SILICON PLANAR POWER ZENER DIODES ZM4727 ~ ZM4761

LL-41
(MELF)

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Glass Axial Package
RoHS compliant

FEATURES:

1. Standard Zener Voltage tolerance is +/- 10% . Add Suffix A for +/- 5% tolerance
2. 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.

APPLICATION:

For Use in Stabilizing and Clipping Circuits with High Power Rating

ABSOLUTE MAXIMUM RATINGS (Ta = 25 ℃ Unless otherwise specified)

PARAMETER	SYMBOL	VALUE	UNIT
Power Dissipation at Tamb=25ºC	P_D [1]	1	W
Junction Temperature	T_j	175	°C
Storage Temperature Range	T_{STG}	-55to +175	°C

Thermal Resistance

Junction to Ambient in free Air	$R_{th\ (j\text{-}a)}$ [1]	170	K/W

Note:

1. Valid provided that electrodes are kept at ambient temperature.

ELECTRICAL CHARACTERISTICS at (Ta = 25 °C Unless otherwise specified)

Device	V_{ZT} at I_{ZT} [3]	I_{ZT}	Maximum Zener Impedance [1]			I_R	V_R	Surge Current	I_{ZM} [2]
	Nominal		r_{zt} MAX	MAX	Z_{ZK} at I_{ZK}	Max		Max I_R	Max
	(V)	(mA)	(Ω)	(Ω)	(mA)	(µA)	(V)	(mA)	(mA)
ZM4727	3	83	10	400	1.00	150	1.0	1375	275
ZM4728	3.3	76	10	400	1.00	150	1.0	1375	275
ZM4729	3.6	69	10	400	1.00	100	1.0	1260	252
ZM4730	3.9	64	9.0	400	1.00	100	1.0	1190	234
ZM4731	4.3	58	9.0	400	1.00	50	1.0	1070	217
ZM4732	4.7	53	8.0	500	1.00	10	1.0	970	193
ZM4733	5.1	49	7.0	550	1.00	10	1.0	890	178
ZM4734	5.6	45	5.0	600	1.00	10	2.0	810	162
ZM4735	6.2	41	2	700	1.00	10	3.0	730	146
ZM4736	6.8	37	3.5	700	1.00	10	4.0	660	133
ZM4737	7.5	34	4.0	700	0.5	10	5.0	605	121
ZM4738	8.2	31	4.5	700	0.5	10	6.0	550	110
ZM4739	9.1	28	5.0	700	0.5	10	7.0	500	100
ZM4740	10	25	7.0	700	0.25	10	7.6	454	91
ZM4741	11	23	8.0	700	0.25	5	8.4	414	83
ZM4742	12	21	9.0	700	0.25	5	9.1	380	76
ZM4743	13	19	10	700	0.25	5	9.9	344	69
ZM4744	15	17	14	700	0.25	5	11.4	304	61
ZM4745	16	15.5	16	700	0.25	5	12.2	285	57
ZM4746	18	14	20	750	0.25	5	13.7	250	50
ZM4747	20	12.5	22	750	0.25	5	15.2	225	45
ZM4748	22	11.5	23	750	0.25	5	16.7	205	41
ZM4749	24	10.5	25	750	0.25	5	18.2	190	38
ZM4750	27	9.5	35	750	0.25	5	20.6	170	34
ZM4751	30	8.5	40	1000	0.25	5	22.8	150	30
ZM4752	33	7.5	45	1000	0.25	5	25.1	135	27
ZM4753	36	7.0	50	1000	0.25	5	27.4	125	25
ZM4754	39	6.5	60	1000	0.25	5	29.7	115	23
ZM4755	43	6.0	70	1500	0.25	5	32.7	110	22
ZM4756	47	5.5	80	1500	0.25	5	35.8	95	19
ZM4757	51	5.0	95	1500	0.25	5	38.8	90	18
ZM4758	56	4.5	110	2000	0.25	5	42.6	80	16
ZM4759	62	4.0	125	2000	0.25	5	47.1	70	14
ZM4760	68	3.7	150	2000	0.25	5	51.7	65	13
ZM4761	75	3.3	175	2000	0.25	5	56.0	60	12

Note:

1. The Zener Impedance is derived from the 60 HZ AC voltage which results when an AC current having and RMS value equal to 10% of the Zener current (I_{ZT} or I_{ZK}) is superimposed on I_{ZT} or I_{ZK}. Zener Impedance is measured at two points to insure a sharp knee on the breakdown curve and to eliminate unstable units
2. Valid provided that electrodes are kept at ambient temperature
3. Measured under thermal equilibrium and DC test conditions

