

Surface Mount Schottky Power Rectifier Plastic SOD-123 Package

MBR0530T1
MBR0530T3

Motorola Preferred Devices

**SCHOTTKY BARRIER
RECTIFIER
0.5 AMPERES
30 VOLTS**



**CASE 425-04
SOD-123**

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

- Guardring for Stress Protection
- Low Forward Voltage
- 125°C Operating Junction Temperature
- Epoxy Meets UL94, VO at 1/8"
- Package Designed for Optimal Automated Board Assembly

Mechanical Characteristics

- Reel Options: MBR0530T1 = 3,000 per 7" reel/8 mm tape
MBR0530T3 = 10,000 per 13" reel/8 mm tape
- Device Marking: B3
- 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

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	30	Volts
Average Rectified Forward Current (Rated V_R) $T_L = 100^\circ\text{C}$	$I_F(AV)$	0.5	Amps
Non-repetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I_{FSM}	5.5	Amps
Storage Temperature	T_{stg}	-65 to +125	°C
Operating Junction Temperature	T_J	-65 to +125	°C
Voltage Rate of Change (Rated V_R)	dv/dt	1000	V/ μs

THERMAL CHARACTERISTICS

Thermal Resistance — Junction to Ambient (1)	$R_{\theta JA}$	340	°C/W
Thermal Resistance — Junction to Lead (1)	$R_{\theta JL}$	150	°C/W

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (2) ($i_F = 0.1$ Amps, $T_J = 25^\circ\text{C}$) ($i_F = 0.5$ Amps, $T_J = 25^\circ\text{C}$)	V_F	0.375 0.43	Volts
Maximum Instantaneous Reverse Current (2) (Rated dc Voltage, $T_C = 25^\circ\text{C}$) ($V_R = 15$ V, $T_C = 25^\circ\text{C}$)	I_R	130 20	μA

(1) FR-4 or FR-5 = 3.5 x 1.5 inches using the Motorola minimum recommended footprint.

(2) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2\%$.

Preferred devices are Motorola recommended choices for future use and best overall value.

