Surface Mount Schottky Power Rectifier

Plastic SOD−123 Package

MBR230LSFT1G, NRVB230LSFT1G

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. 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.

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
- ESD Ratings: Machine Model, C
  Human Body Model, 3B
- NRVB Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free and are RoHS Compliant

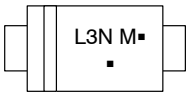
Mechanical Characteristics

- Reel Options: MBR230LSFT1G = 3,000 per 7 in reel/8 mm tape
- Device Marking: L3N
- 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

SCHOTTKY BARRIER RECTIFIER 2.0 AMPERES, 30 VOLTS

SOD−123FL
CASE 498

MARKING DIAGRAM



L3N = Specific Device Code
M = Date Code
▪ = Pb−Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
MBR230LSFT1G	SOD−123FL (Pb−Free)	3000/Tape & Reel
NRVB230LSFT1G	SOD−123FL (Pb−Free)	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.

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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 = 105°C)	I_O	2.0	A
Peak Repetitive Forward Current (At Rated V_R, Square Wave, 100 kHz, T_L = 95°C)	I_{FRM}	4.0	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	°C
Operating Junction Temperature	T_J	−55 to 125	°C
Voltage Rate of Change (Rated V_R, T_J = 25°C)	dv/dt	10,000	V/μs

THERMAL CHARACTERISTICS

Thermal Resistance, Junction−to−Lead (Note 1) Thermal Resistance, Junction−to−Lead (Note 2) Thermal Resistance, Junction−to−Ambient (Note 1) Thermal Resistance, Junction−to−Ambient (Note 2)	R_{tjl} R_{tjl} R_{tja} R_{tja}	26 21 325 82	°C/W

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.

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

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 3)	V_F	**T_J = 25°C**	**T_J = 100°C**	V
(I_F = 1.0 A) (I_F = 2.0 A)		0.38 0.43	0.30 0.37	
Maximum Instantaneous Reverse Current (Note 3)	I_R	**T_J = 25°C**	**T_J = 100°C**	mA
(V_R = 30 V)		1.0	25	

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.