TYPICAL CHARACTERISTICS CURVES

Fig 1: Zener Breakdown characteristics

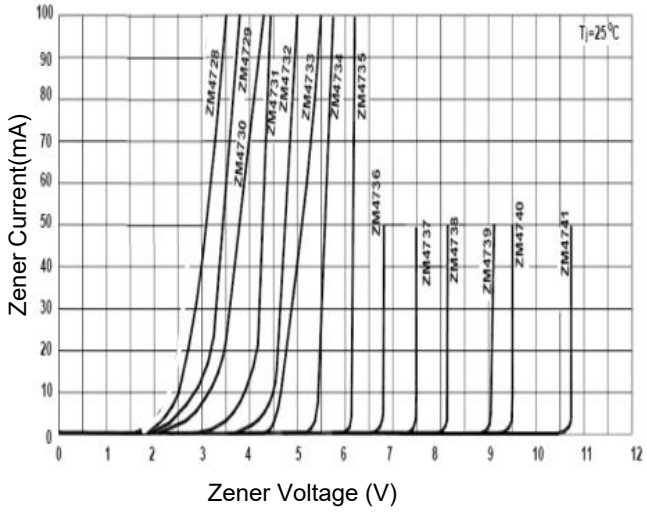


Fig 3: Zener Breakdown characteristics

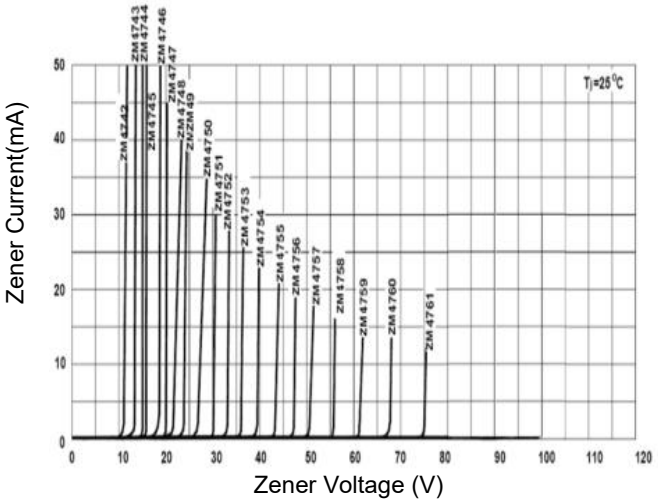
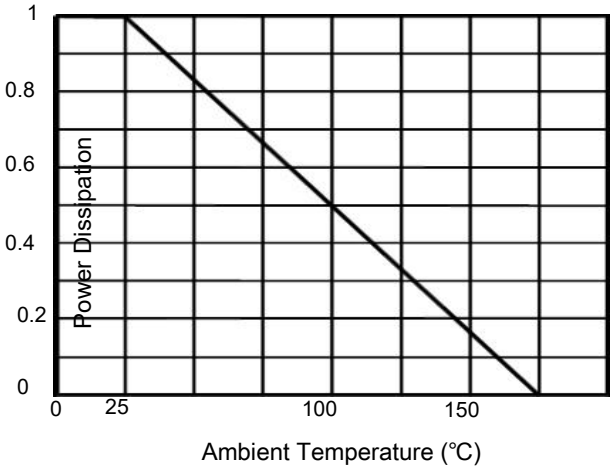
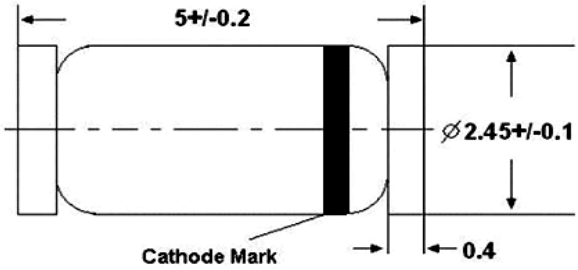


Fig 2: Power Derating Curve



Package Details

LL-41 (MELF)



All Dimensions 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.

