

# MBR130T1, MBR130T3

## Surface Mount Schottky Power Rectifier

### Plastic SOD-123 Package

... 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
- ESD Ratings: Machine Model, C;  
Human Body Model, 3

#### Mechanical Characteristics

- Reel Options: MBR130T1 = 3,000 per 7" reel/8 mm tape  
MBR130T3 = 10,000 per 13" 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

#### 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 $V_R$ ) $T_L = 65^\circ\text{C}$	$I_{F(AV)}$	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/ $\mu\text{s}$



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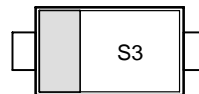
<http://onsemi.com>

### SCHOTTKY BARRIER RECTIFIER 1.0 AMPERES 30 VOLTS



SOD-123  
CASE 425  
STYLE 1

#### DEVICE MARKING



S3 = Device Code

#### ORDERING INFORMATION

Device	Package	Shipping
MBR130T1	SOD-123	3000/Tape & Reel
MBR130T3	SOD-123	10,000/Tape & Reel

# MBR130T1, MBR130T3

## THERMAL CHARACTERISTICS

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

## ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Typ	Max	Unit
Maximum Instantaneous Forward Voltage (Note 2.) ( $I_F = 0.1\text{ A}$ , $T_J = 25^{\circ}\text{C}$ ) ( $I_F = 0.7\text{ A}$ , $T_J = 25^{\circ}\text{C}$ ) ( $I_F = 1.0\text{ A}$ , $T_J = 25^{\circ}\text{C}$ )	$V_F$	— — 0.47	0.35 0.45 —	V
Maximum Instantaneous Reverse Current (Note 2.) (Rated dc Voltage, $T_C = 25^{\circ}\text{C}$ ) ( $V_R = 5\text{ V}$ , $T_C = 25^{\circ}\text{C}$ )	$I_R$	60 10		$\mu\text{A}$

- FR-4 or FR-5 =  $3.5 \times 1.5$  inches using a 1 inch Cu pad.
- Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

