

# MBR130LSFT1

## 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. 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. These state-of-the-art devices have the following features:

- Guardring for Stress Protection
- Low Forward Voltage
- 125°C Operating Junction Temperature
- Epoxy Meets UL 94, V-0
- Package Designed for Optimal Automated Board Assembly
- This device is manufactured with a Pb-Free external lead finish only.
- ESD Ratings: Machine Model, C  
Human Body Model, 3B

#### Mechanical Characteristics

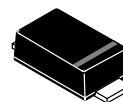
- Reel Options: MBR130LSFT1 = 3,000 per 7" reel/8 mm tape
- Device Marking: L3L
- Polarity Designator: Cathode Band
- Weight: 11.7 mg (approximately)
- Case: Epoxy, Molded
- Lead Finish: 100% Matte Sn (Tin)
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Device Meets MSL 1 Requirements



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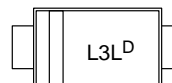
<http://onsemi.com>

### SCHOTTKY BARRIER RECTIFIER 1.0 AMPERES 30 VOLTS



SOD-123FL  
CASE 498  
PLASTIC

#### DEVICE MARKING



L3L = Specific Device Code  
D = Date Code

#### ORDERING INFORMATION

Device	Package	Shipping†
MBR130LSFT1	SOD-123FL*	3000/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.

\*This package is inherently Pb-Free.

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## 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 (At Rated $V_R$ , $T_L = 117^\circ\text{C}$ )	$I_O$	1.0	A
Peak Repetitive Forward Current (At Rated $V_R$ , Square Wave, 100 kHz, $T_L = 110^\circ\text{C}$ )	$I_{FRM}$	2.0	A
Non-Repetitive Peak Surge Current (Non-Repetitive peak surge current, halfwave, single phase, 60 Hz)	$I_{FSM}$	40	A
Storage Temperature	$T_{stg}$	-55 to 150	$^\circ\text{C}$
Operating Junction Temperature	$T_J$	-55 to 125	$^\circ\text{C}$
Voltage Rate of Change (Rated $V_R$ , $T_J = 25^\circ\text{C}$ )	dv/dt	10,000	V/ $\mu\text{s}$

## THERMAL CHARACTERISTICS

Thermal Resistance – Junction-to-Lead (Note 1)	$R_{tjl}$	26	$^\circ\text{C/W}$
Thermal Resistance – Junction-to-Lead (Note 2)	$R_{tjl}$	21	
Thermal Resistance – Junction-to-Ambient (Note 1)	$R_{tja}$	325	
Thermal Resistance – Junction-to-Ambient (Note 2)	$R_{tja}$	82	

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. Mounted with minimum recommended pad size, PC Board FR4.
2. Mounted with 1 in. copper pad (Cu area 700 mm<sup>2</sup>).

## ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 3)  ( $I_F = 0.1\text{ A}$ ) ( $I_F = 0.7\text{ A}$ ) ( $I_F = 1.0\text{ A}$ )	$V_F$	$T_J = 25^\circ\text{C}$	$T_J = 100^\circ\text{C}$	V
		0.29	0.18	
		0.36	0.27	
Maximum Instantaneous Reverse Current (Note 3)  ( $V_R = 30\text{ V}$ )	$I_R$	$T_J = 25^\circ\text{C}$	$T_J = 100^\circ\text{C}$	mA
		1.0	25	

