

# MBR2535CTG, MBR2545CTG

## SWITCHMODE Power Rectifiers

The MBR2535CTG/45CTG series uses the Schottky Barrier principle with a platinum barrier metal. These state-of-the-art devices have the following features:

### Features

- Guardring for Stress Protection
- Low Forward Voltage
- 175°C Operating Junction Temperature
- These are Pb-Free Devices\*

### Mechanical Characteristics

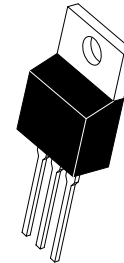
- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight: 1.9 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds



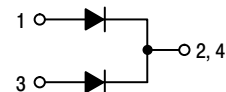
**ON Semiconductor®**

<http://onsemi.com>

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



TO-220AB  
CASE 221A



### MARKING DIAGRAM



A = Assembly Location  
Y = Year  
WW = Work Week  
B25x5 = Device Code  
x = 3 or 4  
G = Pb-Free Package  
AKA = Diode Polarity

### ORDERING INFORMATION

| Device     | Package             | Shipping      |
|------------|---------------------|---------------|
| MBR2535CTG | TO-220<br>(Pb-Free) | 50 Units/Rail |
| MBR2545CTG | TO-220<br>(Pb-Free) | 50 Units/Rail |

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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## MAXIMUM RATINGS

| Rating   | Symbol                          | Value           | Unit             |
|--|---------------------------------|-----------------|------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage<br>MBR2535CTG<br>MBR2545CTG         | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 35<br>45        | V                |
| Average Rectified Forward Current<br>(Rated $V_R$ , $T_C = 160^\circ\text{C}$ )<br>Per Device<br>Per Diode                 | $I_{F(AV)}$                     | 30<br>15        | A                |
| Peak Repetitive Forward Current<br>per Diode Leg (Rated $V_R$ , Square Wave, 20 kHz, $T_C = 150^\circ\text{C}$ )           | $I_{FRM}$                       | 30              | A                |
| Non-Repetitive Peak Surge Current per Diode Leg<br>(Surge Applied at Rated Load Conditions, Halfwave, Single Phase, 60 Hz) | $I_{FSM}$                       | 150             | A                |
| Peak Repetitive Reverse Surge Current (2.0 $\mu\text{s}$ , 1.0 kHz)  | $I_{RRM}$                       | 1.0             | A                |
| Storage Temperature Range  | $T_{stg}$                       | -65 to +175     | $^\circ\text{C}$ |
| Operating Junction Temperature (Note 1)  | $T_J$                           | -65 to +175     | $^\circ\text{C}$ |
| Voltage Rate of Change (Rated $V_R$ )  | dv/dt                           | 10,000          | V/ $\mu\text{s}$ |
| ESD Ratings:<br>Machine Model = C<br>Human Body Model = 3B   | ESD                             | > 400<br>> 8000 | V                |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. The heat generated must be less than the thermal conductivity from Junction-to-Ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ .

## THERMAL CHARACTERISTICS (Per Leg)

| Characteristic  | Symbol                             | Value     | Unit                      |
|---|------------------------------------|-----------|---------------------------|
| Thermal Resistance,<br>Junction-to-Case<br>Junction-to-Ambient (Note 2) | $R_{\theta JC}$<br>$R_{\theta JA}$ | 1.5<br>50 | $^\circ\text{C}/\text{W}$ |

2. When mounted using minimum recommended pad size on FR-4 board.

## ELECTRICAL CHARACTERISTICS (Per Diode)

| Symbol | Characteristic                            | Condition  | Min              | Typ                    | Max                          | Unit |
|--------|---|--|------------------|------------------------|------------------------------|------|
| $V_F$  | Instantaneous Forward Voltage<br>(Note 3) | $I_F = 15 \text{ Amp}$ , $T_J = 25^\circ\text{C}$<br>$I_F = 15 \text{ Amp}$ , $T_J = 125^\circ\text{C}$<br>$I_F = 30 \text{ Amp}$ , $T_J = 25^\circ\text{C}$<br>$I_F = 30 \text{ Amp}$ , $T_J = 125^\circ\text{C}$ | -<br>-<br>-<br>- | -<br>0.50<br>-<br>0.65 | 0.62<br>0.57<br>0.82<br>0.72 | V    |
| $I_R$  | Instantaneous Reverse Current<br>(Note 3) | Rated dc Voltage, $T_J = 25^\circ\text{C}$<br>Rated dc Voltage, $T_J = 125^\circ\text{C}$  | -<br>-           | -<br>9.0               | 0.2<br>25                    | mA   |

