# MBR2045CTP

## SWITCHMODE™ Power Rectifier

. . . 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
- 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: B2045P

**MAXIMUM RATINGS**

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 45 | V |
| Average Rectified Forward Current (Rated $V_R$, $T_C$ = 135°C) | $I_{F(AV)}$ | 20 | A |
| Peak Repetitive Forward Current (Rated $V_R$, Square Wave, 20 kHz, $T_C$ = 135°C) Per Diode Leg | $I_{FRM}$ | 20 | A |
| Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | $I_{FSM}$ | 150 | A |
| Peak Repetitive Reverse Surge Current (2.0 μs, 1.0 kHz) | $I_{RRM}$ | 1.0 | A |
| Storage Temperature Range | $T_{stg}$ | −65 to +175 | °C |
| Operating Junction Temperature | $T_J$ | −65 to +150 | °C |
| Voltage Rate of Change (Rated $V_R$) | dv/dt | 10,000 | V/μs |



**ON Semiconductor™**

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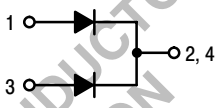
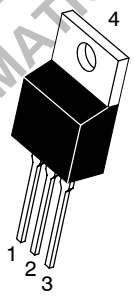
**SCHOTTKY BARRIER RECTIFIER 20 AMPERES 45 VOLTS**




**CASE 221A**
**TO−220AB**
**PLASTIC**

**MARKING DIAGRAM**


YY = Year
WW = Work Week
B2045P = Device Code
AKA = Diode Polarity

**ORDERING INFORMATION**

| Device | Package | Shipping |
|---|---|---|
| MBR2045CTP | TO−220 | 50 Units/Rail |

## THERMAL CHARACTERISTICS

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Maximum Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 2.0 | °C/W |

## ELECTRICAL CHARACTERISTICS

| | | | |
|---|---|---|---|
| Maximum Instantaneous Forward Voltage (Note 1)<br>($i_F$ = 10 Amps, $T_C$ = 125°C)<br>($i_F$ = 20 Amps, $T_C$ = 125°C)<br>($i_F$ = 20 Amps, $T_C$ = 25°C) | $v_F$ | <br>0.57<br>0.72<br>0.84 | Volts |
| Maximum Instantaneous Reverse Current (Note 1)<br>(Rated dc Voltage, $T_C$ = 125°C)<br>(Rated dc Voltage, $T_C$ = 25°C) | $i_R$ | <br>15<br>0.1 | mA |