3. Pulse Test: Pulse Width  $\leq 250\ \mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

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## TYPICAL CHARACTERISTICS

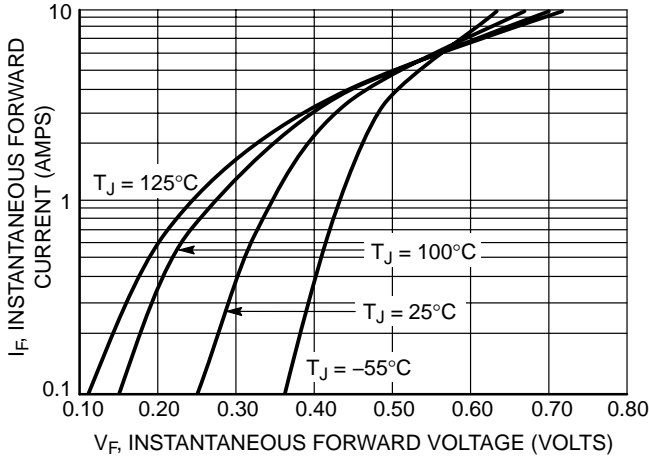


Figure 1. Typical Forward Voltage

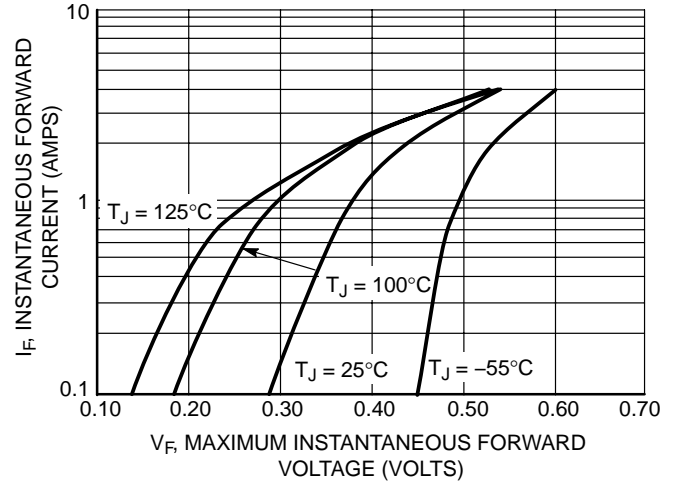


Figure 2. Maximum Forward Voltage

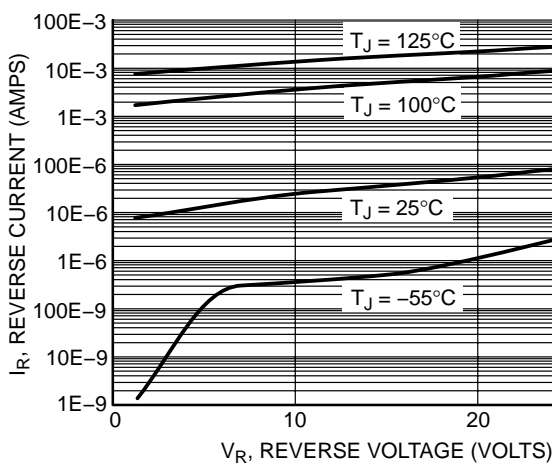


Figure 3. Typical Reverse Current

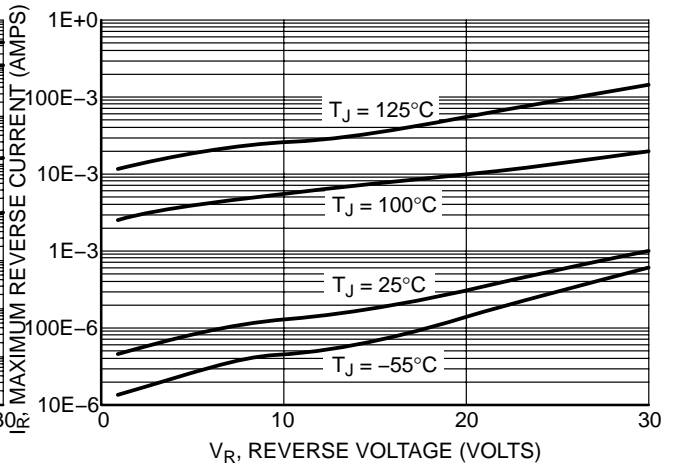


Figure 4. Maximum Reverse Current

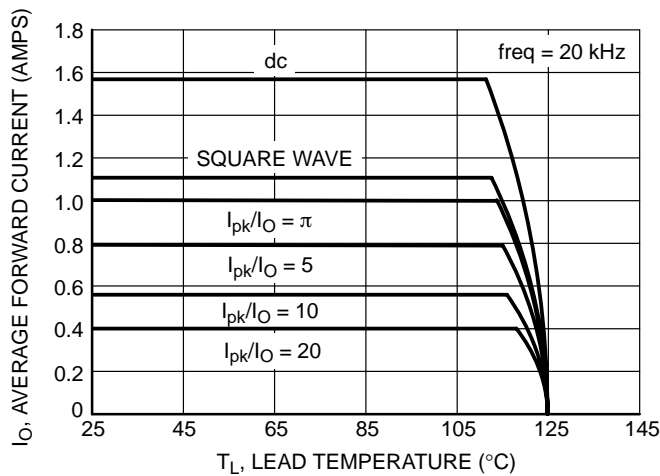


Figure 5. Current Derating

