

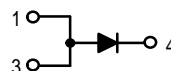
# SWITCHMODE™ Power Rectifier

Using the Schottky Barrier principle with a proprietary barrier metal. These state-of-the-art devices have the following features:

- Guardring for Stress Protection
- Maximum Die Size
- 150°C Operating Junction Temperature
- Short Heat Sink Tab Manufactured – Not Sheared

## Mechanical Characteristics

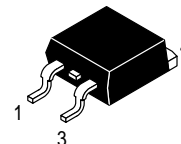
- Case: Epoxy, Molded
- Weight: 1.7 Grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads Readily Solderable
- Shipped 50 Units per Plastic Tube
- Available in 24 mm Tape and Reel, 800 Units per 13" Reel by Adding a "T4" Suffix to the Part Number
- Marking: B4030



**MBRB4030**

Motorola Preferred Device

**SCHOTTKY BARRIER  
RECTIFIER  
40 AMPERES  
30 VOLTS**



**CASE 418B-02  
D<sup>2</sup>PAK**

## 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 $V_R$ ) $T_C = +115^\circ\text{C}$ (1)	$I_{F(AV)}$	40	A
Peak Repetitive Forward Current (At Rated $V_R$ , Square Wave, 20 kHz) $T_C = +112^\circ\text{C}$	$I_{FRM}$	80	A
Nonrepetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	$I_{FSM}$	300	A
Peak Repetitive Reverse Surge Current (2.0 $\mu\text{s}$ , 1.0 kHz)	$I_{RRM}$	2.0	A
Storage Temperature	$T_{stg}$	- 65 to +150	$^\circ\text{C}$
Operating Junction Temperature	$T_J$	- 65 to +150	$^\circ\text{C}$
Voltage Rate of Change (Rated $V_R$ )	dv/dt	10,000	V/ $\mu\text{s}$
Reverse Energy (Unclamped Inductive Surge) (Inductance = 3 mH), $T_C = 25^\circ\text{C}$	W	600	mJ

## THERMAL CHARACTERISTICS

Thermal Resistance – Junction to Case	$R_{\theta JC}$	1.0	$^\circ\text{C}/\text{W}$
Thermal Resistance – Junction to Ambient (2)	$R_{\theta JA}$	50	$^\circ\text{C}/\text{W}$

## ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (1 and 3), per Device ( $I_F = 20\text{ A}$ , $T_C = +25^\circ\text{C}$ ) ( $I_F = 20\text{ A}$ , $T_C = +150^\circ\text{C}$ ) ( $I_F = 40\text{ A}$ , $T_C = +25^\circ\text{C}$ ) ( $I_F = 40\text{ A}$ , $T_C = +150^\circ\text{C}$ )	$V_F$	0.46 0.34 0.55 0.45	V
Maximum Instantaneous Reverse Current (3), per Device (Rated DC Voltage, $T_C = +25^\circ\text{C}$ ) (Rated DC Voltage, $T_C = +125^\circ\text{C}$ )	$I_R$	0.35 150	mA

- (1) Rating applies when pins 1 and 3 are connected.  
 (2) Rating applies when surface mounted on the minimum pad size recommended.  
 (3) Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

SWITCHMODE is a trademark of Motorola, Inc.

