

# LMBR120FT1G thru LMBR1200FT1G

## Schottky Barrier Rectifiers

Reverse Voltage 20 to 200V Forward Current 1.0A

### 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

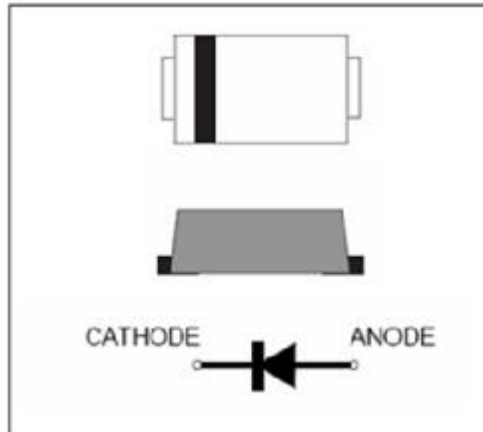
**Terminals:** Tin Plated, solderable per MIL-STD-750, Method 2026

**Polarity:** Color band denotes cathode end

**Mounting Position:** Any

**Weight:** 0.0155 g

**Handling precautin:**None



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

### 1.Electrical Characteristic

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

Parameter Symbol	symbol	LMBR 120FT1G	LMBR 130FT1G	LMBR 140FT1G	LMBR 150FT1G	LMBR 160FT1G	LMBR 180FT1G	LMBR 1100FT1G	LMBR 1150FT1G	LMBR 1200FT1G	Unit
device marking code		12	13	14	15	16	18	110	115	120	
Maximum repetitive peak reverse voltage	$V_{RRM}$	20	30	40	50	60	80	100	150	200	V
Maximum RMS voltage	$V_{RMS}$	14	21	28	35	42	56	70	105	140	V
Maximum DC blocking voltage	$V_{DC}$	20	30	40	50	60	80	100	150	200	V
Maximum average forward rectified current at $T_A = 75^\circ\text{C}$	$I_{F(AV)}$	1.0									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)	$R_{\theta JA}$ $R_{\theta Jc}$	110					40				$^\circ\text{C/W}$
Operating junction temperature range	$T_J$	-55 to +150									$^\circ\text{C}$
storage temperature range	$T_{STG}$	-65 to +175									$^\circ\text{C}$

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Maximum instantaneous forward voltage at( $I_F = 0.1\text{ A}$ , $T_J = 25^\circ\text{C}$ ) ( $I_F = 0.7\text{ A}$ , $T_J = 25^\circ\text{C}$ ) ( $I_F = 1.0\text{ A}$ , $T_J = 25^\circ\text{C}$ )	$V_F$	- - 0.5	0.35 0.45 0.50	- - 0.55	- - 0.7	0.85		0.9	0.92		V
Maximum DC reverse current at rated DC blocking voltage $T_A = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	$I_R$	0.5 10									mA
Typical junction capacitance at 4.0V, 1MHz	$C_J$	160									PF

