

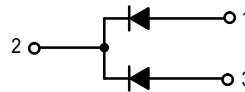
# SWITCHMODE™ Schottky Power Rectifier

The SWITCHMODE Power Rectifier employs the Schottky Barrier principle in a large area metal-to-silicon power diode. State-of-the-art geometry features epitaxial construction with oxide passivation and metal overlay contact. Ideally suited for use as rectifiers in very low-voltage, high-frequency switching power supplies, free wheeling diodes and polarity protection diodes.

- Highly Stable Oxide Passivated Junction
- Very Low Forward Voltage Drop
- Matched Dual Die Construction
- High Junction Temperature Capability
- High dv/dt Capability
- Excellent Ability to Withstand Reverse Avalanche Energy Transients
- Guardring for Stress Protection
- Epoxy Meets UL94, VO at 1/8"
- Electrically Isolated. No Isolation Hardware Required.
- UL Recognized File #E69369(1)

### Mechanical Characteristics

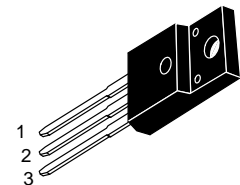
- Case: Epoxy, Molded
- Weight: 1.9 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 50 units per plastic tube
- Marking: B2045



**MBRF2045CT**

Motorola Preferred Device

**SCHOTTKY BARRIER  
RECTIFIER  
20 AMPERES  
45 VOLTS**



**CASE 221D-02  
ISOLATED TO-220**

### MAXIMUM RATINGS, PER LEG

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	45	Volts
Average Rectified Forward Current (Rated $V_R$ ), $T_C = 135^\circ\text{C}$	$I_F(AV)$	10 20	Amps
Peak Repetitive Forward Current Per Diode Leg (Rated $V_R$ , Square Wave, 20 kHz), $T_C = 135^\circ\text{C}$	$I_{FRM}$	20	Amps
Non-repetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	$I_{FSM}$	150	Amps
Peak Repetitive Reverse Surge Current (2.0 $\mu\text{s}$ , 1.0 kHz)	$I_{RRM}$	1.0	Amp
Operating Junction and Storage Temperature	$T_J, T_{stg}$	- 65 to +150	$^\circ\text{C}$
Voltage Rate of Change (Rated $V_R$ )	dv/dt	10000	V/ $\mu\text{s}$
RMS Isolation Voltage (t = 1 second, R.H. $\leq$ 30%, $T_A = 25^\circ\text{C}$ ) <sup>(2)</sup>	Per Figure 5 Per Figure 6 <sup>(1)</sup> Per Figure 7	$V_{iso1}$ 4500 $V_{iso2}$ 3500 $V_{iso3}$ 1500	Volts

### THERMAL CHARACTERISTICS, PER LEG

Maximum Thermal Resistance, Junction to Case	$R_{\theta JC}$	4.0	$^\circ\text{C/W}$
Lead Temperature for Soldering Purposes: 1/8" from Case for 5 seconds	$T_L$	260	$^\circ\text{C}$

(1) UL Recognized mounting method is per Figure 6.

(2) Proper strike and creepage distance must be provided.

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

# MBRF2045CT

## ELECTRICAL CHARACTERISTICS, PER LEG

Characteristic	Symbol	Max	Unit
Maximum Instantaneous Forward Voltage (3) ( $i_F = 20$ Amp, $T_C = 25^\circ\text{C}$ ) ( $i_F = 20$ Amp, $T_C = 125^\circ\text{C}$ ) ( $i_F = 10$ Amp, $T_C = 125^\circ\text{C}$ )	$v_F$	0.84 0.72 0.57	Volts
Maximum Instantaneous Reverse Current (3) (Rated DC Voltage, $T_C = 25^\circ\text{C}$ ) (Rated DC Voltage, $T_C = 125^\circ\text{C}$ )	$i_R$	0.1 15	mA