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

ELECTRICAL CHARACTERISTICS

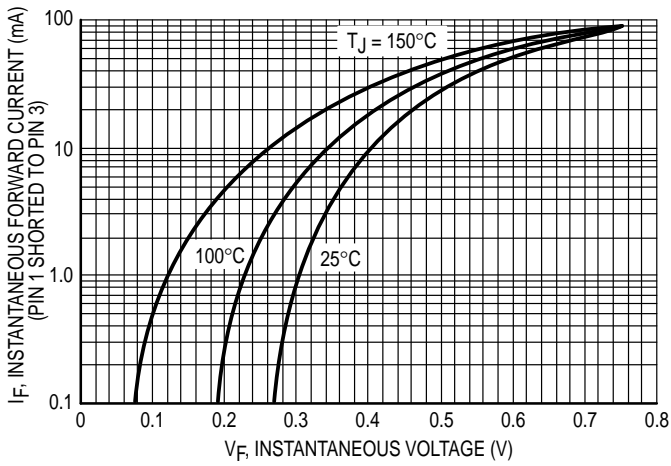


Figure 1. Maximum Forward Voltage

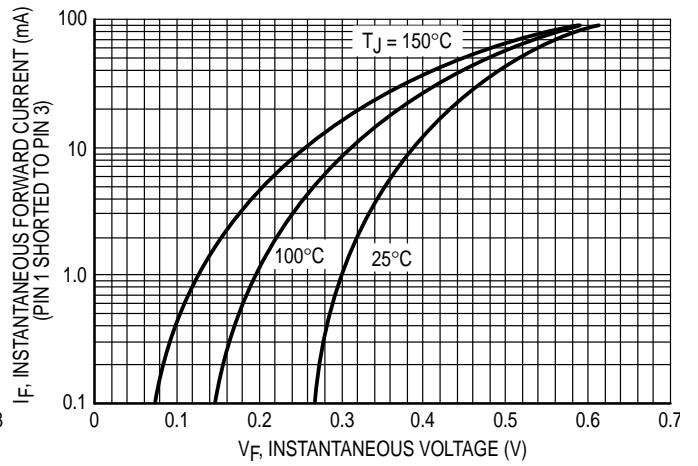


Figure 2. Typical Forward Voltage

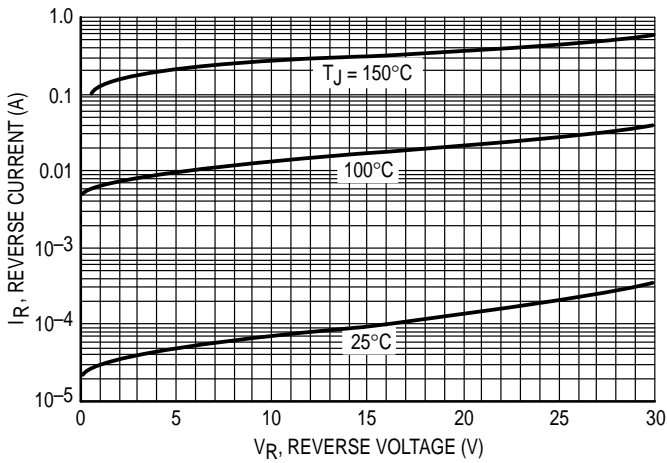


Figure 3. Maximum Reverse Current

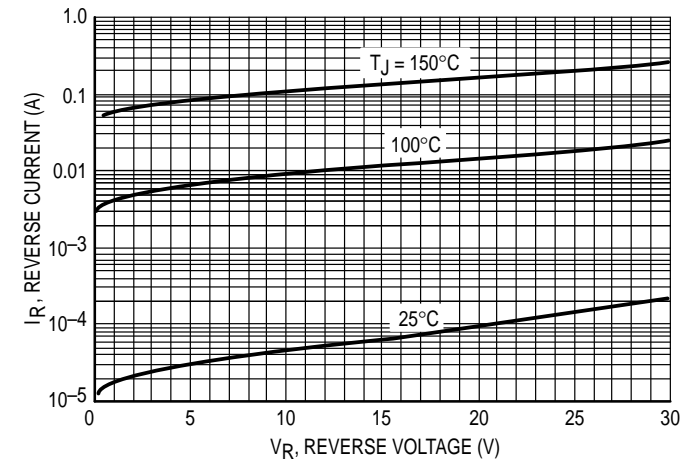


