Surface Mount
Schottky Power Rectifier

Pb-Free package is available

LMBR130T1G



SOD–123

This device uses the Schottky Barrier principle with a large area metal−to−silicon power diode. Ideally suited for low voltage, high frequency rectification or as free wheeling and polarity protection diodes in surface mount applications where compact size and weight are critical to the system. This package also provides an easy to work with alternative to leadless 34 package style.

Features

- Guardring for Stress Protection
- Low Forward Voltage
- 125°C Operating Junction Temperature
- Epoxy Meets UL 94 V−0 @ 0.125 in
- Package Designed for Optimal Automated Board Assembly
- ESD Ratings: Machine Model, C;
  Human Body Model, 3
- Pb−Free Packages are Available

Mechanical Characteristics

- Reel Options: LMBR130T1G = 3,000 per 7 in reel/8 mm tape
  LMBR130T3G = 10,000 per 13 in reel/8 mm tape
- Device Marking: S3
- Polarity Designator: Cathode Band
- Weight: 11.7 mg (approximately)
- Case: Epoxy, Molded
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds

ORDERING INFORMATION

Device	Package	Shipping†
LMBR130T1G	SOD−123 (Pb−Free)	3000/Tape & Reel
LMBR130T3G	SOD−123 (Pb−Free)	10,000/Tape & Reel

LMBR130T1G

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	30	V
Average Rectified Forward Current (Rated V_R) T_L = 65°C	$I_{F(AV)}$	1.0	A
Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions, Halfwave, Single Phase, 60 Hz)	I_{FSM}	5.5	A
Storage Temperature Range	T_{stg}	−65 to +125	°C
Operating Junction Temperature	T_J	−65 to +125	°C
Voltage Rate of Change (Rated V_R)	dv/dt	1000	V/μs

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	230	°C/W
Thermal Resistance, Junction to Lead (Note 1)	$R_{\theta JL}$	108	°C/W

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. FR−4 or FR−5 = 3.5 × 1.5 inches using a 1 inch Cu pad.

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Typ	Max	Unit
Reverse Breakdown Voltage (I_R = 500 μA)	V_{BR}	30	–	V
Maximum Instantaneous Forward Voltage (Note 2) (I_F = 0.1 A, T_J = 25°C) (I_F = 0.7 A, T_J = 25°C) (I_F = 1.0 A, T_J = 25°C)	V_F	 – – 0.47	 0.35 0.45 –	V
Maximum Instantaneous Reverse Current (Note 2) (Rated DC Voltage, T_C = 25°C) (V_R = 5 V, T_C = 25°C)	I_R	 60 10		μA

2. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%.

