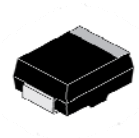
SURFACE MOUNT SILICON ZENER DIODES

SZ553J-SZ55D0



DO-214AC (SMA)

DO-214AC (SMA)
Surface Mount
RoHS compliant

FEATURES:

1. Complete Voltage Range, 3.9V to 200V
2. High Peak Reverse Power Dissipation
3. Low Leakage Current
4. Epoxy : UL94V-O rate flame retardant
5. Colour Band Denotes Cathode End

4.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 (Ta = 25 ℃ Unless otherwise specified)

PARAMETER	SYMBOL	VALUE	UNIT
DC Power Dissipation at T_L = 75°C [1]	P_D	3	W
Maximum Forward Voltage at I_F = 200mA	V_F	1.5	V
Junction Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_S	-55 to +150	°C

Note:

1. T_L Lead temperature at 5.0mm2(0.013mm thick) copper land area.

ELECTRICAL CHARACTERISTICS at (Ta = 25 ℃ Unless otherwise specified)

TYPE	Nominal Zener Voltage		Maximum Zener Impedance			Maximum Reverse Leakage Current		Maximum DC Zener Current
	V_Z @ I_{ZT}	I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK}	I_{ZK}	I_R @ V_R		I_{ZM}
	(V)	(mA)	(Ω)	(Ω)	(mA)	I_R(mA)	V_R (V)	(mA)
SZ553J	3.9	192	4.5	400	1.0	80	1.0	630
SZ554D	4.3	174	4.5	400	1.0	30	1.0	590
SZ554H	4.7	160	4.0	500	1.0	20	1.0	550
SZ555B	5.1	147	3.5	550	1.0	5.0	1.0	520
SZ555G	5.6	134	2.5	600	1.0	5.0	2.0	480
SZ556C	6.2	121	1.5	700	1.0	5.0	3.0	435
SZ556I	6.8	110	2.0	700	1.0	50	4.0	393
SZ557F	7.5	100	2.0	700	0.5	50	5.0	360
SZ558C	8.2	91	2.3	700	0.5	50	6.0	330
SZ559B	9.1	82	2.5	700	0.5	50	7.0	297
SZ5510	10	75	3.5	700	0.3	50	7.6	270

ELECTRICAL CHARACTERISTICS at (Ta = 25 ℃ Unless otherwise specified)

TYPE	Nominal Zener Voltage		Maximum Zener Impedance			Maximum Reverse Leakage Current		Maximum DC Zener Current
	V_Z @ I_{ZT}	I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK}	I_{ZK}	I_R @ V_R		I_{ZM}
	(V)	(mA)	(Ω)	(Ω)	(mA)	I_R(mA)	V_R (V)	(mA)
SZ5511	11	68	4.0	700	0.25	50	8.4	225
SZ5512	12	63	4.5	700	0.25	1.0	9.1	246
SZ5513	13	58	4.5	700	0.25	0.5	9.1	208
SZ5514	14	53	5.0	700	0.25	0.5	10.6	193
SZ5515	15	50	5.5	700	0.25	0.5	11.4	180
SZ5516	16	47	5.5	700	0.25	0.5	12.2	169
SZ5517	17	44	6.0	750	0.25	0.5	13.0	159
SZ5518	18	42	6.0	750	0.25	0.5	13.7	150
SZ5519	19	40	7.0	750	0.25	0.5	14.4	142
SZ5520	20	37	7.0	750	0.25	0.5	15.2	135
SZ5522	22	34	8.0	750	0.25	0.5	16.7	123
SZ5524	24	31	9.0	750	0.25	0.5	18.2	112
SZ5527	27	28	10	750	0.25	0.5	20.6	100
SZ5528	28	27	12	750	0.25	0.5	21.0	96
SZ5530	30	25	16	1000	0.25	0.5	22.5	90
SZ5533	33	23	20	1000	0.25	0.5	25.1	82
SZ5536	36	21	22	1000	0.25	0.5	27.4	75
SZ5539	39	19	28	1000	0.25	0.5	29.7	69
SZ5543	43	17	33	1500	0.25	0.5	32.2	63
SZ5547	47	16	38	1500	0.25	0.5	35.6	57
SZ5551	51	15	45	1500	0.25	0.5	38.8	53
SZ5556	56	13	50	2000	0.25	0.5	42.6	48
SZ5562	62	12	55	2000	0.25	0.5	47.1	44
SZ5568	68	11	70	2000	0.25	0.5	51.7	40
SZ5575	75	10	85	2000	0.25	0.5	56.0	36
SZ5582	82	9.1	95	3000	0.25	0.5	62.2	33
SZ5591	91	8.2	115	3000	0.25	0.5	69.2	30
SZ55B0	100	7.5	160	3000	0.25	0.5	76.0	27
SZ55B1	110	6.8	225	4000	0.25	0.5	83.6	25
SZ55B2	120	6.3	300	4500	0.25	0.5	91.2	22
SZ55B3	130	5.8	375	5000	0.25	0.5	98.8	21
SZ55B4	140	5.3	475	5000	0.25	0.5	106.4	19
SZ55B5	150	5.0	550	6000	0.25	0.5	114.0	18
SZ55B6	160	4.7	625	6500	0.25	0.5	121.6	17
SZ55B7	170	4.4	650	7000	0.25	0.5	130.4	16
SZ55B8	180	4.2	700	7000	0.25	0.5	136.8	15
SZ55B9	190	4.0	800	8000	0.25	0.5	144.8	14
SZ55D0	200	3.7	875	8000	0.25	0.5	152.0	13

