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June 2008

# MBRP3045N

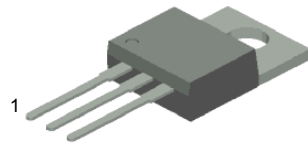
## Schottky Barrier Rectifier

### Applications

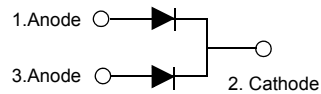
- Switched mode power supply
- Freewheeling diodes

### Features

- Low forward voltage drop
- High frequency properties and switching speed
- Guard ring for over-voltage protection



TO220



### Absolute Maximum Ratings $T_C=25^{\circ}\text{C}$ unless otherwise noted

| Symbol         | Parameter                                                                   | Value       | Units              |
|----------------|-----------------------------------------------------------------------------|-------------|--------------------|
| $V_{RRM}$      | Maximum Repetitive Reverse Voltage                                          | 45          | V                  |
| $V_R$          | Maximum DC Reverse Voltage                                                  | 45          | V                  |
| $I_{F(AV)}$    | Average Rectified Forward Current @ $T_C = 100^{\circ}\text{C}$             | 30          | A                  |
| $I_{FSM}$      | Non-repetitive Peak Surge Current (per diode)<br>60Hz Single Half-Sine Wave | 200         | A                  |
| $T_J, T_{STG}$ | Operating Junction and Storage Temperature                                  | -65 to +150 | $^{\circ}\text{C}$ |

### Thermal Characteristics

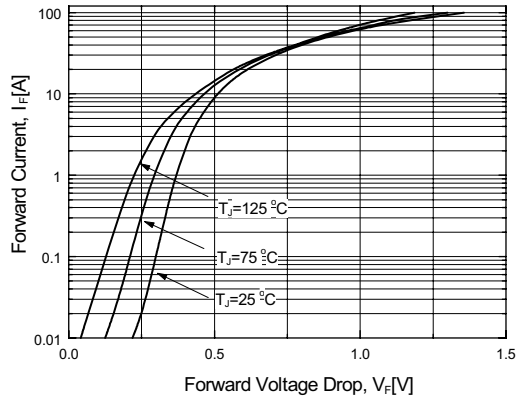
| Symbol          | Parameter                                                | Value | Units                |
|-----------------|----------------------------------------------------------|-------|----------------------|
| $R_{\theta JC}$ | Maximum Thermal Resistance, Junction to Case (per diode) | 2.2   | $^{\circ}\text{C/W}$ |

### Electrical Characteristics (per diode)

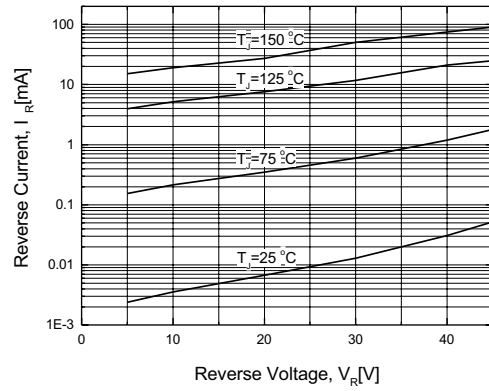
| Symbol     | Parameter                             | Value | Units |
|------------|---------------------------------------|-------|-------|
| $V_{FM} *$ | Maximum Instantaneous Forward Voltage |       | V     |
|            | $I_F = 15\text{A}$                    |       |       |
|            | $T_C = 25^{\circ}\text{C}$            | 0.65  |       |
|            | $T_C = 125^{\circ}\text{C}$           | 0.57  |       |
|            | $I_F = 30\text{A}$                    |       |       |
|            | $T_C = 25^{\circ}\text{C}$            | 0.80  |       |
|            | $T_C = 125^{\circ}\text{C}$           | 0.65  |       |
| $I_{RM} *$ | Maximum Instantaneous Reverse Current | 1     | mA    |
|            | @ rated $V_R$                         | 80    |       |

\* Pulse Test: Pulse Width=300 $\mu\text{s}$ , Duty Cycle=2%

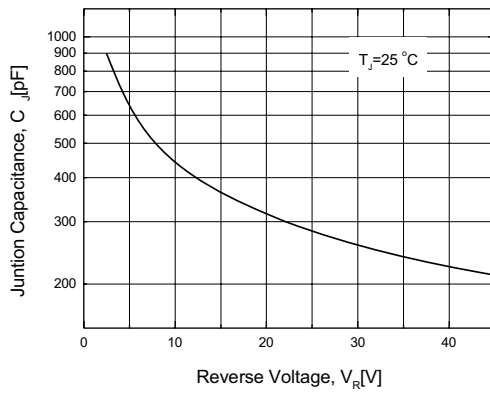
## Typical Performance Characteristics



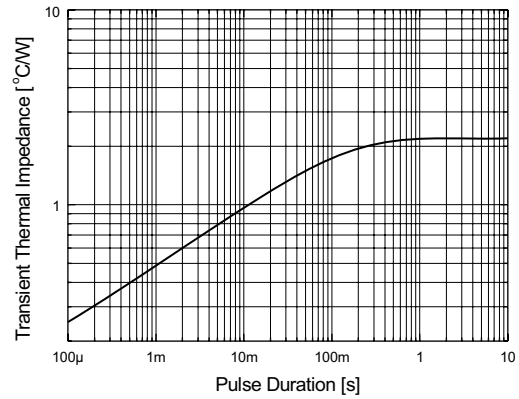
**Figure 1. Typical Forward Voltage Characteristics (per diode)**