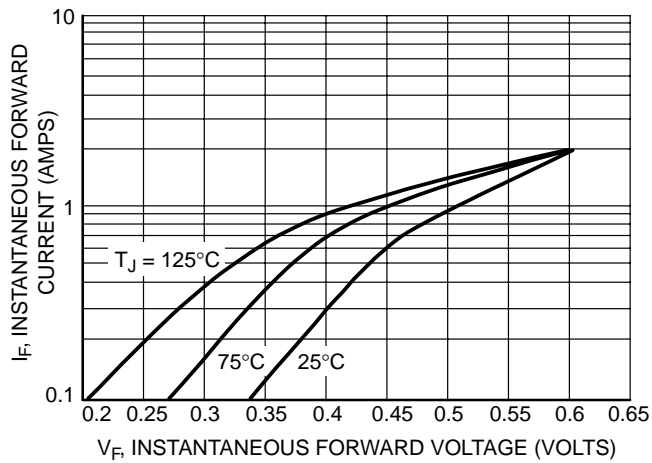


Figure 1. Maximum Forward Voltage

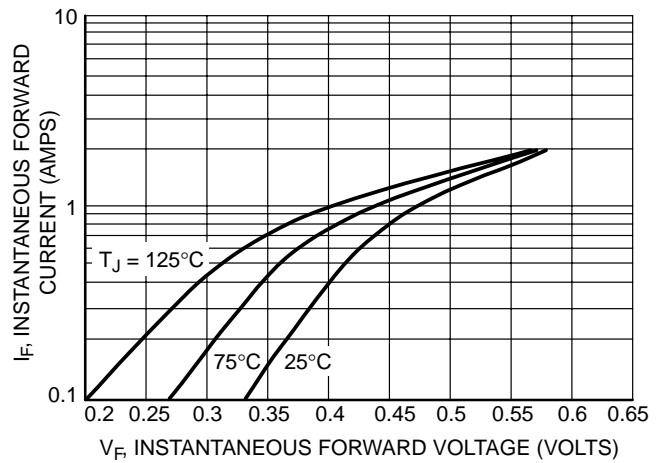


Figure 2. Typical Forward Voltage

## MBR130T1, MBR130T3

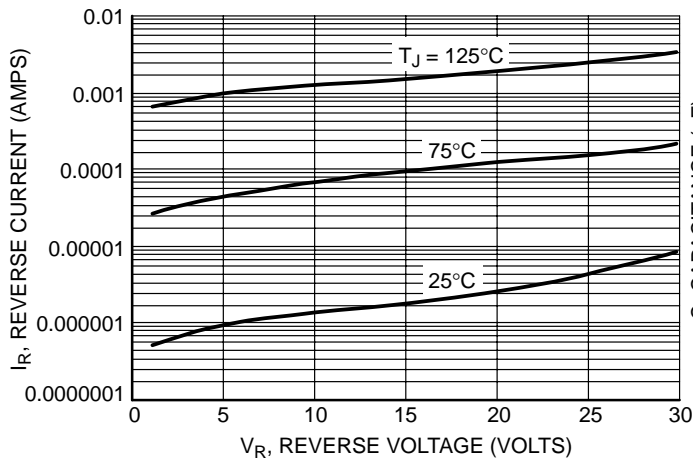


Figure 3. Typical Reverse Current

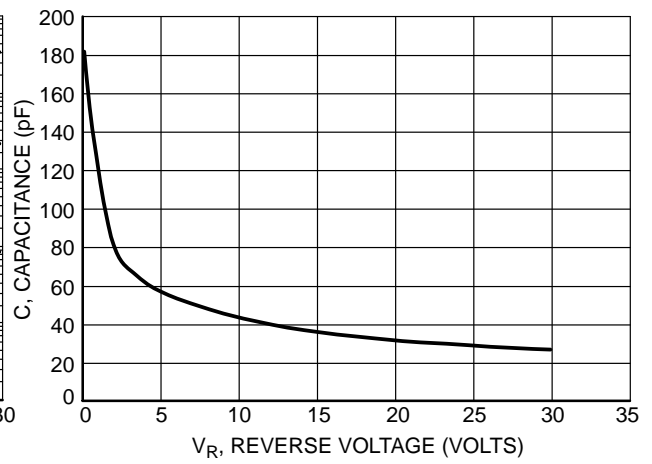


Figure 4. Typical Capacitance

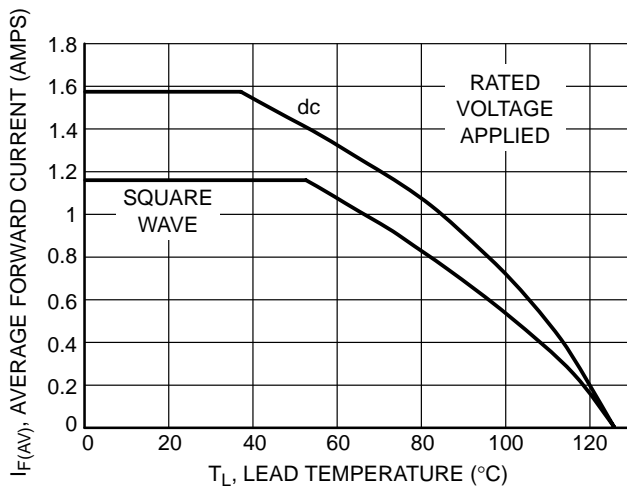


Figure 5. Current Derating, Lead,  $R_{\theta JL} = 108^{\circ}\text{C/W}$

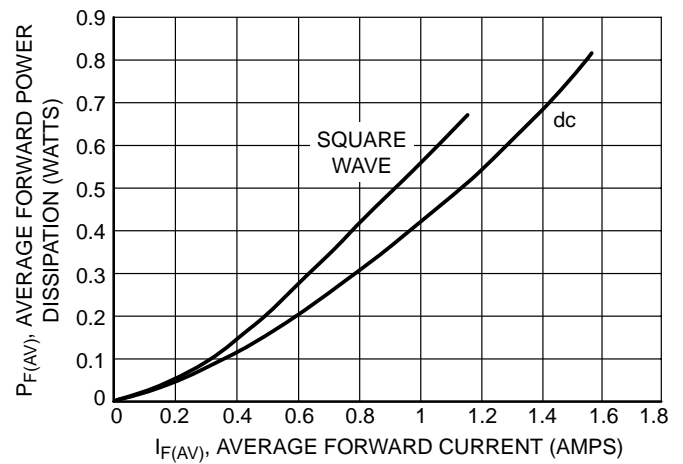
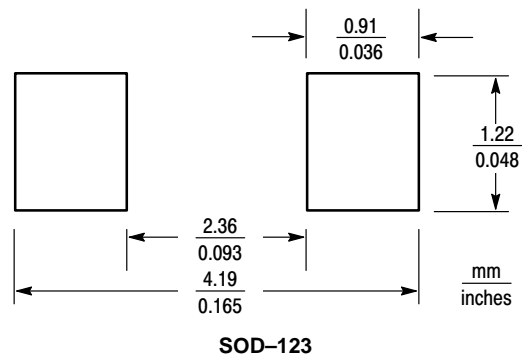


Figure 6. Forward Power Dissipation

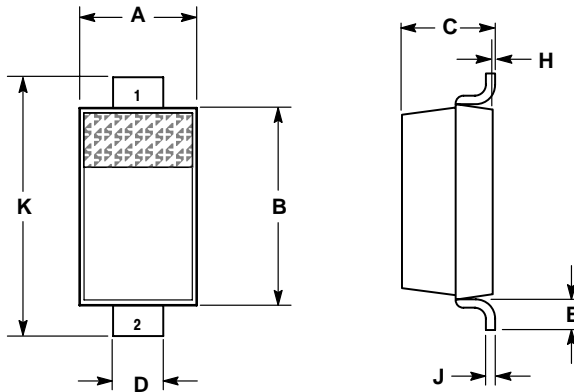
## RECOMMENDED FOOTPRINT FOR SOD-123



# MBR130T1, MBR130T3

## PACKAGE DIMENSIONS

SOD-123  
CASE 425-04  
ISSUE C




### 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  
2. ANODE

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