MBR0530T1

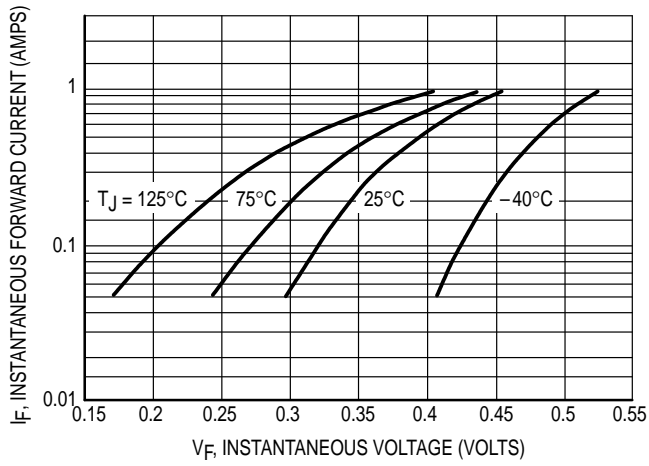


Figure 1. Typical Forward Voltage

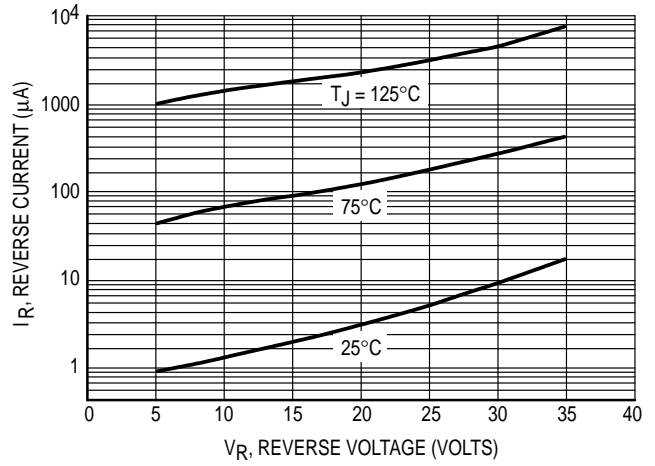


Figure 2. Typical Reverse Current

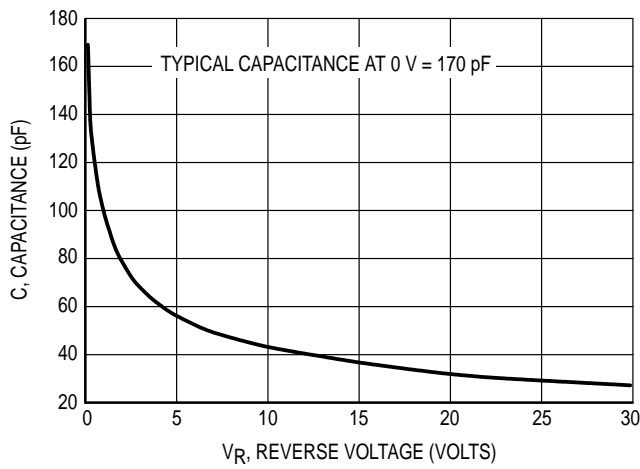


Figure 3. Typical Capacitance

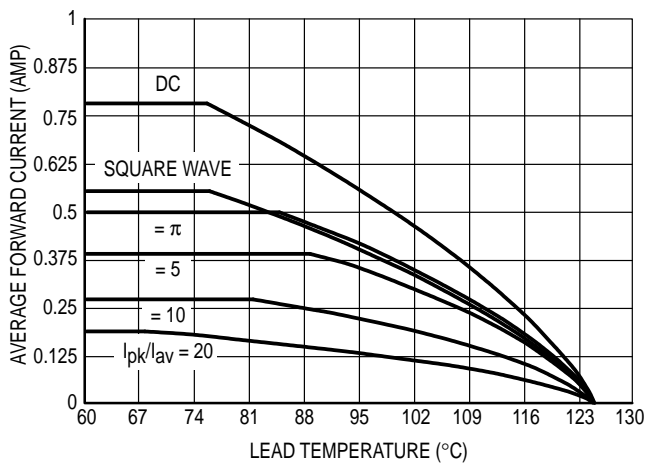


Figure 4. Current Derating (Lead)

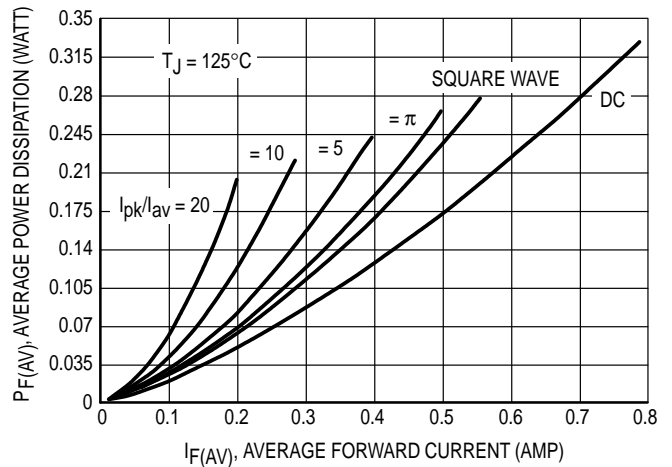
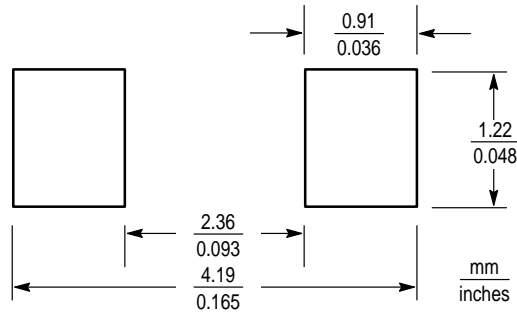


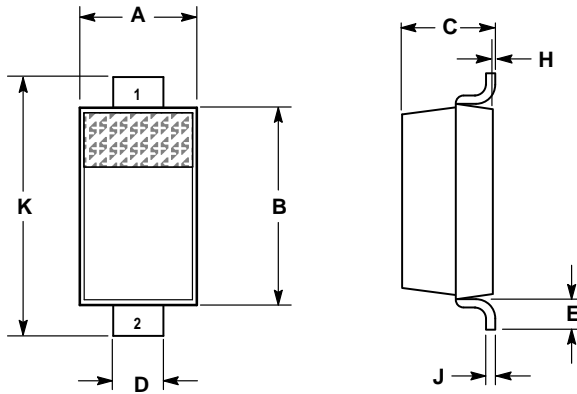
Figure 5. Power Dissipation

RECOMMENDED FOOTPRINT FOR SOD-123



SOD-123

PACKAGE DIMENSIONS




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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.055	0.071	1.40	1.80
B	0.100	0.112	2.55	2.85
C	0.037	0.053	0.95	1.35
D	0.020	0.028	0.50	0.70
E	0.004	—	0.25	—
H	0.000	0.004	0.00	0.10
J	—	0.006	—	0.15
K	0.140	0.152	3.55	3.85

STYLE 1:
 PIN 1. CATHODE
 2. ANODE

CASE 425-04
 ISSUE C
 PLASTIC

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters which may be provided in Motorola data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and  are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

Mfax is a trademark of Motorola, Inc.

How to reach us:

USA/EUROPE/Locations Not Listed: Motorola Literature Distribution;
 P.O. Box 5405, Denver, Colorado 80217. 303-675-2140 or 1-800-441-2447

JAPAN: Nippon Motorola Ltd.; Tatsumi-SPD-JLDC, 6F Seibu-Butsuryu-Center,
 3-14-2 Tatsumi Koto-Ku, Tokyo 135, Japan. 81-3-3521-8315

Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 602-244-6609
 INTERNET: http://Design-NET.com

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
 51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

