

FEATURES

- * Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- * Low power loss, high efficiency
- * For use in low voltage high frequency inverters, free wheeling, and polarity protection applications
- * Guardring for over voltage protection
- * High temperature soldering guaranteed: 260°C/10 seconds at terminals

Mechanical Data

Case: SOD123-FL/MINI SMA

molded plastic over sky die

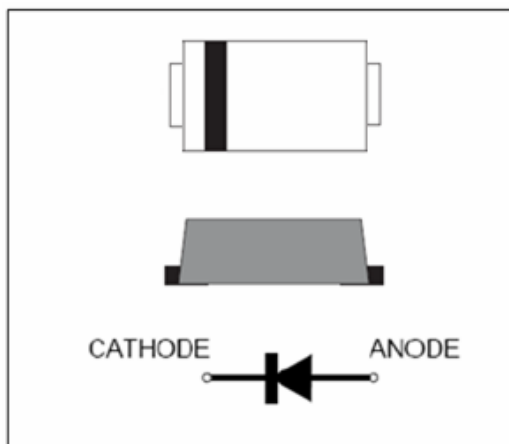
Terminals: Plated leads, solderable per MIL-STD-750, Method 2026

Polarity: Color band denotes cathode end

Mounting Position: Any

Weight: 0.0155 g

Handling precaution: None



We declare that the material of product is Halogen free (green epoxy compound)

1. Electrical Characteristic

Maximum & Thermal Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

Parameter Symbol	symbol	LMBR0520FT1G	LMBR0530FT1G	LMBR0540FT1G	Unit
device marking code		052	053	054	
Maximum repetitive peak reverse voltage	V_{RRM}	20	30	40	V
Maximum RMS voltage	V_{RMS}	14	21	28	V
Maximum DC blocking voltage	V_{DC}	20	30	40	V
Maximum average forward rectified current at TC = 75°C	$I_{F(AV)}$	0.5			A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method)	I_{FSM}	30			A
Typical thermal resistance (Note 1)	$R_{\theta JA}$	85			°C/W
Operating junction temperature range	T_J	-55 to +125		-55 to +150	°C
storage temperature range	T_{STG}	-65 to +175			°C

Electrical Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

Parameter Symbol	symbol	LMBR0520FT1G	LMBR0530FT1G	LMBR0540FT1G	Unit
Maximum instantaneous forward voltage at ($I_F = 0.1$ A, $T_J = 25^\circ\text{C}$) ($I_F = 0.5$ A, $T_J = 25^\circ\text{C}$)	V_F	0.3 0.385	0.375 0.450	- 0.55	V
Maximum DC reverse current at rated DC blocking voltage $T_A = 25^\circ\text{C}$ $T_J = 100^\circ\text{C}$	I_R	0.25 8	0.130 10	0.04 10	mA
Typical junction capacitance at 4.0V, 1MHz	C_J	160			PF

NOTES:

1. 8.0mm² (.013mm thick) land areas

2. Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

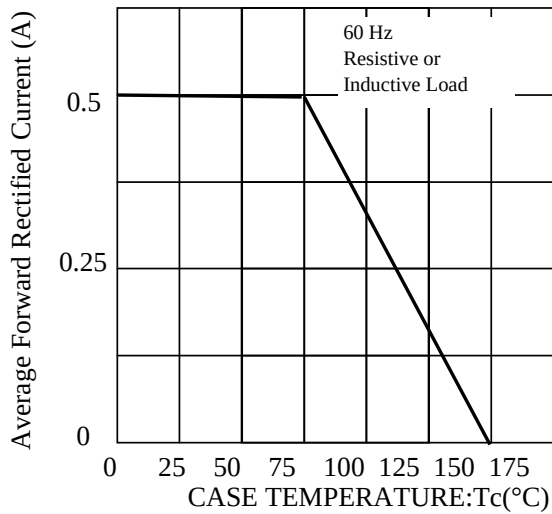


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

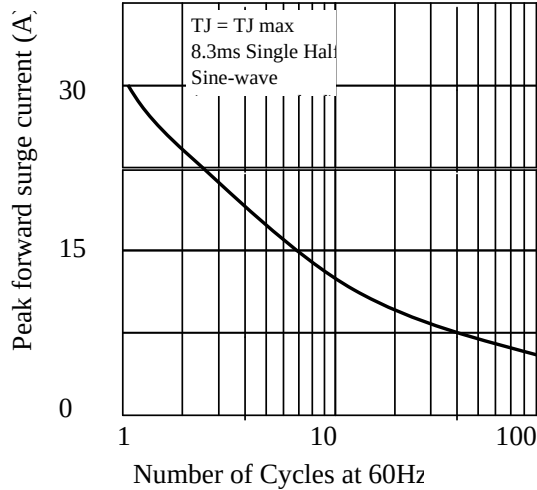


Fig. 3 - Typical Instantaneous Forward Characteristics

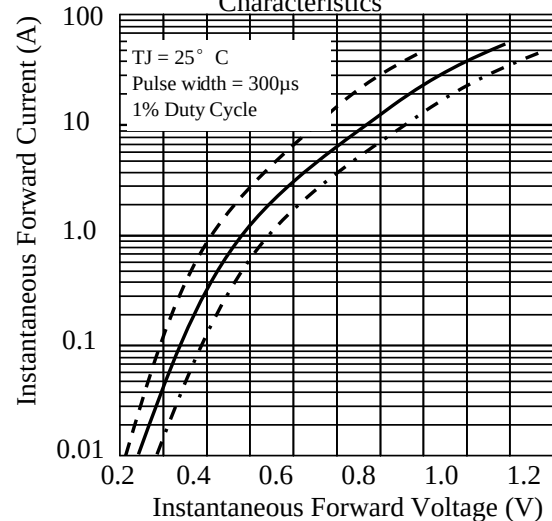


Fig. 4 - Typical Reverse Characteristics

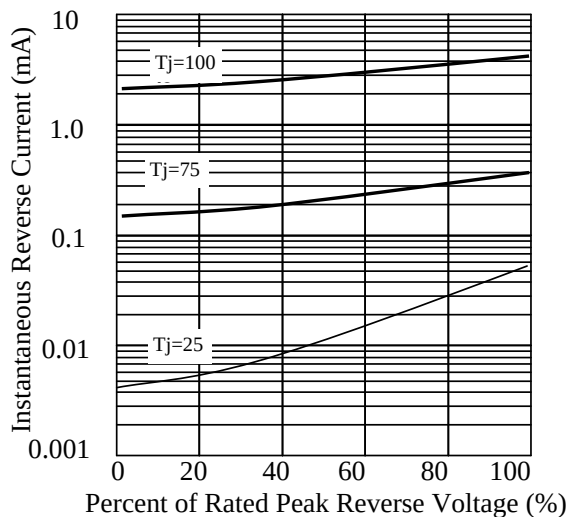


Fig. 5 - typical transient thermal impedance

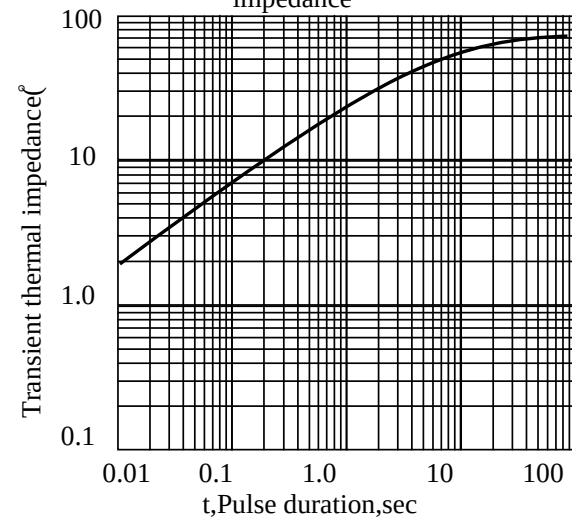
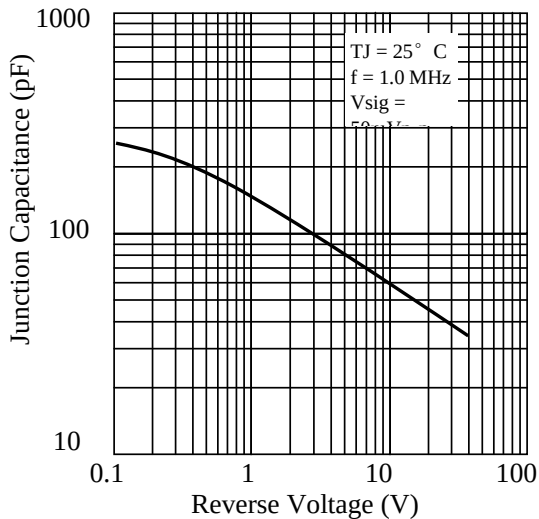
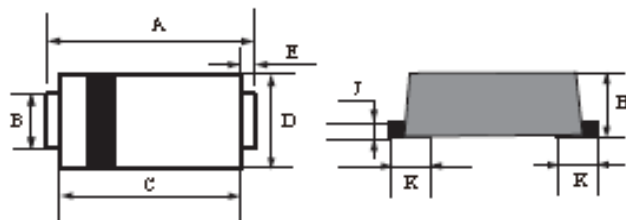


