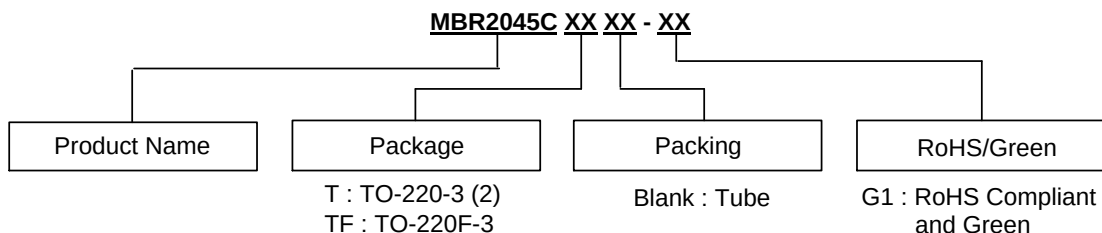


## Ordering Information (Note 4)



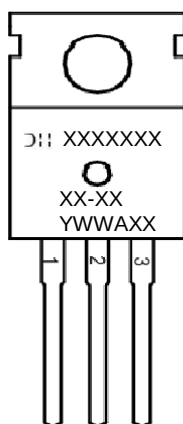
| Package      | Part Number   | Marking ID    | Packing        |
|--------------|---------------|---------------|----------------|
| TO-220-3 (2) | MBR2045CT-G1  | MBR2045CT-G1  | 50 Pieces/Tube |
| TO-220F-3    | MBR2045CTF-G1 | MBR2045CTF-G1 | 50 Pieces/Tube |

Note: 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information

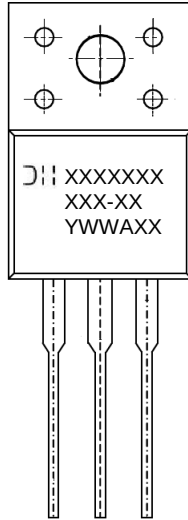
### (1) TO-220-3 (2)

(Front View)



First and Second Lines: Logo and Marking ID  
(See Ordering Information)  
Third Line: Date Code  
Y: Year  
WW: Work Week of Molding  
A: Assembly House Code  
XX: 7th and 8th Digits of Batch Number

**Marking Information** (continued)

**(2) TO-220F-3**
**(Front View)**


First and Second Lines: Logo and Marking ID  
 (See Ordering Information)  
 Third Line: Date Code  
 Y: Year  
 WW: Work Week of Molding  
 A: Assembly House Code  
 XX: 7th and 8th Digits of Batch Number

**Maximum Ratings** (Each Diode Leg)

| Characteristic                                                                                              | Symbol      | Rating      | Unit             |
|-------------------------------------------------------------------------------------------------------------|-------------|-------------|------------------|
| Peak Repetitive Reverse Voltage                                                                             | $V_{RRM}$   | 45          | V                |
| Working Peak Reverse Voltage                                                                                | $V_{RWM}$   |             |                  |
| DC Blocking Voltage                                                                                         | $V_R$       |             |                  |
| Average Rectified Forward Current<br>(Rated $V_R$ ) $T_C = +139^\circ\text{C}$                              | $I_{F(AV)}$ | 10          | A                |
| Peak Repetitive Forward Current<br>(Rated $V_R$ , Square Wave, 20kHz) $T_C = +137^\circ\text{C}$            | $I_{FRM}$   | 20          | A                |
| Non Repetitive Peak Surge Current (Surge Applied at<br>Rated Load Conditions Half Wave, Single Phase, 60Hz) | $I_{FSM}$   | 150         | A                |
| Peak Repetitive Reverse Surge Current (2.0 $\mu\text{s}$ , 1.0kHz)                                          | $I_{RRM}$   | 1.0         | A                |
| Operating Junction Temperature (Note 5)                                                                     | $T_J$       | +150        | $^\circ\text{C}$ |
| Storage Temperature Range                                                                                   | $T_{STG}$   | -65 to +150 | $^\circ\text{C}$ |
| Voltage Rate of Change (Rated $V_R$ )                                                                       | $dv/dt$     | 10000       | V/ $\mu\text{s}$ |
| ESD (Machine Model = C)                                                                                     | —           | >400        | V                |
| ESD (Human Body Model = 3B)                                                                                 | —           | >8000       | V                |

Note: 5. The heat generated must be less than the thermal conductivity from Junction to Ambient:  $dP_D/dT_J < 1/\theta_{JA}$ .

## Thermal Characteristics

| Characteristic                                               | Symbol          | Rating       |     | Unit |
|--------------------------------------------------------------|-----------------|--------------|-----|------|
| Maximum Thermal Resistance (Junction to Case)<br>(Note 6)    | $R_{\theta JC}$ | TO-220-3 (2) | 2.2 | °C/W |
|                                                              |                 | TO-220F-3    | 4.5 |      |
| Maximum Thermal Resistance (Junction to Ambient)<br>(Note 6) | $R_{\theta JA}$ | TO-220-3 (2) | 60  |      |
|                                                              |                 | TO-220F-3    | 60  |      |

Note: 6. Device mounted on heat sink, with minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.