#### NOTES:

1.  $8.0\text{mm}^2$  (.013mm thick) land areas

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

Fig. 1 - Forward Current Derating Curve

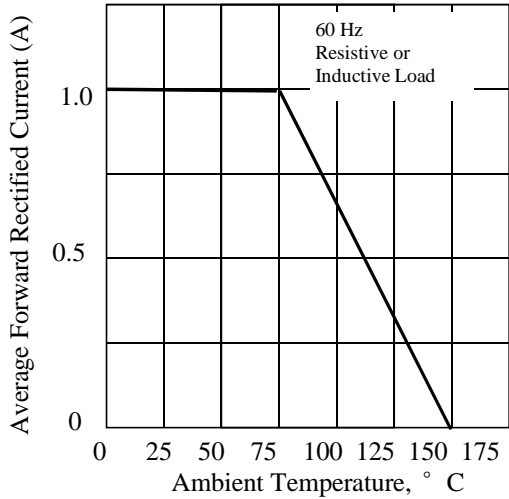


Fig. 2 - Maximum Non-repetitive Peak Forward Surge Current

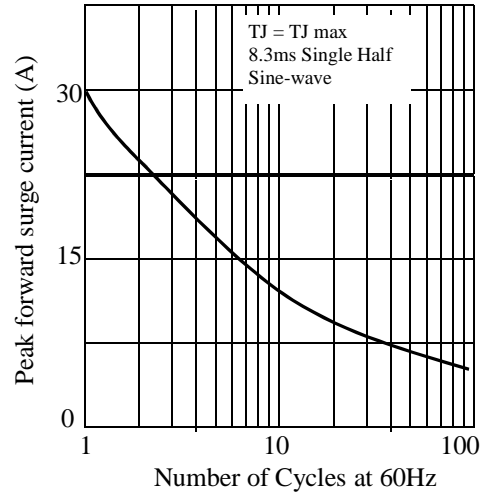


Fig. 3 - Typical Instantaneous Forward Characteristics

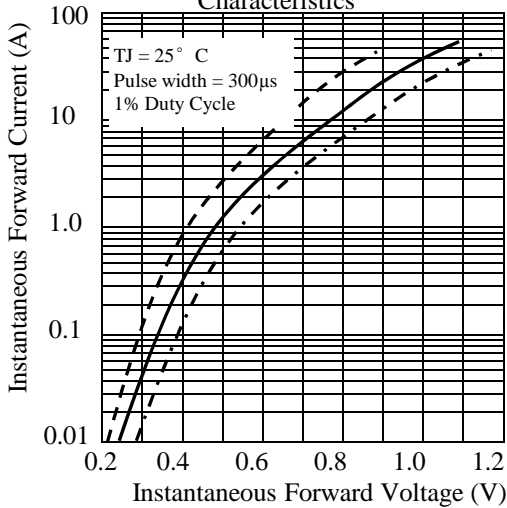


Fig. 4 - Typical Reverse Characteristics

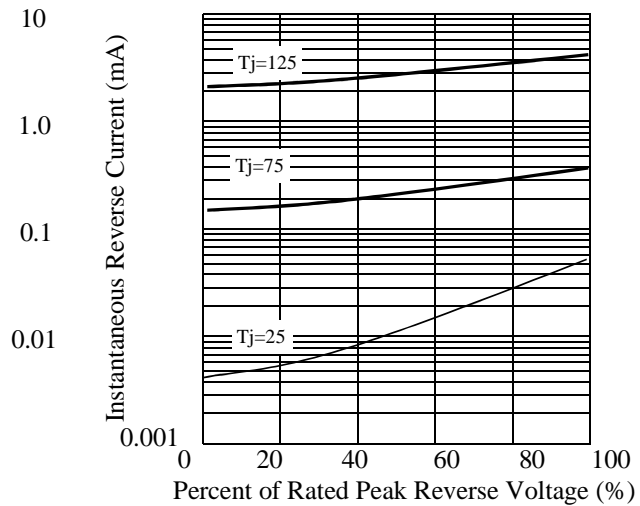


Fig. 5 - typical transient thermal impedance

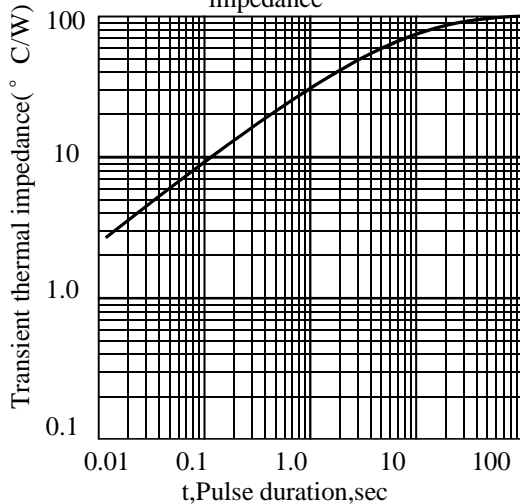
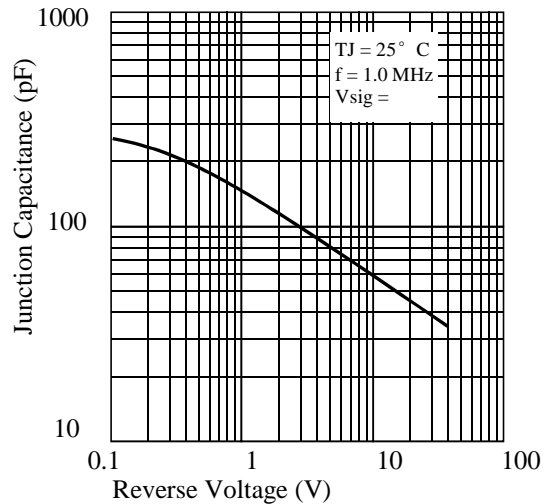


