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May 2015

# MBR3035PT - MBR3060PT

## 30 A Schottky Barrier Rectifiers

### Features

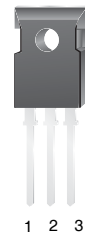
- Low Power Loss, High Efficiency
- High Surge Capacity
- Metal Silicon Junction, Majority Carrier Conduction
- High Current Capacity, Low Forward Voltage Drop
- Guard Ring for Over-Voltage Protection (OVP)

### Applications

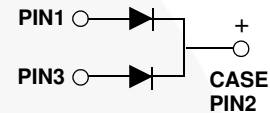
- Low-Voltage
- High-Frequency Inverters
- Free Wheeling
- Polarity Protection

### Description

This center-tap Schottky rectifier is optimal for secondary rectification and free-wheeling applications for high-efficiency DC-DC convertor design, which features very low forward voltage drop and low leakage current.



TO-3P/TO-247AD



### Ordering Information

| Part Number | Marking   | Package   | Packing Method |
|-------------|-----------|-----------|----------------|
| MBR3035PT   | MBR3035PT | TO-247 3L | Rail           |
| MBR3045PT   | MBR3045PT |           |                |
| MBR3050PT   | MBR3050PT |           |                |
| MBR3060PT   | MBR3060PT |           |                |

### Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol      | Parameter   | Value       |            |            |            | Unit             |
|-------------|---|-------------|------------|------------|------------|------------------|
|             |   | MBR 3035PT  | MBR 3045PT | MBR 3050PT | MBR 3060PT |                  |
| $V_{RRM}$   | Maximum Repetitive Reverse Voltage                                      | 35          | 45         | 50         | 60         | V                |
| $I_{F(AV)}$ | Average Rectified Forward Current<br>.375-inch Lead Length              | 30          |            |            |            | A                |
| $I_{FSM}$   | Non-Repetitive Peak Forward Surge Current: 8.3 ms Single Half-Sine Wave | 200         |            |            |            | A                |
| $T_{STG}$   | Storage Temperature Range   | -65 to +175 |            |            |            | $^\circ\text{C}$ |
| $T_J$       | Operating Junction Temperature Range                                    | -65 to +150 |            |            |            | $^\circ\text{C}$ |

### Thermal Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol          | Parameter                            | Value | Unit               |
|-----------------|--------------------------------------|-------|--------------------|
| $P_D$           | Power Dissipation                    | 3.0   | W                  |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 1.4   | $^\circ\text{C/W}$ |

### Electrical Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol    | Parameter   | Value  |               |               |               | Unit |
|-----------|---|--|---------------|---------------|---------------|------|
|           |   | MBR<br>3035PT                                | MBR<br>3045PT | MBR<br>3050PT | MBR<br>3060PT |      |
| $V_F$     | Maximum Forward Voltage,<br>per Leg   | $I_F = 20\text{ A}, T_C = 25^\circ\text{C}$  |               | 0.75          |               | V    |
|           |   | $I_F = 20\text{ A}, T_C = 125^\circ\text{C}$ | 0.60          | 0.65          |               |      |
|           |   | $I_F = 30\text{ A}, T_C = 25^\circ\text{C}$  | 0.76          |               |               |      |
|           |   | $I_F = 30\text{ A}, T_C = 125^\circ\text{C}$ | 0.72          |               |               |      |
| $I_R$     | Maximum Reverse Current<br>at Rated $V_{RRM}$ , per Leg   | $T_A = 25^\circ\text{C}$                     |               | 5.0           |               | mA   |
|           |   | $T_A = 125^\circ\text{C}$                    |               | 100.0         |               |      |
| $I_{RRM}$ | Peak Repetitive Reverse Surge Current, per Leg<br>2.0 $\mu\text{s}$ Pulse Width, $f = 1.0\text{ kHz}$ | 1.0  |               | 0.5           |               | A    |