Note:

2. The type number listed have a standard tolerance on the nominal zener voltage of +5%, altered the fourth number of type from "5" for +5% tolerance to be "0" for 10% tolerance.
3. "SZ" will be omitted in marking on the diode.

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

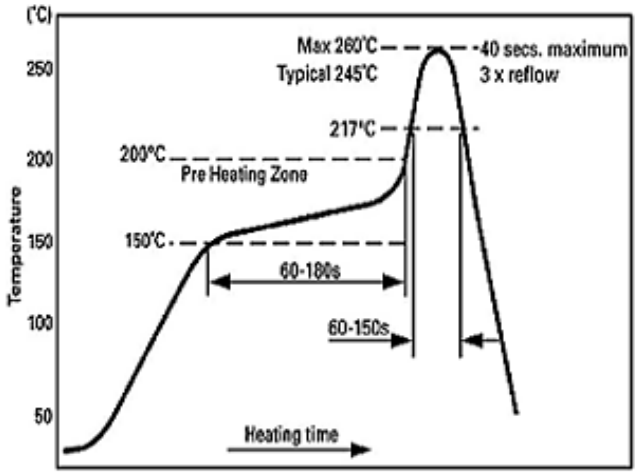
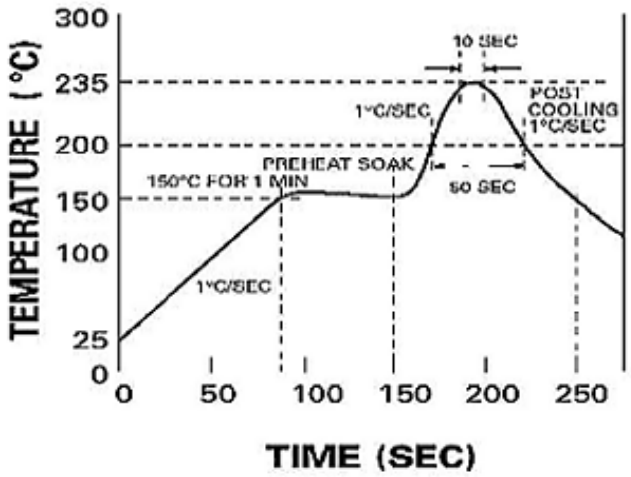