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

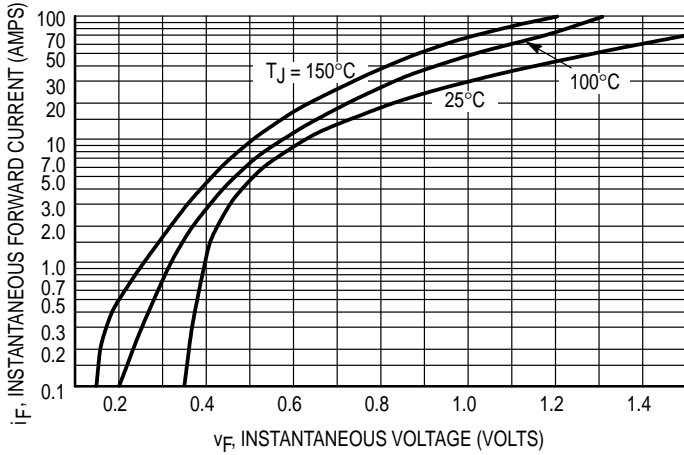


Figure 1. Maximum Forward Voltage

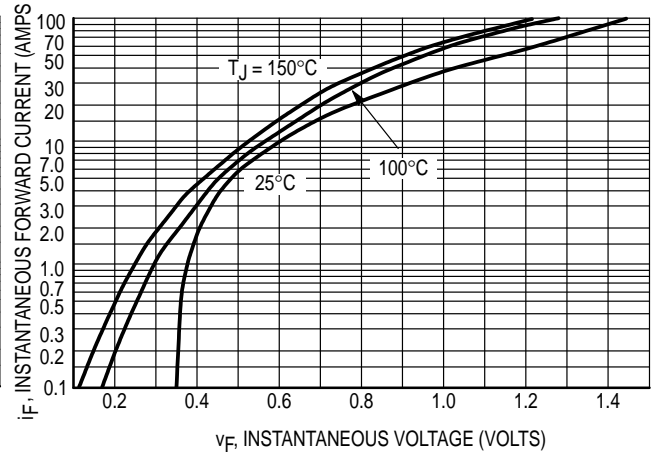


Figure 2. Typical Forward Voltage

