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
- 175°C Operating Junction Temperature
- Epoxy Meets UL 94 V-0
- Package Designed for Optimal Automated Board Assembly
- ESD Ratings: Machine Model, C Human Body Model, 3B
- This is a Pb-Free Device

Mechanical Characteristics

- Reel Options: MBR1H100SFT3G = 10,000 per 13 in reel/8 mm tape
- Device Marking: L1H
- Polarity Designator: Cathode Band
- Weight: 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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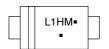
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SCHOTTKY BARRIER RECTIFIER 1.0 AMPERES 100 VOLTS



SOD-123FL CASE 498 PLASTIC

MARKING DIAGRAM



L1H = Specific Device Code

M = Date Code

= Pb-Free Package
 (Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping [†]
MBR1H100SFT3G	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 _{RRM} V _{RWM} V _R	100	V	
Average Rectified Forward Current $(T_L = 162^{\circ}C)$	lo	1.0	Α	
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I _{FSM}	50	Α	
Storage and Operating Junction Temperature Range (Note 1)	T _{stg} , T _J	-65 to +175	°C	

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

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction-to-Lead (Note 2)	Ψ_{JCL}	23	°C/W
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{ heta JA}$	85	°C/W
Thermal Resistance, Junction-to-Ambient (Note 3)	$R_{\theta JA}$	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 _F	0.76 0.84 0.61 0.68	>
Maximum Instantaneous Reverse Current (Note 4) (Rated dc Voltage, $T_J = 25^{\circ}C$) (Rated dc Voltage, $T_J = 125^{\circ}C$)	I _R	40 0.5	μ Α mA

- 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%.

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

TYPICAL CHARACTERISTICS

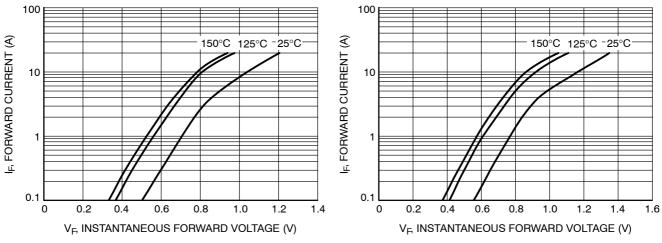


Figure 1. Typical Forward Voltage

Figure 2. Maximum Forward Voltage

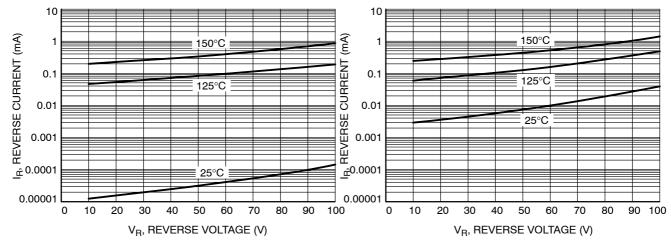
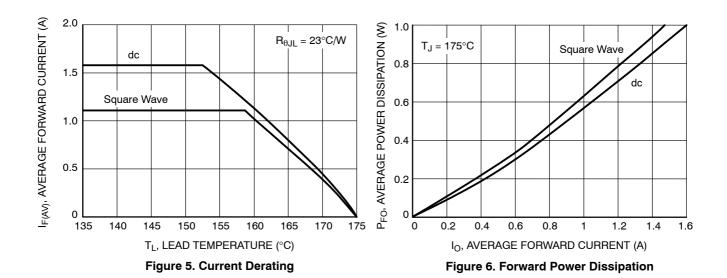


Figure 3. Typical Reverse Current

Figure 4. Maximum Reverse Current



TYPICAL CHARACTERISTICS

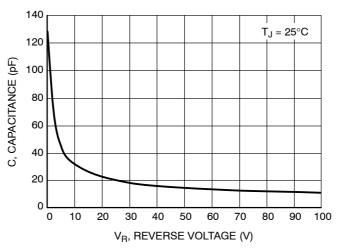


Figure 7. Capacitance

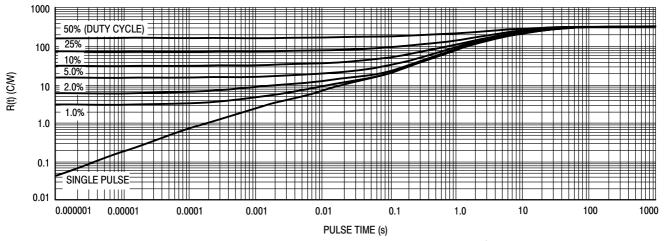


Figure 8. Thermal Response, Junction-to-Ambient (20 mm² pad)

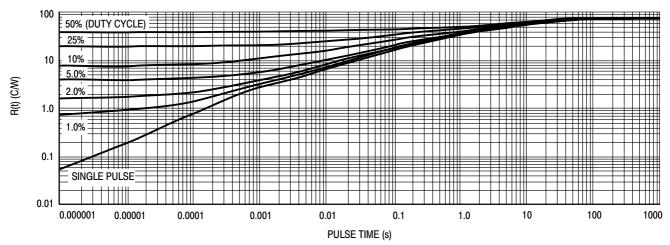
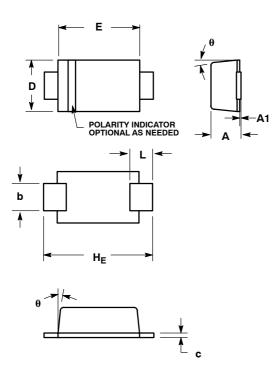


Figure 9. Thermal Response, Junction-to-Ambient (1 in² pad)

PACKAGE DIMENSIONS

SOD-123LF CASE 498-01 ISSUE A

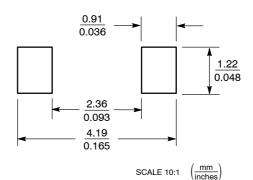


NOTES

- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,
 1982
- 2. CONTROLLING DIMENSION: MILLIMETER.
- DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH.
 DIMENSIONS D AND J ARE TO BE MEASURED ON FLAT
- DIMENSIONS D AND J ARE TO BE MEASURED ON FLA 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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