## Typical Performance Characteristics

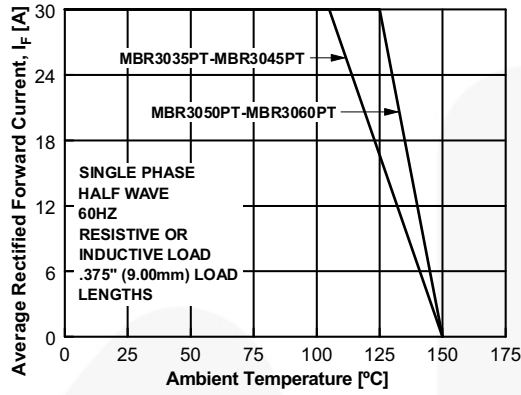


Figure 1. Forward Current Derating Curve

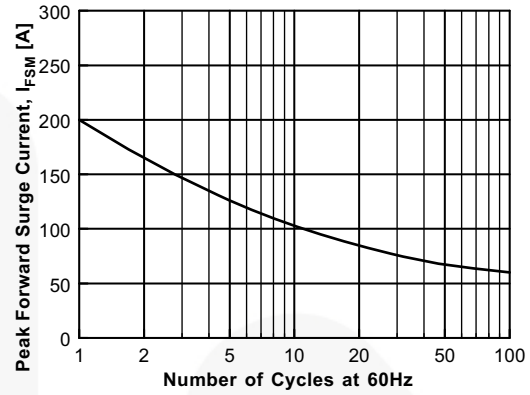


Figure 2. Non-Repetitive Surge Current

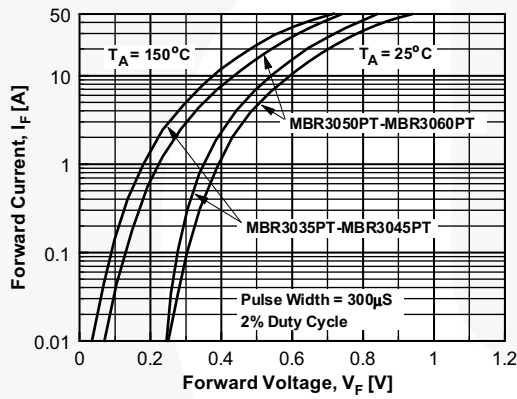


Figure 3. Forward Voltage Characteristics

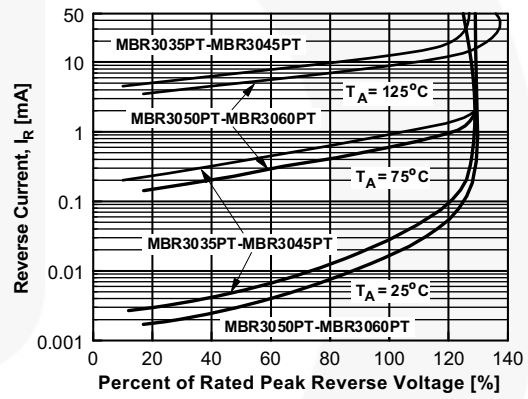


Figure 4. Reverse Current vs. Reverse Voltage

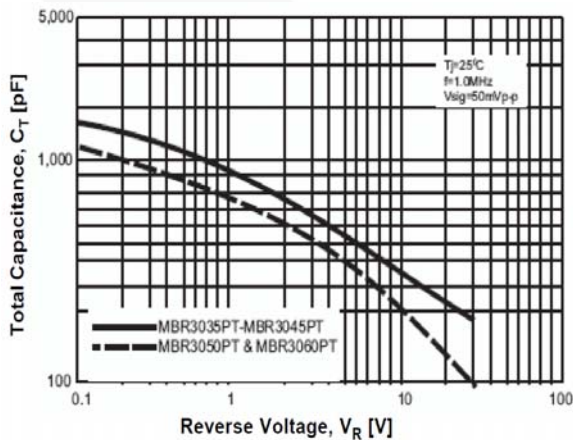


Figure 5. Total Capacitance

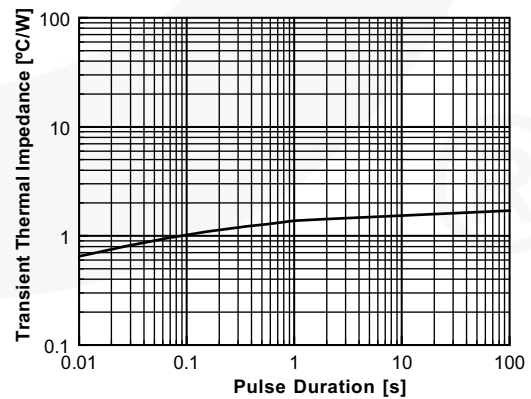
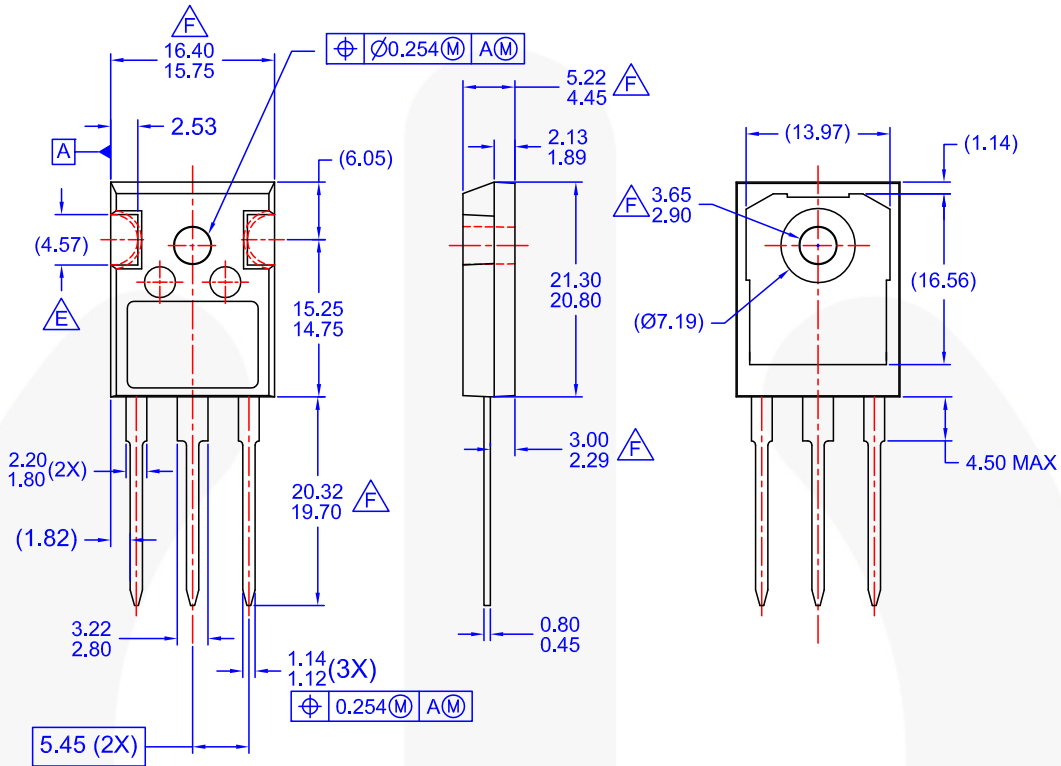


Figure 6. Thermal Impedance Characteristics

Physical Dimensions








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- A. PACKAGE REFERENCE: JEDEC TO-247, ISSUE "E", VARIATION AD
  - B. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.
  - C. ALL DIMENSIONS ARE IN MILLIMETERS.
  - D. DRAWING CONFORMS TO ASME Y14.5 - 1994
- △ DOES NOT COMPLY JEDEC STANDARD VALUE.
- △ NOTCH MAY BE SQUARE
- G. DRAWING FILENAME: MKT-TO247E03\_REV02

Figure 7. TO-247, MOLDED, 3 LEADS, JEDEC OPTION AD



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