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

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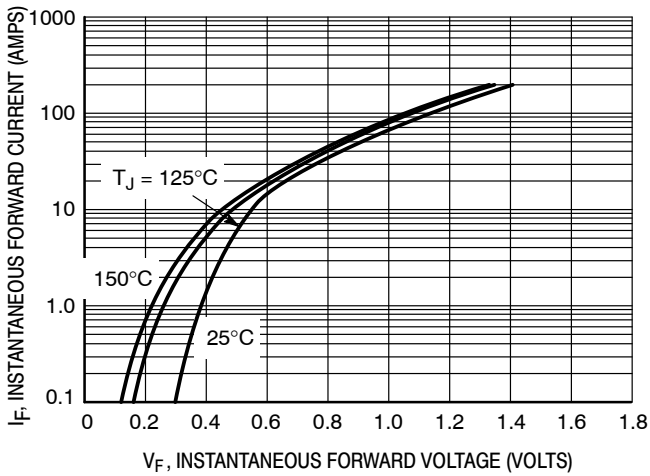


Figure 1. Typical Forward Voltage, Per Leg

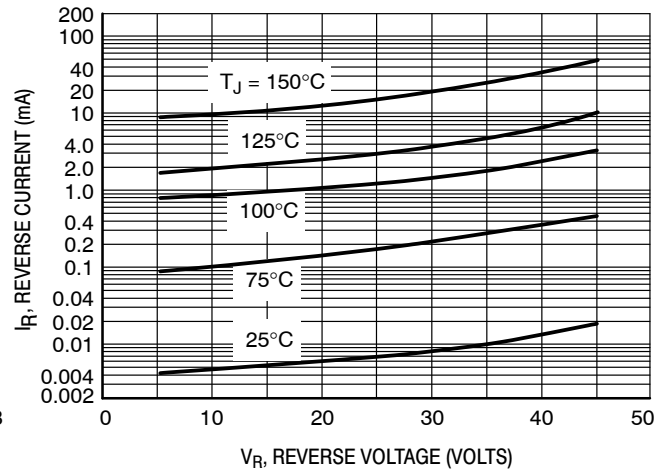


Figure 2. Typical Reverse Current, Per Leg

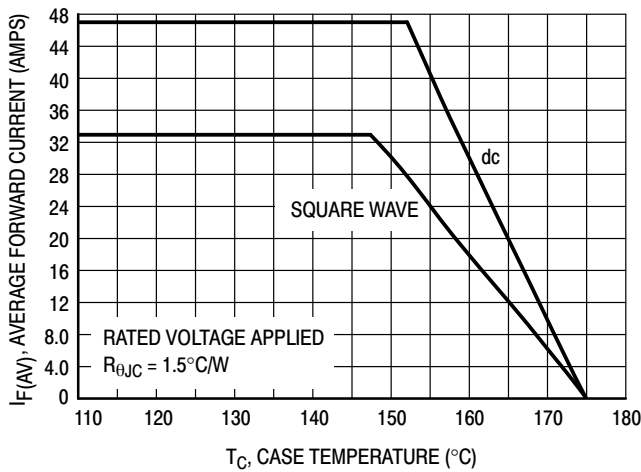


Figure 3. Current Derating, Per Device

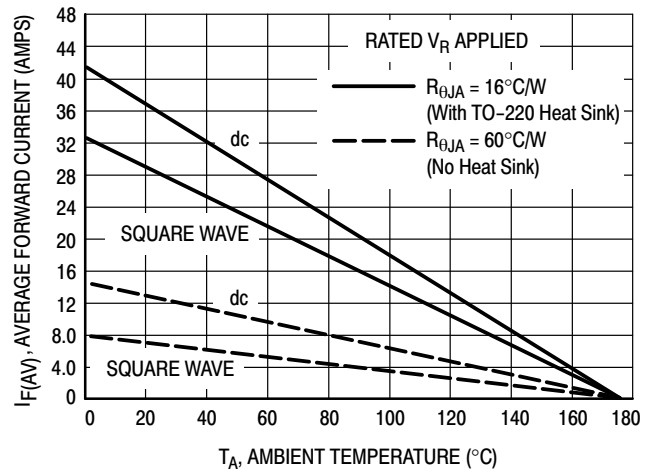


Figure 4. Current Derating, Per Device

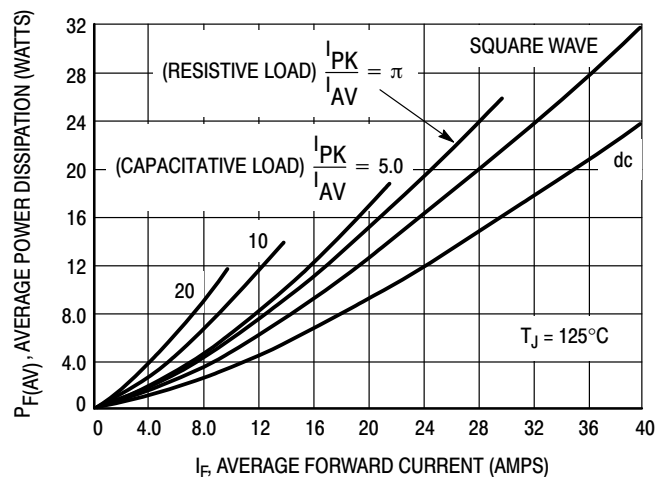
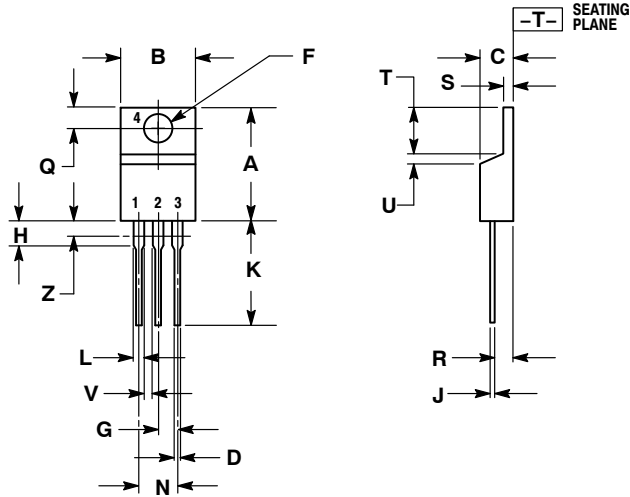


Figure 5. Forward Power Dissipation

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## PACKAGE DIMENSIONS

TO-220  
CASE 221A-09  
ISSUE AG




### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

| DIM | INCHES |       | MILLIMETERS |       |
|-----|--------|-------|-------------|-------|
|     | MIN    | MAX   | MIN         | MAX   |
| A   | 0.570  | 0.620 | 14.48       | 15.75 |
