

# MBR0530T1, MBR0530T3

## Surface Mount Schottky Power Rectifier

### Plastic SOD-123 Package

The MBR0530T1/3 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. These state-of-the-art devices have the following features:

#### 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
- Pb-Free Packages are Available

#### Mechanical Characteristics

- Reel Options: MBR0530T1 = 3,000 per 7 in reel/8 mm tape  
MBR0530T3 = 10,000 per 13 in reel/8 mm tape
- 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 Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	30	V
Average Rectified Forward Current (Rated $V_R$ , $T_L = 100^\circ\text{C}$ )	$I_{F(AV)}$	0.5	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 +150	°C
Operating Junction Temperature	$T_J$	-65 to +125	°C
Voltage Rate of Change (Rated $V_R$ )	$dv/dt$	1000	V/ $\mu\text{s}$
ESD Rating: Machine Model = C Human Body Model = 3B		> 400 > 8000	V

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



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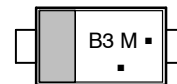
<http://onsemi.com>

**SCHOTTKY BARRIER  
RECTIFIER  
0.5 AMPERES  
30 VOLTS**



SOD-123  
CASE 425  
STYLE 1

#### MARKING DIAGRAM



B3 = Device Code  
M = Date Code  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 3 of this data sheet.

# MBR0530T1, MBR0530T3

## THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Thermal Resistance – Junction-to-Ambient (Note 1)	$R_{\theta JA}$	206	$^{\circ}C/W$
Thermal Resistance – Junction-to-Lead	$R_{\theta JL}$	150	$^{\circ}C/W$

## ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 2) ( $i_F = 0.1$ Amps, $T_J = 25^{\circ}C$ ) ( $i_F = 0.5$ Amps, $T_J = 25^{\circ}C$ )	$V_F$	0.375 0.43	V
Maximum Instantaneous Reverse Current (Note 2) (Rated DC Voltage, $T_C = 25^{\circ}C$ ) ( $V_R = 15$ V, $T_C = 25^{\circ}C$ )	$I_R$	130 20	$\mu A$

- 1 inch square pad size (1 x 0.5 inch for each lead) on FR4 board.
- Pulse Test: Pulse Width = 300  $\mu s$ , Duty Cycle  $\leq 2\%$ .