Figure 1

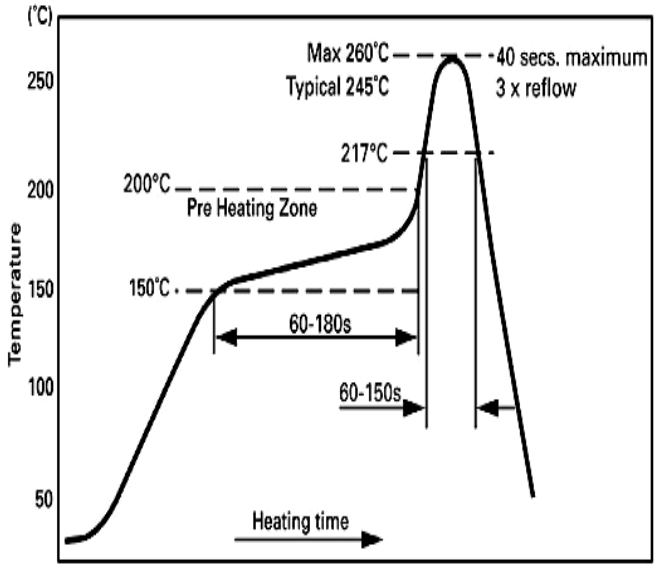
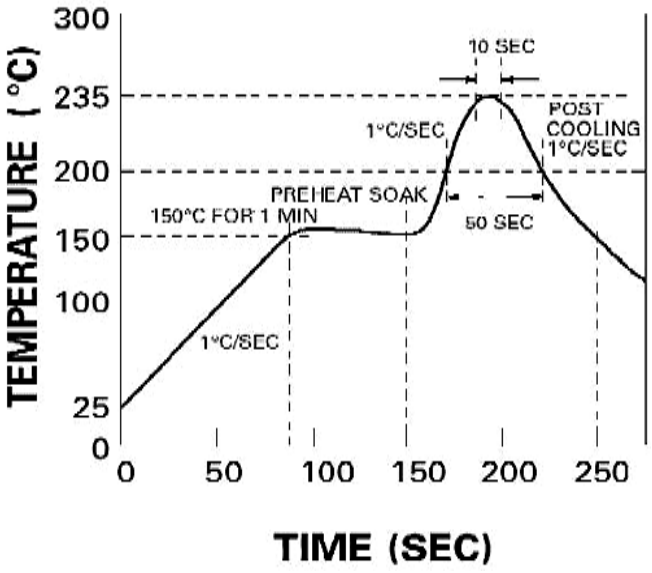


Figure 2

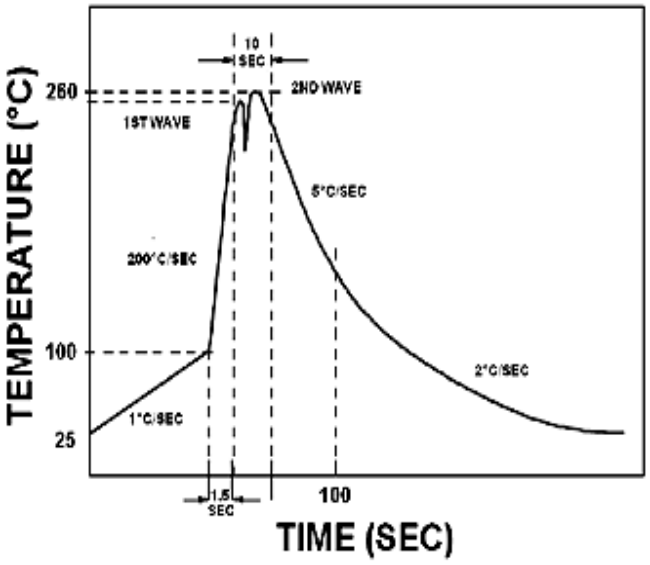


Reflow profiles in tabular form

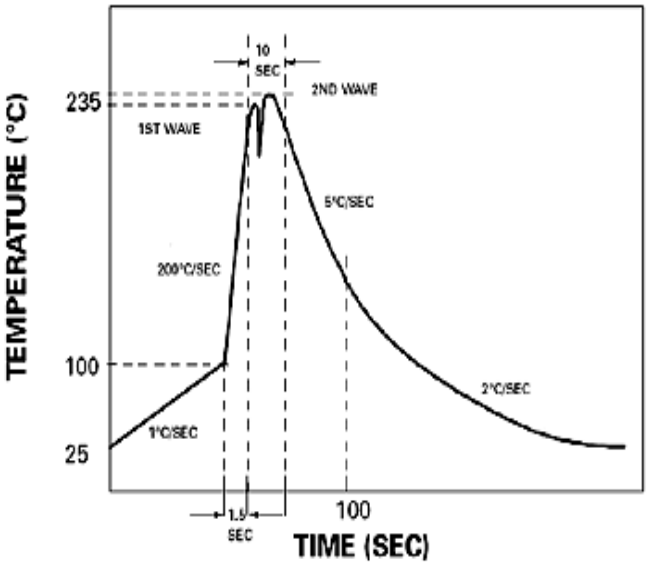
Profile Feature	Sn-Pb System	Pb-Free System
Average Ramp-Up Rate	~3°C/second	~3°C/second
Preheat – Temperature Range – Time	 150-170°C 60-180 seconds	 150-200°C 60-180 seconds
Time maintained above: – Temperature – Tim	 200°C 30-50 seconds	 217°C 60-150 seconds
Peak Temperature	235°C	260°C max.
Time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

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

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 recommended 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).

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CDIL is a registered trademark of
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