# Surface Mount Schottky Power Rectifier

## Plastic SOD–123 Package

**MBR0530T1**
**MBR0530T3**
**Motorola Preferred Devices**

**SCHOTTKY BARRIER RECTIFIER 0.5 AMPERES 30 VOLTS**

. . . using 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. These state–of–the–art devices have the following features:

- Guardring for Stress Protection
- Low Forward Voltage
- 125°C Operating Junction Temperature
- Epoxy Meets UL94, VO at 1/8″
- Package Designed for Optimal Automated Board Assembly

**CASE 425–04**
**SOD–123**

**Mechanical Characteristics**

- Reel Options: MBR0530T1 = 3,000 per 7″ reel/8 mm tape
  MBR0530T3 = 10,000 per 13″ reel/8 mm tape
- Device Marking: B3
- 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

**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>$V_R$ | 30 | Volts |
| Average Rectified Forward Current (Rated $V_R$) $T_L$ = 100°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/μs |

**THERMAL CHARACTERISTICS**

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

**ELECTRICAL CHARACTERISTICS**

| | | | |
|---|---|---|---|
| Maximum Instantaneous Forward Voltage (2)<br>($i_F$ = 0.1 Amps, $T_J$ = 25°C)<br>($i_F$ = 0.5 Amps, $T_J$ = 25°C) | $V_F$ | <br>0.375<br>0.43 | Volts |
| Maximum Instantaneous Reverse Current (2)<br>(Rated dc Voltage, $T_C$ = 25°C)<br>($V_R$ = 15 V, $T_C$ = 25°C) | $I_R$ | <br>130<br>20 | μA |

(1) FR–4 or FR–5 = 3.5 x 1.5 inches using the Motorola minimum recommended footprint.
(2) Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%.

