# **Surface Mount Schottky Power Rectifier**

# Plastic SOD-123FL Package

This device 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. Because of its small size, it is ideal for use in portable and battery powered products such as cellular and cordless phones, chargers, notebook computers, printers, PDAs and PCMCIA cards. Typical applications are AC–DC and DC–DC converters, reverse battery protection, and "Oring" of multiple supply voltages and any other application where performance and size are critical.

#### **Features**

- Guardring for Stress Protection
- Low Forward Voltage
- Epoxy Meets UL 94 V-0
- Package Designed for Optimal Automated Board Assembly
- These are Pb-Free Devices

#### **Mechanical Characteristics**

• Reel Options: MBR2H200SFT3G = 10,000 per 13 in reel/8 mm tape

• Device Marking: L2J

Polarity Designator: Cathode BandWeight: 11.7 mg (approximately)

• Case: Epoxy, Molded

• Lead Finish: 100% Matte Sn (Tin)

• Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds

• Device Meets MSL 1 Requirements



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# SCHOTTKY BARRIER RECTIFIER 2.0 AMPERES 200 VOLTS



SOD-123FL CASE 498

#### MARKING DIAGRAM



L2J = Specific Device Code

Date CodePb-Free Package

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>	
MBR2H200SFT3G	SOD-123 (Pb-Free)	10000 / Tape & Reel	

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

#### **MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>R</sub>	200	٧
Average Rectified Forward Current (T <sub>L</sub> = 108°C)	lo	2.0	Α
Peak Repetitive Forward Current (Rated $V_R$ , Square Wave, 20 kHz, $T_C$ = 105°C)	I <sub>FRM</sub>	4.0	Α
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I <sub>FSM</sub>	30	Α
Storage and Operating Junction Temperature Range (Note 1)	T <sub>stg</sub> , T <sub>J</sub>	-55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction-to-Lead (Note 2)	$\Psi_{JCL}$	23	°C/W
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{ heta JA}$	85	°C/W
Thermal Resistance, Junction-to-Ambient (Note 3)	$R_{ heta JA}$	330	°C/W

#### **ELECTRICAL CHARACTERISTICS**

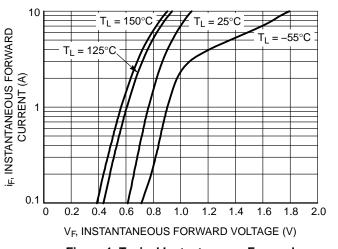
Characteristic	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 4) $ \begin{array}{l} (I_F = 1.0 \text{ A, } T_J = 25^{\circ}\text{C}) \\ (I_F = 2.0 \text{ A, } T_J = 25^{\circ}\text{C}) \\ (I_F = 1.0 \text{ A, } T_J = 125^{\circ}\text{C}) \\ (I_F = 2.0 \text{ A, } T_J = 125^{\circ}\text{C}) \end{array} $	V <sub>F</sub>	0.86 0.94 0.71 0.78	V
Maximum Instantaneous Reverse Current (Note 4) (Rated dc Voltage, $T_J = 25^{\circ}C$ ) (Rated dc Voltage, $T_J = 125^{\circ}C$ )	I <sub>R</sub>	200 2	μA mA

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

- Mounted with 700 mm² copper pad size (Approximately 1 in²) 1 oz FR4 Board.
   Mounted with pad size approximately 20 mm² copper, 1 oz FR4 Board.
   Pulse Test: Pulse Width ≤ 380 μs, Duty Cycle ≤ 2.0%.

<sup>1.</sup> The heat generated must be less than the thermal conductivity from Junction–to–Ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ .

#### **TYPICAL CHARACTERISTICS**



 $T_L = 150^{\circ}C$ i<sub>F</sub>, INSTANTANEOUS FORWARD  $T_L = -55^{\circ}C$  $T_L = 125^{\circ}C$ CURRENT (A) 0.1 0.2 0.4 0.6 8.0 1.0 1.2 1.4 1.6 V<sub>F</sub>, INSTANTANEOUS FORWARD VOLTAGE (V)

