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:

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 UL 94 V−0 @ 0.125 in
- Package Designed for Optimal Automated Board Assembly
- Pb−Free Packages are Available

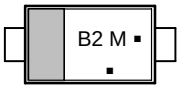
Mechanical Characteristics

- Reel Options: MBR0520LT1 = 3,000 per 7″ reel/8 mm tape
  MBR0520LT3 = 10,000 per 13″ 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

SCHOTTKY BARRIER RECTIFIER 0.5 AMPERES, 20 VOLTS

SOD−123
CASE 425
STYLE 1

MARKING DIAGRAM



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°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/μs
ESD Ratings: 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.

THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Thermal Resistance; Junction−to−Ambient (Note 1)	$R_{\theta JA}$	206	°C/W
Thermal Resistance; Junction−to−Lead	$R_{\theta JL}$	150	°C/W

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 2)	v_F	T_J = 25°C	T_J = 100°C	V
(i_F = 0.1 Amps) (i_F = 0.5 Amps)		0.300 0.385	0.220 0.330	
Maximum Instantaneous Reverse Current (Note 2)	I_R	T_J = 25°C	T_J = 100°C	mA
(V_R = 10 V) (Rated DC Voltage = 20 V)		75 μA 250 μA	5 mA 8 mA	

1. 1 inch square pad size (1 x 0.5 inch for each lead) on FR4 board.
2. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%.

