

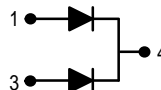
# SWITCHMODE™ Power Rectifier

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:

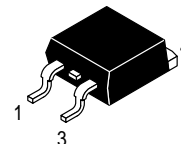
- Case: Epoxy, Molded
- Weight: 1.7 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 50 Units per Plastic Tube
- Available in 24 mm Tape and Reel, 800 Units per 13" Reel by Adding a "T4" Suffix to the Part Number
- Marking: B3030



**MBRB3030CT**

Motorola Preferred Device

**SCHOTTKY BARRIER  
RECTIFIER  
30 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 $V_R$ , $T_C = +134^\circ\text{C}$ )	$I_{F(AV)}$	30 15	A Per Device Per Leg
Peak Repetitive Forward Current, Per Leg (At Rated $V_R$ , Square Wave, 20 kHz) $T_C = +137^\circ\text{C}$	$I_{FRM}$	30	A
Nonrepetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	$I_{FSM}$	200	A
Peak Repetitive Reverse Surge Current (2.0 $\mu\text{s}$ , 1.0 kHz)	$I_{RRM}$	2.0	A
Storage Temperature	$T_{stg}$	- 55 to +150	$^\circ\text{C}$
Operating Junction Temperature	$T_J$	- 55 to +150	$^\circ\text{C}$
Voltage Rate of Change (Rated $V_R$ )	$dv/dt$	10000	V/ $\mu\text{s}$
Reverse Energy (Unclamped Inductive Surge) (Inductance = 3 mH), $T_C = 25^\circ\text{C}$	W	100	mJ

## THERMAL CHARACTERISTICS

Thermal Resistance – Junction to Case	$R_{\theta JC}$	1.0	$^\circ\text{C}/\text{W}$
Thermal Resistance – Junction to Ambient (1)	$R_{\theta JA}$	50	$^\circ\text{C}/\text{W}$

## ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (2), per Leg ( $I_F = 15\text{ A}$ , $T_C = +25^\circ\text{C}$ ) ( $I_F = 15\text{ A}$ , $T_C = +150^\circ\text{C}$ ) ( $I_F = 30\text{ A}$ , $T_C = +25^\circ\text{C}$ ) ( $I_F = 30\text{ A}$ , $T_C = +150^\circ\text{C}$ )	$V_F$	0.54 0.47 0.67 0.66	V
Maximum Instantaneous Reverse Current (2), per Leg (Rated DC Voltage, $T_C = +25^\circ\text{C}$ ) (Reverse Voltage = 10 V, $T_C = +150^\circ\text{C}$ ) (Rate DC Voltage, $T_C = +150^\circ\text{C}$ )	$I_R$	0.6 46 145	mA

(1) When mounted using minimum recommended pad size on FR-4 board.

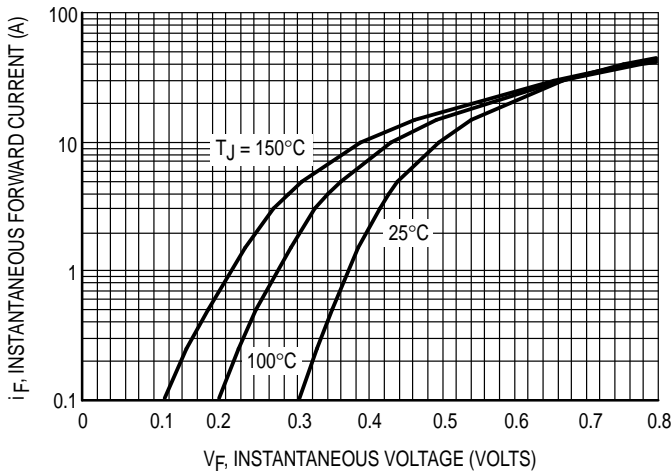
(2) Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

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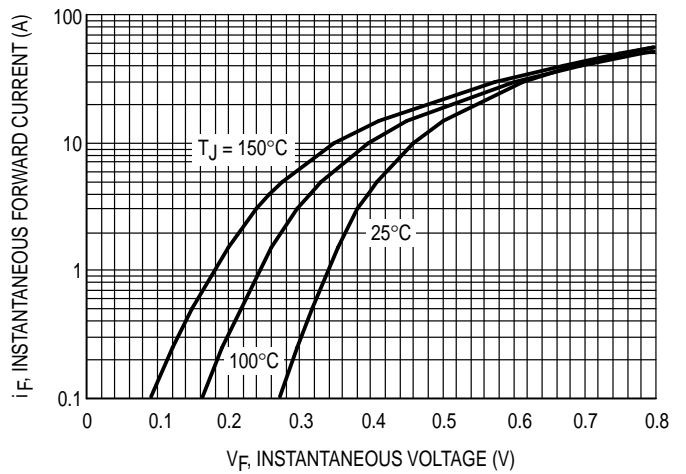
Preferred devices are Motorola recommended choices for future use and best overall value.



