500mW Zener Diode Series

ZD52XXBSH

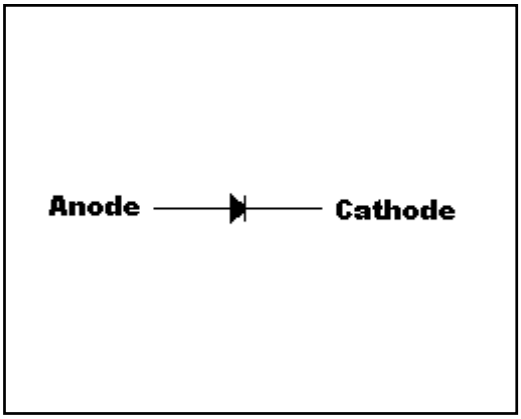
Description

The ZD52XXBSH series covers zener voltage range from 2.4V to 43V, and is encapsulated in SOD-123 package, very suitable for low cost, low power voltage regulation application.

Features

- Ultra small surface mount package
- General purpose, medium current
- Planar die construction
- Pb-free lead plating and halogen-free package

Symbol



Outline



SOD-123

Ordering Information

Device	Package	Shipping
ZD52XXBSH-0-T1-G	SOD-123 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel

Environment friendly grade : S for RoHS compliant products, G for RoHS compliant and green compound products

Packing spec, T1 : 3000 pcs / tape & reel, 7" reel

Product rank, zero for no rank products

Product name

Absolute Maximum Ratings(Tj=25℃, unless otherwise specified)

- Maximum Temperatures
  Operating and Storage Temperature Range Tj,Tstg ..... -65~+150 °C
- Maximum Forward Voltage @ I_F=10mA 0.9V
- Maximum Power Dissipation
  Total Power Dissipation @T_L=75 °C Ptot (Note 1) .....500 mW
- Thermal Resistance, Junction to Ambient Air $R_{\theta JL}$ (Note 1).....150℃/W
- Maximum Z-current..... Ptot/V_Z mA
- ESD susceptibility (Note 2)..... 30KV

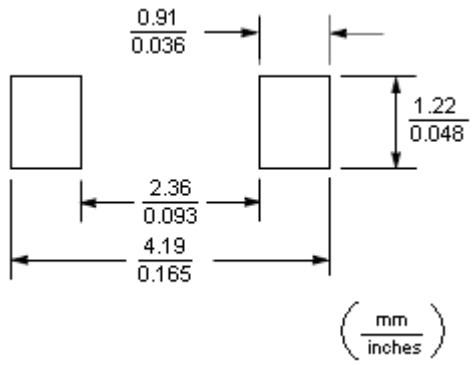
Note : 1. Parts mounted on FR-5 board with area of 3.5inch x 1.5inch.
2. Human body model.

Electrical Characteristic (Ta=25℃, unless otherwise noted)