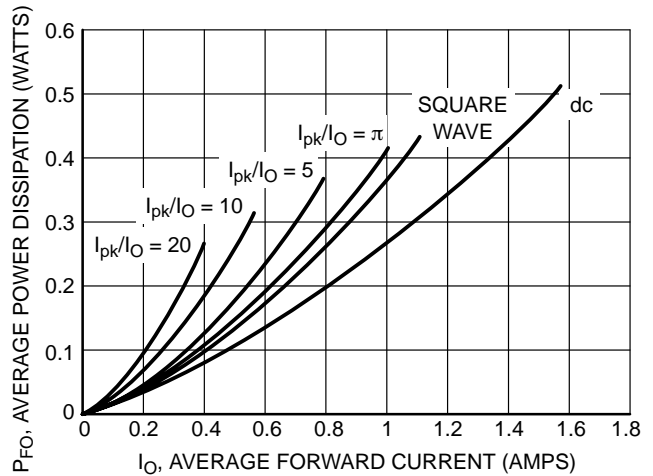


Figure 6. Forward Power Dissipation

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## TYPICAL CHARACTERISTICS

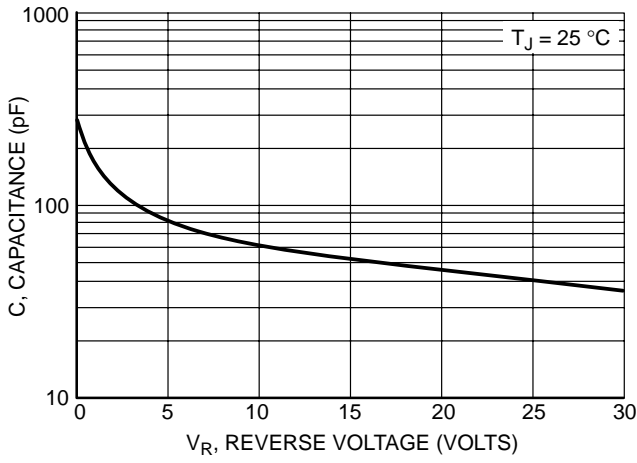


Figure 7. Capacitance

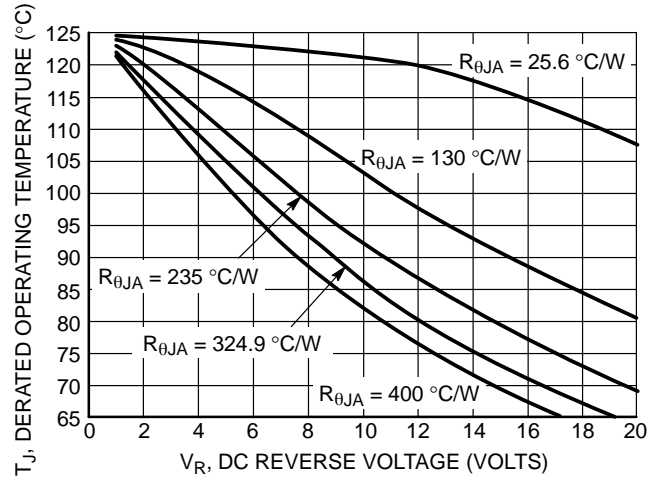


Figure 8. Typical Operating Temperature Derating

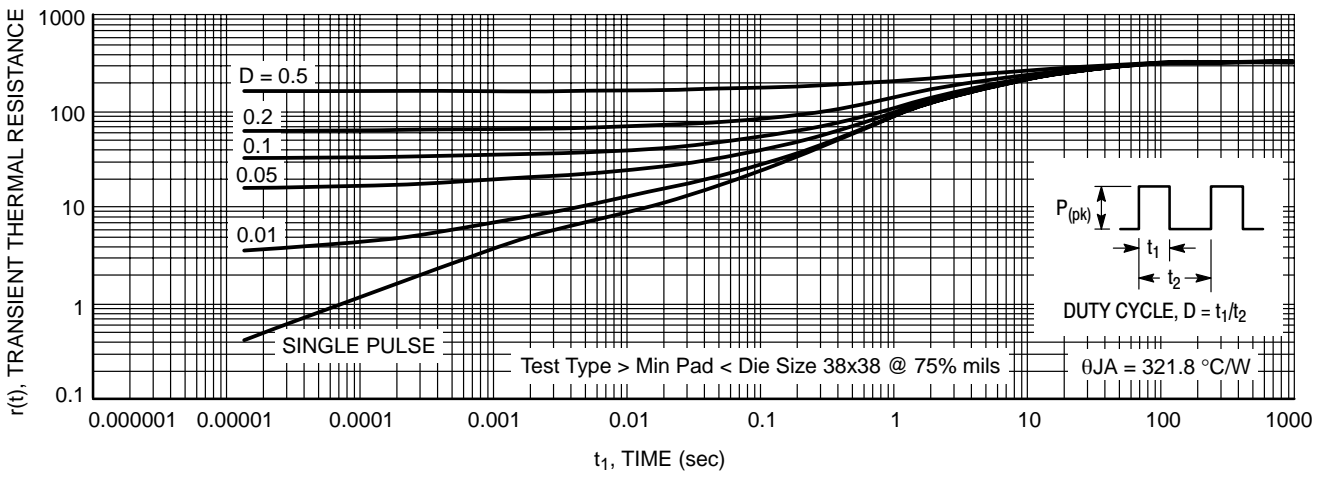
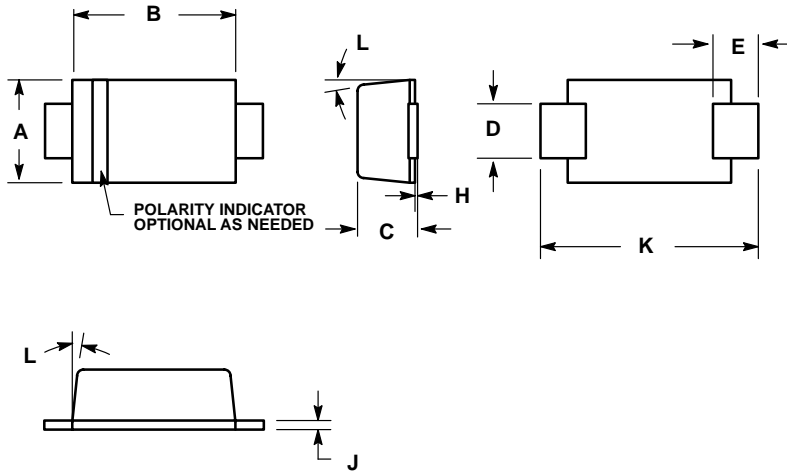


Figure 9. Thermal Response

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## PACKAGE DIMENSIONS

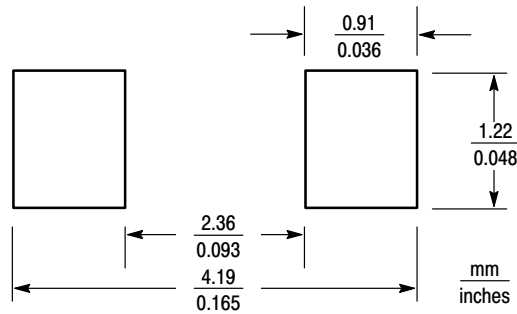
SOD-123LF  
CASE 498-01  
ISSUE O



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: MILLIMETER.
  3. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH.
  4. 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.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.50	1.80	0.059	0.071
B	2.50	2.90	0.098	0.114
C	0.90	1.00	0.035	0.039
D	0.70	1.10	0.028	0.043
E	0.55	0.95	0.022	0.037
H	0.00	0.10	0.000	0.004
J	0.10	0.20	0.004	0.008
K	3.40	3.80	0.134	0.150
L	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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