3. Pulse Test: Pulse Width ≤ 250 μs, Duty Cycle ≤ 2%.

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TYPICAL CHARACTERISTICS

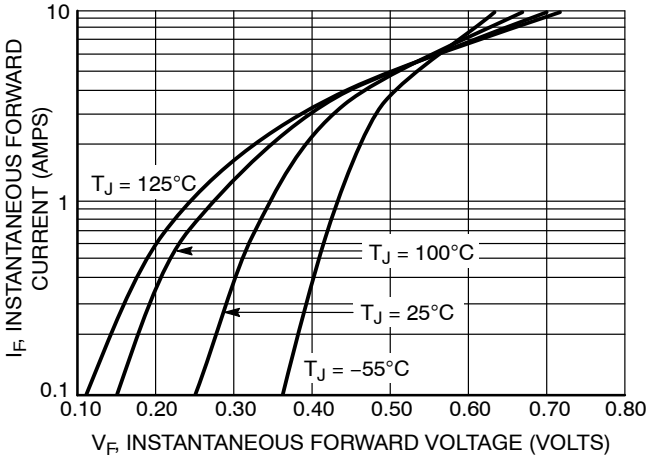

Figure 1. Typical Forward Voltage

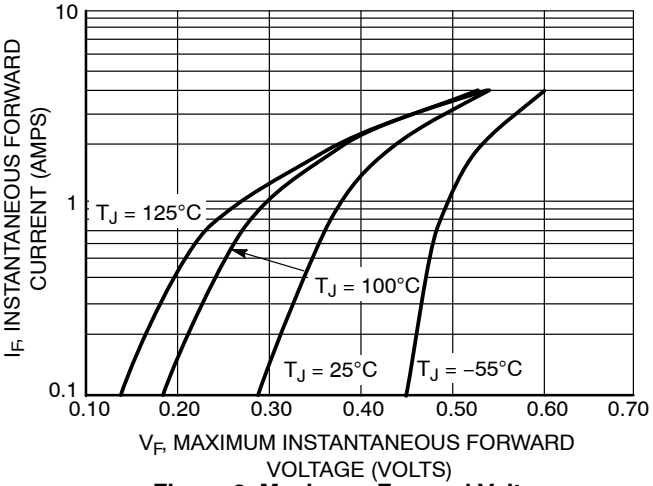

Figure 2. Maximum Forward Voltage

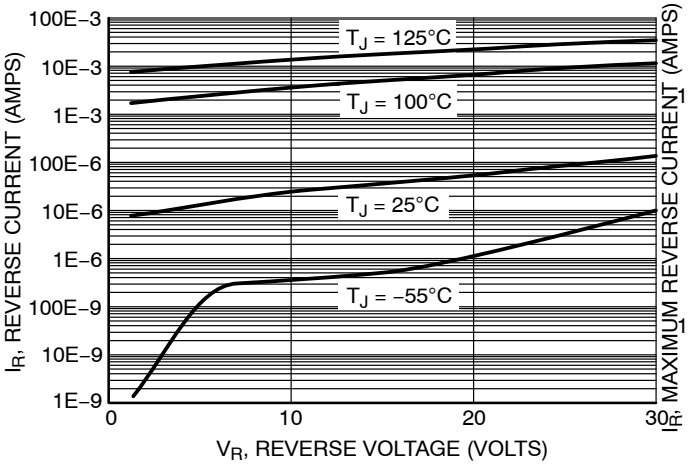

Figure 3. Typical Reverse Current

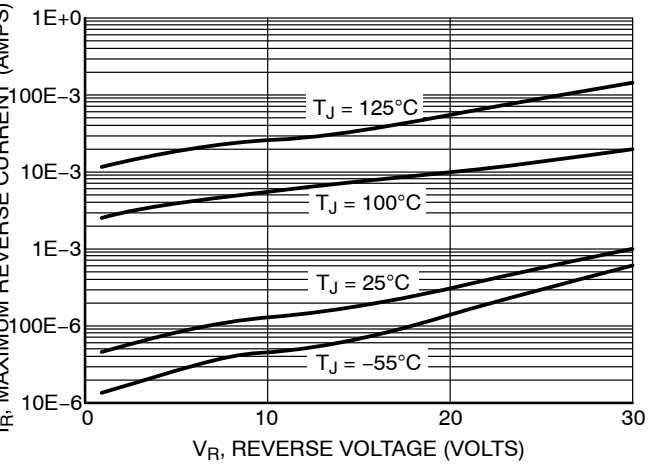

Figure 4. Maximum Reverse Current

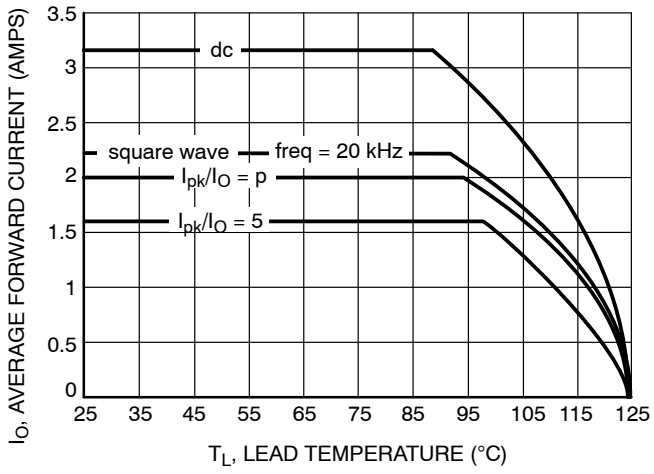

Figure 5. Current Derating

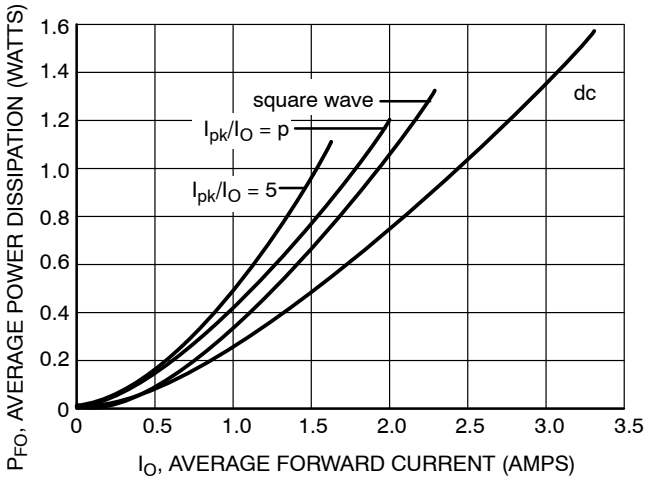

Figure 6. Forward Power Dissipation

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TYPICAL CHARACTERISTICS

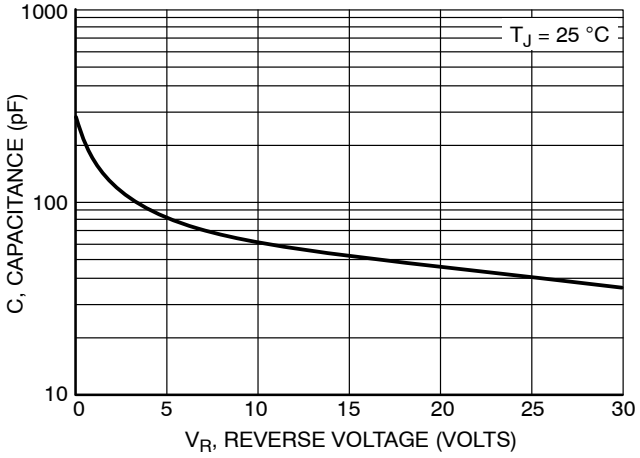

Figure 7. Capacitance