Figure 1. Typical Instantaneous Forward Characteristics

Figure 2. Maximum Instantaneous Forward Characteristics

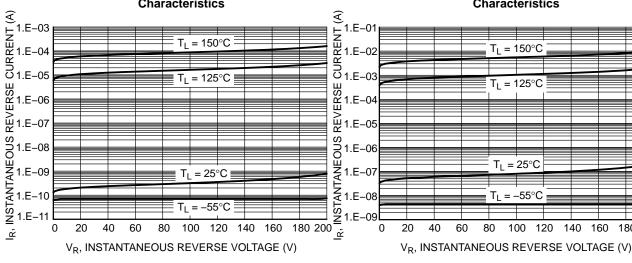
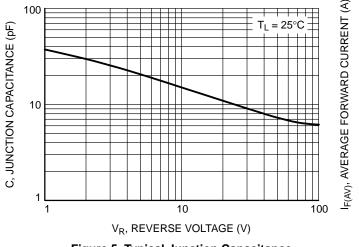


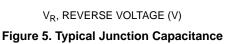
Figure 3. Typical Reverse Characteristics

Figure 4. Maximum Reverse Characteristics

140 160

180 200





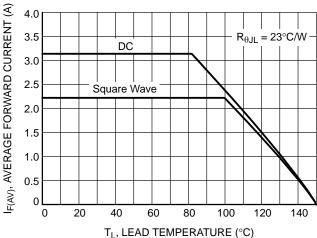
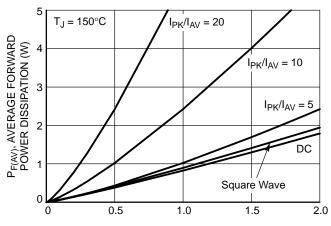


Figure 6. Current Derating per Diode

#### **TYPICAL CHARACTERISTICS**



I<sub>F(AV)</sub>, AVERAGE FORWARD CURRENT (A)

Figure 7. Forward Power Dissipation

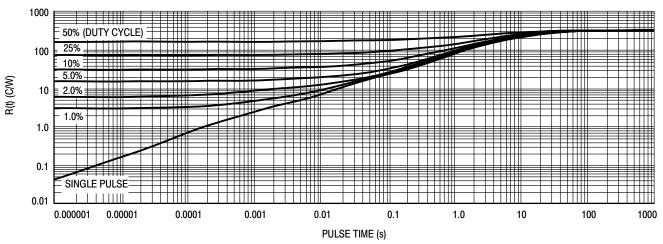


Figure 8. Thermal Response, Junction-to-Ambient (20 mm<sup>2</sup> pad)

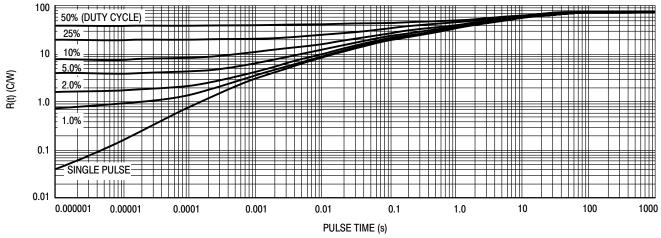
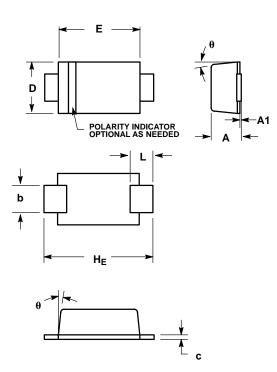


Figure 9. Thermal Response, Junction-to-Ambient (1 in<sup>2</sup> pad)

#### PACKAGE DIMENSIONS

#### SOD-123FL **CASE 498 ISSUE B**

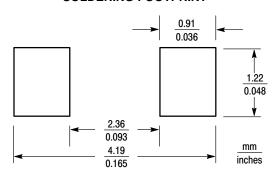


#### NOTES

- 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982
- CONTROLLING DIMENSION: MILLIMETER.
- DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH.
  DIMENSIONS D AND J ARE TO BE MEASURED ON FLAT
  SECTION OF THE LEAD: BETWEEN 0.10 AND 0.25 MM FROM THE LEAD TIP.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
Α	0.90	0.95	1.00	0.035	0.037	0.039
A1	0.00	0.05	0.10	0.000	0.002	0.004
b	0.70	0.90	1.10	0.028	0.035	0.043
С	0.10	0.15	0.20	0.004	0.006	0.008
D	1.50	1.65	1.80	0.059	0.065	0.071
E	2.50	2.70	2.90	0.098	0.106	0.114
L	0.55	0.75	0.95	0.022	0.030	0.037
HE	3.40	3.60	3.80	0.134	0.142	0.150
θ	0°	_	8°	0°	_	8°

#### **SOLDERING FOOTPRINT\***



\*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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