| B   | 0.380  | 0.405 | 9.66        | 10.28 |
| C   | 0.160  | 0.190 | 4.07        | 4.82  |
| D   | 0.025  | 0.036 | 0.64        | 0.91  |
| F   | 0.142  | 0.161 | 3.61        | 4.09  |
| G   | 0.095  | 0.105 | 2.42        | 2.66  |
| H   | 0.110  | 0.161 | 2.80        | 4.10  |
| J   | 0.014  | 0.025 | 0.36        | 0.64  |
| K   | 0.500  | 0.562 | 12.70       | 14.27 |
| L   | 0.045  | 0.060 | 1.15        | 1.52  |
| N   | 0.190  | 0.210 | 4.83        | 5.33  |
| Q   | 0.100  | 0.120 | 2.54        | 3.04  |
| R   | 0.080  | 0.110 | 2.04        | 2.79  |
| S   | 0.045  | 0.055 | 1.15        | 1.39  |
| T   | 0.235  | 0.255 | 5.97        | 6.47  |
| U   | 0.000  | 0.050 | 0.00        | 1.27  |
| V   | 0.045  | ---   | 1.15        | ---   |
| Z   | ---    | 0.080 | ---         | 2.04  |

### STYLE 6:

- PIN 1. ANODE  
2. CATHODE  
3. ANODE  
4. CATHODE

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