LL4448 (MM4448)

List

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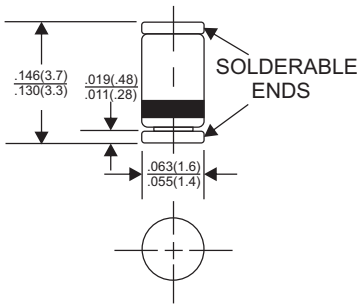
500mW Surface Mount Switching Diode- 100V

Features

- Fast speed switching.
- Silicon epitaxial planar chip structruction.
- Hermetically sealed glass.
- Small surface mounting type.
- Lead-free parts meet RoHS requirments.

Package outline

SOD-80



Dimensions in inches and (millimeters)

Mechanical data

- Case : GLASS MINI-MELF / SOD-80
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.03 gram

Maximum ratings and Electrical Characteristics (AT T_A=25°C unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Repetitive peak reverse voltage		V_{RRM}			100	V
Reverse voltage		V_R			75	V
Peak forward surge current	t_p = 1 us	I_{FSM}			2000	mA
Non-repetitive peak forward current		I_{FM}			450	mA
Average forward current		I_{FAV}			150	mA
Power dissipation		P_D			500	mW
Junction temperature		T_J	-55		+150	°C
Storage temperature		T_{STG}	-65		+150	°C
Forward voltage	I_F = 5 mA	V_F	0.62		0.72	V
	I_F = 100 mA	V_F			1.00	V
Reverse current	V_R = 20 V	I_R			25	nA
	V_R = 20 V , T_J = 150°C	I_R			50	uA
	V_R = 75 V	I_R			5.0	uA
Diode capacitance	V_R = 0 V , f = 1MHz	C_D			4.0	pF
Reverse recovery time	I_F = 10 mA , V_R = 6V , I_{RR} = 1mA , R_L = 100Ω	t_{rr}			4.0	ns

Rating and characteristic curves (LL4448 / MM4448)

Figure 1. Power Dissipation vs Ambient Temperature
Valid provided leads at a distance of 0.8mm from case are kept at ambient temperature

