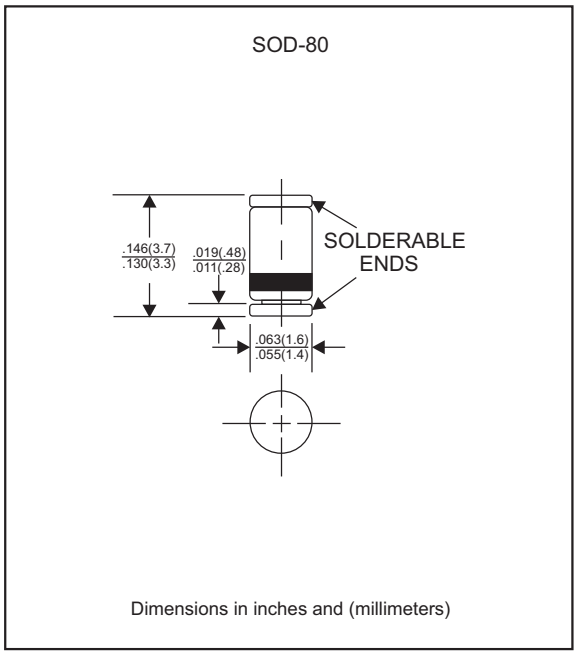
RLZ SERIES

500mW Surface Mount Zener Diodes - 2.0V-39V

Package outline



Features

- For use as low voltage stabilizer or voltage reference
- Silicon epitaxial planar chip struction
- High reliability
- Glass sealed envelope
- Small surface mounting type
- Lead-free parts for green partner meet RoHS
- Environment substance directive request

Mechanical data

- Case : Glass Mini-Melf / SOD-80
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.03 gram

Maximum ratings (at T_A=25°C unless otherwise noted)

Parameter	Conditions	Symbol	MIN.	TYP.	MAX.	Unit
Forward voltage	I_F=100mA	V_F			1.0	V
Power dissipation at T_A=25°C		P_D			500	mW
Thermal resistance		$R_{\theta JA}$			500	K/W
Operating junction temperature range		T_J	-65		+175	°C
Storage temperature range		T_{STG}	-65		+175	°C

Electrical characteristics (at T_A=25°C unless otherwise noted)

