

# Surface Mount Schottky Power Rectifier

## Pb-Free package is available

The Schottky Power Rectifier employs the Schottky Barrier principle with a barrier metal that produces optimal forward voltage drop–reverse current tradeoff. 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 provides an alternative to the leadless 34 MELF style package. These state-of-the-art devices have the following features:

- Guardring for Stress Protection
- Very Low Forward Voltage (0.38 V Max @ 0.5 A, 25°C)
- 125°C Operating Junction Temperature
- Epoxy Meets UL94, VO at 1/8"
- Package Designed for Optimal Automated Board Assembly

### Mechanical Characteristics

- Reel Options: LMBR0520T1G = 3,000 per 7" reel/8 mm tape.  
LMBR0520T3G = 10,000 per 13" reel/8 mm tape.
- Device Marking: B2
- 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

## LMBR0520T1G



SOD-123

### MAXIMUM RATINGS

| Rating  | Symbol                          | Value       | Unit             |
|---|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                      | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 20          | Volts            |
| Average Rectified Forward Current (Rated $V_R$ ) $T_L = 90^\circ\text{C}$                                   | $I_{F(AV)}$                     | 0.5         | Amps             |
| Non-repetitive Peak Surge Current<br>(Surge applied at rated load conditions halfwave, single phase, 60 Hz) | $I_{FSM}$                       | 5.5         | Amps             |
| Storage Temperature   | $T_{stg}$                       | -65 to +125 | °C               |
| Operating Junction Temperature  | $T_J$                           | -65 to +125 | °C               |
| Voltage Rate of Change (Rated $V_R$ )   | $dv/dt$                         | 1000        | V/ $\mu\text{s}$ |

### THERMAL CHARACTERISTICS

|  |                 |     |      |
|--|-----------------|-----|------|
| Thermal Resistance — Junction to Ambient (1) | $R_{\theta JA}$ | 340 | °C/W |
| Thermal Resistance — Junction to Lead        | $R_{\theta JL}$ | 150 | °C/W |

### ELECTRICAL CHARACTERISTICS

|   |       |                                       |                           |       |
|---|-------|---------------------------------------|---------------------------|-------|
| Maximum Instantaneous Forward Voltage (2)<br>( $i_F = 0.1$ Amps)<br>( $i_F = 0.5$ Amps)   | $V_F$ | $T_J = 25^\circ\text{C}$              | $T_J = 100^\circ\text{C}$ | Volts |
|   |       | 0.300<br>0.385                        | 0.220<br>0.330            |       |
| Maximum Instantaneous Reverse Current (2)<br>( $V_R = 10$ V)<br>(Rated dc Voltage = 20 V) | $I_R$ | $T_J = 25^\circ\text{C}$              | $T_J = 100^\circ\text{C}$ | mA    |
|   |       | 75 $\mu\text{A}$<br>250 $\mu\text{A}$ | 5 mA<br>8 mA              |       |

(1) FR-4 or FR-5 = 3.5 x 1.5 inches using the Motorola minimum recommended footprint.