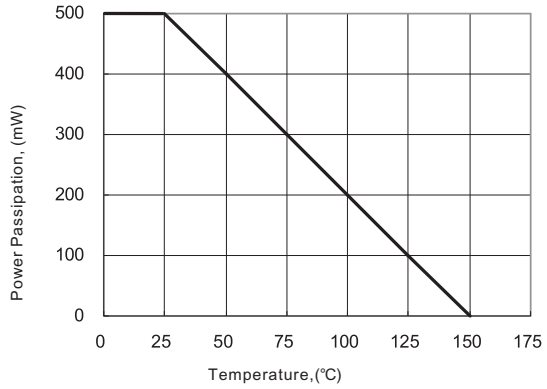


Figure 2. Total Capacitance

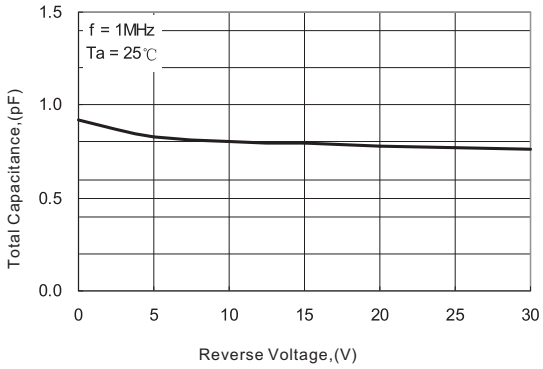


Figure 3. Reverse Voltage vs Reverse Current

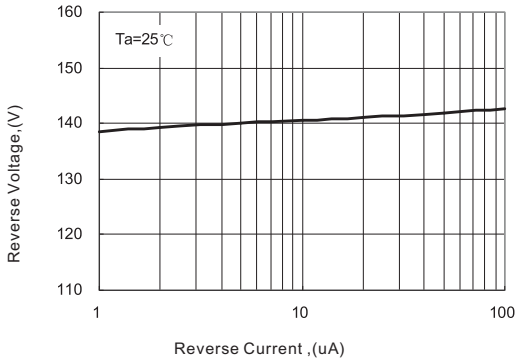


Figure 4. Reverse Current vs Reverse Voltage

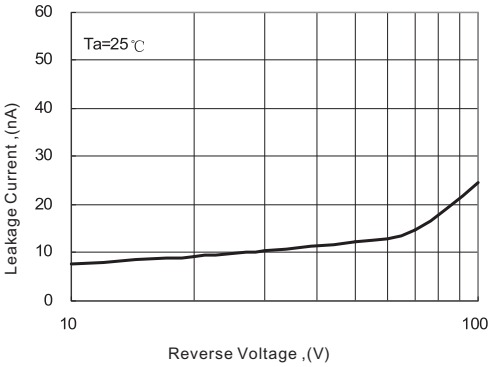


Figure 5. Forward Voltage vs Forward Current

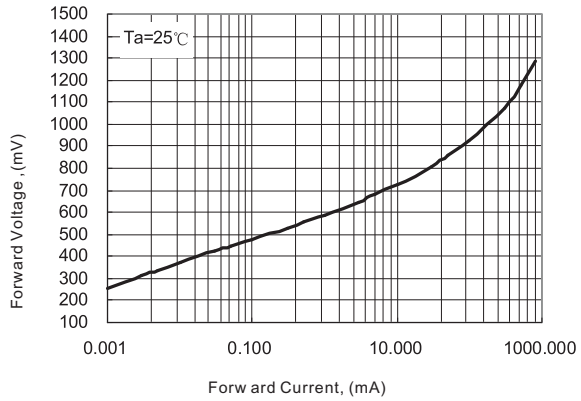
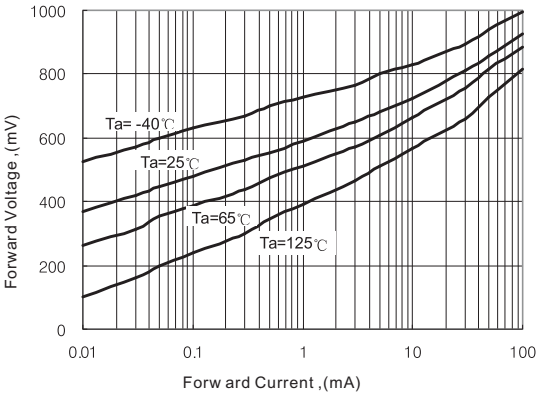


Figure 6. Forward Voltage vs Ambient Temperature



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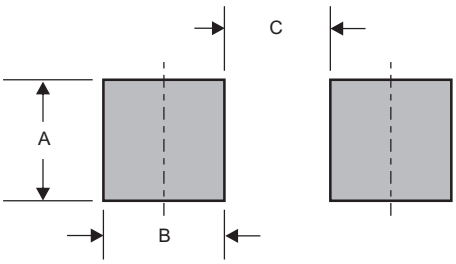
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
LL4448	cathode band only

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)

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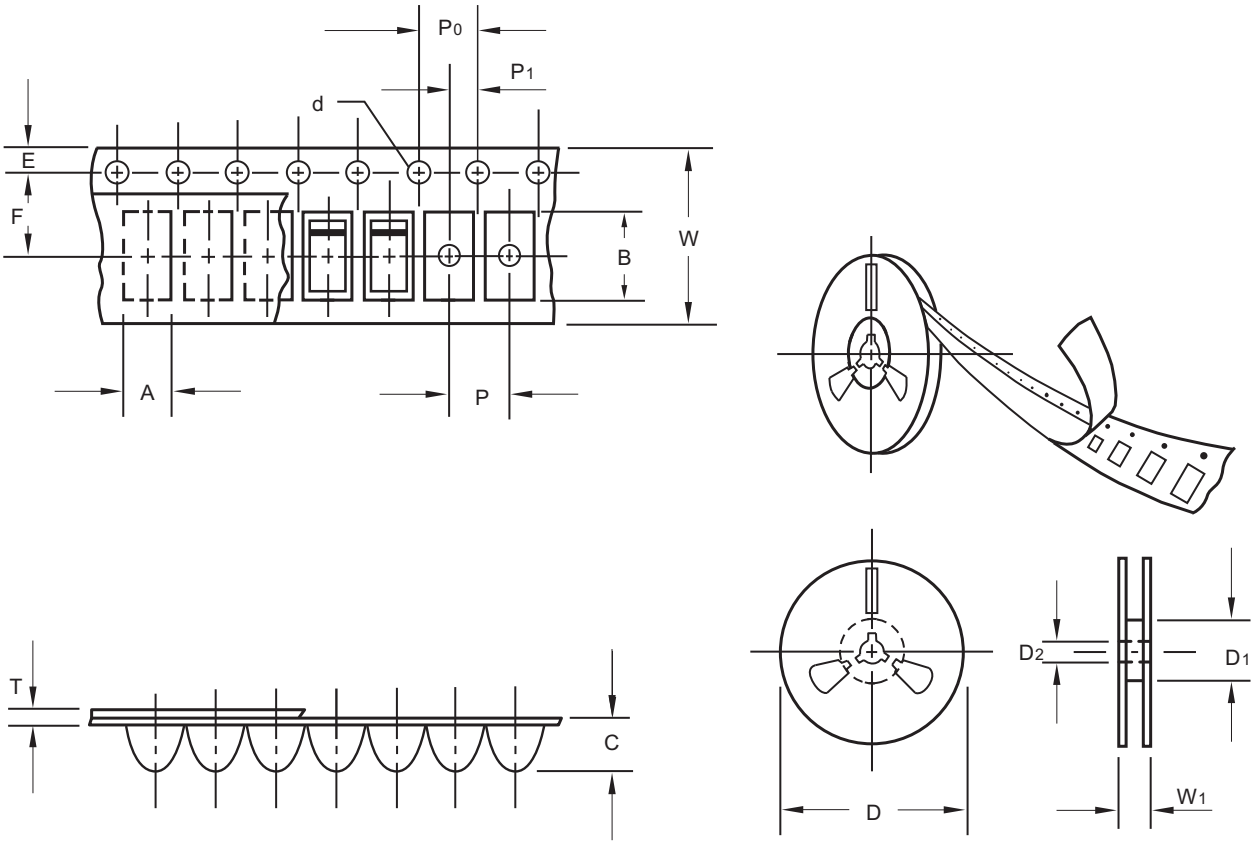
Packing information