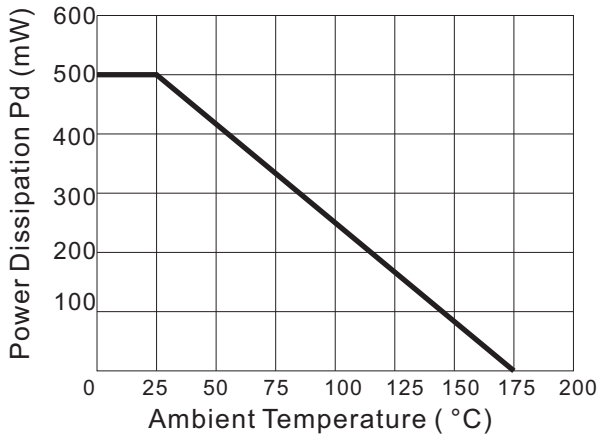
Type No.	Zener voltage				Zener impedance				Leakage current	
	Rank	V_Z (Volt)@ I_{ZT}			Z_{ZT} @ I_{ZT}		Z_{ZK} @ I_{ZK}		I_R	
		Min.	Max.	I_{ZT}(mA)	Max.（Ω）	I_{ZT}(mA)	Max.（Ω）	I_{ZK}(mA)	Max. (μA)	V_R(Volts)
RLZ2.0	A B	1.88 2.02	2.10 2.20	20	140	20	2000	1	120	0.5
RLZ2.2	A B	2.12 2.22	2.30 2.41	20	120	20	2000	1	120	0.7
RLZ2.4	A B	2.33 2.43	2.52 2.63	20	100	20	2000	1	120	1.0
RLZ2.7	A B	2.54 2.69	2.75 2.91	20	100	20	1000	1	120	1.0
RLZ3.0	A B	2.85 3.01	3.07 3.22	20	80	20	1000	1	50	1.0
RLZ3.3	A B	3.16 3.32	3.38 3.53	20	70	20	1000	1	20	1.0
RLZ3.6	A B	3.46 3.60	3.69 3.84	20	60	20	1000	1	10	1.0
RLZ3.9	A B	3.74 3.89	4.01 4.16	20	50	20	1000	1	5	1.0
RLZ4.3	A B C	4.04 4.17 4.30	4.29 4.43 4.57	20	40	20	1000	1	5	1.0
RLZ4.7	A B C	4.44 4.55 4.68	4.68 4.80 4.93	20	25	20	900	1	5	1.0
RLZ5.1	A B C	4.81 4.94 5.09	5.07 5.20 5.37	20	20	20	800	1	5	1.5
RLZ5.6	A B C	5.28 5.45 5.61	5.55 5.73 5.91	20	13	20	500	1	5	2.5
RLZ6.2	A B C	5.78 5.96 6.12	6.09 6.27 6.44	20	10	20	300	1	5	3.0
RLZ6.8	A B C	6.29 6.49 6.66	6.63 6.83 7.01	20	8	20	150	0.5	2	3.5
RLZ7.5	A B C	6.85 7.07 7.29	7.22 7.45 7.67	20	8	20	120	0.5	0.5	4.0
RLZ8.2	A B C	7.53 7.78 8.03	7.92 8.19 8.45	20	8	20	120	0.5	0.5	5.0
RLZ9.1	A B C	8.29 8.57 8.83	8.73 9.01 9.30	20	8	20	120	0.5	0.5	6.0
RLZ10	A B C D	9.12 9.41 9.70 9.94	9.59 9.90 10.20 10.44	20	8	20	120	0.5	0.2	7.0
RLZ11	A B C	10.18 10.50 10.82	10.71 11.05 11.38	10	10	10	120	0.5	0.2	8.0
RLZ12	A B C	11.13 11.44 11.74	11.71 12.03 12.35	10	12	10	110	0.5	0.2	9.0
RLZ13	A B C	12.11 12.55 12.99	12.75 13.21 13.66	10	14	10	110	0.5	0.2	10
RLZ15	A B C	13.44 13.89 14.35	14.13 14.62 15.09	10	16	10	110	0.5	0.2	11
RLZ16	A B C	14.80 15.25 15.69	15.57 16.04 16.51	10	18	10	150	0.5	0.2	12
RLZ18	A B C	16.22 16.82 17.42	17.06 17.70 18.33	10	23	10	150	0.5	0.2	13
RLZ20	A B C D	18.20 18.63 19.23 19.72	18.96 19.59 20.22 20.72	10	28	10	200	0.5	0.2	15

Electrical characteristics (at T_A=25°C unless otherwise noted)

Type No.	Zener voltage				Zener impedance				Leakage current	
	Rank	V_Z (Volt)@ I_{ZT}			Z_{ZT} @ I_{ZT}		Z_{ZK} @ I_{ZK}		I_R	
		Min.	Max.	I_{ZT}(mA)	Max.（Ω）	I_{ZT}(mA)	Max.（Ω）	I_{ZK}(mA)	Max. (μA)	V_R(Volts)
RLZ22	A B C D	20.15 20.64 21.08 21.52	21.20 21.71 22.17 22.63	5	30	5	200	0.5	0.2	17
RLZ24	A B C D	22.05 22.61 23.12 23.63	23.18 23.77 24.13 24.85	5	35	5	200	0.5	0.2	19
RLZ27	A B C D	24.26 24.97 25.63 26.29	25.52 26.26 26.95 27.64	5	45	5	250	0.5	0.2	21
RLZ30	A B C D	26.99 27.70 28.36 29.02	28.39 29.13 29.82 30.51	5	55	5	250	0.5	0.2	23
RLZ33	A B C D	29.68 30.32 30.90 31.49	31.22 31.88 32.50 33.11	5	65	5	250	0.5	0.2	25
RLZ36	A B C D	32.14 32.79 33.40 34.01	33.79 34.49 35.13 35.77	5	75	5	250	0.5	0.2	27
RLZ39	A B C D	34.68 35.36 36.00 36.63	36.47 37.19 37.85 38.52	5	85	5	250	0.5	0.2	30

