

# MBR0520LT1, MBR0520LT3

Preferred Devices

## Surface Mount Schottky Power Rectifier

### Plastic SOD-123 Package

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: MBR0520LT1 = 3,000 per 7" reel/8 mm tape.  
MBR0520LT3 = 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

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	20	V
Average Rectified Forward Current (Rated $V_R$ , $T_L = 90^\circ\text{C}$ )	$I_{F(AV)}$	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 +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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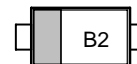
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### SCHOTTKY BARRIER RECTIFIER 0.5 AMPERES 20 VOLTS



SOD-123  
CASE 425  
STYLE 1

#### MARKING DIAGRAM



B2 = Device Code

#### ORDERING INFORMATION

Device	Package	Shipping
MBR0520LT1	SOD-123	3000/Tape & Reel
MBR0520LT3	SOD-123	10,000/Tape & Reel

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

# MBR0520LT1, MBR0520LT3

## THERMAL CHARACTERISTICS

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

## ELECTRICAL CHARACTERISTICS

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

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

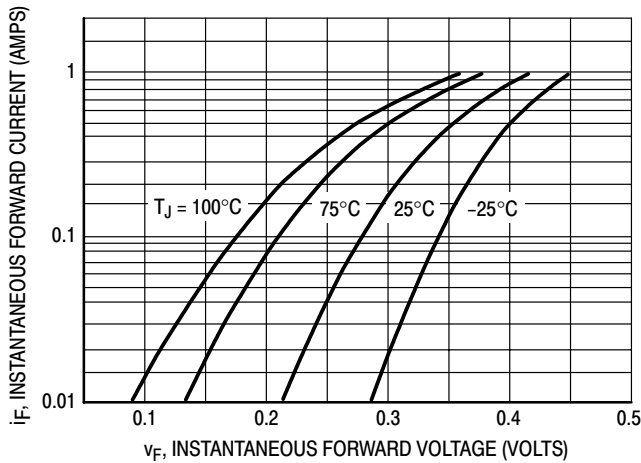


Figure 1. Typical Forward Voltage

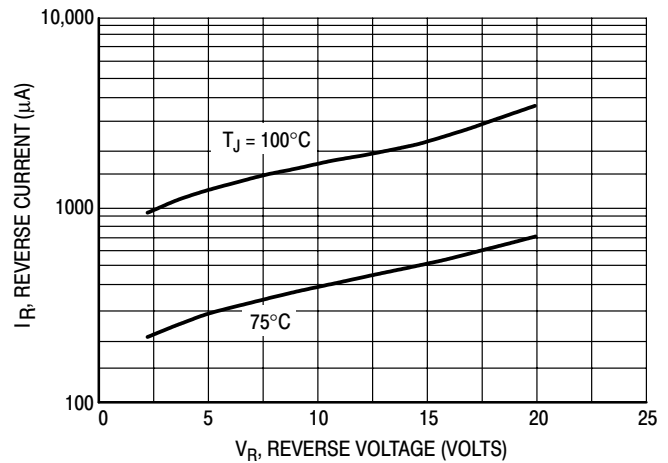


Figure 2. Typical Reverse Current

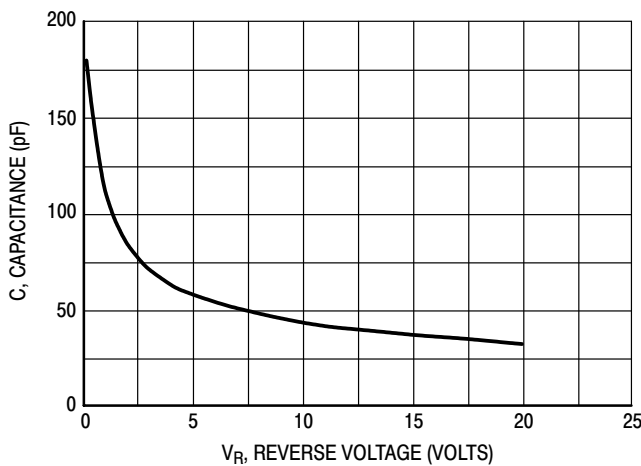


Figure 3. Typical Capacitance

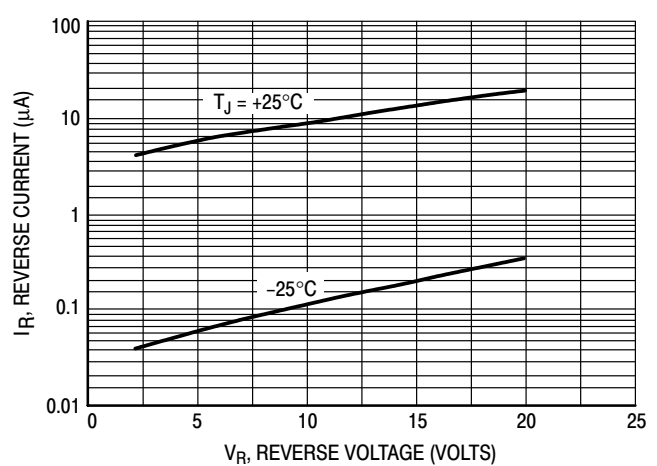


Figure 4. Typical Reverse Current

# MBR0520LT1, MBR0520LT3

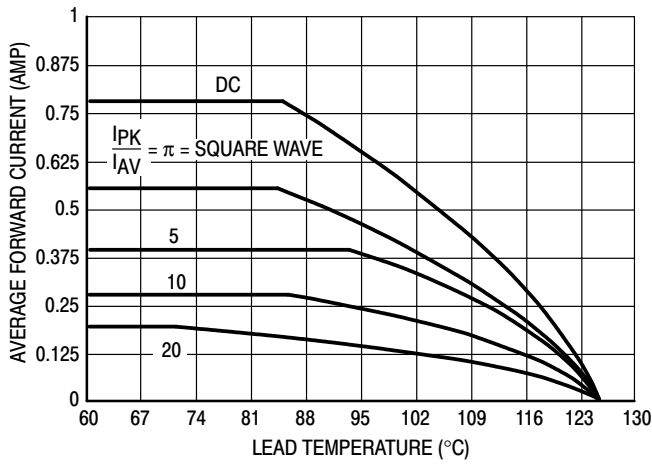


Figure 5. Current Derating (Lead)

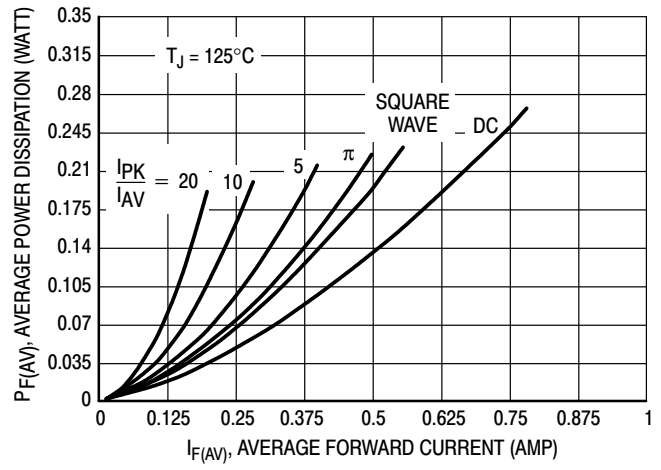
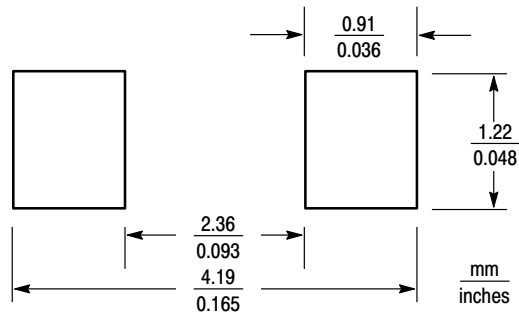


Figure 6. Power Dissipation

## RECOMMENDED FOOTPRINT FOR SOD-123

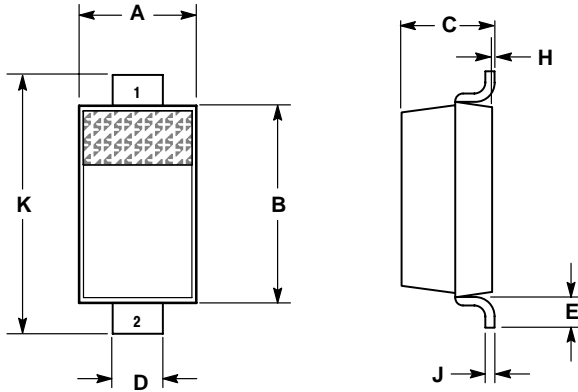


SOD-123

# MBR0520LT1, MBR0520LT3

## PACKAGE DIMENSIONS


SOD-123  
PLASTIC  
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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