Device	Type Code	Nom. Zener Voltage Vz@Izt				Max. Zener Impedance Zzt@ Izt		Zzk@ Izk		Max. Zener Current	Max. Reverse Leakage Current	
		Nom.	Min.	Max.	Izt	Zzt	Izt	Zzk	Izk	Izm@Ta	Ir	Vr
		(V)	(V)	(V)	(mA)	(Ω)	(mA)	(Ω)	(mA)	(mA)	(μA)	(V)
ZD5221B	C1	2.4	2.28	2.52	20	30	20	1200	0.25	188	100	1.0
ZD5223B	C3	2.7	2.57	2.84	20	30	20	1300	0.25	167	75	1.0
ZD5225B	C5	3.0	2.85	3.15	20	30	20	1600	0.25	150	50	1.0
ZD5226B	G1	3.3	3.14	3.47	20	28	20	1600	0.25	138	25	1.0
ZD5227B	G2	3.6	3.42	3.78	20	24	20	1700	0.25	126	15	1.0
ZD5228B	G3	3.9	3.71	4.10	20	23	20	1900	0.25	115	10	1.0
ZD5229B	G4	4.3	4.09	4.52	20	22	20	2000	0.25	106	5.0	1.0
ZD5230B	G5	4.7	4.47	4.94	20	19	20	1900	0.25	97	5.0	2.0
ZD5231B	E1	5.1	4.85	5.36	20	17	20	1600	0.25	89	5.0	2.0
ZD5232B	E2	5.6	5.32	5.88	20	11	20	1600	0.25	81	5.0	3.0
ZD5233B	E3	6.0	5.70	6.30	20	7.0	20	1600	0.25	76	5.0	3.5
ZD5234B	E4	6.2	5.89	6.51	20	7.0	20	1000	0.25	73	5.0	4.0
ZD5235B	E5	6.8	6.46	7.14	20	5.0	20	750	0.25	67	3.0	5.0
ZD5236B	F1	7.5	7.13	7.88	20	6.0	20	500	0.25	61	3.0	6.0
ZD5237B	F2	8.2	7.79	8.61	20	8.0	20	500	0.25	55	3.0	6.5
ZD5238B	F3	8.7	8.27	9.14	20	8.0	20	600	0.25	55	3.0	6.5
ZD5239B	F4	9.1	8.65	9.56	20	10	20	600	0.25	50	3.0	7.0
ZD5240B	F5	10	9.5	10.5	20	17	20	600	0.25	45	3.0	8.0
ZD5241B	H1	11	10.45	11.55	20	22	20	600	0.25	41	2.0	8.4
ZD5242B	H2	12	11.4	12.6	20	30	20	600	0.25	38	1.0	9.1
ZD5243B	H3	13	12.35	13.65	9.5	13	9.5	600	0.25	35	0.5	9.9
ZD5245B	H5	15	14.25	15.75	8.5	16	8.5	600	0.25	30	0.1	11
ZD5246B	J1	16	15.2	16.8	7.8	17	7.8	600	0.25	28	0.1	12
ZD5248B	J3	18	17.1	18.9	7.0	21	7.0	600	0.25	25	0.1	14
ZD5250B	J5	20	19	21	6.2	25	6.2	600	0.25	23	0.1	15
ZD5251B	K1	22	20.9	23.1	5.6	29	5.6	600	0.25	21	0.1	17

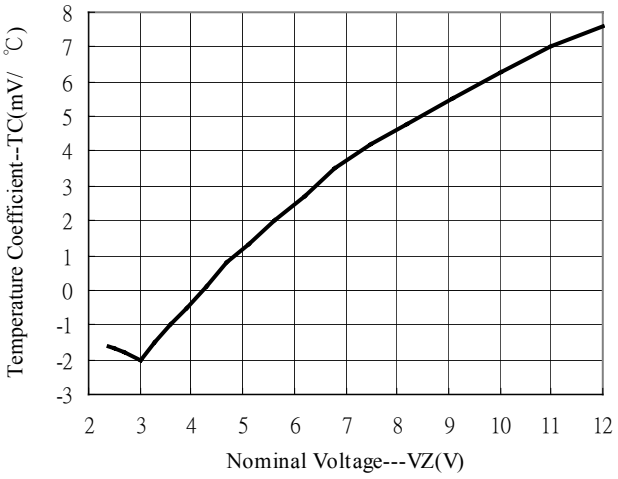
ZD5252B	K2	24	22.8	25.2	5.2	33	5.2	600	0.25	19.1	0.1	18
ZD5254B	K4	27	25.65	28.35	5.0	41	5.0	600	0.25	16.8	0.1	21
ZD5255B	K5	28	26.6	29.4	4.5	44	4.5	600	0.25	16.2	0.1	21
ZD5256B	M1	30	28.5	31.5	4.2	49	4.2	600	0.25	15.1	0.1	23
ZD5257B	M2	33	31.35	34.65	3.8	58	3.8	700	0.25	13.8	0.1	25
ZD5258B	M3	36	34.2	37.8	3.4	70	3.4	700	0.25	12.6	0.1	27
ZD5259B	M4	39	37.05	40.95	3.2	80	3.2	800	0.25	11.6	0.1	30
ZD5260B	M5	43	40.85	45.15	3	93	3	900	0.25	10.6	0.1	33