## Electrical Characteristics (Each Diode Leg)

| Characteristic                                         | Symbol | Typ  | Max  | Rating | Test Condition                         |
|--------------------------------------------------------|--------|------|------|--------|----------------------------------------|
| Maximum Instantaneous Forward Voltage Drop<br>(Note 7) | $V_F$  | 0.59 | 0.65 | V      | $I_F = 10A, T_C = +25^\circ C$         |
|                                                        |        | 0.50 | 0.57 |        | $I_F = 10A, T_C = +125^\circ C$        |
| Maximum Instantaneous Reverse Current<br>(Note 7)      | $I_R$  | 5    | 15   | mA     | Rated DC Voltage, $T_C = +125^\circ C$ |
|                                                        |        | 0.01 | 0.1  |        | Rated DC Voltage, $T_C = +25^\circ C$  |

Note: 7. Short duration pulse test used to minimize self-heating effect, Pulse Test Width = 300μs, Duty Cycle < 2.0%.

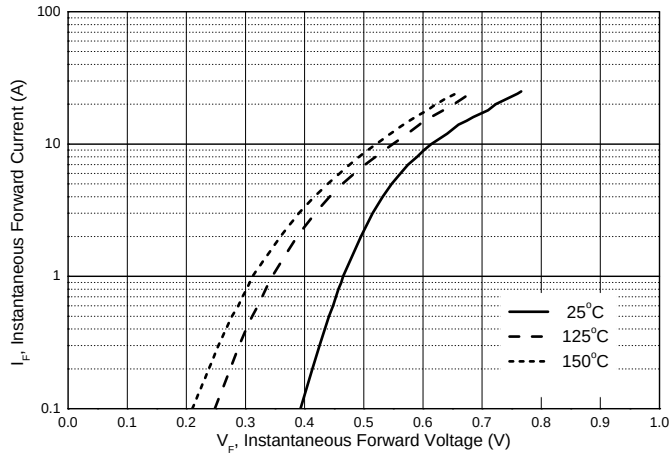


Figure 1. Typical Forward Voltage

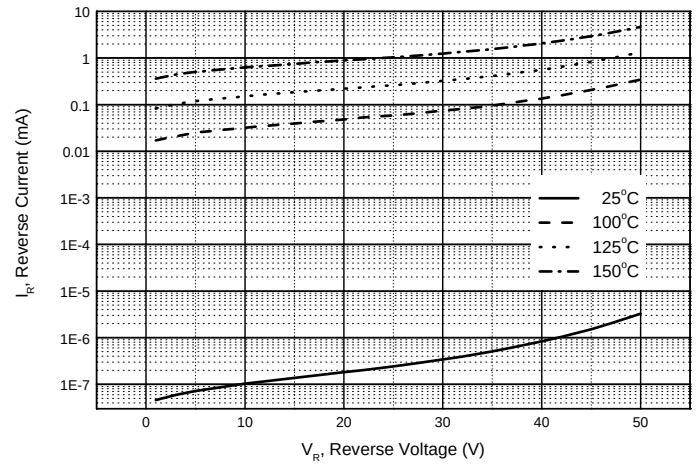


Figure 2. Typical Reverse Current

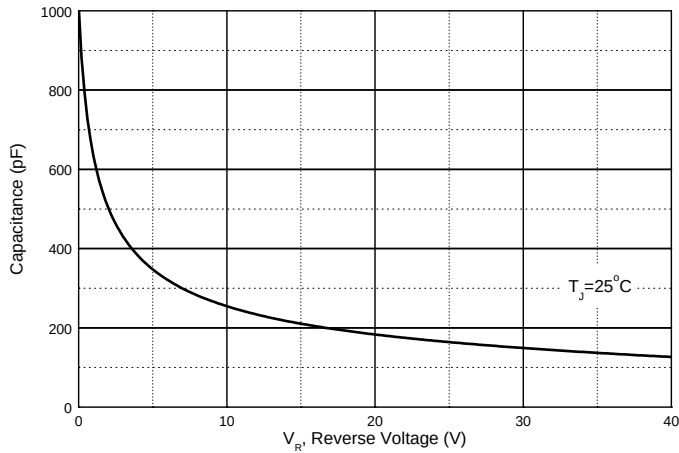


Figure 3. Capacitance vs.  $V_R$ , Reverse Voltage

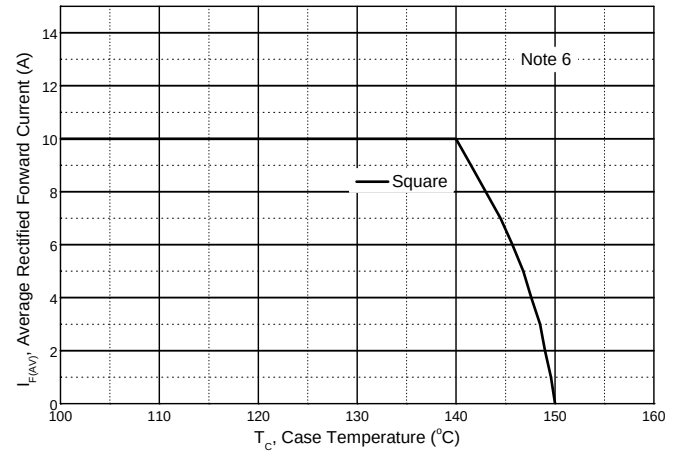
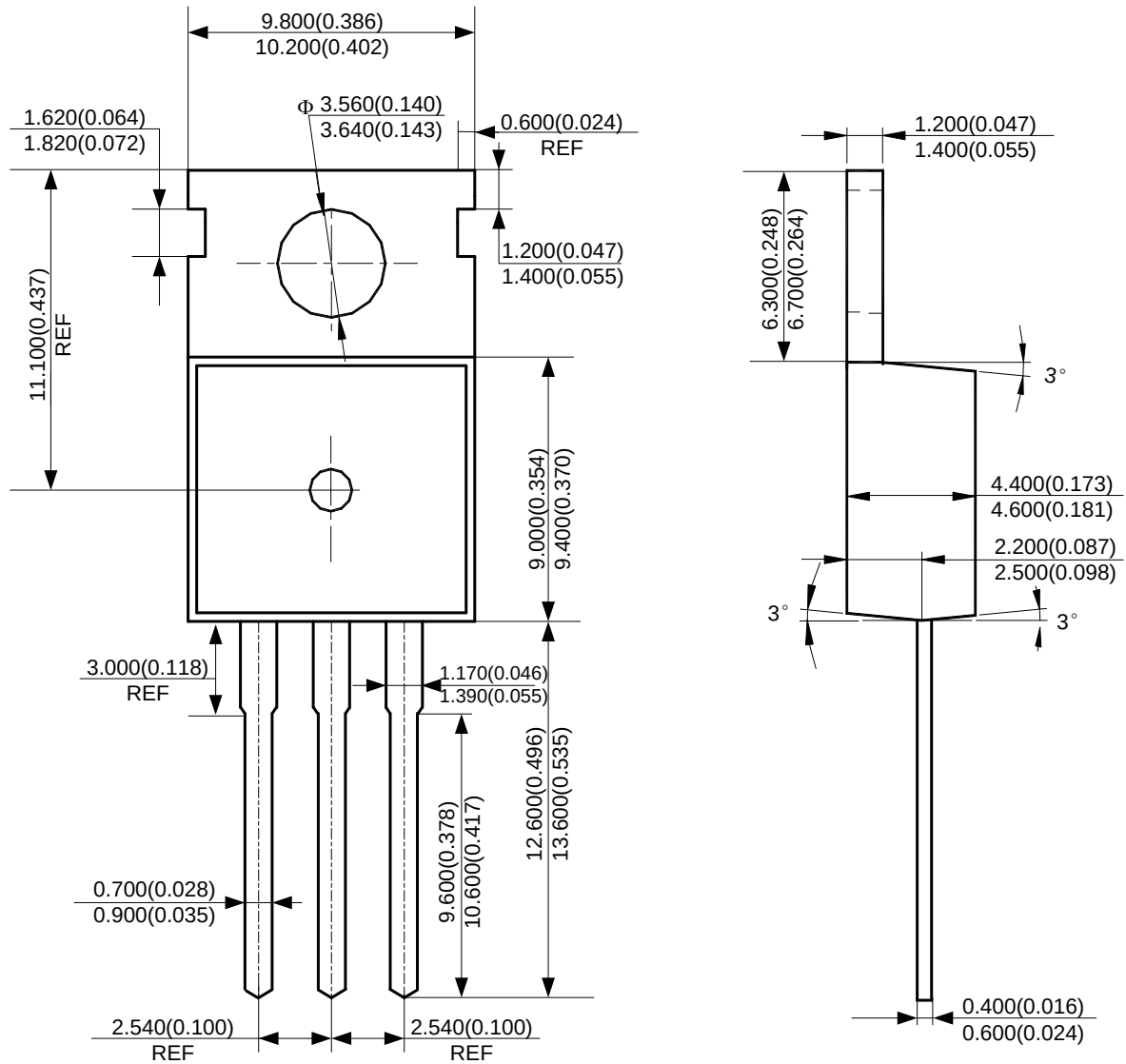


Figure 4. Average Rectified Forward Current vs. Case Temperature (Square, Each Diode)

**Package Outline Dimensions** (All dimensions in mm(inch).)

(1) Package Type: TO-220-3 (2)



(2) Package Type: TO-220F-3



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