Figure 4. Typical Reverse Current

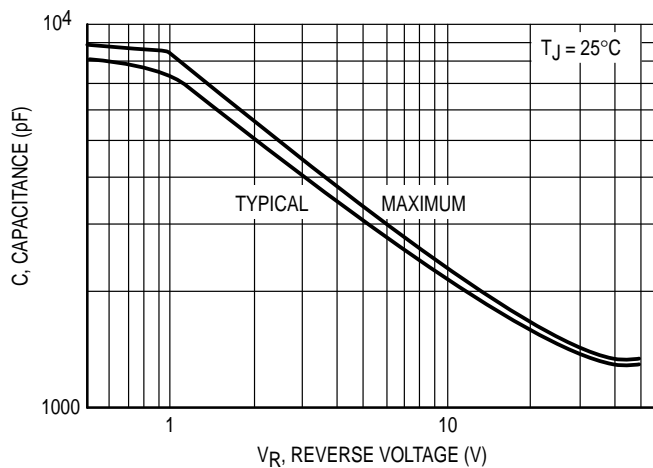


Figure 5. Maximum and Typical Capacitance

ELECTRICAL CHARACTERISTICS

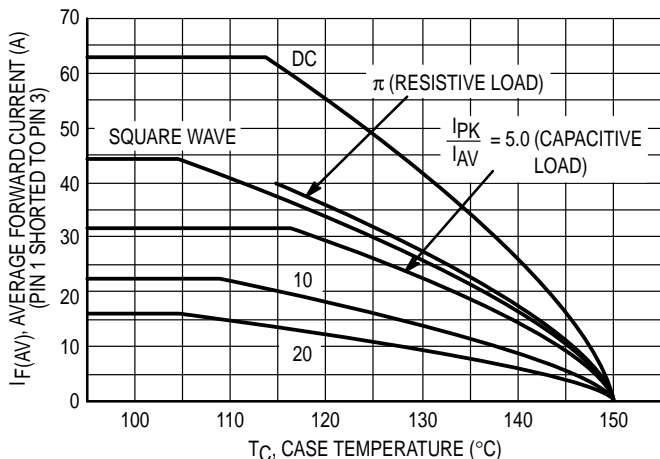


Figure 6. Current Derating, Infinite Heatsink

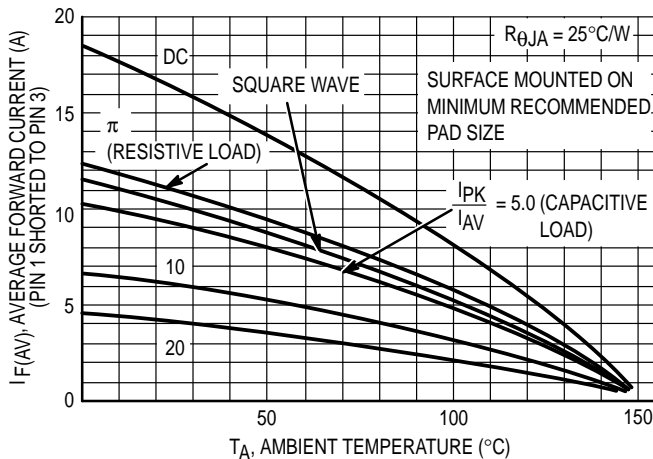


Figure 7. Current Derating

