Surface Mount Schottky Power Rectifier

Plastic SOD-123 Package

The MBR0530 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. These state—of—the—art devices have the following features:

Features

- Guardring for Stress Protection
- Low Forward Voltage
- 125°C Operating Junction Temperature
- Epoxy Meets UL 94, V-0 @ 0.125 in
- Package Designed for Optimal Automated Board Assembly
- 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

- 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



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SCHOTTKY BARRIER RECTIFIER 0.5 AMPERES 30 VOLTS



SOD-123 CASE 425 STYLE 1

MARKING DIAGRAM



B3 = Device Code
M = Date Code
Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping [†]
MBR0530T1G	SOD-123 (Pb-Free)	3,000 / Tape & Reel **
NRVB0530T1G	SOD-123 (Pb-Free)	3,000 / Tape & Reel **
MBR0530T3G	SOD-123 (Pb-Free)	10.000 / Tape & Reel ***
NRVB0530T3G	SOD-123 (Pb-Free)	10.000 / Tape & Reel ***

^{* 8} mm Tape, 7" Reel

^{*** 8} mm Tape, 13" Reel

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

^{*}For additional information on our Pb–Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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 (Rated V _R , T _L = 100°C)	I _{F(AV)}	0.5	А	
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I _{FSM}	5.5	А	
Storage Temperature Range	T _{stg}	-65 to +150	°C	
Operating Junction Temperature	TJ	-65 to +125	°C	
Voltage Rate of Change (Rated V _R)	dv/dt	1000	V/μs	
ESD Rating: Machine Model = C Human Body Model = 3B		> 400 > 8000	V	

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–Ambient (Note 1)	$R_{ heta JA}$	206	°C/W
Thermal Resistance – Junction–to–Lead	$R_{ heta JL}$	150	°C/W

^{1. 1} inch square pad size (1 x 0.5 inch for each lead) on FR4 board.

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 2) ($i_F = 0.1 \text{ Amps}, T_J = 25^{\circ}\text{C}$) ($i_F = 0.5 \text{ Amps}, T_J = 25^{\circ}\text{C}$)	V _F	0.375 0.43	V
Maximum Instantaneous Reverse Current (Note 2) (Rated DC Voltage, $T_C = 25$ °C) ($V_R = 15 \text{ V}, T_C = 25$ °C)	I _R	130 20	μΑ

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.

^{2.} Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%.

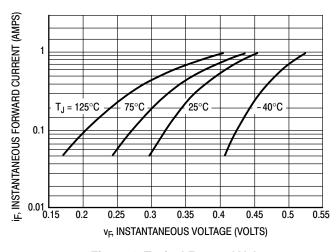


Figure 1. Typical Forward Voltage

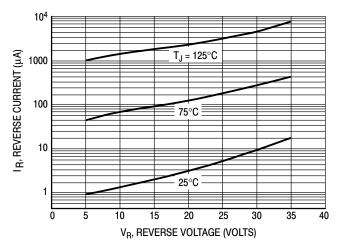


Figure 2. Typical Reverse Current

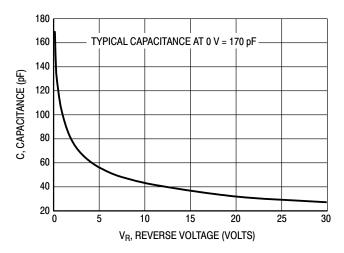


Figure 3. Typical Capacitance

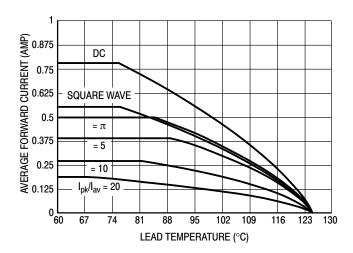


Figure 4. Current Derating (Lead)

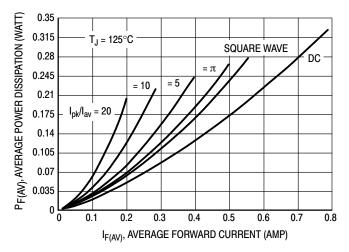
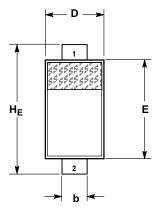
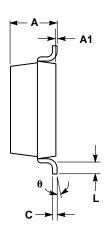


Figure 5. Power Dissipation

PACKAGE DIMENSIONS

SOD-123 CASE 425-04 **ISSUE G**





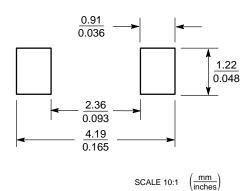
NOTES:

- 1. DIMENSIONING AND TOLERANCING PER ANSI
- Y14.5M. 1982.
- 2. CONTROLLING DIMENSION: INCH.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
Α	0.94	1.17	1.35	0.037	0.046	0.053
A1	0.00	0.05	0.10	0.000	0.002	0.004
b	0.51	0.61	0.71	0.020	0.024	0.028
С			0.15			0.006
D	1.40	1.60	1.80	0.055	0.063	0.071
E	2.54	2.69	2.84	0.100	0.106	0.112
HE	3.56	3.68	3.86	0.140	0.145	0.152
L	0.25			0.010	-	-
θ	0°		10∘	0°		10∘

STYLE 1: PIN 1. CATHODE 2 ANODE

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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