

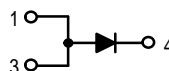
SWITCHMODE™ Power Rectifier

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

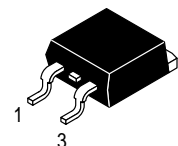
- Case: Epoxy, Molded
- Weight: 1.7 Grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads Readily Solderable
- Shipped 50 Units per Plastic Tube
- Available in 24 mm Tape and Reel, 800 Units per 13" Reel by Adding a "T4" Suffix to the Part Number
- Marking: B4030



MBRB4030

Motorola Preferred Device

**SCHOTTKY BARRIER
RECTIFIER
40 AMPERES
30 VOLTS**



**CASE 418B-02
D²PAK**

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 μs , 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/ μs |
| 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 μs , 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

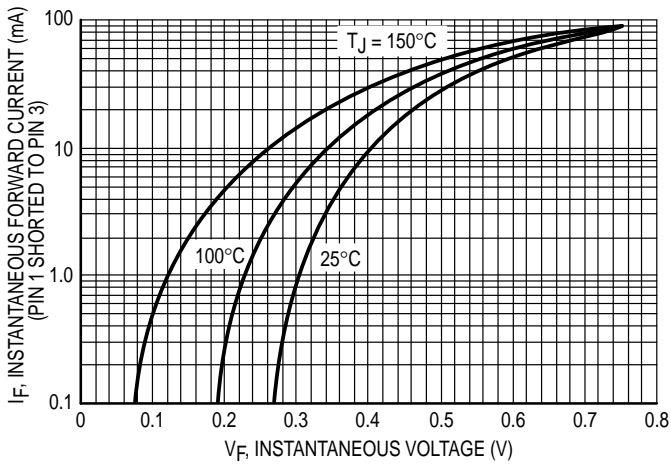


Figure 1. Maximum Forward Voltage

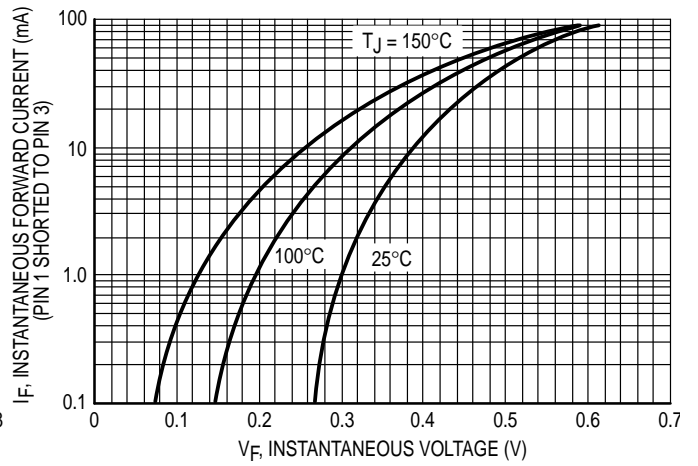


Figure 2. Typical Forward Voltage

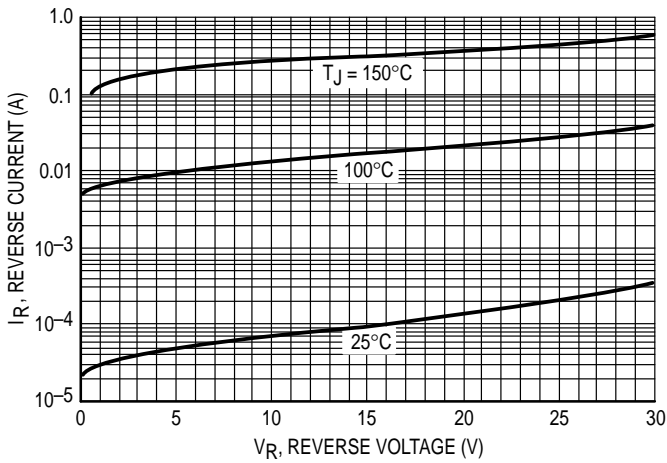


Figure 3. Maximum Reverse Current

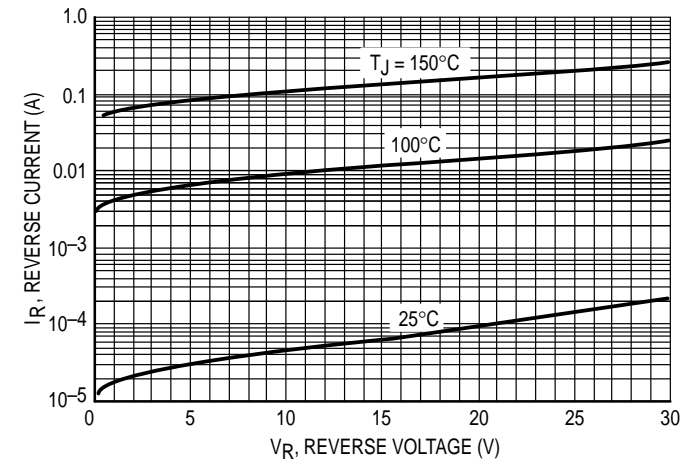


Figure 4. Typical Reverse Current

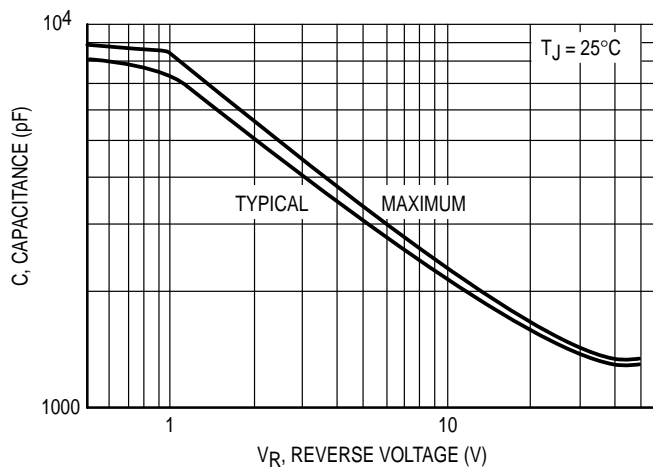


