

# 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

## Mechanical Characteristics:

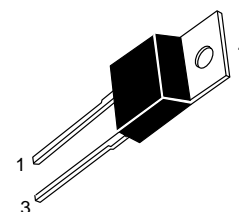
- Case: Epoxy, Molded
- Weight: 1.9 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 50 units per plastic tube
- Marking: B1635, B1645



**MBR1635**  
**MBR1645**

MBR1645 is a  
Motorola Preferred Device

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



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

## MAXIMUM RATINGS

| Rating   | Symbol                          | MBR1635     | MBR1645     | 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>$T_C = 125^\circ\text{C}$                              | $I_F(AV)$                       | 16          | 16          | Amps             |
| Peak Repetitive Forward Current<br>(Rated $V_R$ , Square Wave, 20 kHz) $T_C = 125^\circ\text{C}$           | $I_{FRM}$                       | 32          | 32          | 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       | V/ $\mu\text{s}$ |

## THERMAL CHARACTERISTICS

|  |                 |     |     |                    |
|--|-----------------|-----|-----|--------------------|
| Maximum Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 1.5 | 1.5 | $^\circ\text{C/W}$ |
|--|-----------------|-----|-----|--------------------|

## ELECTRICAL CHARACTERISTICS

|  |       |              |              |       |
|--|-------|--------------|--------------|-------|
| Maximum Instantaneous Forward Voltage (1)<br>( $i_F = 16$ Amps, $T_C = 125^\circ\text{C}$ )<br>( $i_F = 16$ Amps, $T_C = 25^\circ\text{C}$ ) | $v_F$ | 0.57<br>0.63 | 0.57<br>0.63 | Volts |
| Maximum Instantaneous Reverse Current (1)<br>(Rated dc Voltage, $T_C = 125^\circ\text{C}$ )<br>(Rated dc Voltage, $T_C = 25^\circ\text{C}$ ) | $i_R$ | 40<br>0.2    | 40<br>0.2    | mA    |

(1) 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.



