

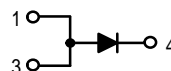
# SWITCHMODE™ Power Rectifier

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

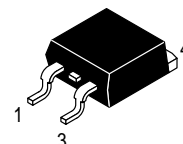
- Case: Epoxy, Molded
- Weight: 1.7 Grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads Readily Solderable
- Shipped 50 Units per Plastic Tube
- Available in 24 mm Tape and Reel, 800 Units per 13" Reel by Adding a "T4" Suffix to the Part Number
- Marking: B4030



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

## 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

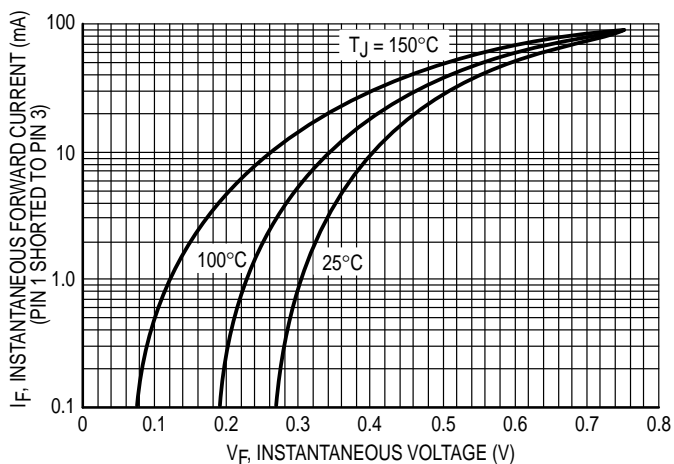


Figure 1. Maximum Forward Voltage

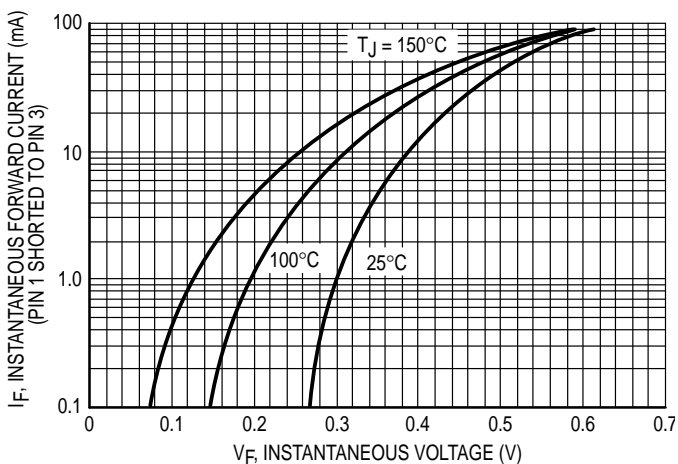


Figure 2. Typical Forward Voltage