Figure 5. Maximum and Typical Capacitance

ELECTRICAL CHARACTERISTICS

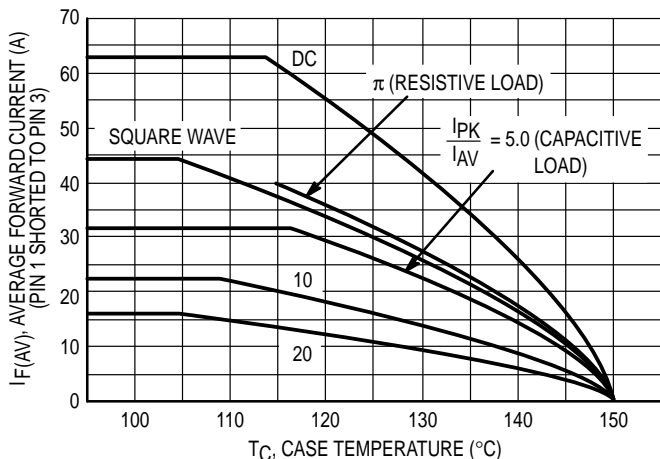


Figure 6. Current Derating, Infinite Heatsink

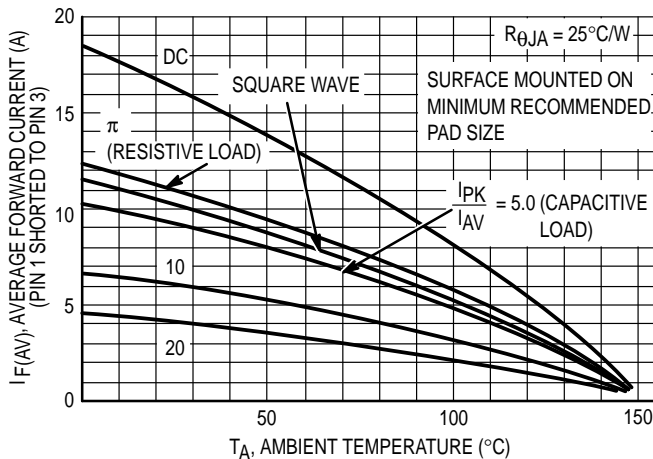


Figure 7. Current Derating

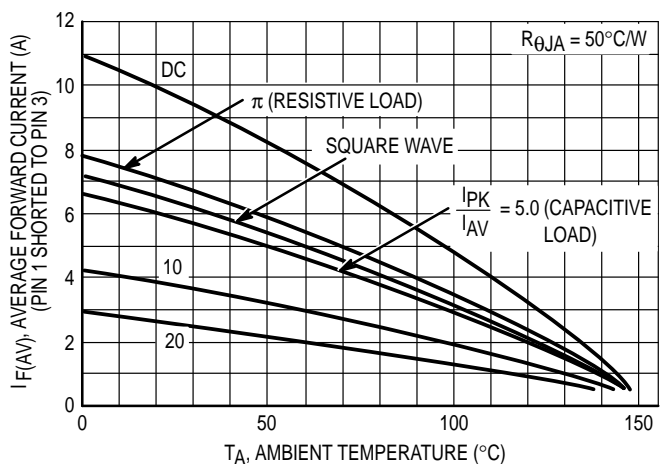


Figure 8. Current Derating, Free Air

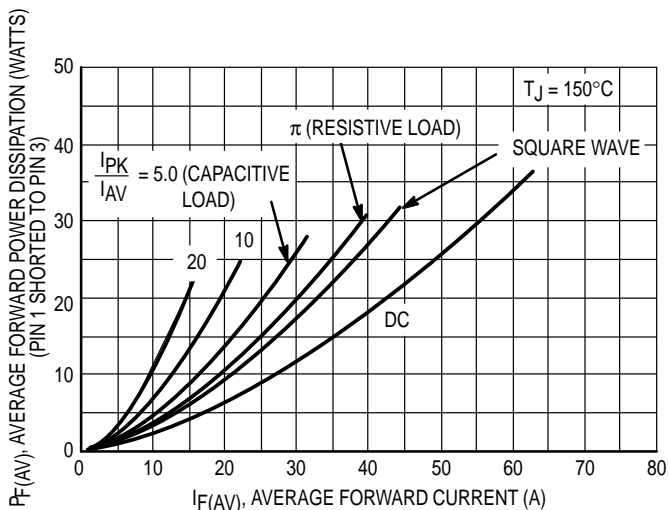


Figure 9. Forward Power Dissipation

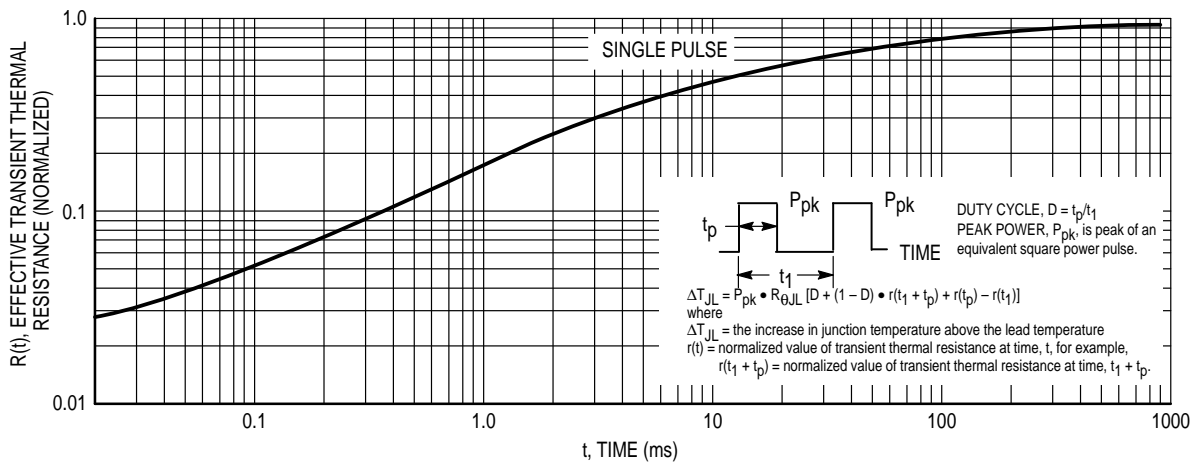
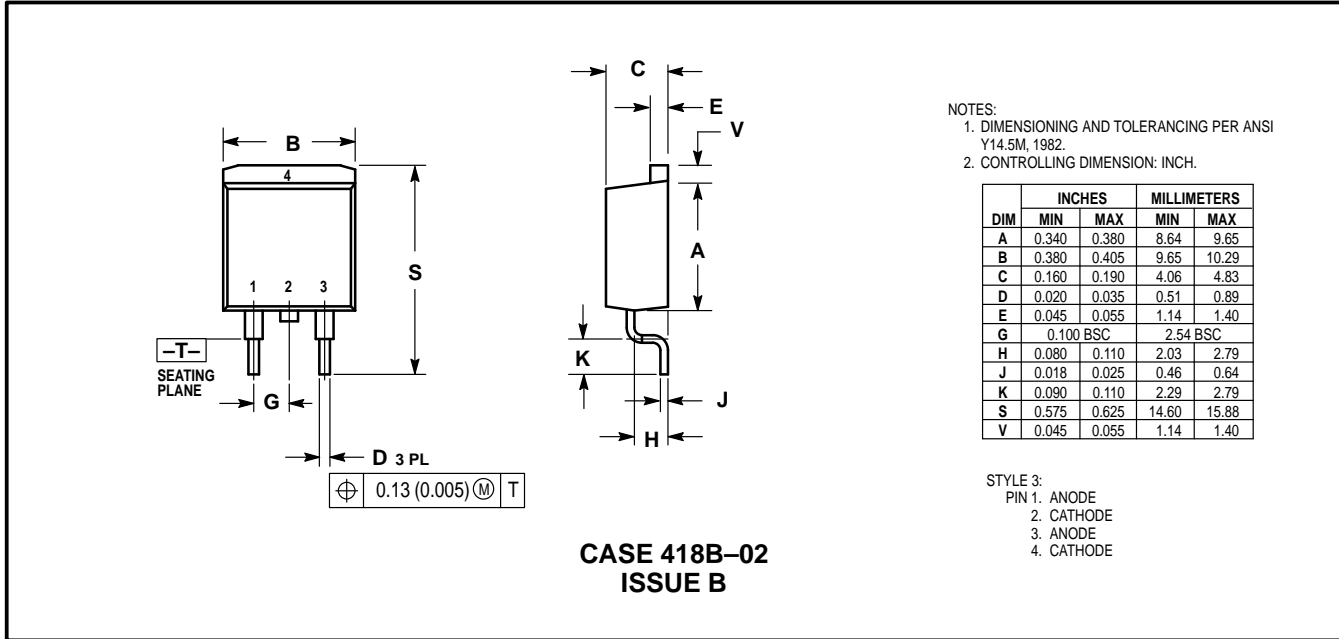


Figure 10. Thermal Response

PACKAGE DIMENSIONS



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