## MBR1635 MBR1645

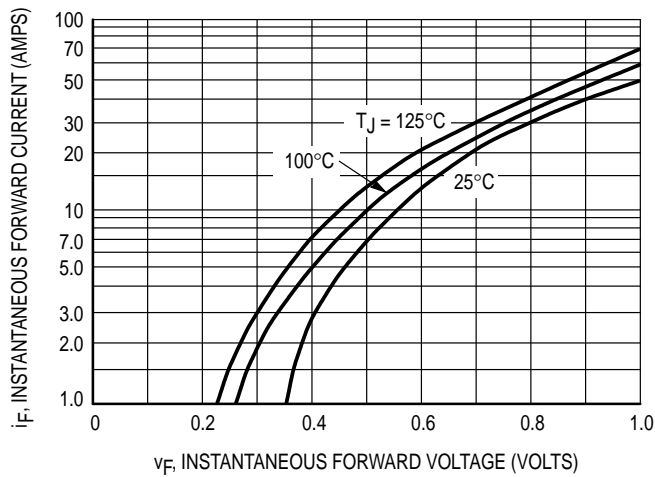


Figure 1. Typical Forward Voltage

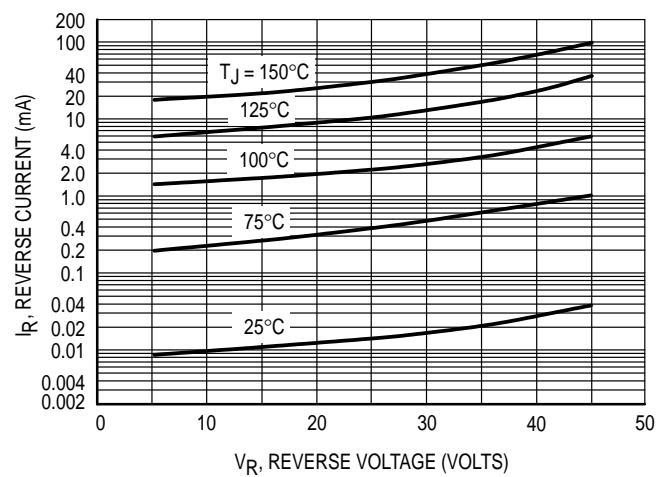


Figure 2. Typical Reverse Current

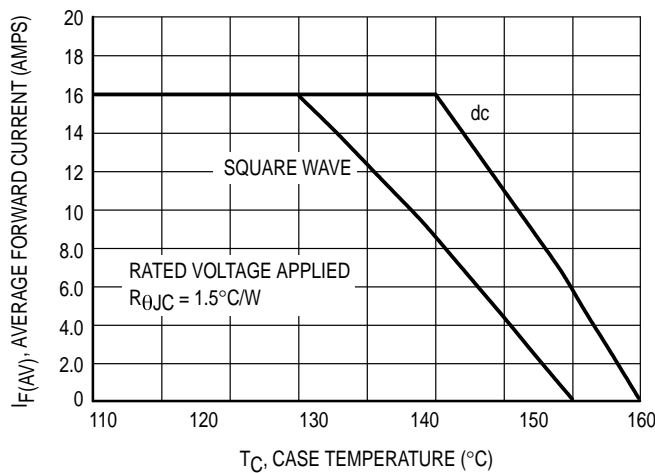


Figure 3. Current Derating, Case

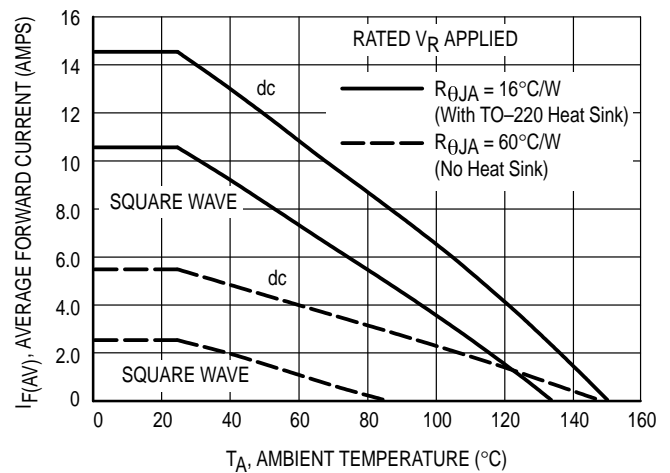


Figure 4. Current Derating, Ambient

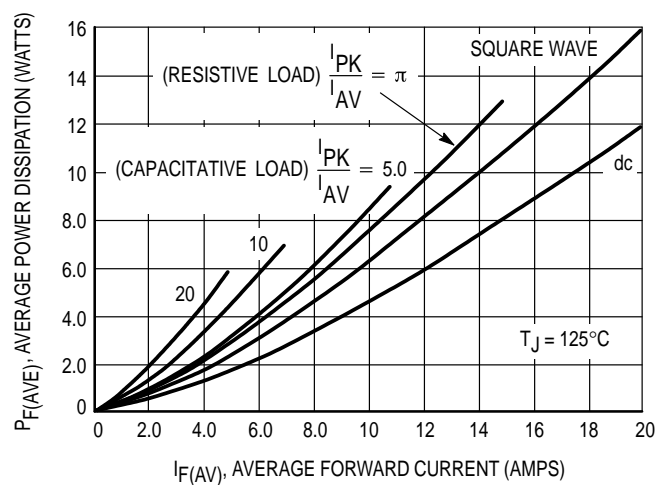
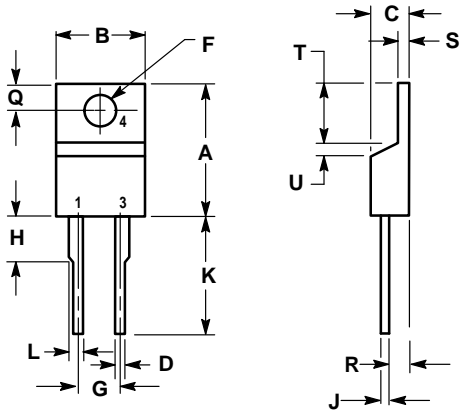


Figure 5. Forward Power Dissipation


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

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**MBR1635/D**

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Datasheets for electronics components.