(2) Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

### LMBR0520T1G

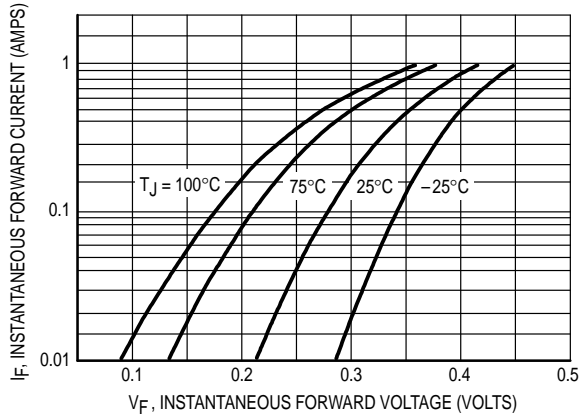


Figure 1. Typical Forward Voltage

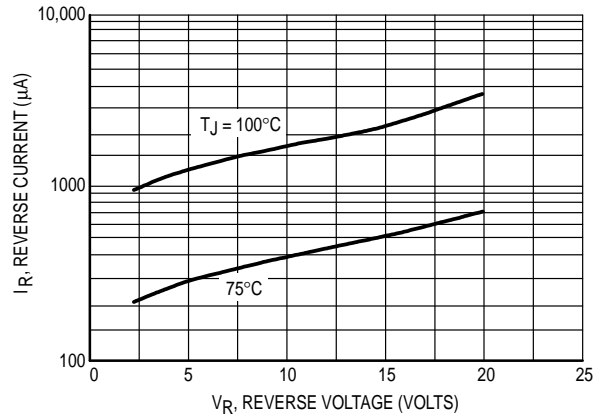


Figure 2. Typical Reverse Current

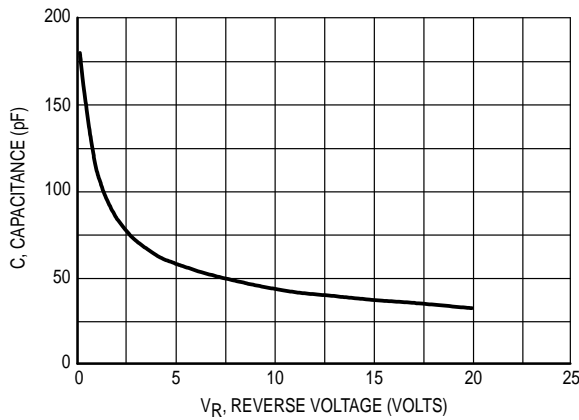


Figure 3. Typical Capacitance

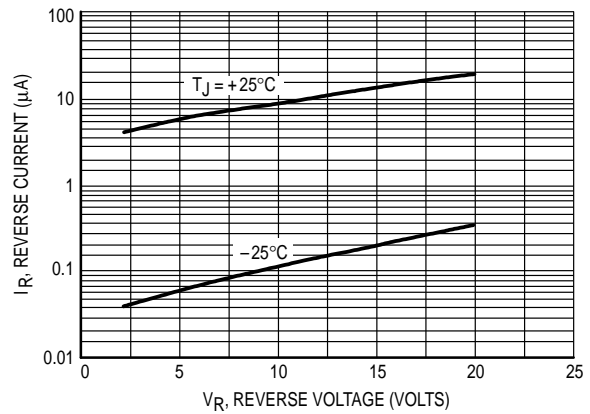


Figure 4. Typical Reverse Current

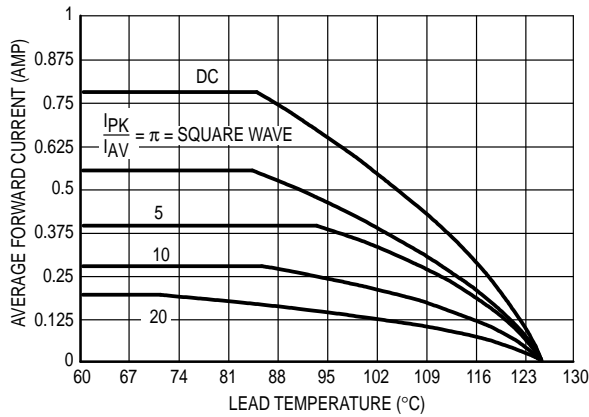


Figure 5. Current Derating (Lead)

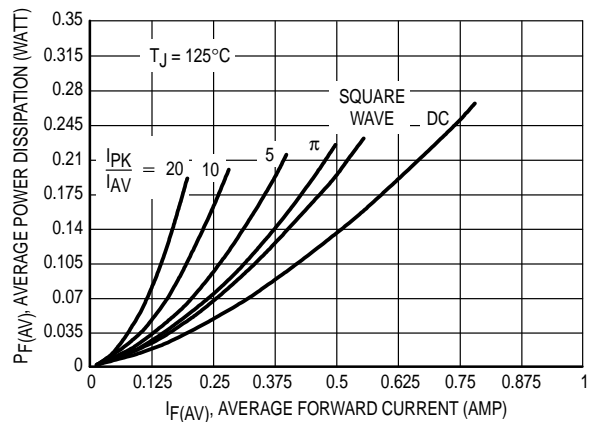
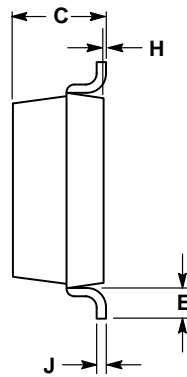
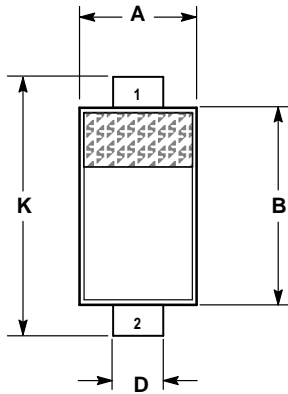


Figure 6. Power Dissipation

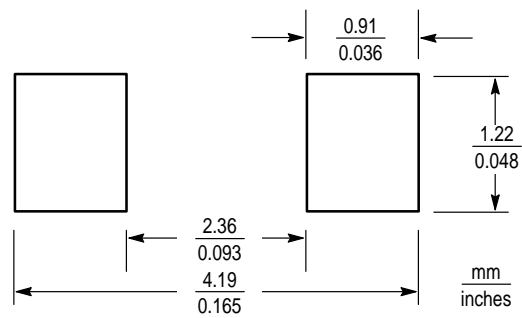
**LMBR0520T1G**
**PACKAGE DIMENSIONS**
**SOD-123**

**NOTES:**

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

| DIM | INCHES |       | MILLIMETERS |      |
|-----|--------|-------|-------------|------|
|     | 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
- PIN 2. ANODE

**RECOMMENDED FOOTPRINT FOR SOD-123**

**SOD-123**