

# SWITCHMODE™ Power Rectifiers

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

- Guardring for Stress Protection
- Low Forward Voltage
- 150°C Operating Junction Temperature
- Guaranteed Reverse Avalanche
- Epoxy Meets UL94, VO at 1/8"

### Mechanical Characteristics:

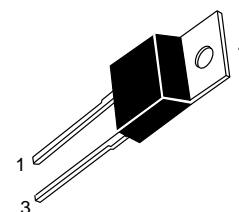
- Case: Epoxy, Molded
- Weight: 1.9 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 50 units per plastic tube
- Marking: B735, B745



**MBR735**  
**MBR745**

MBR745 is a  
Motorola Preferred Device

**SCHOTTKY BARRIER  
RECTIFIERS**  
**7.5 AMPERES**  
**35 and 45 VOLTS**



**CASE 221B-03**  
**TO-220AC**

### MAXIMUM RATINGS

| Rating   | Symbol                          | MBR735      | MBR745      | Unit                   |
|--|---------------------------------|-------------|-------------|------------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                     | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 35          | 45          | Volts                  |
| Average Rectified Forward Current (Rated $V_R$ )<br>$T_C = 105^\circ\text{C}$                              | $I_{F(AV)}$                     | 7.5         | 7.5         | Amps                   |
| Peak Repetitive Forward Current<br>(Rated $V_R$ , Square Wave, 20 kHz) $T_C = 105^\circ\text{C}$           | $I_{FRM}$                       | 15          | 15          | Amps                   |
| Nonrepetitive Peak Surge Current<br>(Surge applied at rated load conditions halfwave, single phase, 60 Hz) | $I_{FSM}$                       | 150         | 150         | Amps                   |
| Peak Repetitive Reverse Surge Current<br>(2.0 $\mu\text{s}$ , 1.0 kHz)                                     | $I_{RRM}$                       | 1.0         | 1.0         | Amp                    |
| Operating Junction Temperature   | $T_J$                           | -65 to +150 | -65 to +150 | $^\circ\text{C}$       |
| Storage Temperature  | $T_{stg}$                       | -65 to +175 | -65 to +175 | $^\circ\text{C}$       |
| Voltage Rate of Change (Rated $V_R$ )  | $dv/dt$                         | 1000        | 10000       | $\text{V}/\mu\text{s}$ |

### THERMAL CHARACTERISTICS

|   |                 |     |     |                           |
|---|-----------------|-----|-----|---------------------------|
| Maximum Thermal Resistance, Junction to Case    | $R_{\theta JC}$ | 3.0 | 3.0 | $^\circ\text{C}/\text{W}$ |
| Maximum Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 60  | 60  | $^\circ\text{C}/\text{W}$ |

### ELECTRICAL CHARACTERISTICS

|   |       |                      |                      |       |
|---|-------|----------------------|----------------------|-------|
| Maximum Instantaneous Forward Voltage (1)<br>( $i_F = 7.5$ Amps, $T_C = 125^\circ\text{C}$ )<br>( $i_F = 15$ Amps, $T_C = 125^\circ\text{C}$ )<br>( $i_F = 15$ Amps, $T_C = 25^\circ\text{C}$ ) | $v_F$ | 0.57<br>0.72<br>0.84 | 0.57<br>0.72<br>0.84 | Volts |
| Maximum Instantaneous Reverse Current (1)<br>(Rated dc Voltage, $T_C = 125^\circ\text{C}$ )<br>(Rated dc Voltage, $T_C = 25^\circ\text{C}$ )  | $i_R$ | 15<br>0.1            | 15<br>0.1            | mA    |

(1) 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.