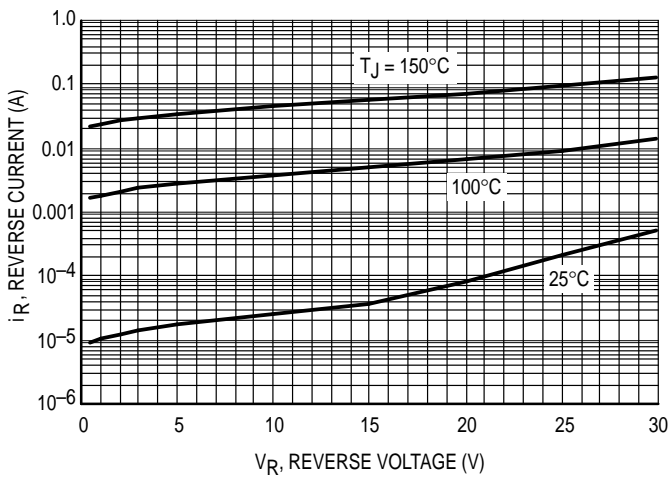
**ELECTRICAL CHARACTERISTICS**



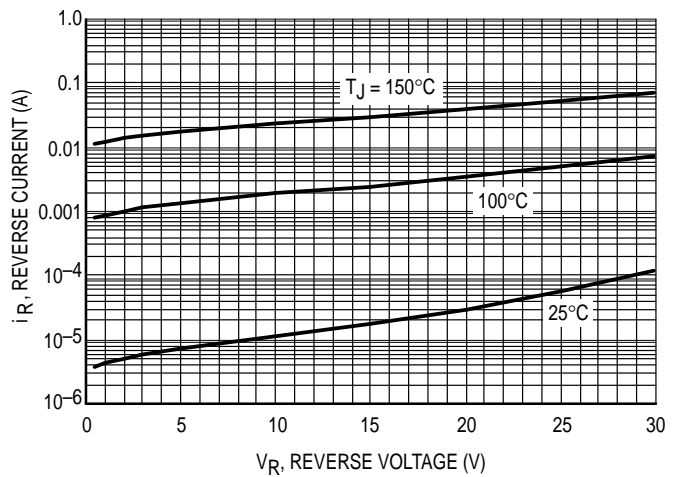
**Figure 1. Maximum Forward Voltage, Per Leg**



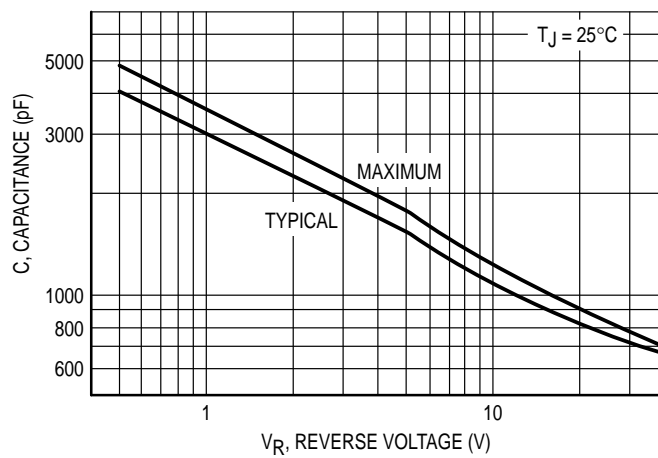
**Figure 2. Typical Forward Voltage, Per Leg**