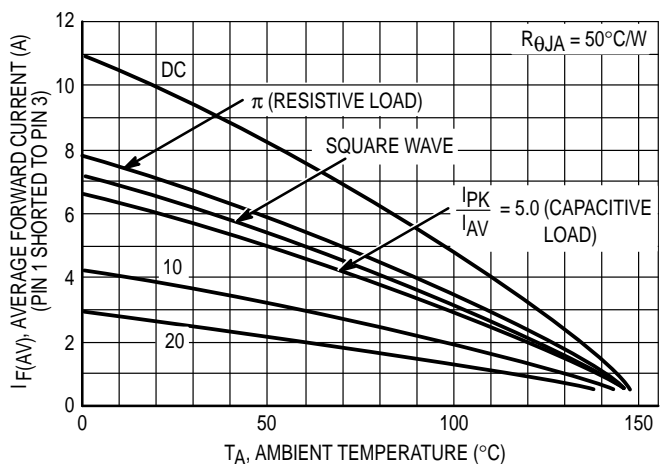


Figure 8. Current Derating, Free Air

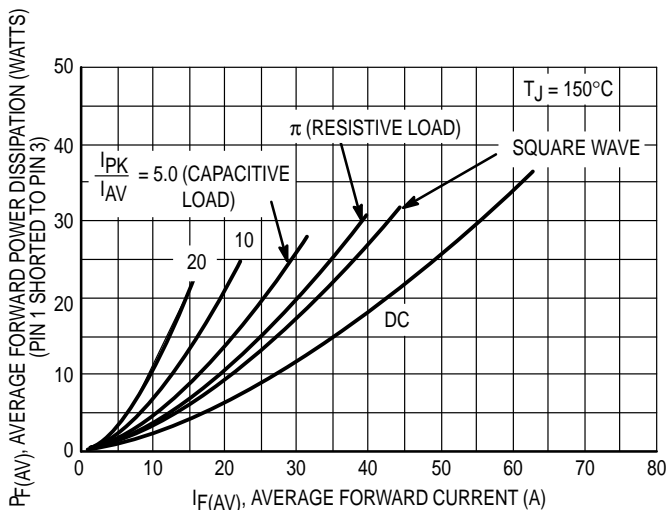


Figure 9. Forward Power Dissipation

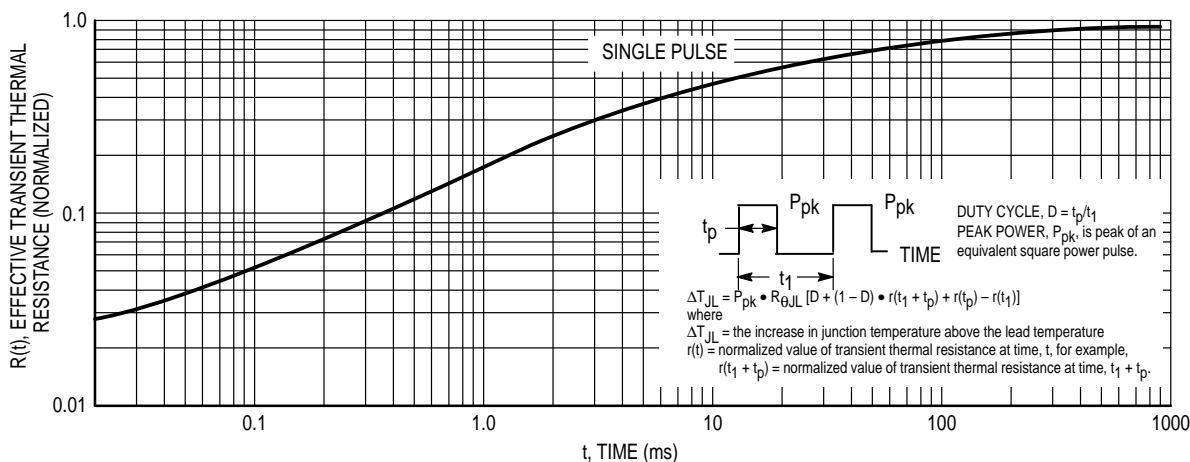
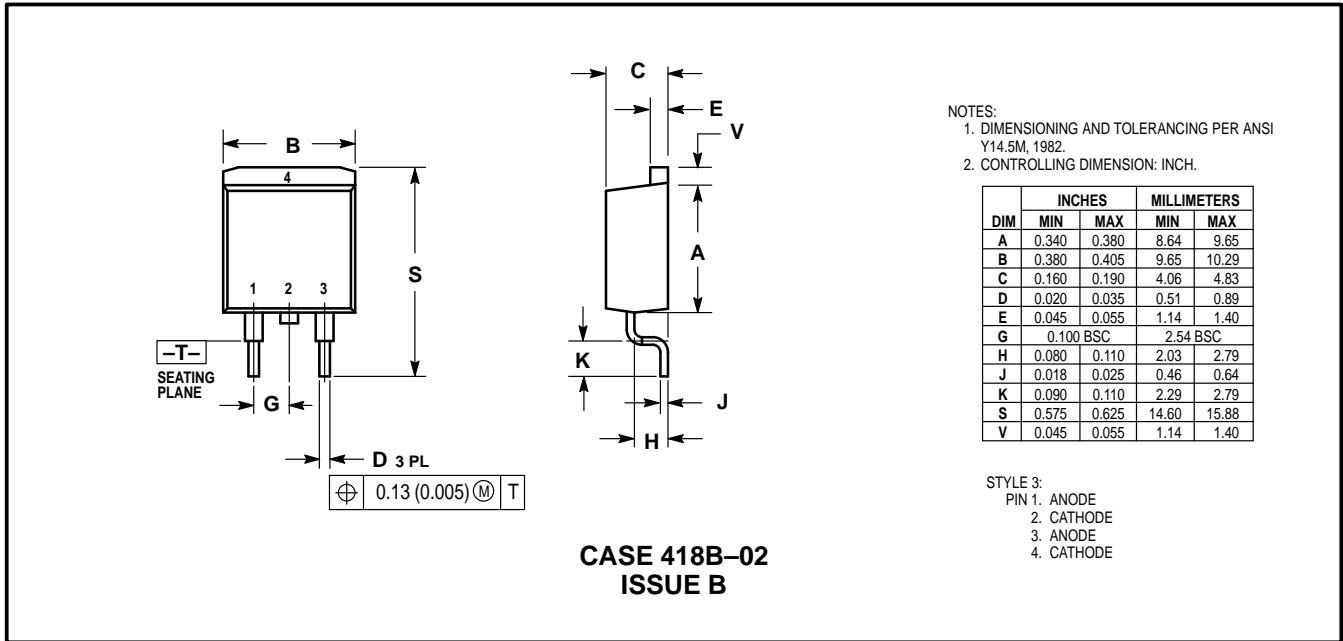


Figure 10. Thermal Response

PACKAGE DIMENSIONS



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