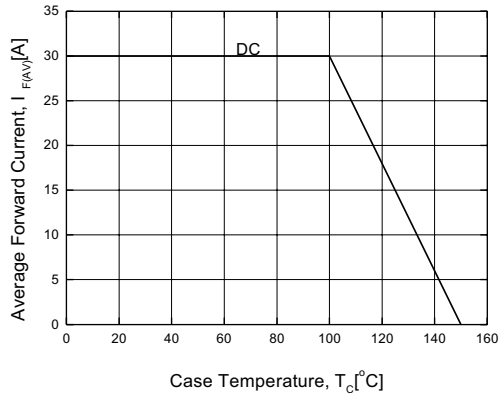
**Figure 2. Typical Reverse Current vs. Reverse Voltage (per diode)**



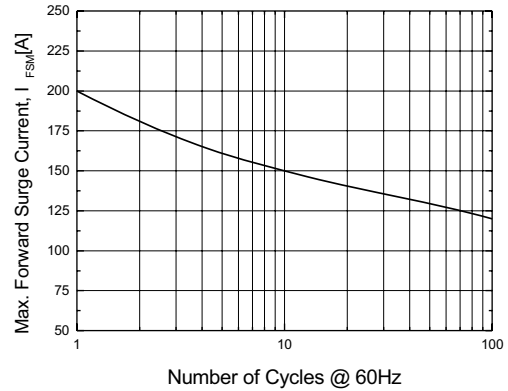
**Figure 3. Typical Junction Capacitance (per diode)**



**Figure 4. Thermal Impedance Characteristics (per diode)**



**Figure 5. Forward Current Derating Curve**

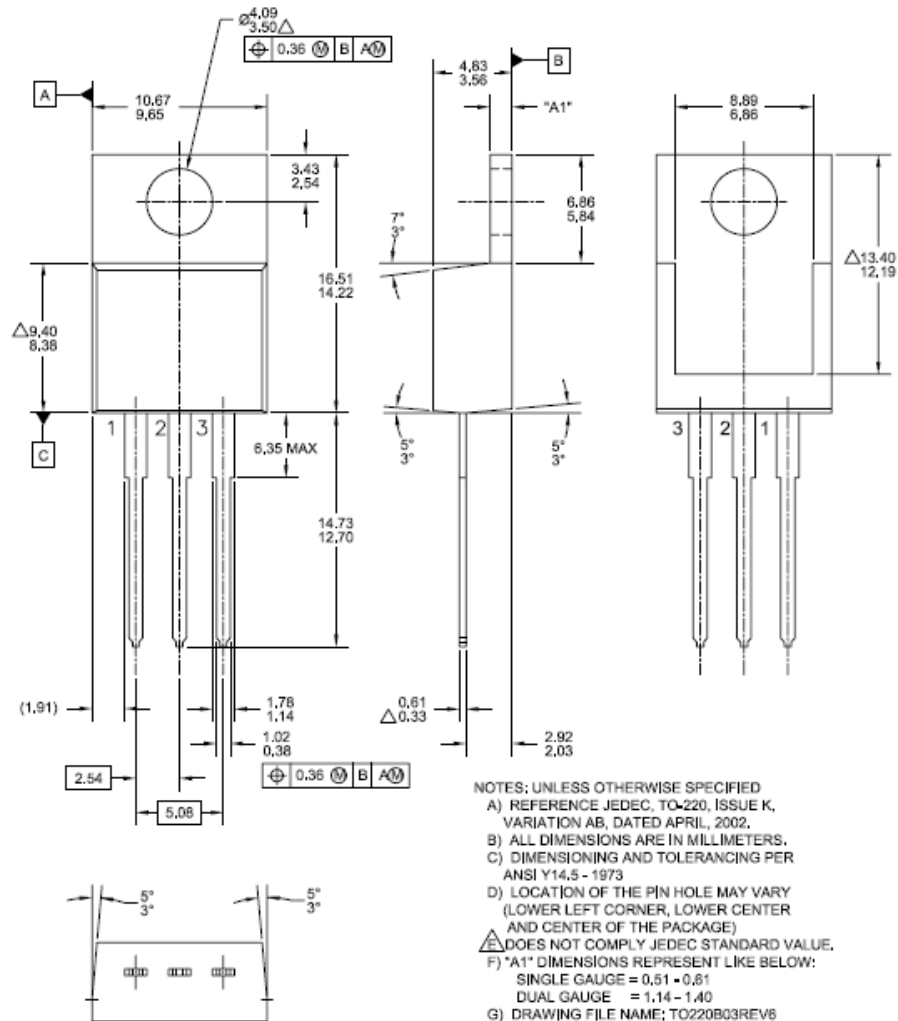


**Figure 6. Non-Repetitive Surge Current (per diode)**

## Package Dimensions

# TO-220

Dimensions are in mm



Dimensions in Millimeters



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| FPS™                                                                                         | OPTOPLANAR®                                    | SyncFET™                                                                          | 仙童™                                                                                 |
|                                                                                              |                                                | Sync-Lock™                                                                        |                                                                                     |

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