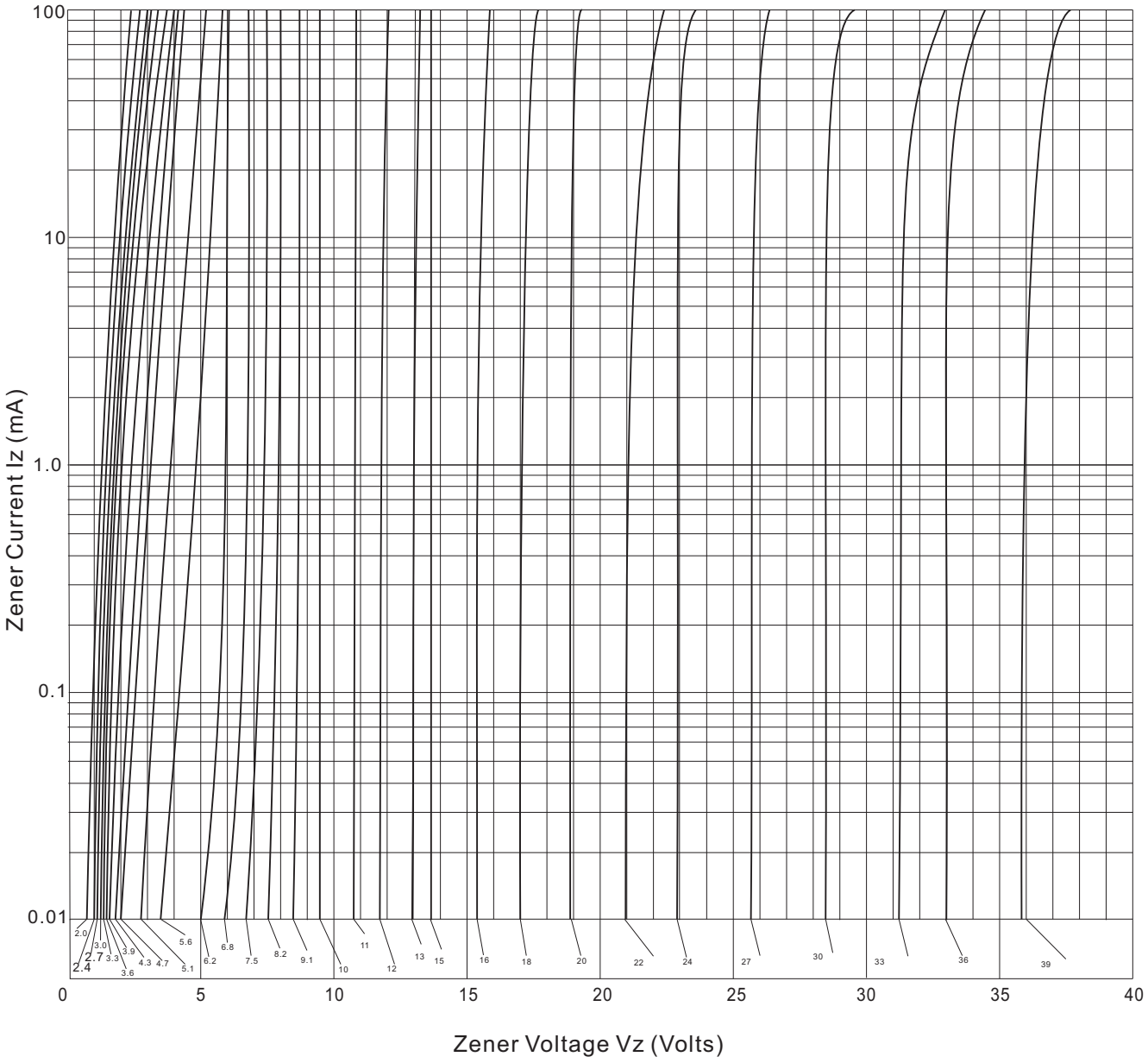
Rating and characteristic curves (RLZ Series)