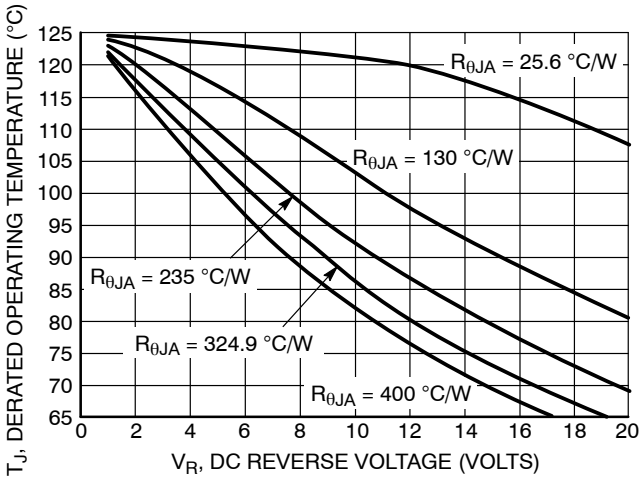

Figure 8. Typical Operating Temperature Derating

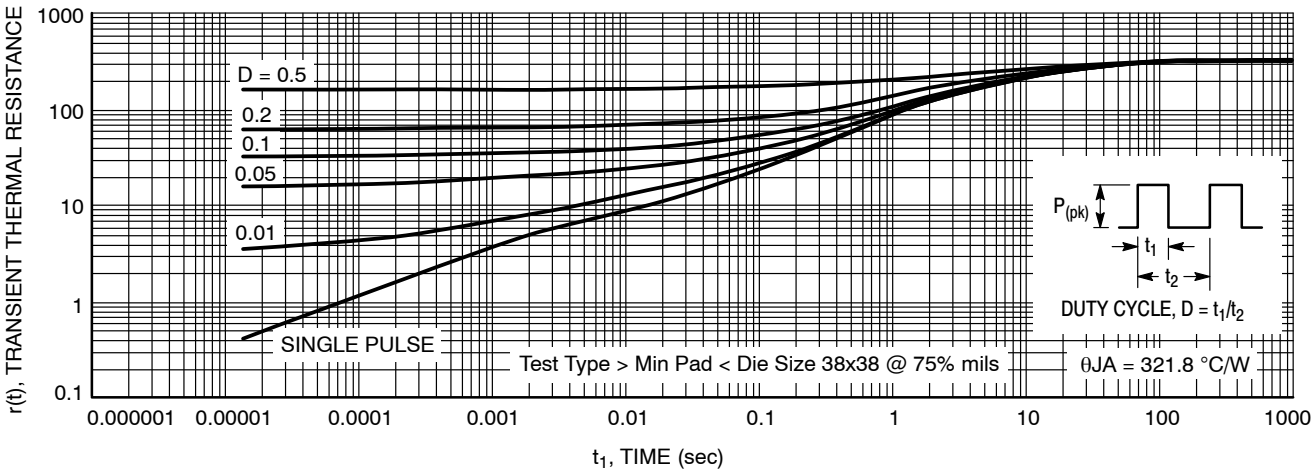

Figure 9. Thermal Response

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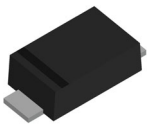
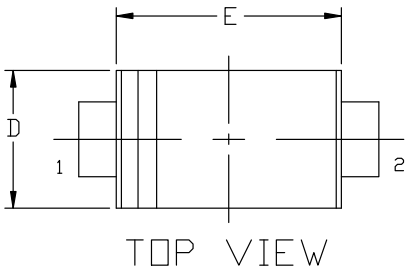
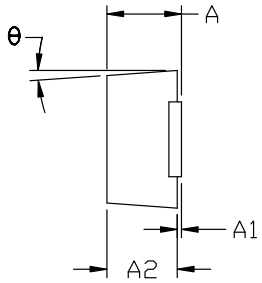


SOD−123−2 1.65x2.70x0.90
CASE 498
ISSUE E

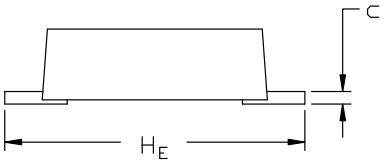
DATE 22 AUG 2023



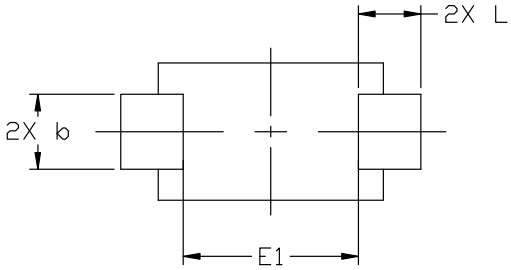
TOP VIEW



END VIEW



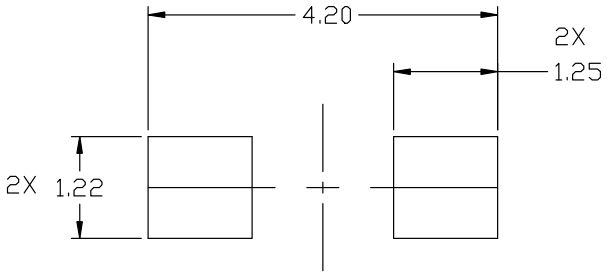
SIDE VIEW



BOTTOM VIEW

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	0.95	0.98
A1	0.00	0.05	0.10
A2	0.85	0.90	0.95
b	0.70	0.90	1.10
c	0.10	0.15	0.20
D	1.50	1.65	1.80
E	2.50	2.70	2.90
E1	1.70	2.10	2.50
H_E	3.40	3.60	3.80
L	0.55	0.75	0.95
θ	0°	---	8°

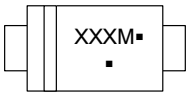
NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSIONS b AND L ARE TO BE MEASURED ON A FLAT SECTION OF THE LEAD BETWEEN 0.10 AND 0.25 FROM THE LEAD TIP.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH PROTRUSIONS, OR GATE BURRS.
5. FLAT LEAD.



RECOMMENDED
MOUNTING 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.

GENERIC
MARKING DIAGRAM*



XXX = Specific Device Code
M = Date Code
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

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DESCRIPTION:	**SOD−123−2 1.65x2.70x0.90**		**PAGE 1 OF 1**

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