LMBR130T1G

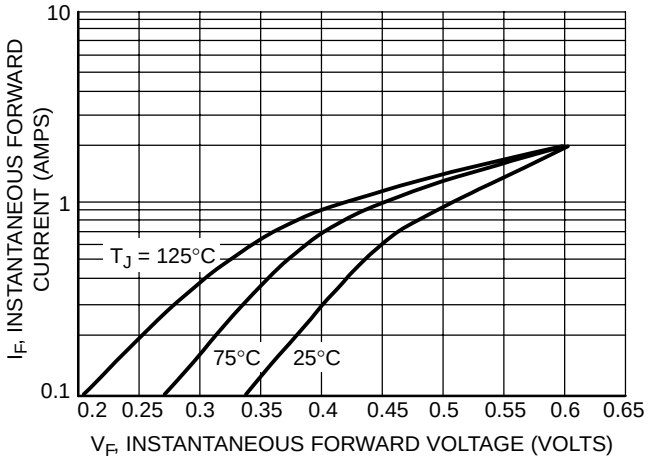


Figure 1. Maximum Forward Voltage

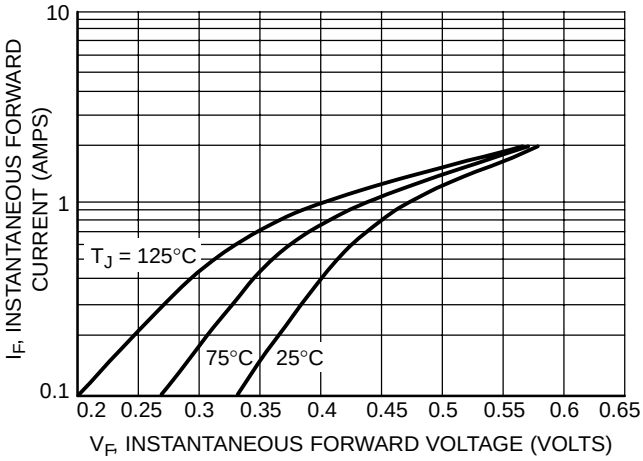


Figure 2. Typical Forward Voltage

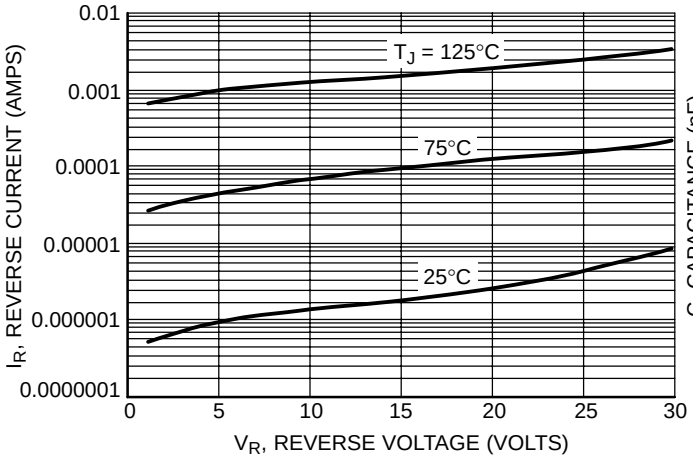


Figure 3. Typical Reverse Current

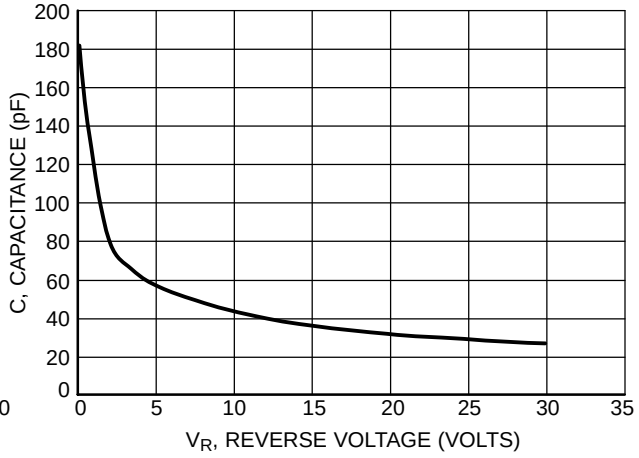


Figure 4. Typical Capacitance

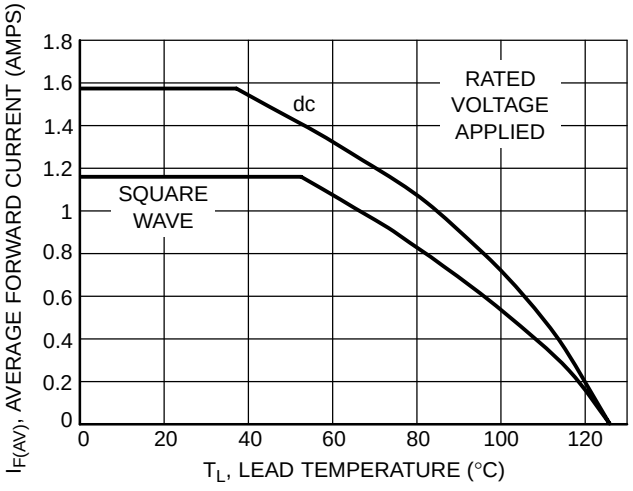


Figure 5. Current Derating, Lead, $R_{\theta JL}$ = 108°C/W

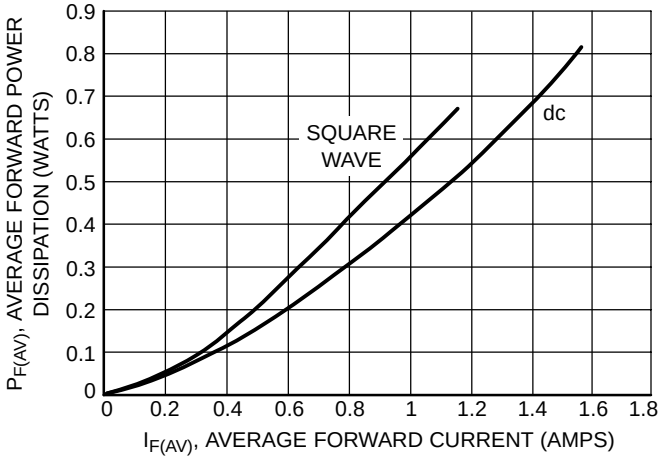
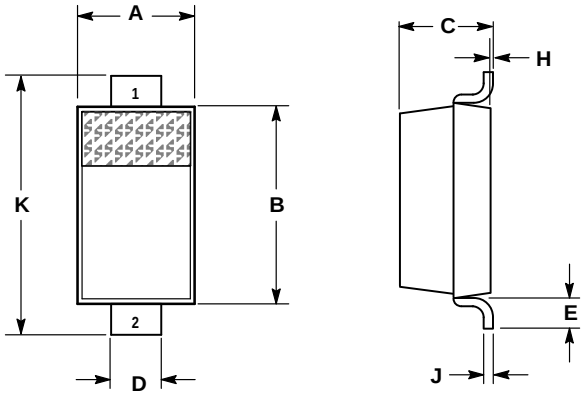


Figure 6. Forward Power Dissipation

LMBR130T1G

PACKAGE DIMENSIONS

SOD–123

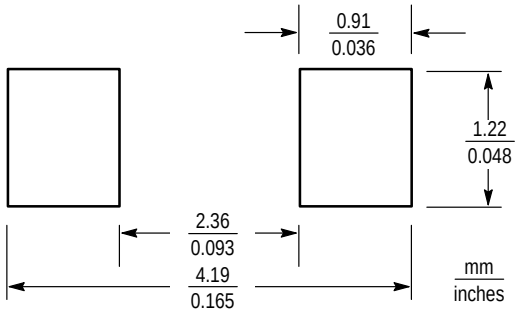


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.055	0.071	1.40	1.80
B	0.100	0.112	2.55	2.85
C	0.037	0.053	0.95	1.35
D	0.020	0.028	0.50	0.70
E	0.004	—	0.25	—
H	0.000	0.004	0.00	0.10
J	—	0.006	—	0.15
K	0.140	0.152	3.55	3.85

STYLE 1:
PIN 1. CATHODE
2. ANODE

RECOMMENDED FOOTPRINT FOR SOD–123



SOD–123