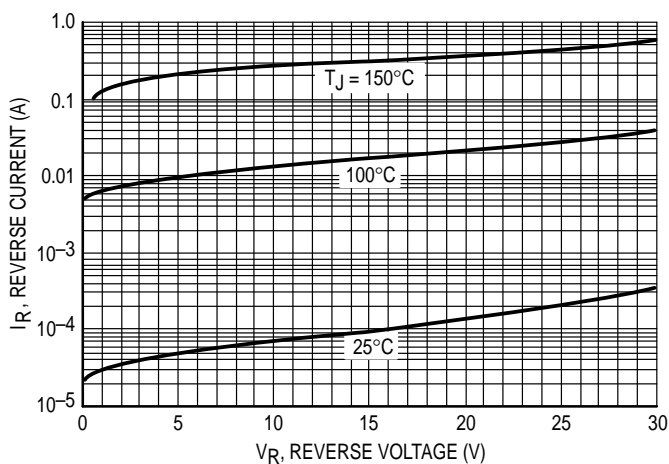


Figure 3. Maximum Reverse Current

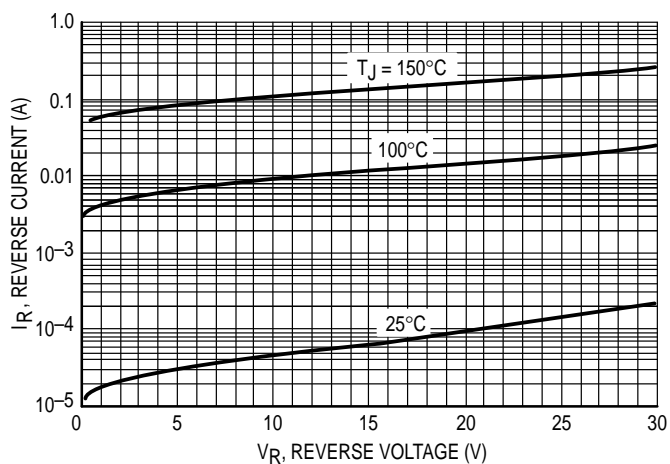


Figure 4. Typical Reverse Current

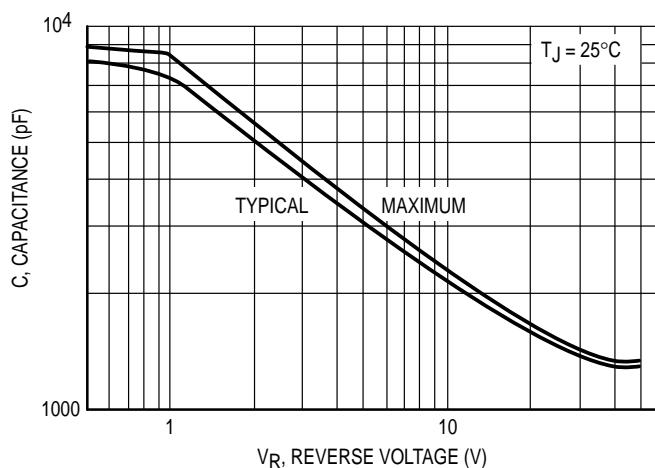


Figure 5. Maximum and Typical Capacitance

# ELECTRICAL CHARACTERISTICS

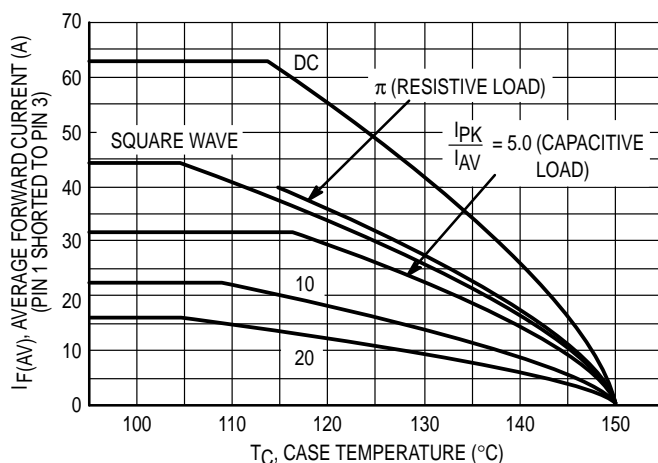


Figure 6. Current Derating, Infinite Heatsink

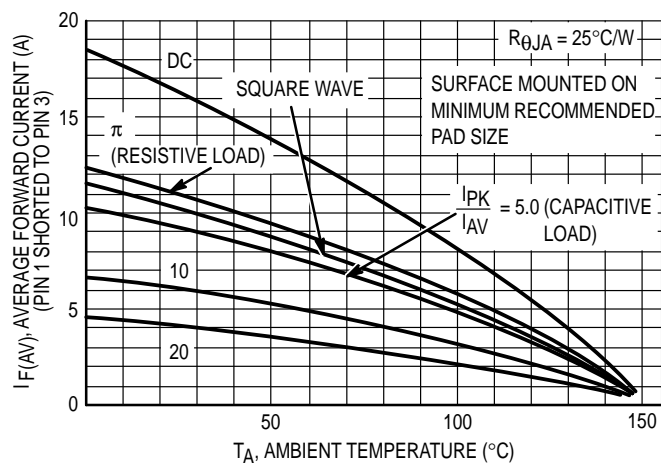


Figure 7. Current Derating

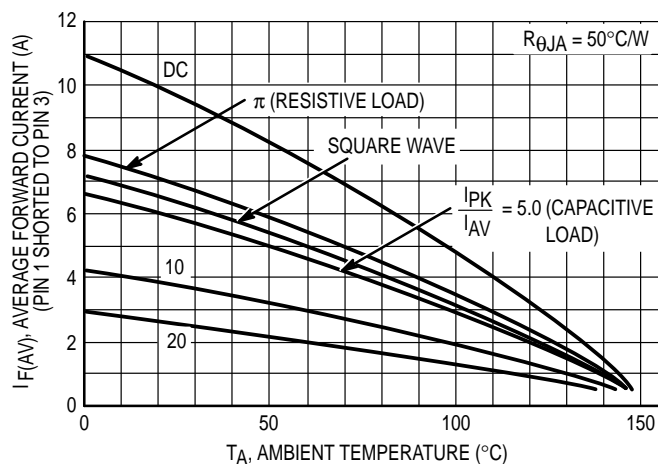


Figure 8. Current Derating, Free Air

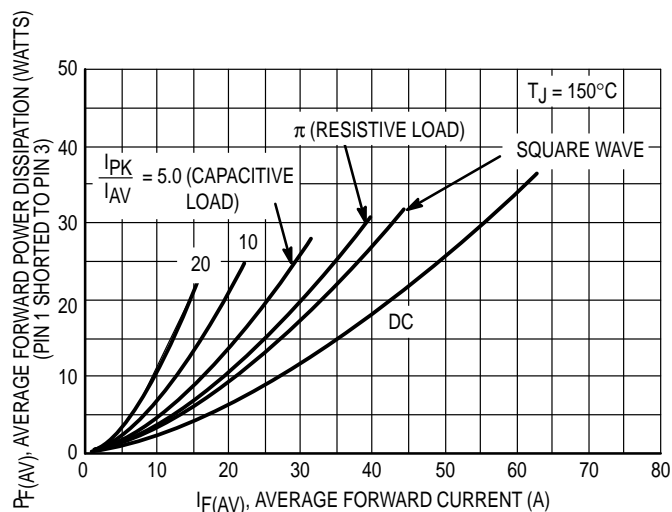


Figure 9. Forward Power Dissipation

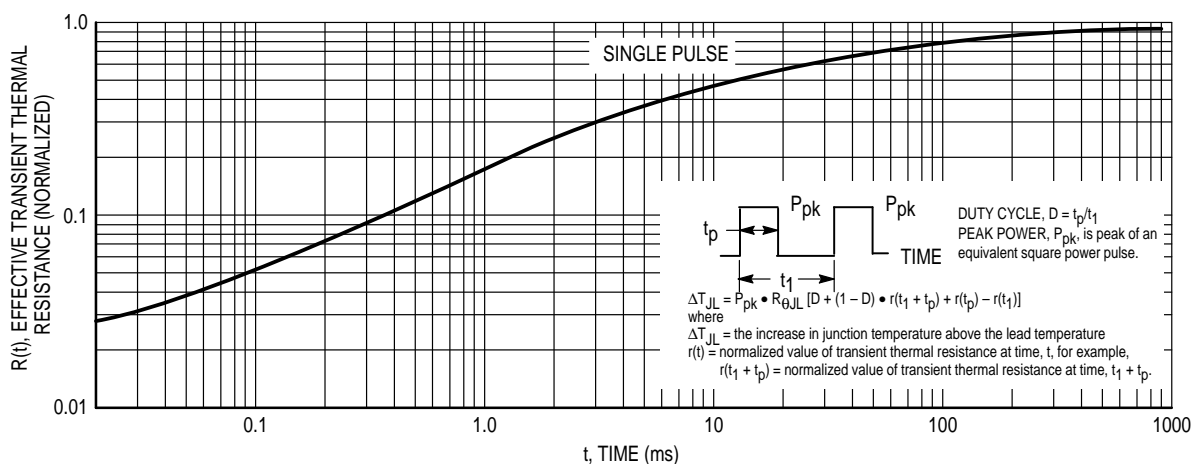
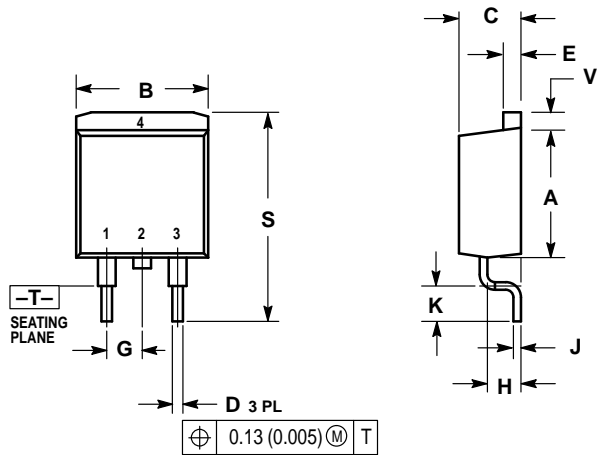


Figure 10. Thermal Response

PACKAGE DIMENSIONS




CASE 418B-02  
ISSUE B

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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.340	0.380	8.64	9.65
B	0.380	0.405	9.65	10.29
C	0.160	0.190	4.06	4.83
D	0.020	0.035	0.51	0.89
E	0.045	0.055	1.14	1.40
G	0.100 BSC		2.54 BSC	
H	0.080	0.110	2.03	2.79
J	0.018	0.025	0.46	0.64
K	0.090	0.110	2.29	2.79
S	0.575	0.625	14.60	15.88
V	0.045	0.055	1.14	1.40

STYLE 3:  
PIN 1. ANODE  
2. CATHODE  
3. ANODE  
4. CATHODE

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**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

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

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

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