Fig.1 - Power Dissipation Derating Curve



Rating and characteristic curves (RLZ Series)

Fig. 2 - Zener Voltage vs Zener Current Curve

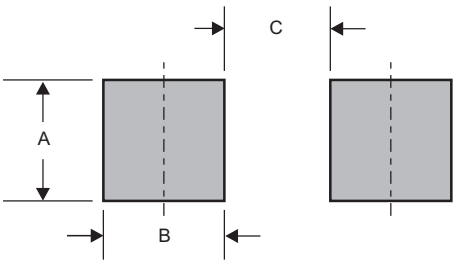


RLZ SERIES

Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Suggested solder pad layout

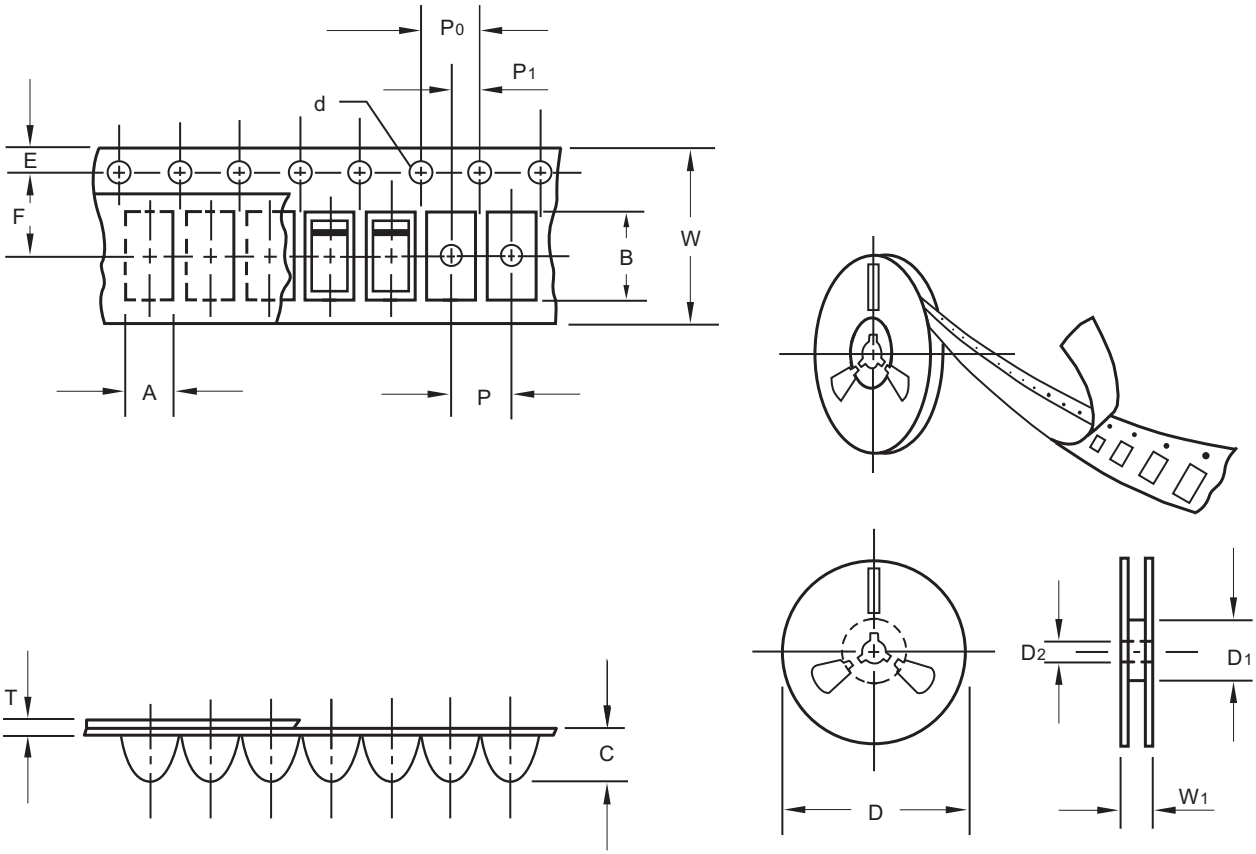


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-80	0.071 (1.80)	0.035 (0.90)	0.102 (2.60)