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%

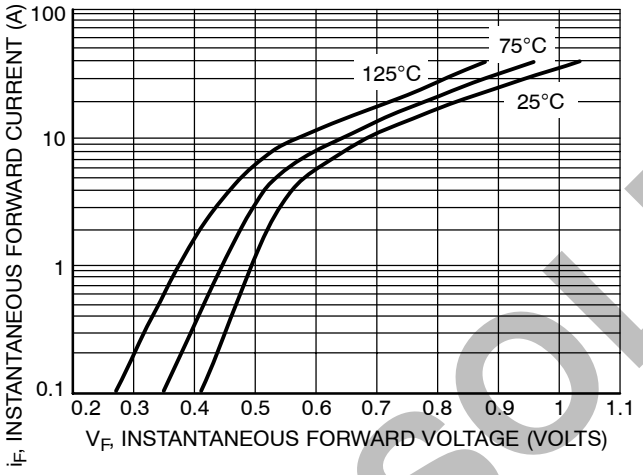



**Figure 1. Maximum Forward Voltage**

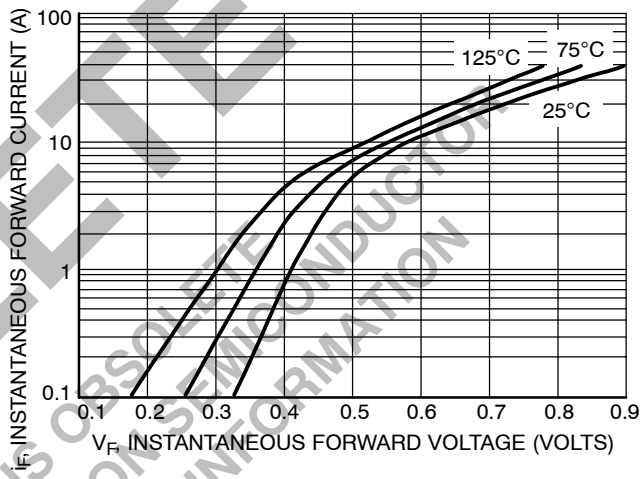



**Figure 2. Typical Forward Voltage**

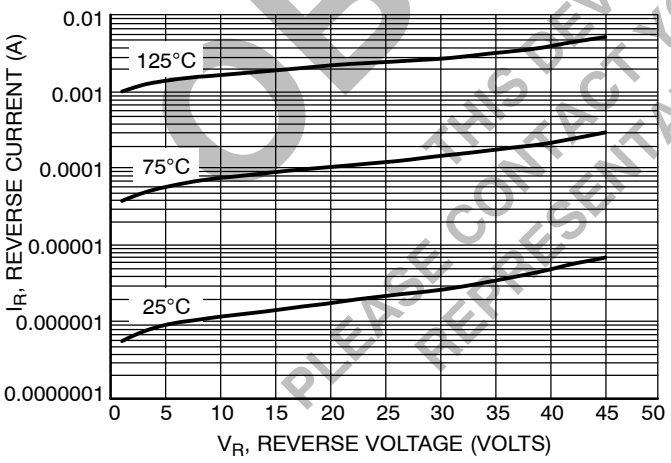



**Figure 3. Typical Reverse Current**

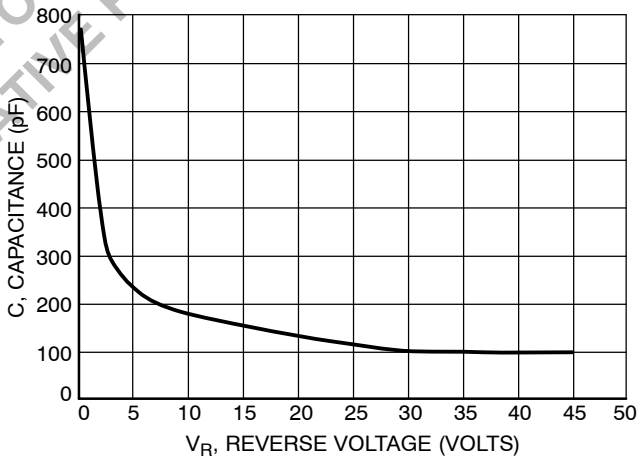



**Figure 4. Typical Capacitance**

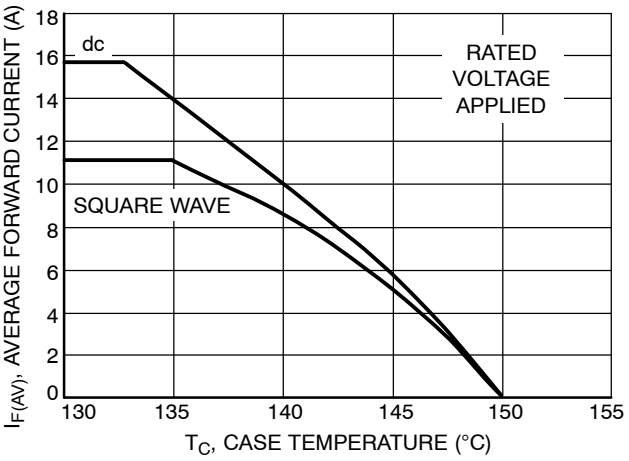



**Figure 5. Current Derating, Case, Per Diode**

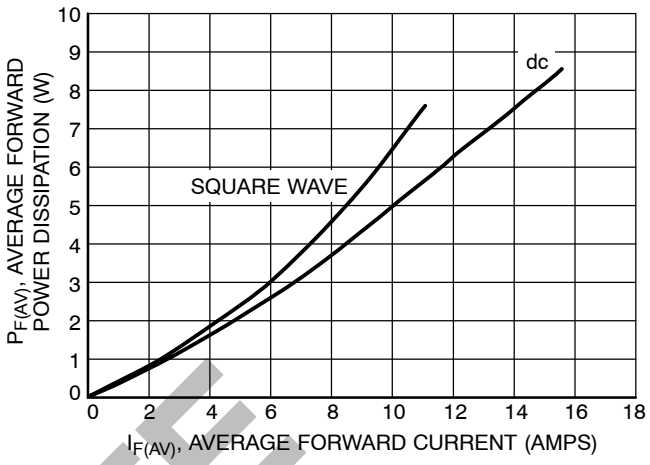
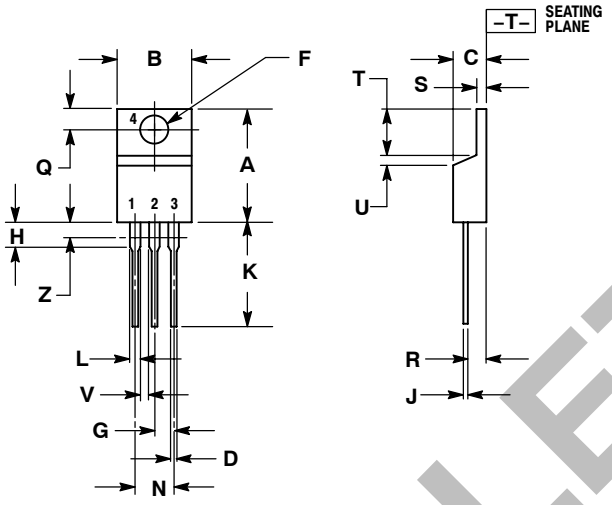



**Figure 6. Forward Power Dissipation, Per Diode**

# MBR2045CTP

## PACKAGE DIMENSIONS

**TO−220 THREE−LEAD**
**TO−220AB**
CASE 221A−09
ISSUE AA




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.

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | 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 | 0.035 | 0.64 | 0.88 |
| F | 0.142 | 0.147 | 3.61 | 3.73 |
| G | 0.095 | 0.105 | 2.42 | 2.66 |
| H | 0.110 | 0.155 | 2.80 | 3.93 |
| J | 0.018 | 0.025 | 0.46 | 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 |



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**MBR2045CTP/D**