**Figure 3. Maximum Reverse Current, Per Leg**



**Figure 4. Typical Reverse Current, Per Leg**



**Figure 5. Capacitance**

TYPICAL CHARACTERISTICS

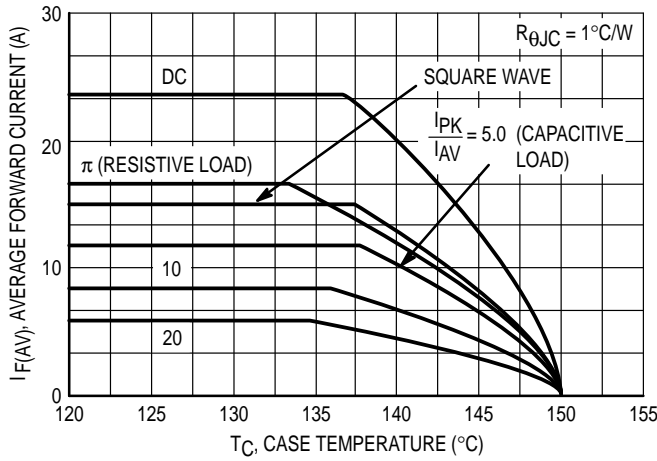


Figure 6. Current Derating, Infinite Heatsink

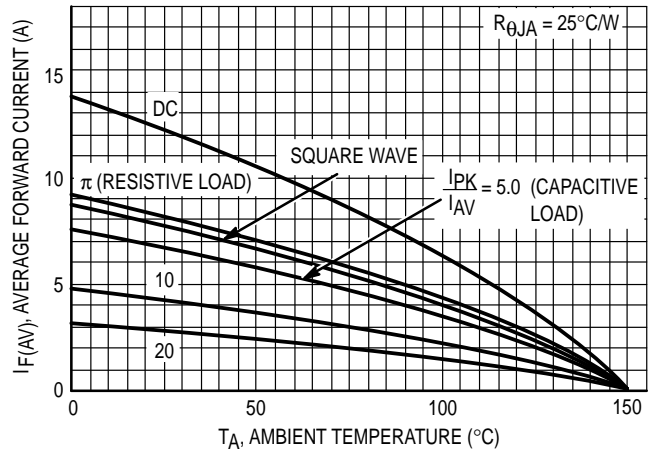


Figure 7. Current Derating

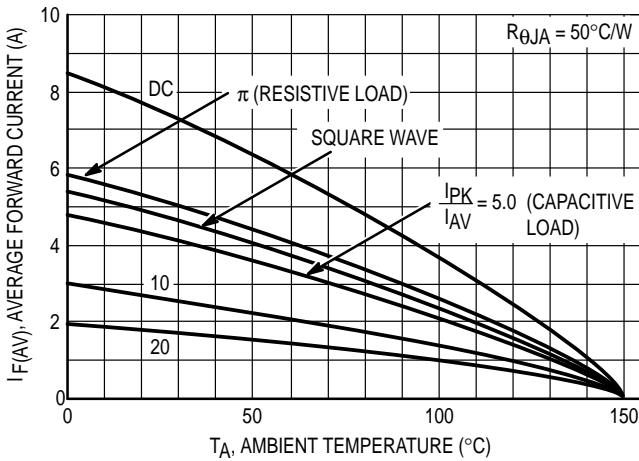