Figure 2

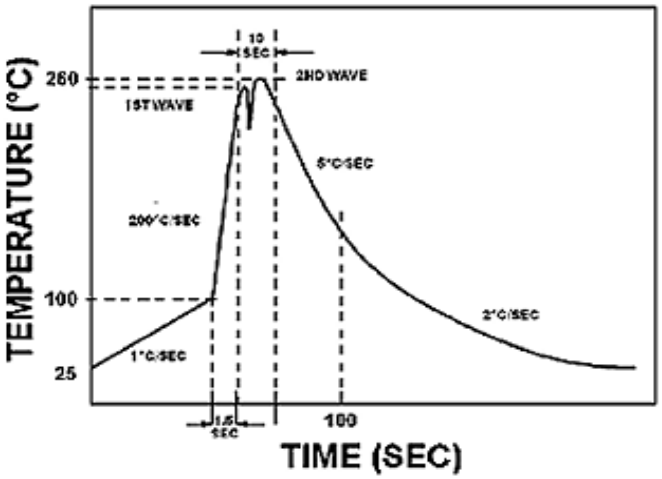


Reflow profiles in tabular form

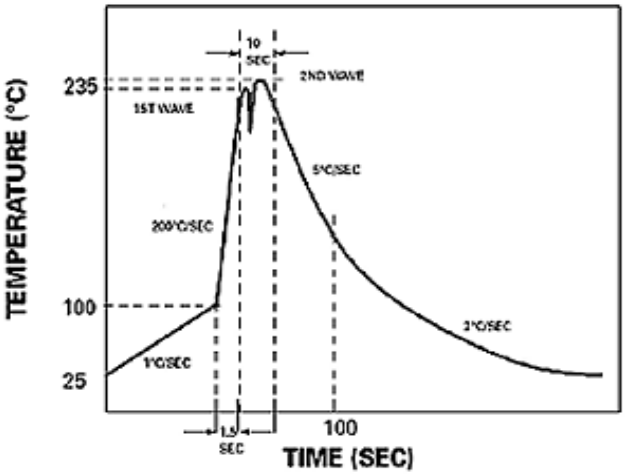
Profile Feature	Sn-Pb System	Pb-Free System
Average Ramp-Up Rate	~3°C/second	~3°C/second
Preheat – Temperature Range – Time	 150-170°C 60-180 seconds	 150-200°C 60-180 seconds
Time maintained above: – Temperature – Time	 200°C 30-50 seconds	 217°C 60-150 seconds
Peak Temperature	235°C	260°C max.
Time 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