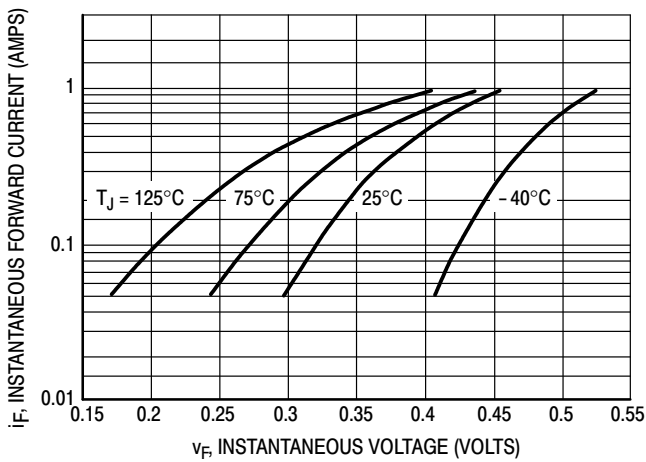


Figure 1. Typical Forward Voltage

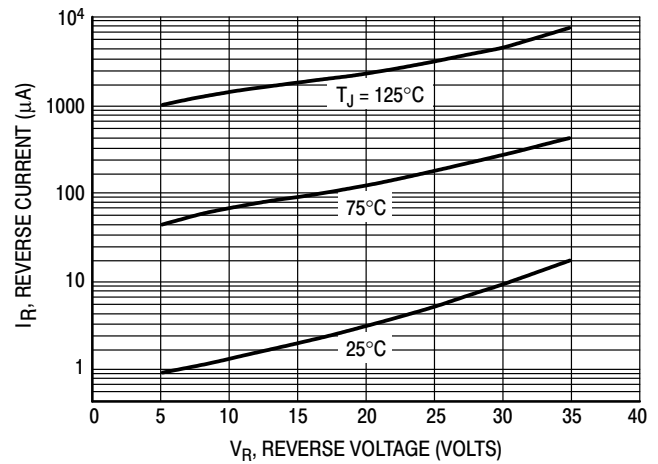


Figure 2. Typical Reverse Current

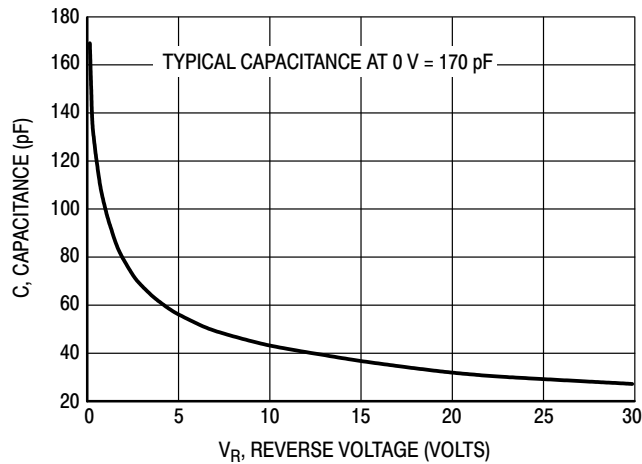
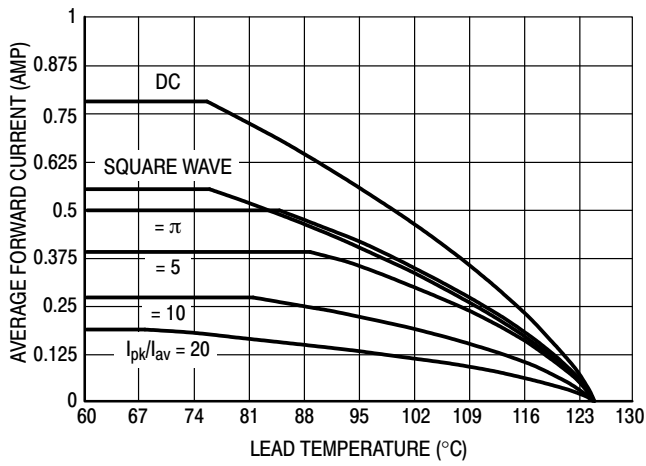
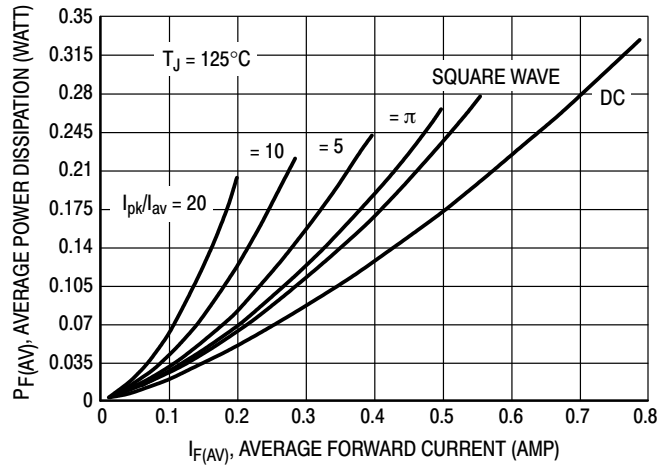


Figure 3. Typical Capacitance

## MBR0530T1, MBR0530T3



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



**Figure 5. Power Dissipation**

### ORDERING INFORMATION

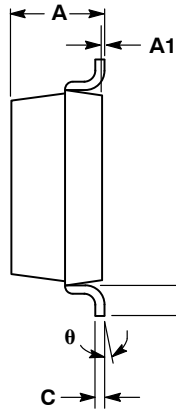
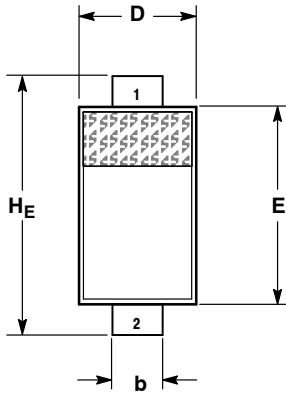
Device	Package	Shipping†
MBR0530T1	SOD-123	3000 / Tape & Reel
MBR0530T1G	SOD-123 (Pb-Free)	3000 / Tape & Reel
MBR0530T3	SOD-123	10,000 Tape & Reel
MBR0530T3G	SOD-123 (Pb-Free)	10,000 Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# MBR0530T1, MBR0530T3

## PACKAGE DIMENSIONS

SOD-123  
CASE 425-04  
ISSUE F

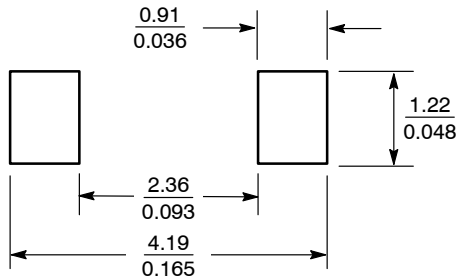


- NOTES:  
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
2. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.94	1.17	1.35	0.037	0.046	0.053
A1	0.00	0.05	0.10	0.000	0.002	0.004
b	0.51	0.61	0.71	0.020	0.024	0.028
c	---	---	0.15	---	---	0.006
D	1.40	1.60	1.80	0.055	0.063	0.071
E	2.54	2.69	2.84	0.100	0.106	0.112
HE	3.56	3.68	3.86	0.140	0.145	0.152
L	0.25	---	---	0.010	---	---
θ	0°	---	10°	0°	---	10°

STYLE 1:  
PIN 1. CATHODE  
2. ANODE

## SOLDERING FOOTPRINT\*



SCALE 10:1  $\left(\frac{\text{mm}}{\text{inches}}\right)$

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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