profile for devices that have Pb-free terminal plating, and where a Pb-free solder is used.

Figure 2 shows the recommended solder profile for devices with Pb-free terminal plating used with leaded solder, or for devices with leaded terminal plating used with a leaded solder.

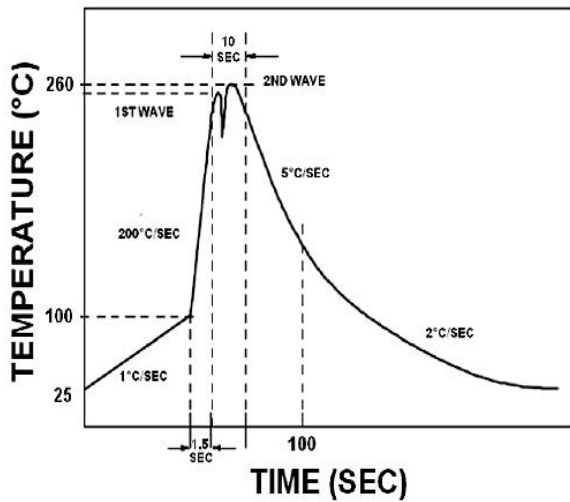


Reflow profiles in tabular form

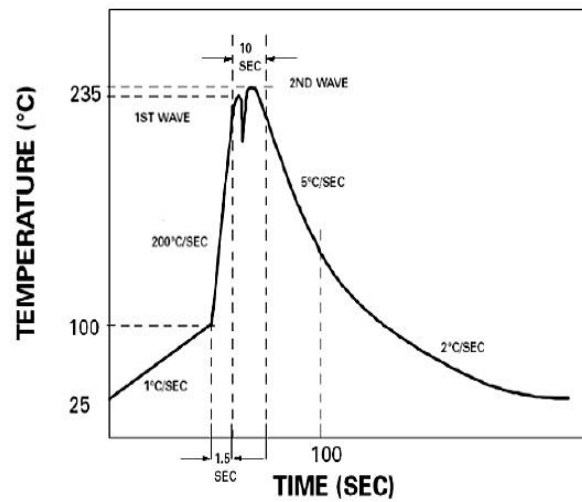
Profile Feature	Sn-Pb System	Pb-Free System
Average Ramp-Up Rate	~3°C/second	~3°C/second
Preheat		
– Temperature Range	150-170°C	150-200°C
– Time	60-180 seconds	60-180 seconds
Time maintained above:		
– Temperature	200°C	217°C
– Time	30-50 seconds	60-150 seconds
Peak Temperature	235°C	260°C max.
Time within +0 -5°C of actual Peak	10 seconds	40 seconds
Ramp-Down Rate	3°C/second max.	6°C/second max.

Recommended Wave Solder Profiles

The Recommended solder Profile For Devices with Pb-free terminal plating where a Pb-free solder is used



The Recommended solder Profile For Devices with Pb-free terminal plating used with leaded solder, or for devices with leaded terminal plating used with leaded solder



Wave Profiles in Tabular Form

Profile Feature	Sn-Pb System	Pb-free System
Average Ramp-Up Rate	~200°C/second	~200°C/second
Heating rate during preheat	Typical 1-2, Max 4°C/sec	Typical 1-2, Max 4°C/Sec
Final preheat Temperature	Within 125°C of Solder Temp	Within 125°C of Solder Temp
Peak Temperature	235°C	260°C max.
Time within +0 -5°C of actual Peak	10 seconds	10 seconds
Ramp-Down Rate	5°C/second max.	5°C/second max.



Continental Device India Pvt. Limited

An IATF 16949, ISO9001 and ISO 14001/ISO 45001 Certified Company



Recommended Product Storage Environment for Discrete Semiconductor Devices

This storage environment assumes that the Diodes and transistors are packed properly inside the original packing supplied by CDIL.

- Temperature 5 °C to 30 °C
- Humidity between 40 to 70 %RH
- Air should be clean.
- Avoid harmful gas or dust.
- Avoid outdoor exposure or storage in areas subject to rain or water spraying .
- Avoid storage in areas subject to corrosive gas or dust. Product shall not be stored in areas exposed to direct sunlight.
- Avoid rapid change of temperature.
- Avoid condensation.
- Mechanical stress such as vibration and impact shall be avoided.
- The product shall not be placed directly on the floor.
- The product shall be stored on a plane area. They should not be turned upside down. They should not be placed against the wall.

Shelf Life of CDIL Products

The shelf life of products is the period from product manufacture to shipment to customers. The product can be unconditionally shipped within this period. The period is defined as 2 years.

If products are stored longer than the shelf life of 2 years the products shall be subjected to quality check as per CDIL quality procedure.

The products are further warranted for another one year after the date of shipment subject to the above conditions in CDIL original packing.

Floor Life of CDIL Products and MSL Level

When the products are opened from the original packing, the floor life will start.

For this, the following JEDEC table may be referred:

JEDEC MSL Level		
Level	Time	Condition
1	Unlimited	≤30 °C / 85% RH
2	1 Year	≤30 °C / 60% RH
2a	4 Weeks	≤30 °C / 60% RH
3	168 Hours	≤30 °C / 60% RH
4	72 Hours	≤30 °C / 60% RH
5	48 Hours	≤30 °C / 60% RH
5a	24 Hours	≤30 °C / 60% RH
6	Time on Label(TOL)	≤30 °C / 60% RH

MMSZ52XXB
Rev1_16022024EFZ



Continental Device India Pvt. Limited

An IATF 16949, ISO9001 and ISO 14001/ISO 45001 Certified Company



Customer Notes

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is commended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s). CDIL strives for continuous improvement and reserves the right to change the specifications of its products without prior notice.



Continental Device India Pvt. Limited

C-120 Naraina Industrial Area, New Delhi 110 028, India.

Telephone +91-11-2579 6150, 4141 1112 Fax +91-11-2579 5290, 4141 1119

email@cdil.com www.cdil.com

CIN No. U32109DL1964PTC004291

MMSZ52XXB
Rev1_16022024EFZ