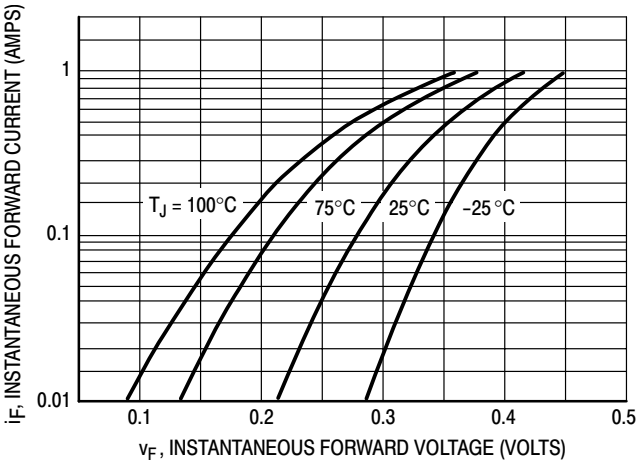


Figure 1. Typical Forward Voltage

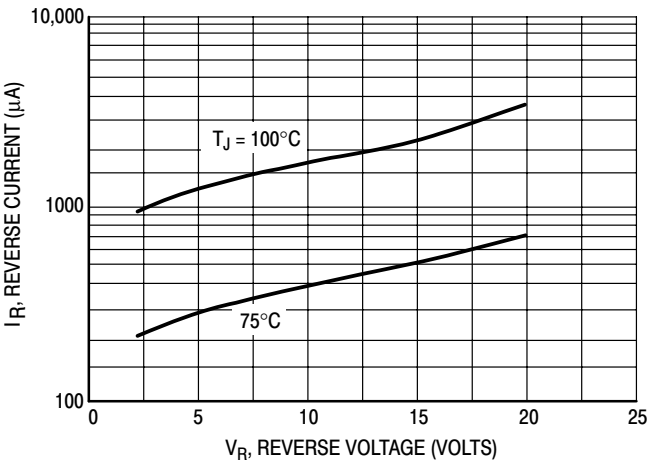


Figure 2. Typical Reverse Current

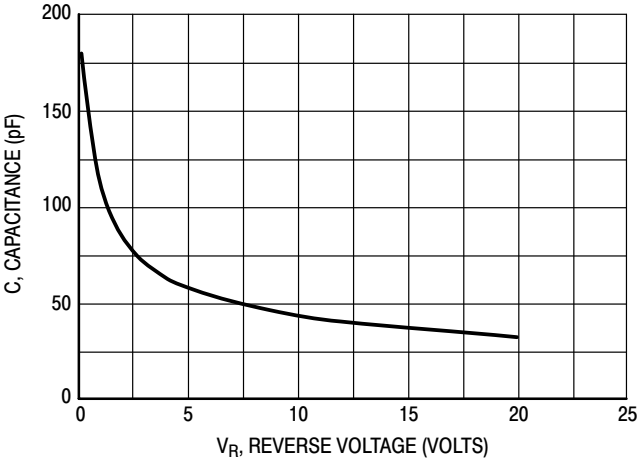


Figure 3. Typical Capacitance

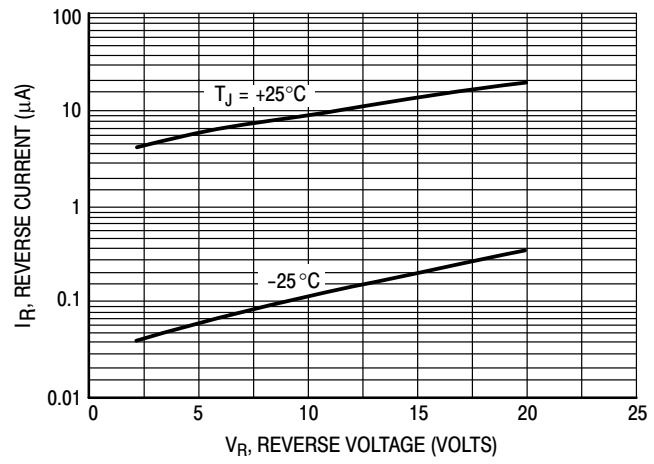


Figure 4. Typical Reverse Current

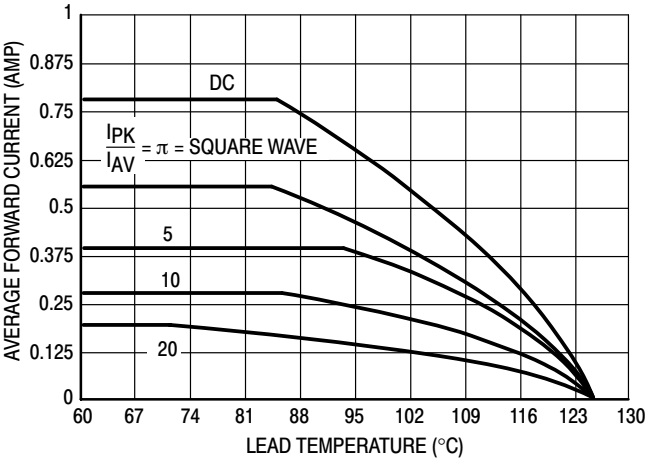


Figure 5. Current Derating (Lead)

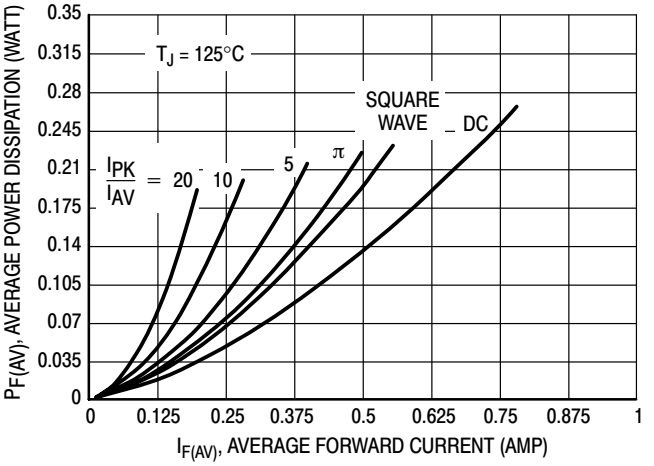


Figure 6. Power Dissipation