# MBR735 MBR745

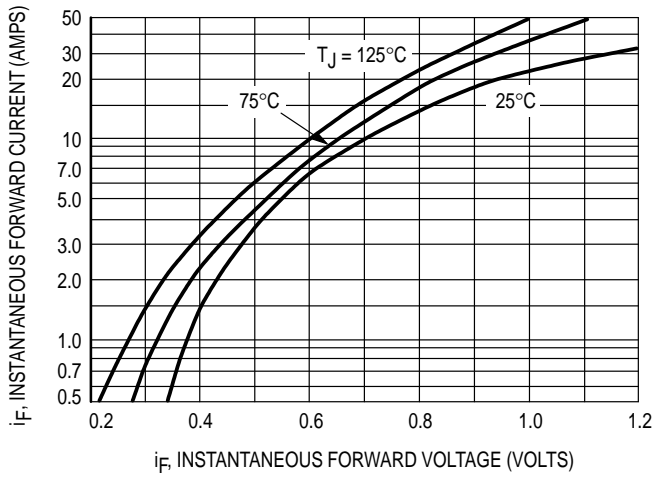


Figure 1. Typical Forward Voltage

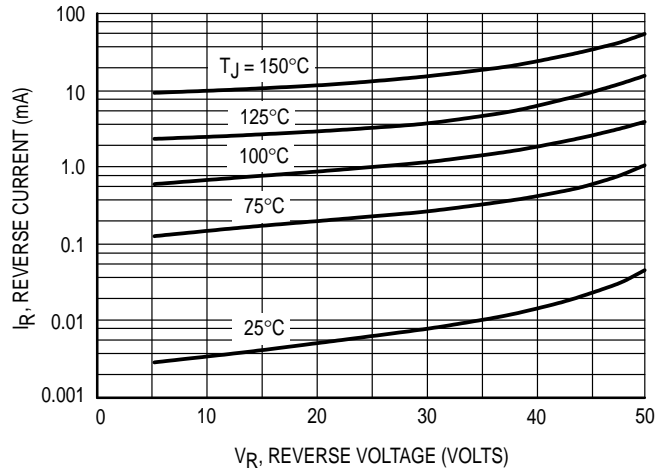


Figure 2. Typical Reverse Current

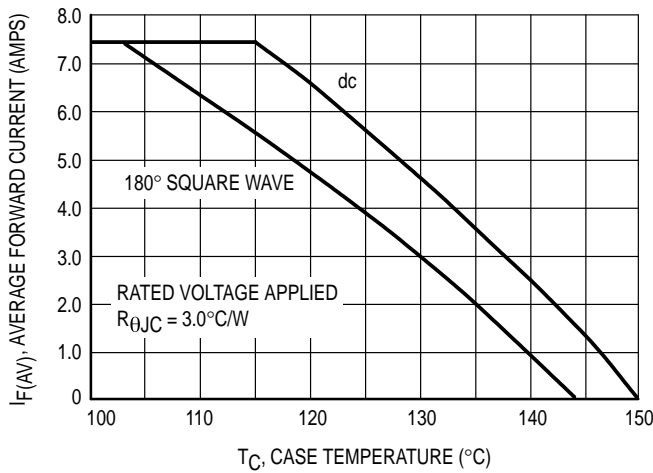


Figure 3. Current Derating, Case

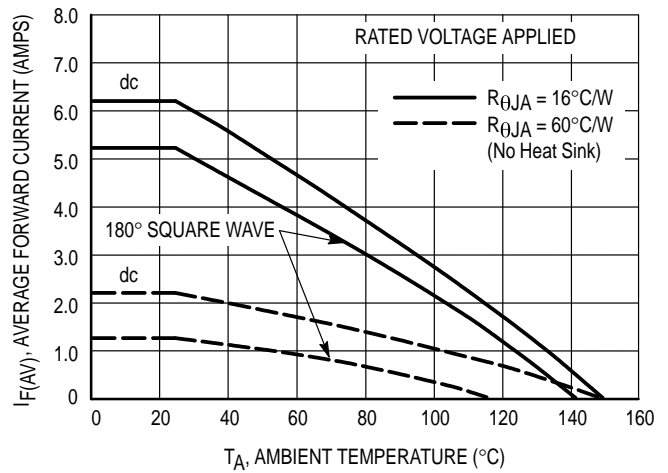


Figure 4. Current Derating, Ambient

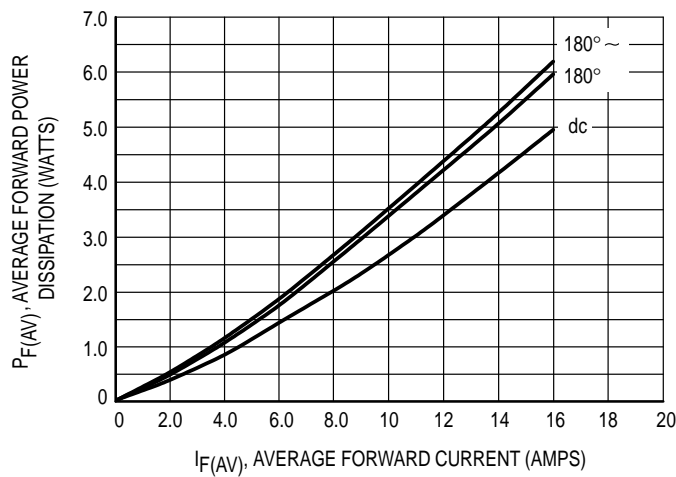
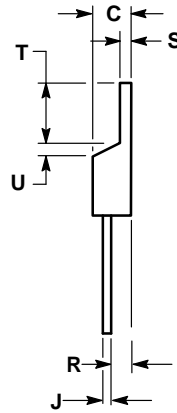
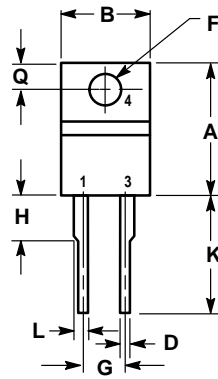


Figure 5. Power Dissipation

PACKAGE DIMENSIONS




NOTES:

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

| DIM | INCHES |       | MILLIMETERS |       |
|-----|--------|-------|-------------|-------|
|     | MIN    | MAX   | MIN         | MAX   |
| A   | 0.595  | 0.620 | 15.11       | 15.75 |
| B   | 0.380  | 0.405 | 9.65        | 10.29 |
| C   | 0.160  | 0.190 | 4.06        | 4.82  |
| D   | 0.025  | 0.035 | 0.64        | 0.89  |
| F   | 0.142  | 0.147 | 3.61        | 3.73  |
| G   | 0.190  | 0.210 | 4.83        | 5.33  |
| H   | 0.110  | 0.130 | 2.79        | 3.30  |
| J   | 0.018  | 0.025 | 0.46        | 0.64  |
| K   | 0.500  | 0.562 | 12.70       | 14.27 |
| L   | 0.045  | 0.060 | 1.14        | 1.52  |
| Q   | 0.100  | 0.120 | 2.54        | 3.04  |
| R   | 0.080  | 0.110 | 2.04        | 2.79  |
| S   | 0.045  | 0.055 | 1.14        | 1.39  |
| T   | 0.235  | 0.255 | 5.97        | 6.48  |
| U   | 0.000  | 0.050 | 0.000       | 1.27  |

CASE 221B-03  
(TO-220AC)  
ISSUE B

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.: SPD, Strategic Planning Office, 4-32-1,  
Nishi-Gotanda, Shinagawa-ku, Tokyo 141, Japan. 81-3-5487-8488

**Mfax™:** RMFAX0@email.sps.mot.com – TOUCHTONE 602-244-6609  
– US & Canada ONLY 1-800-774-1848

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

**INTERNET:** <http://motorola.com/sps>