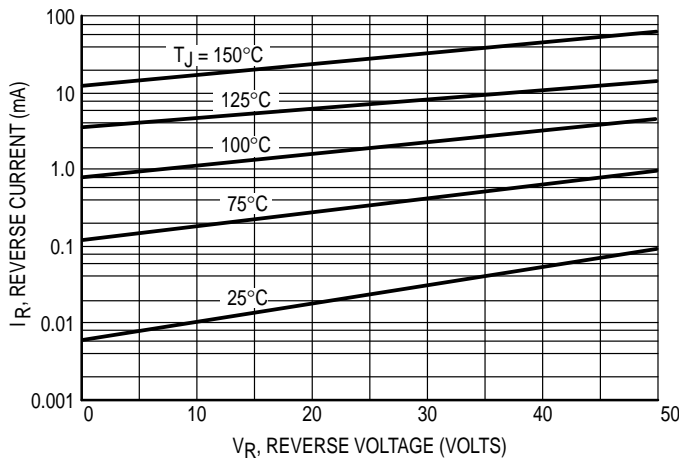


Figure 3. Maximum Reverse Current

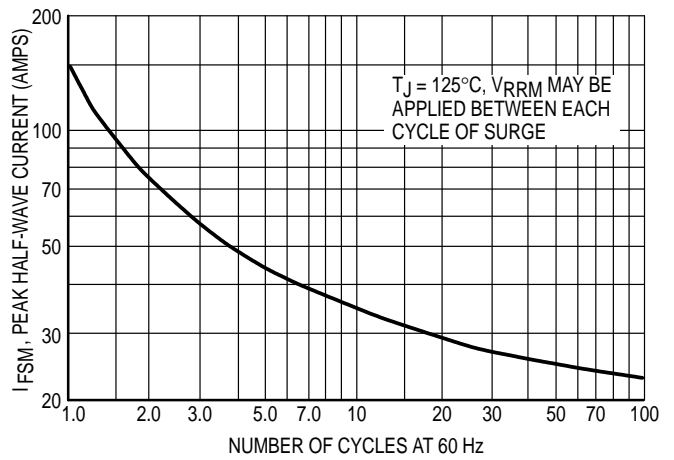
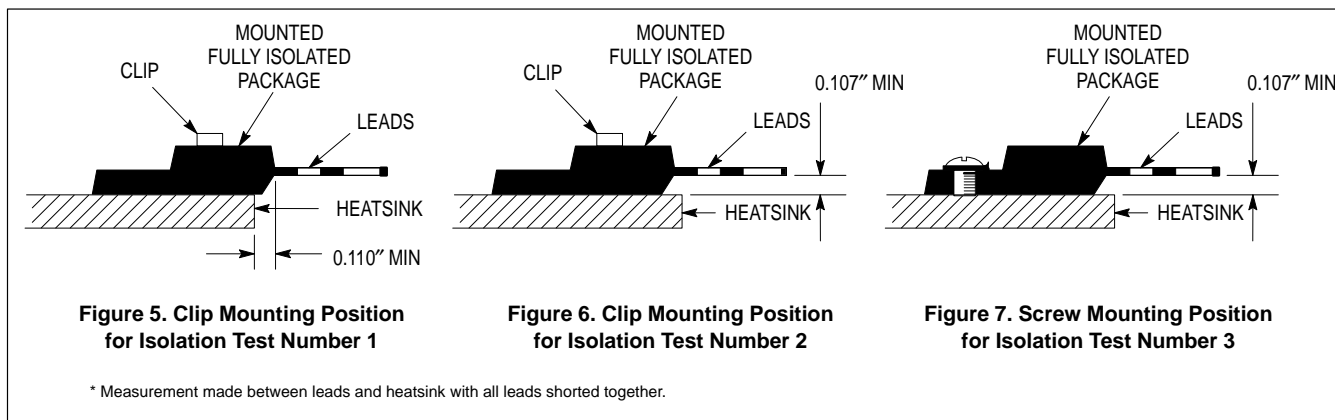
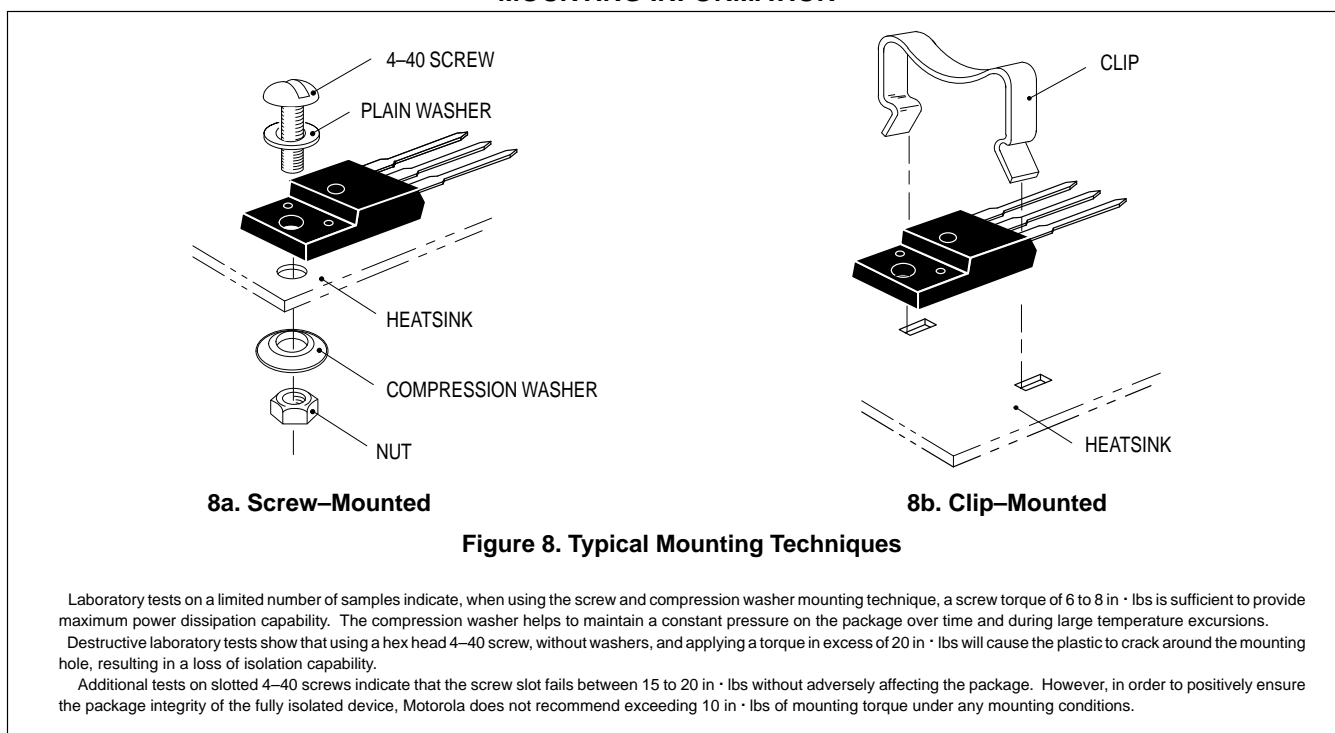