Recommended Soldering Footprint

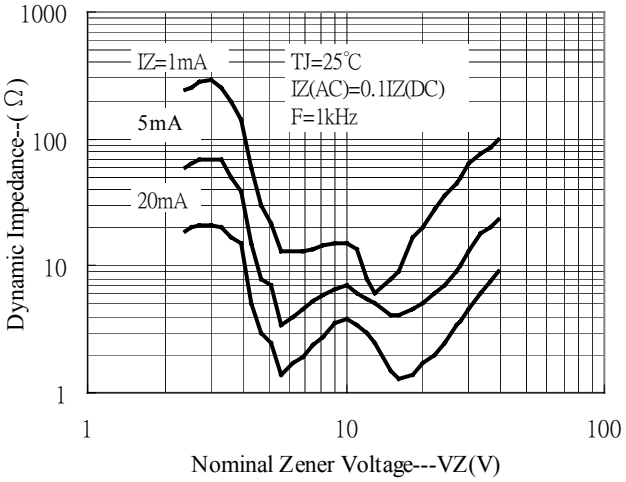


Typical Characteristics

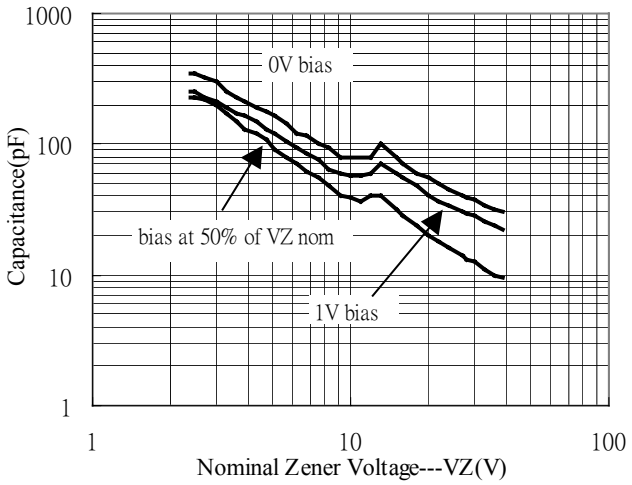
Typical Temperature Coefficient



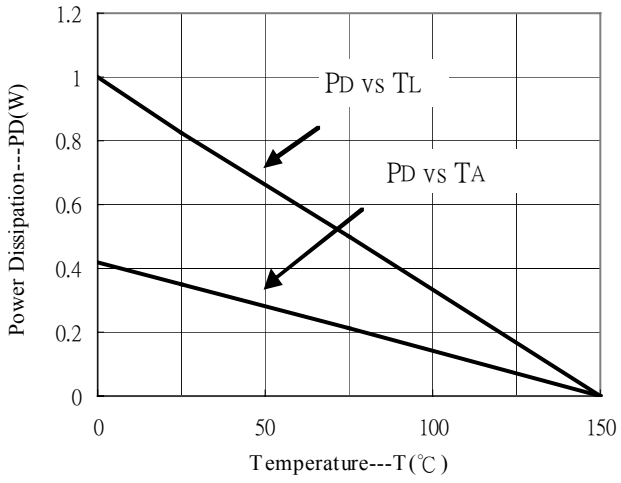
Dynamic Impedance



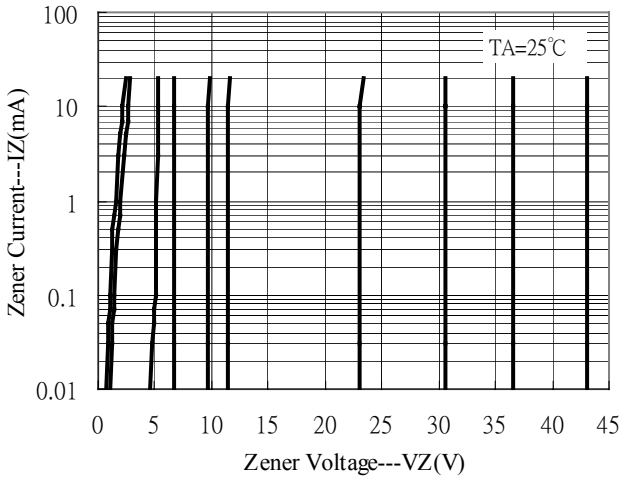
Typical Capacitance



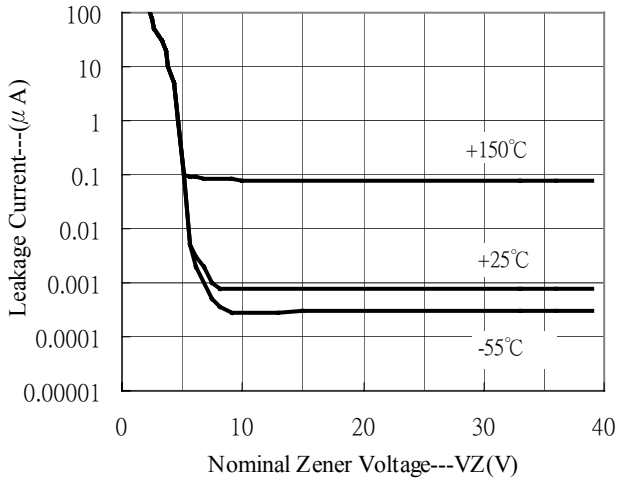
Power Derating Curve



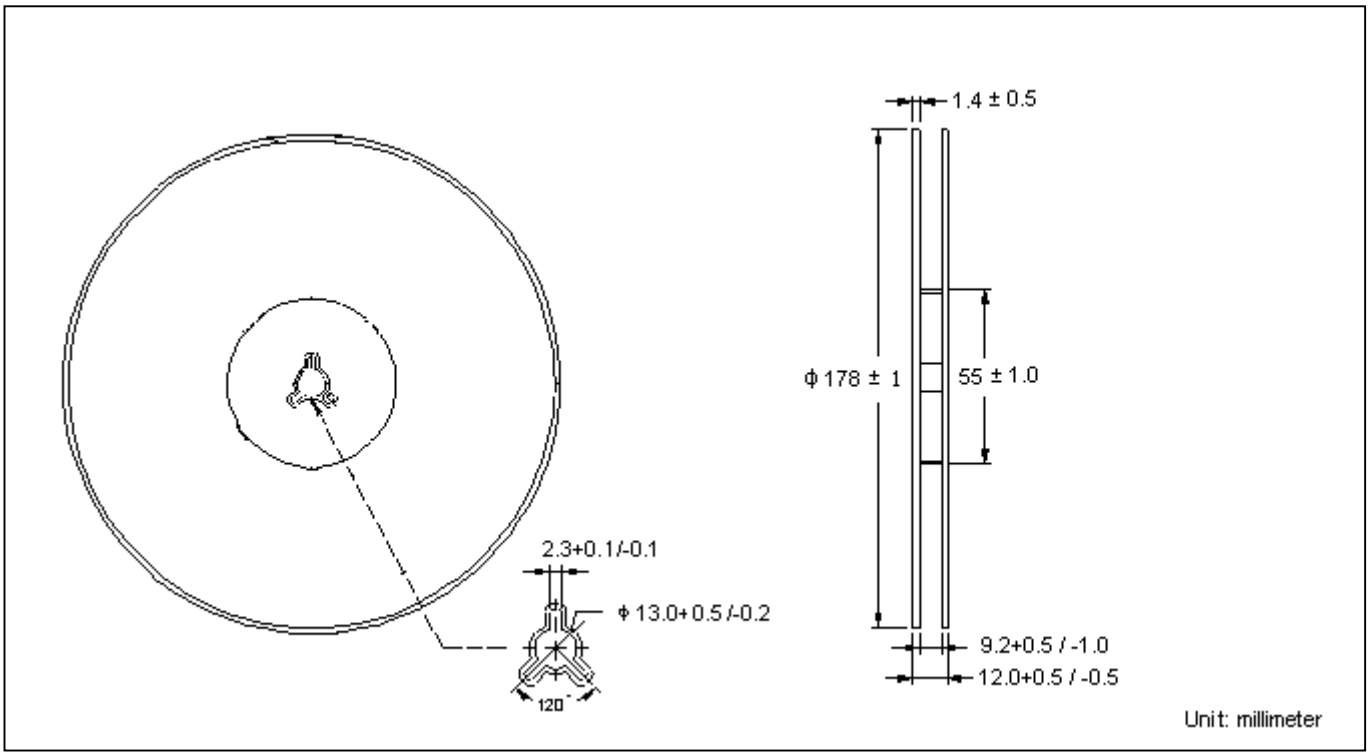
Zener Current vs Zener Voltage



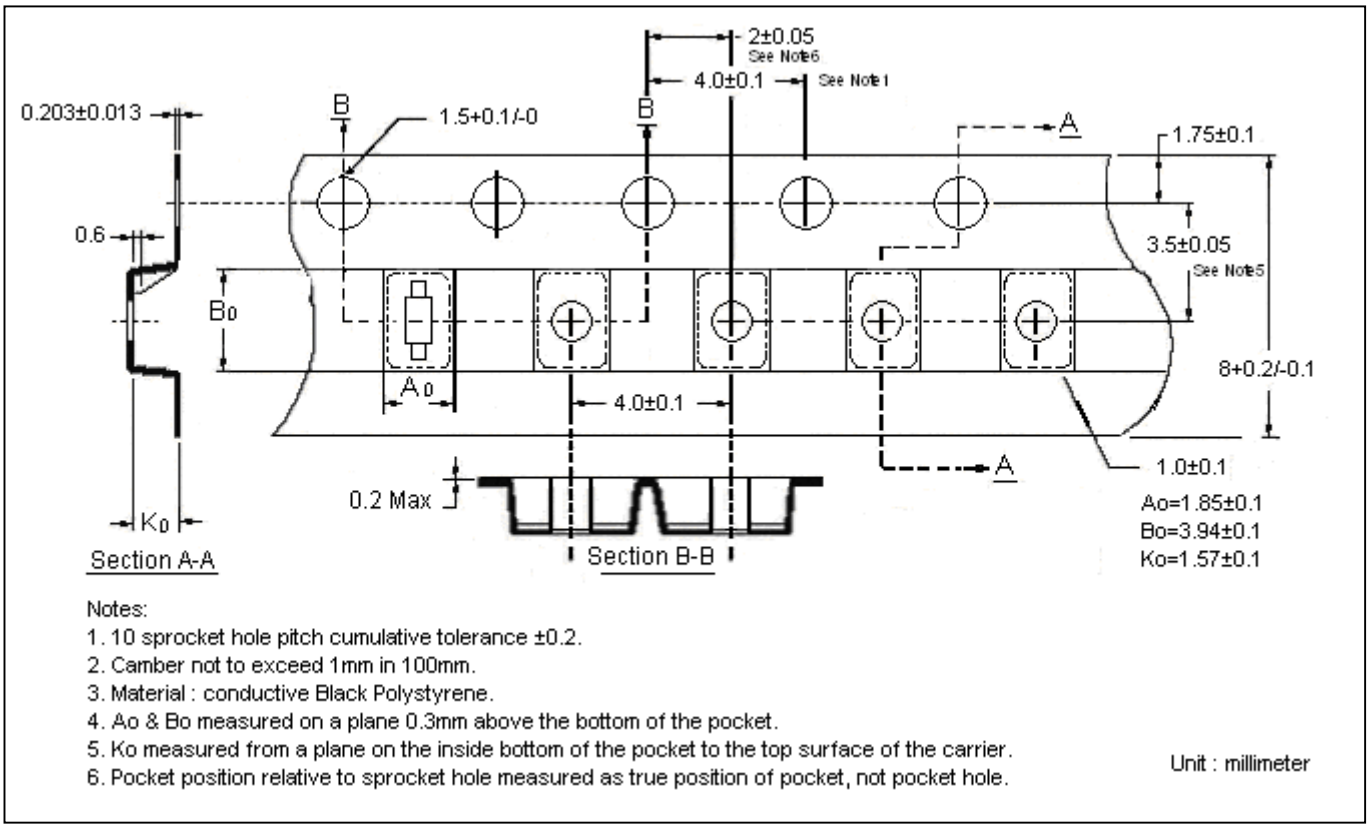
Typical Leakage Current



Reel Dimension