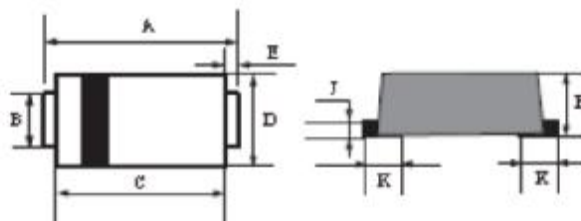
Fig. 6 - Typical Junction Capacitance



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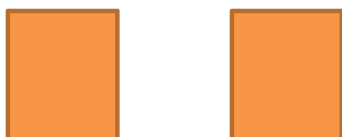
### 3. dimension:

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

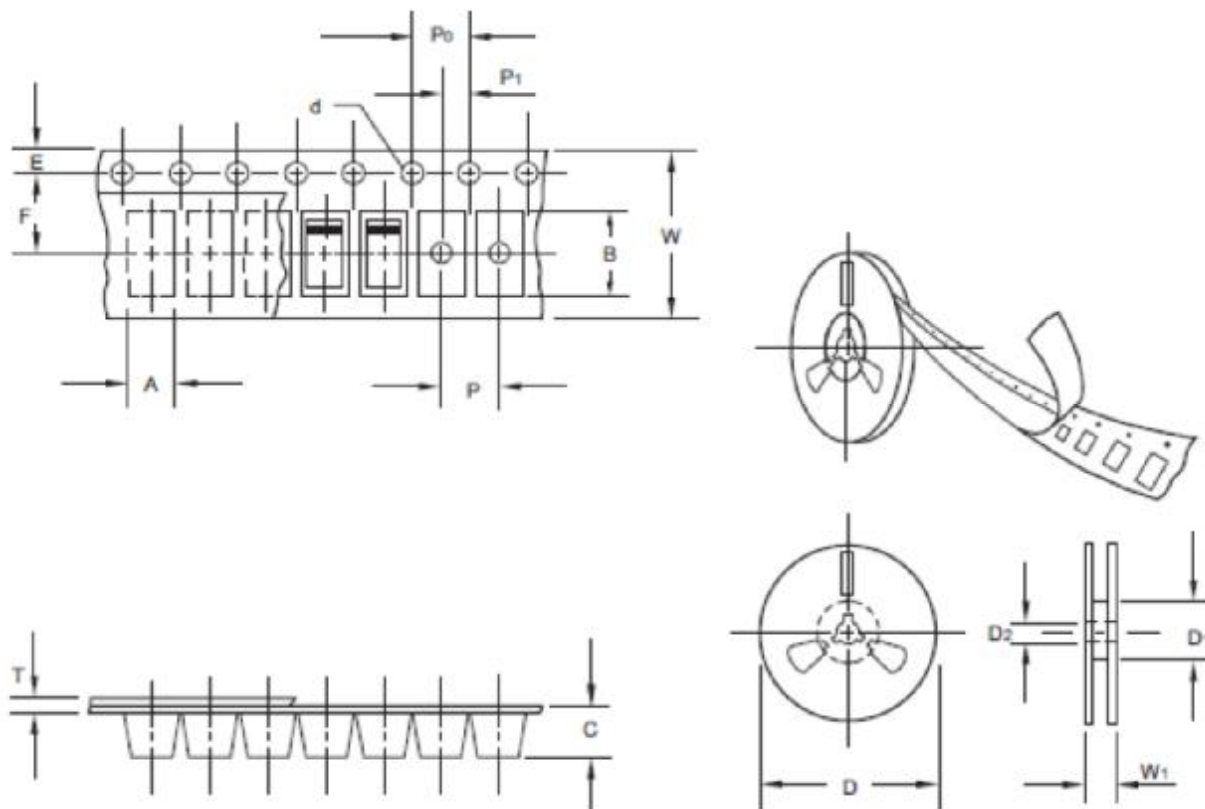


Dimensions in inches and (millimeters)

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

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### 4.Packing information



Unit : mm

Item	Symbol	tolerance	SOD123-FL
Carrier width	A	0.1	2.00
Carrier length	B	0.1	3.85
Carrier depth	C	0.1	1.10
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D <sub>1</sub>	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D <sub>1</sub>	min	62.00
Feed hole diameter	D <sub>2</sub>	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
Spocket hole pitch	P <sub>0</sub>	0.1	4.00
Embossment center	P <sub>1</sub>	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W <sub>1</sub>	1.0	11.40

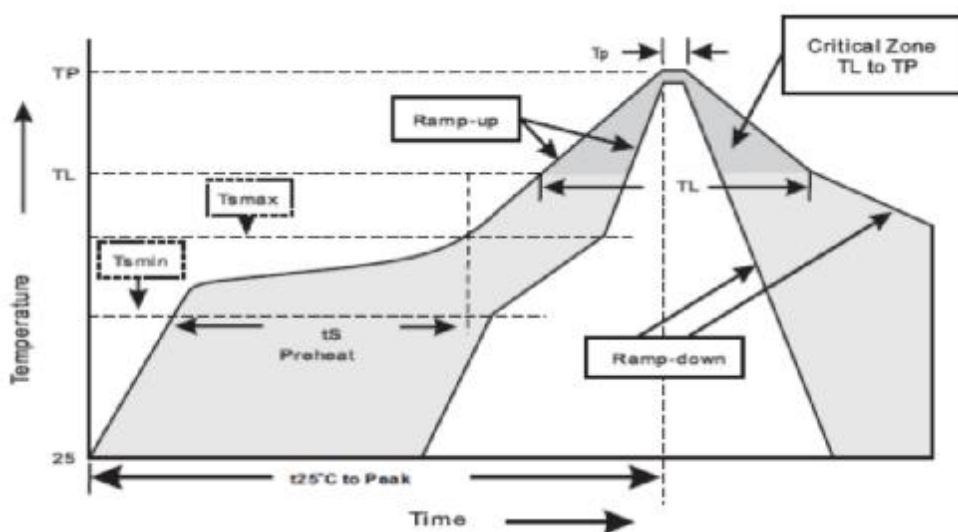
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Reel packing

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

## 5.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	
- Temperature Min( $T_{smin}$ )	150°C
- Temperature Max( $T_{smax}$ )	200°C
- Time(min to max)( $t_s$ )	60-120sec
$T_{smax}$ to $T_L$	
- Ramp-up Rate	<3sec
Time maintained above:	
- Temperature ( $T_L$ )	217°C
- Time( $t_L$ )	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

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### 6.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 <sub>R</sub> =80% rate at T <sub>j</sub> =150°C for 168hrs	MIL-STD-750D METHOD-1038
Forward Operation Life	Rated average rectifier current T <sub>A</sub> =25°C for 500hrs	MIL-STD-750D METHOD-1027
Intermittent Operation Life	T <sub>A</sub> =25°C , I <sub>F</sub> =I <sub>o</sub> 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 <sub>SIG</sub> at T <sub>A</sub> =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 <sub>A</sub> =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

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### 7. Update Record

版次	更新记录	更新作者	更新日期
1	第一版	周杰	2013.04.03