**Preferred** devices are Motorola recommended choices for future use and best overall value.

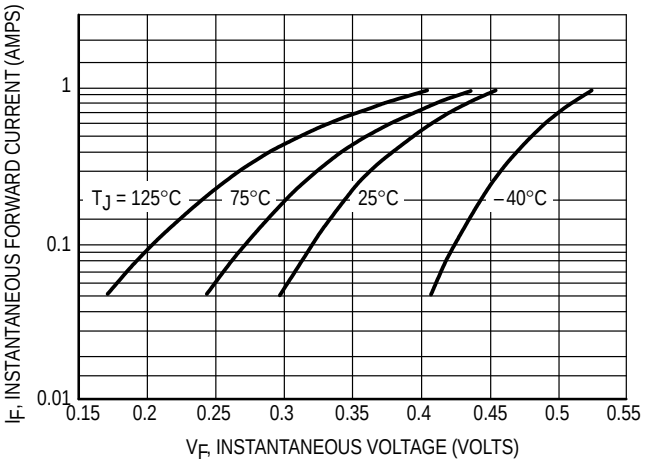



**Figure 1. Typical Forward Voltage**

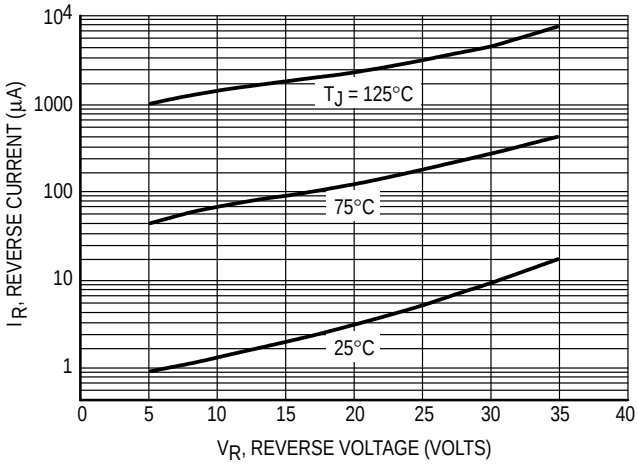



**Figure 2. Typical Reverse Current**

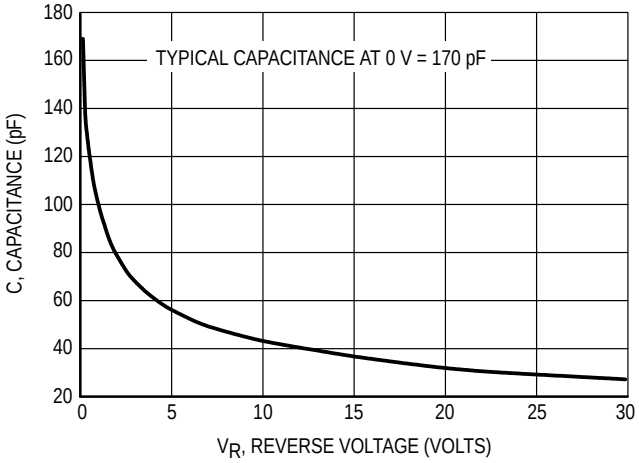



**Figure 3. Typical Capacitance**

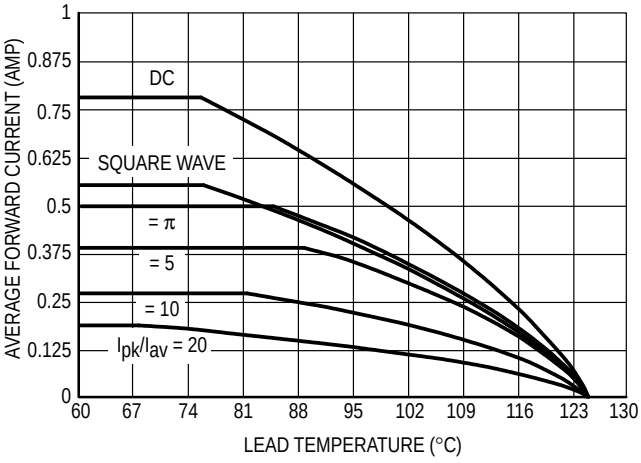



**Figure 4. Current Derating (Lead)**

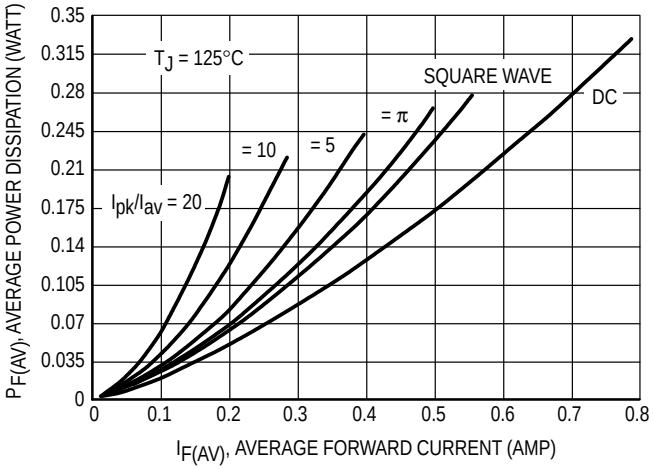
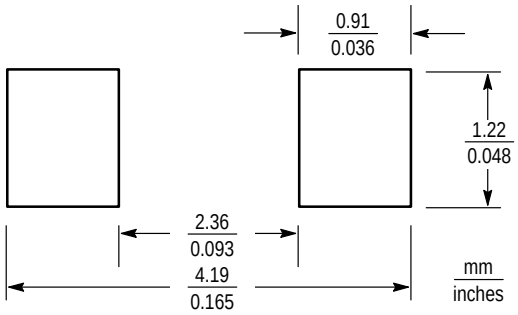


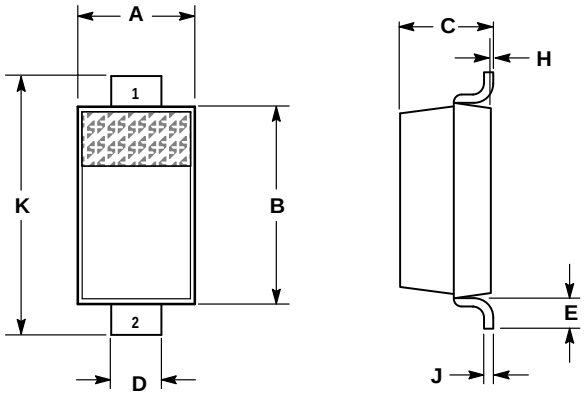

**Figure 5. Power Dissipation**

## RECOMMENDED FOOTPRINT FOR SOD−123




**SOD−123**

## PACKAGE DIMENSIONS




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

**CASE 425–04**
**ISSUE C**
**PLASTIC**



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