Carrier Tape Dimension



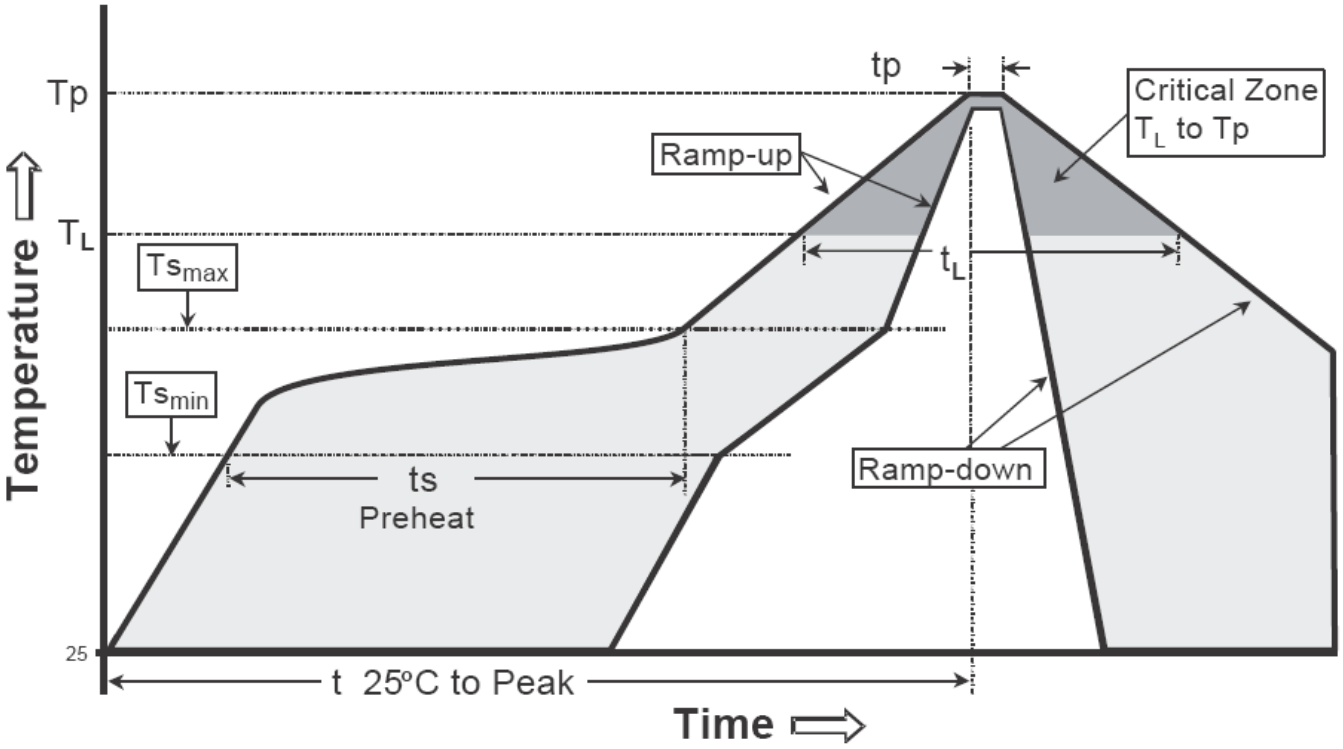
Notes:
1. 10 sprocket hole pitch cumulative tolerance ±0.2.
2. Camber not to exceed 1mm in 100mm.
3. Material : conductive Black Polystyrene.
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

Unit : millimeter

Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

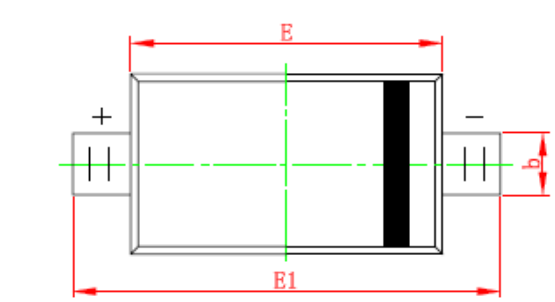
Recommended temperature profile for IR reflow

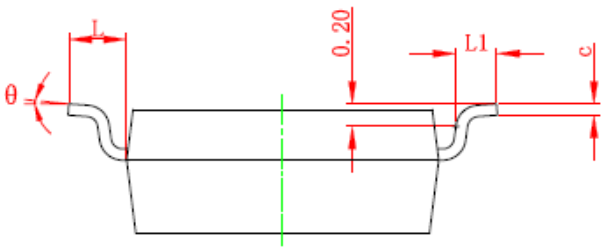


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(Ts min) −Temperature Max(Ts max) −Time(ts min to ts max)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (TL) − Time (tL)	 183°C 60-150 seconds	 217°C 60-150 seconds
Peak Temperature(TP)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

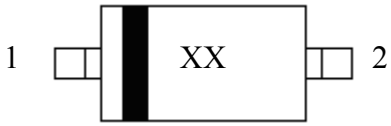
Note : All temperatures refer to topside of the package, measured on the package body surface.

SOD-123 Dimension





Marking:



2-Lead SOD-123 Plastic
Surface Mounted Package
CYStek Package Code: SH

Style: Pin 1.Cathode 2.Anode

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049	E	2.600	2.800	0.102	0.110
A1	0.000	0.100	0.000	0.004	E1	3.550	3.850	0.140	0.152
A2	1.050	1.115	0.041	0.045	L	0.500 REF		0.020 REF	
b	0.450	0.650	0.018	0.026	L1	0.250	0.450	0.010	0.018
c	0.080	0.150	0.003	0.006	θ	0°	8°	0°	8°
D	1.500	1.700	0.059	0.067					

Notes: 1.Controlling dimension : millimeters.
2.Lead thickness specified per L/F drawing with solder plating.
3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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