RLZ SERIES

Packing information



unit:mm

Item	Symbol	Tolerance	SOD-80
Carrier width	A	0.1	2.00
Carrier length	B	0.1	3.70
Carrier depth	C	0.1	1.80
Sprocket hole	d	0.1	1.50
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	50.00
Feed hole diameter	D_2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W_1	1.0	11.40

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

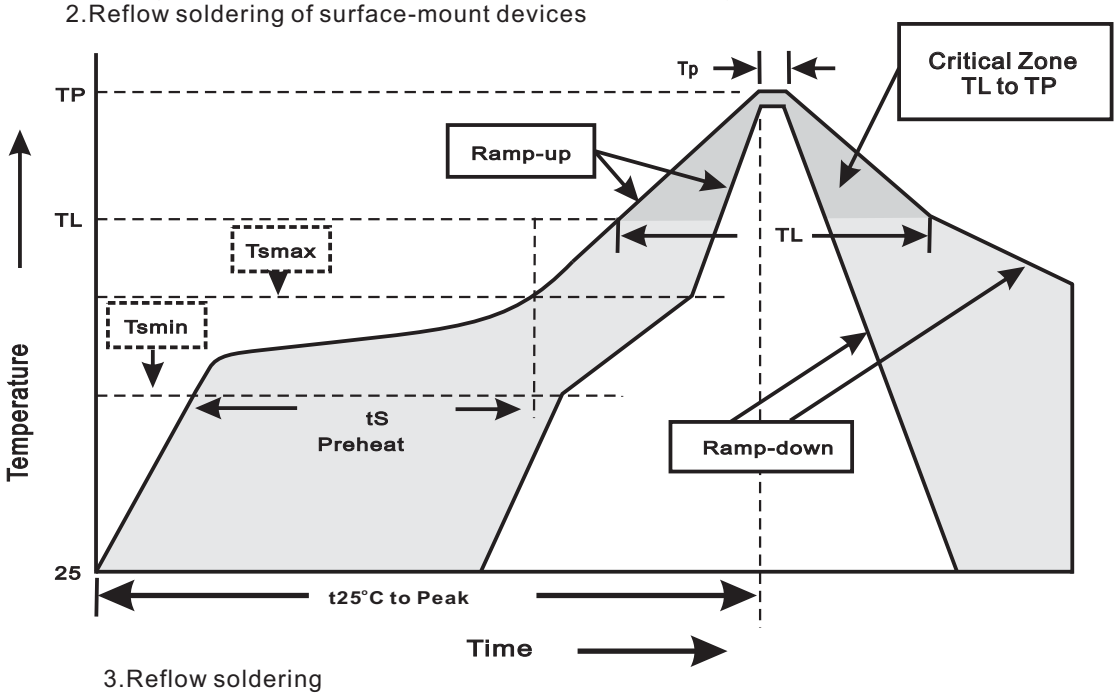
RLZ SERIES

Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOD-80	7"	2,500	4.0	25,000	183*123*183	178	382*257*387	200,000	9.6

Suggested thermal profiles for soldering processes

1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax to T_L -Ramp-upRate	 <3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	 217°C 60~260sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

RLZ SERIES

High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec.	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	V_z=V_z M_{IN}*80% at T_J=175°C for 168 hrs.	MIL-STD-750D METHOD-1038
4. Pressure Cooker	15P_{SIG} at T_A=121°C for 4 hrs.	JESD22-A102
5. Temperature Cycling	-55°C to +125°C dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
6. Humidity	at T_A=85°C, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
7. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031