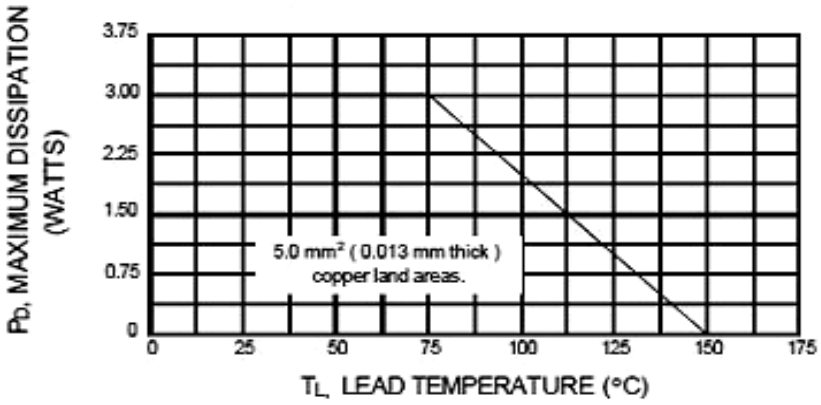


Wave Profiles in Tabular Form

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

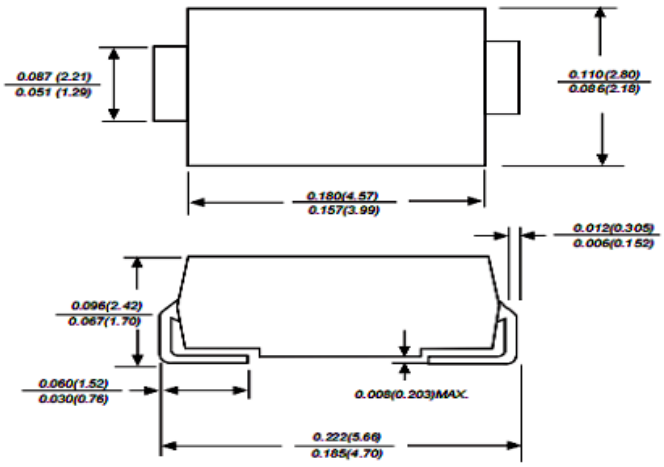
TYPICAL CHARACTERISTICS CURVES

Fig 1: Power Temperature Derating Curve



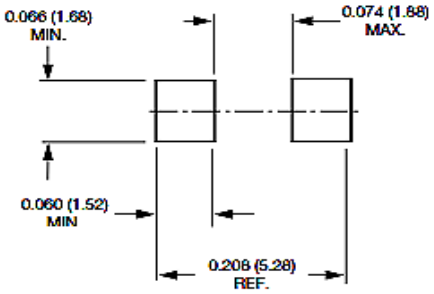
PACKAGE DETAIL

DO-214AC (SMA) Plastic Package

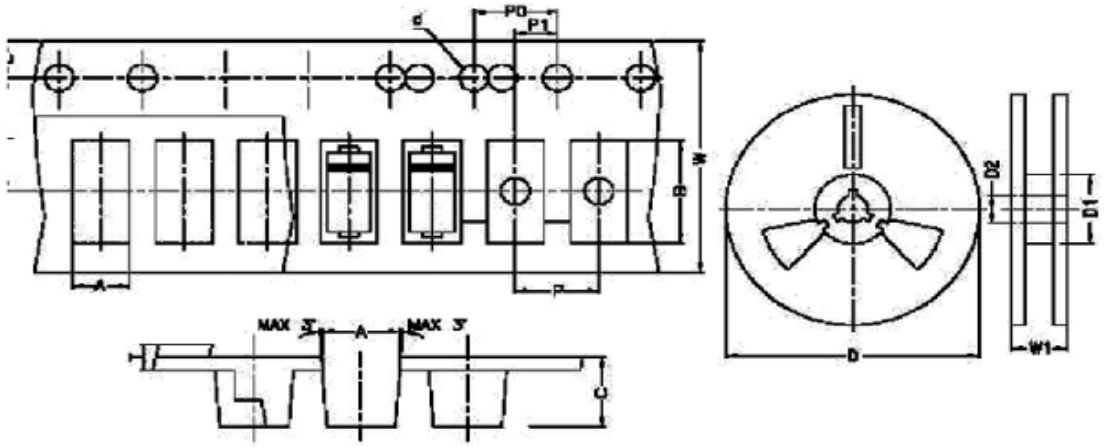


Dimensions in inches and (millimeters)

SOLDER PAD LAYOUT



Package & Reel Taping Specification



ITEM	SYMBOL	SPECIFICATION (mm)	SPECIFICATION (Inch)
CARRIER WIDTH	A	3.2 MAX	0.125 MAX
CARRIER LENTH	B	7.8 MAX	0.307 MAX
CARRIER DEPTH	C	4.5 MAX	0.177 MAX
SPROCKET HOLE	d	1.5 ±1.00	0.58 ±0.004
REEL OUTSIDE DIAMETER	D	178.0 ±2.00	7.00 ±0.079
REEL INNER DIAMETER	D1	50.0 MIN	1.989 MIN
FEED HOLE DIAMETER	D2	13.0 ±0.50	0.512 ±0.020
SPROCKET HOLE POSITION	E	1.75 ±0.10	0.88 ±0.004
PUNCH HOLE POSITION	F	5.5 ±0.10	0.217 ±0.004
PUNCH HOLE PITCH	P	4.0 ±0.10	0.157 ±0.004
SPROCKET HOLE PITCH	PC	4.0 ±0.10	0.157 ±0.004
EMBOSSMENT CENTER	P1	2.0 ±0.05	0.078 ±0.002
CVERALL TAPE THICKNESS	T	1.1 MAX	0.043 MAX
TAPE WIDTH	W	12.0 ±0.30	0.472 ±0.12
REEL WIDTH	W1	10.4 MAX	0.724 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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