Fig. 6 - Typical Junction Capacitance



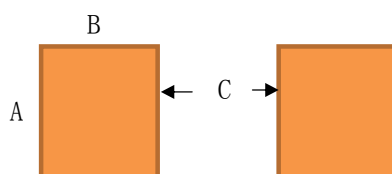
3. dimension:

SOD123-FL



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	3.5	3.9	0.138	0.159
B	0.75	0.95	0.029	0.037
C	2.6	3.0	0.103	0.119
D	1.6	2.0	0.063	0.079
E	0.45Typ		0.018Typ	
H	0.9	1.2	0.036	0.047
J	0.12	0.22	0.005	0.009
K	0.8Typ		0.032Typ	

Suggested solder pad layout



Dimensions in inches and (millimeters)

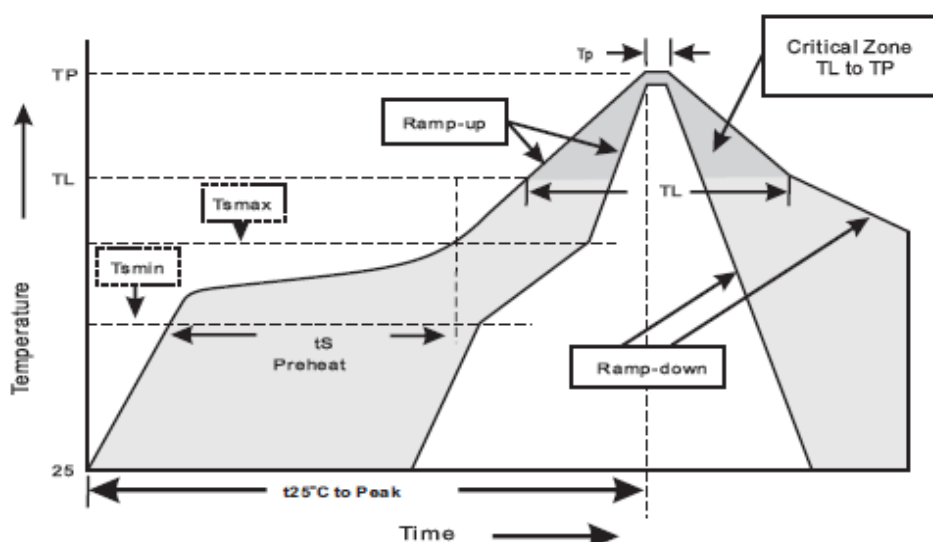
PACKAGE	A	B	C
SOD123-FL	0.044(1.10)	0.040(1.00)	0.079(2.00)

Reel packing

PACKAGE	REEL SIZE	REEL (PCS)	COMPONENT SPACING (mm)	BOX (pcs)	INNER BOX (mm)	REEL DIA. (mm)	CARTON SIZE (mm)	CARTON (PCS)	APPOX. GROSS WEIGHT (kg)
SOD123-FL	7"	3,000	4.0	30,000	183*183*123	178	382*262*387	240,000	8.7

4.Suggested thermal profile for soldering process

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



3. Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat <ul style="list-style-type: none"> - Temperature Min(T_{min}) - Temperature Max(T_{max}) - Time(min to max)(t_s) 	150°C 200°C 60~120sec
T _{max} to T _L <ul style="list-style-type: none"> - Ramp-up Rate 	<3sec
Time maintained above: <ul style="list-style-type: none"> - Temperature (T_L) - Time(t_L) 	217°C 60-260sec
Peak Temperature(T _P)	255 -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

5.High reliability test capabilities

Item Test	Condition	Reference
Solder Resistance	at 260±5°C for 10±2sec immerse body into solder 1/16" ± 1/32"	MIL-STD-750D METHOD-2031
Solderability	at 245±5°C for 5 sec	MIL-STD-202F METHOD-208
High Temperature Reverse Bias	V _R =80% rate at T _J =150°C for 168hrs	MIL-STD-750D METHOD-1038
Forward Operation Life	Rated average rectifier current T _A =25°C for 500hrs	MIL-STD-750D METHOD-1027
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
Pressure Cooker	15P _{SIG} at T _A =121°C for 4hrs	JESD22-A102
Temperature Cycling	-55°C to +125°C dwelled for 30 min. and transferred for 5min. Total 10 cycles	MIL-STD-750D METHOD-1051
Thermal Shock	0°C for 5min. Rise to 100°C for 5min. Total 10 cycles	MIL-STD-750D METHOD-1056
Forward Surge	8.3ms single half sine-wave superimposed on rated load,one surge	MIL-STD-750D METHOD-4066-2
Humidity	at T _A =85°C , RH=85% for 1000hrs	MIL-STD-750D METHOD-1021
High Temperature Storage Life	at 175°C for 1000hrs	MIL-STD-750D METHOD-1031