Figure 4. Maximum Surge Capability

TEST CONDITIONS FOR ISOLATION TESTS\*

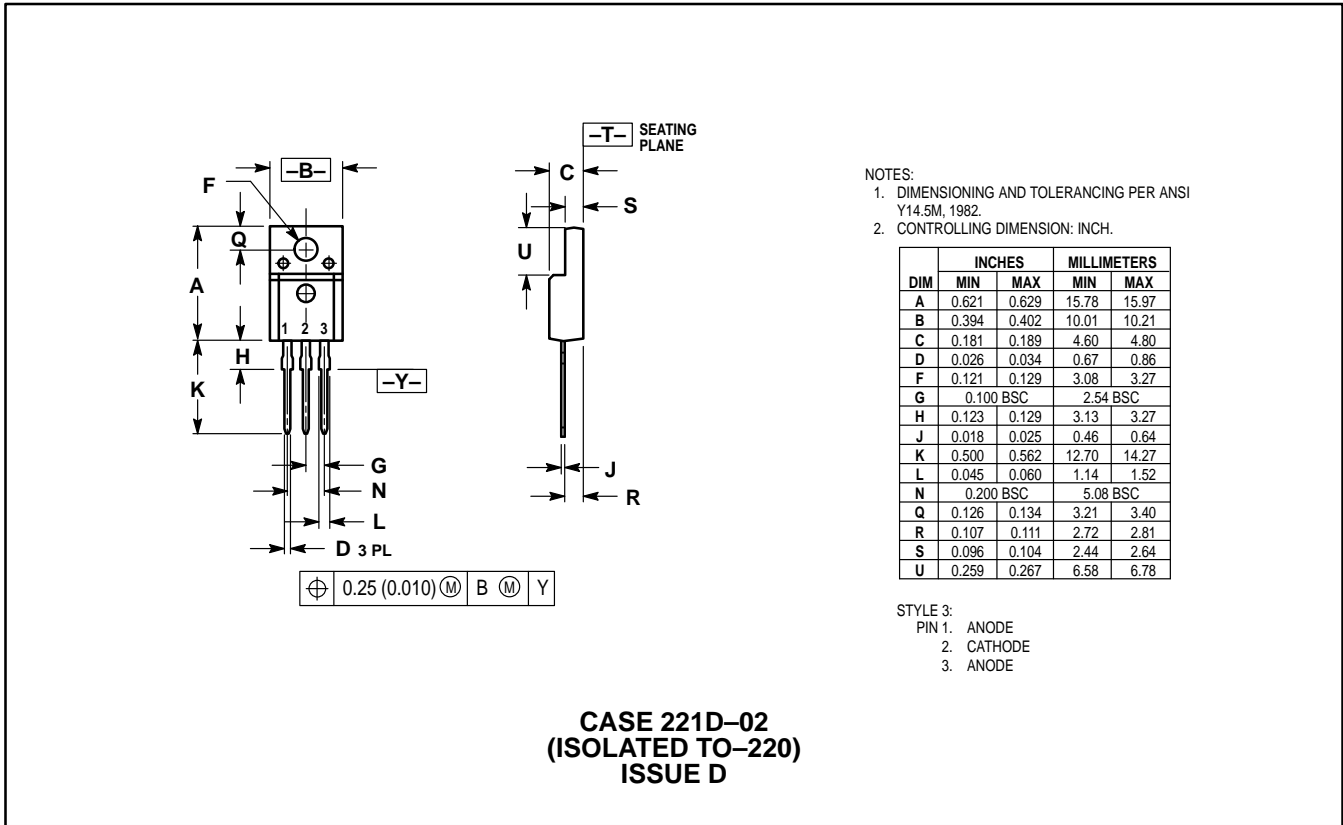


MOUNTING INFORMATION\*\*



\*\*For more information about mounting power semiconductors see Application Note AN1040.

PACKAGE DIMENSIONS



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