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.

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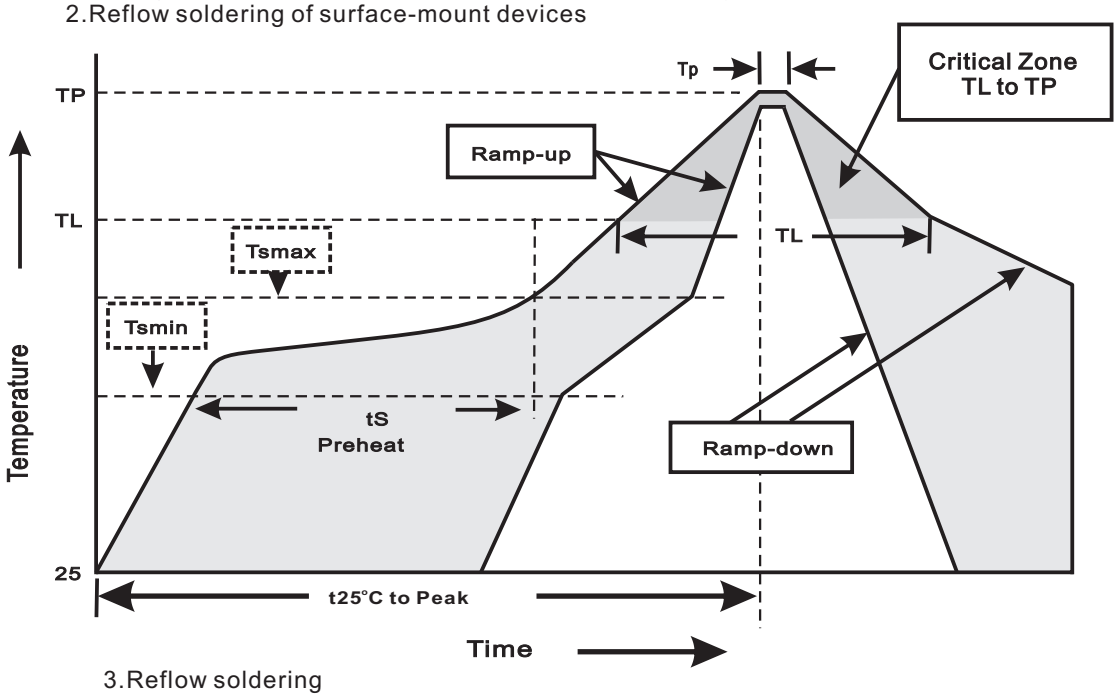
Reel packing

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*183*123	178	382*262*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

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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec. immerse body into solder 1/16"±1/32"	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_R=80% rate at T_J=150°C for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at T_A=25°C for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	T_A = 25°C, I_F = I_O On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles.	MIL-STD-750D METHOD-1036
6. Pressure Cooker	15P_{SIG} at T_A=121°C for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to +125°C dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Thermal Shock	0°C for 5 min. rise to 100°C for 5 min. total 10 cycles.	MIL-STD-750D METHOD-1056
9. Forward Surge	Peak forward surge current t_p = 1 us	MIL-STD-750D METHOD-4066-2
10. Humidity	at T_A=85°C, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
11. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031