Figure 8. Current Derating, Free Air

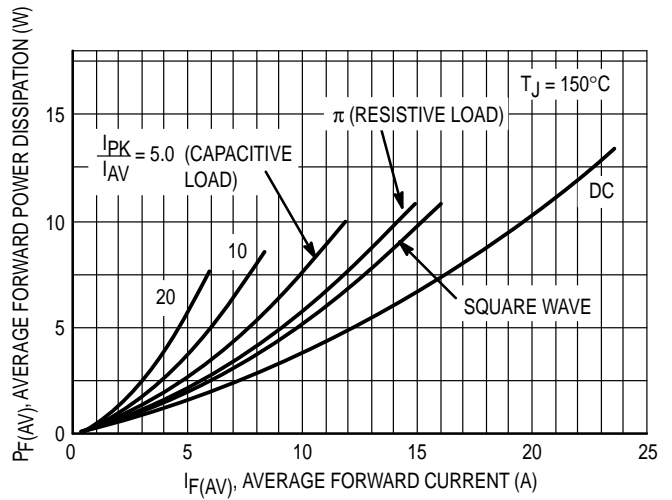


Figure 9. Forward Power Dissipation

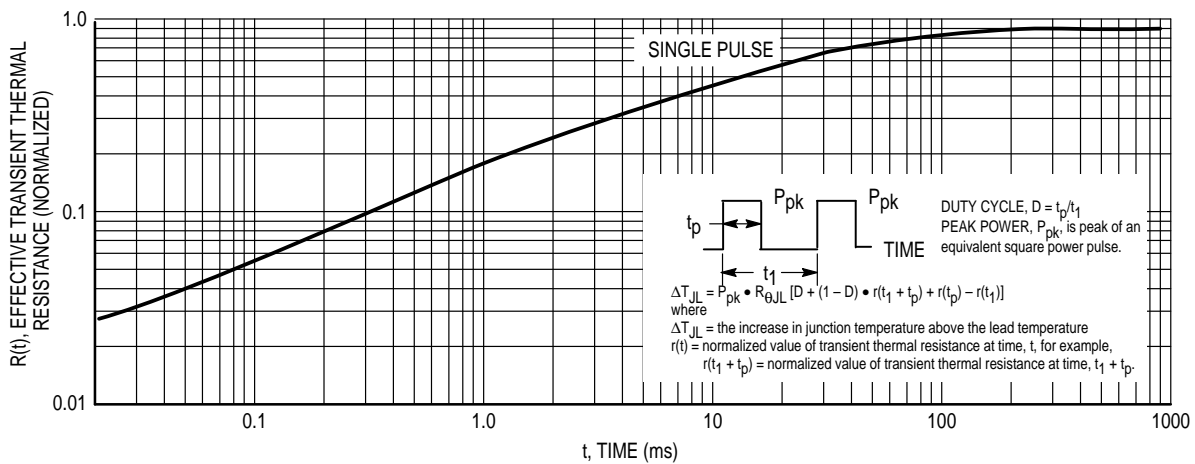
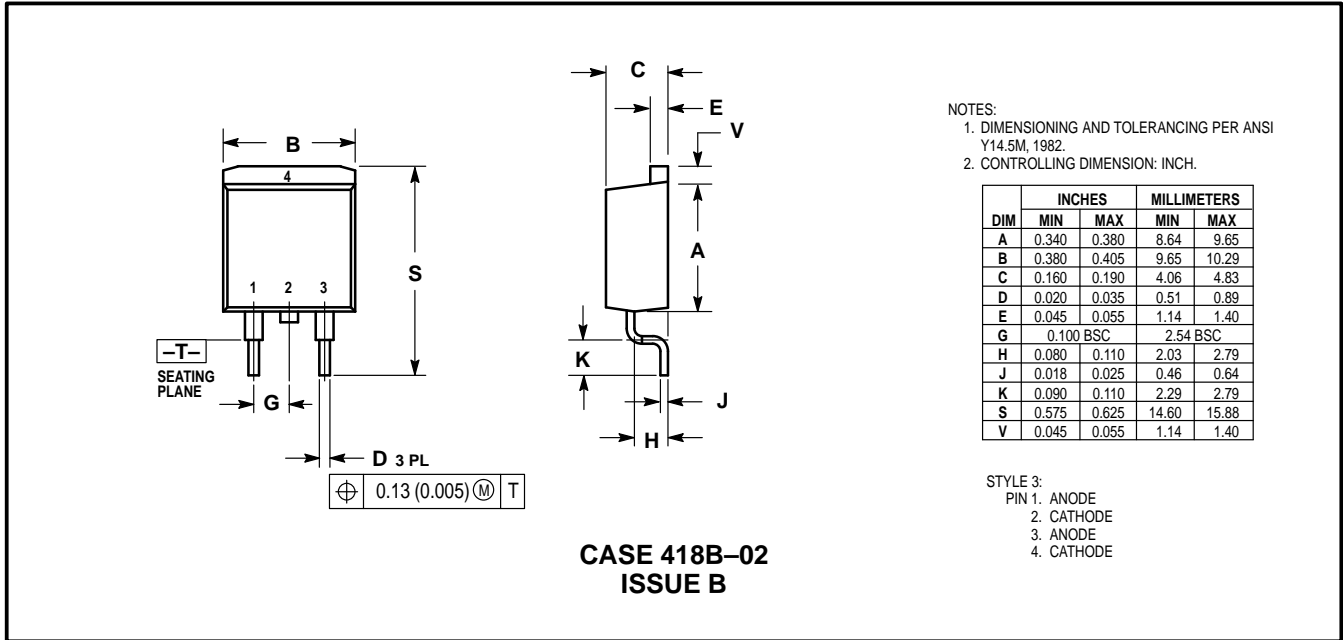
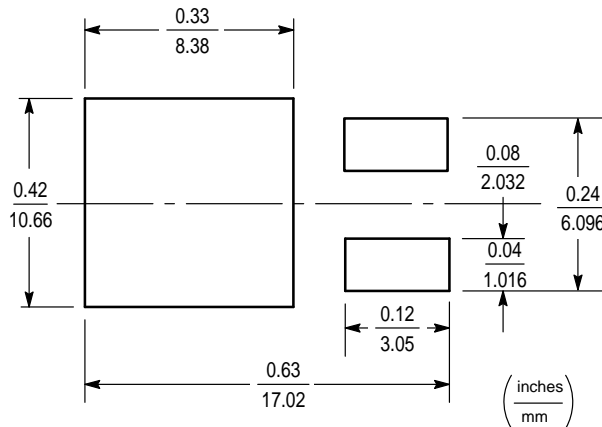


Figure 10. Thermal Response

PACKAGE DIMENSIONS



RECOMMENDED FOOTPRINT FOR D<sup>2</sup>PAK



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