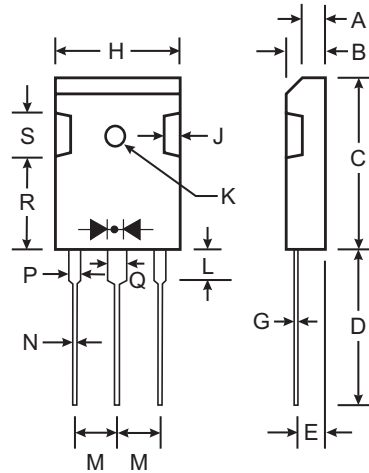


### Features

- Guard Ring Die Construction for Transient Protection
- Low Power Loss, High Efficiency
- High Surge Capability
- High Current Capability and Low Forward Voltage Drop
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Applications
- **Lead Free Finish, RoHS Compliant (Note 4)**

### Mechanical Data

- Case: TO-3P
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish — Bright Tin. Plated Leads Solderable per MIL-STD-202, Method 208
- Polarity: As Marked on Body
- Ordering Information: See Last Page
- Marking: Type Number
- Weight: 5.6 grams (approximate)



| TO-3P                |       |       |
|----------------------|-------|-------|
| Dim                  | Min   | Max   |
| A                    | 1.88  | 2.08  |
| B                    | 4.68  | 5.36  |
| C                    | 20.63 | 22.38 |
| D                    | 18.5  | 21.5  |
| E                    | 2.1   | 2.4   |
| G                    | 0.51  | 0.76  |
| H                    | 15.38 | 16.25 |
| J                    | 1.90  | 2.70  |
| K                    | 2.9Ø  | 3.65Ø |
| L                    | 3.78  | 4.50  |
| M                    | 5.2   | 5.7   |
| N                    | 0.89  | 1.53  |
| P                    | 1.82  | 2.46  |
| Q                    | 2.92  | 3.23  |
| R                    | 11.70 | 12.84 |
| S                    | —     | 6.10  |
| All Dimensions in mm |       |       |

### Maximum Ratings and Electrical Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified

Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

| Characteristic                                                                                                                                                                                       | Symbol                          | MBR 3030PT                | MBR 3035PT | MBR 3040PT | MBR 3045PT | MBR 3050PT                   | MBR 3060PT | Unit          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------------|------------|------------|------------|------------------------------|------------|---------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                                                                                                               | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 30                        | 35         | 40         | 45         | 50                           | 60         | V             |
| RMS Reverse Voltage                                                                                                                                                                                  | $V_{R(RMS)}$                    | 21                        | 24.5       | 28         | 31.5       | 35                           | 42         | V             |
| Average Rectified Output Current @ $T_C = 125^{\circ}C$<br>Total Device (See Fig. 1)                                                                                                                 | $I_O$                           | 30                        |            |            |            |                              |            | A             |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single half sine-wave superimposed on rated load<br>(JEDEC Method)                                                                                | $I_{FSM}$                       | 200                       |            |            |            |                              |            | A             |
| Forward Voltage Drop @ $I_F = 20A$ , $T_C = 25^{\circ}C$<br>per element (Note 3) @ $I_F = 20A$ , $T_C = 125^{\circ}C$<br>@ $I_F = 30A$ , $T_C = 25^{\circ}C$<br>@ $I_F = 30A$ , $T_C = 125^{\circ}C$ | $V_{FM}$                        | —<br>0.60<br>0.76<br>0.72 |            |            |            | 0.75<br>0.65<br>0.80<br>0.75 |            | V             |
| Peak Reverse Current @ $T_C = 25^{\circ}C$<br>at Rated DC Blocking Voltage, per element @ $T_C = 125^{\circ}C$                                                                                       | $I_{RM}$                        | 1.0<br>60                 |            |            |            | 5.0<br>100                   |            | mA            |
| Typical Total Capacitance (Note 2)                                                                                                                                                                   | $C_T$                           | 500                       |            |            |            |                              |            | pF            |
| Typical Thermal Resistance Junction to Case (Note 1)                                                                                                                                                 | $R_{\theta JC}$                 | 1.4                       |            |            |            |                              |            | $^{\circ}C/W$ |
| Voltage Rate of Change (Rated $V_R$ )                                                                                                                                                                | dV/dt                           | 10,000                    |            |            |            |                              |            | V/ $\mu s$    |
| Operating Temperature Range                                                                                                                                                                          | $T_j$                           | -65 to +150               |            |            |            |                              |            | $^{\circ}C$   |
| Storage Temperature Range                                                                                                                                                                            | $T_{STG}$                       | -65 to +175               |            |            |            |                              |            | $^{\circ}C$   |

- Notes:
1. Thermal resistance junction to case mounted on heatsink.
  2. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.
  3. Pulse width ≤300 μs, duty cycle ≤2%.
  4. RoHS revision 13.2.2003. Glass and High Temperature Solder Exemptions Applied, see EU Directive Annex Notes 5 and 7.

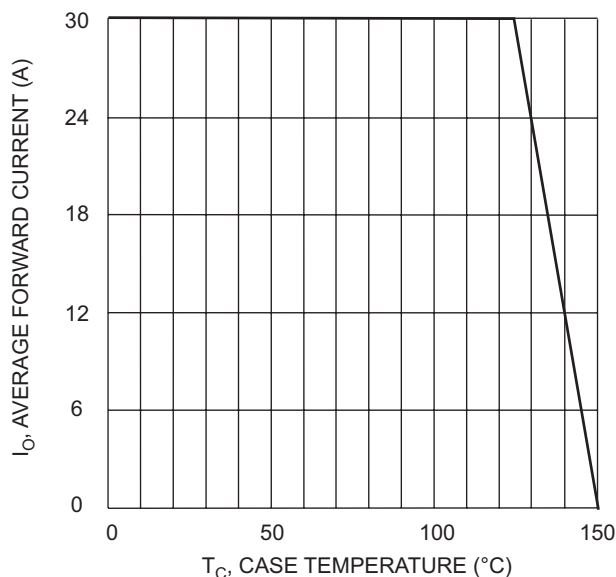


Fig. 1 Forward Current Derating Curve, total device

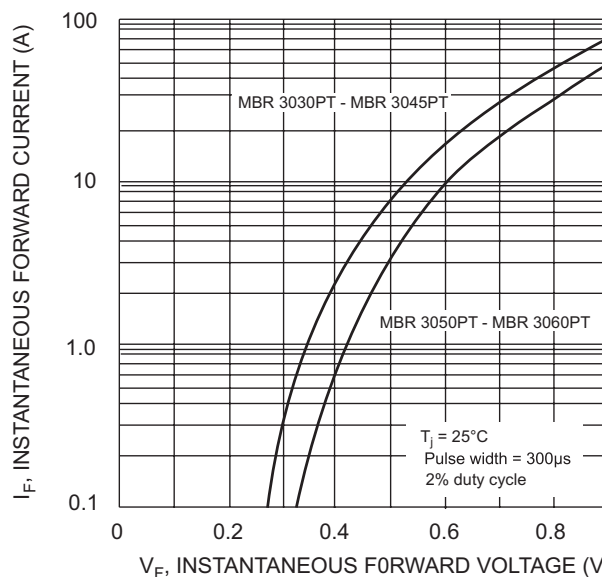


Fig. 2 Typical Forward Characteristics, per element

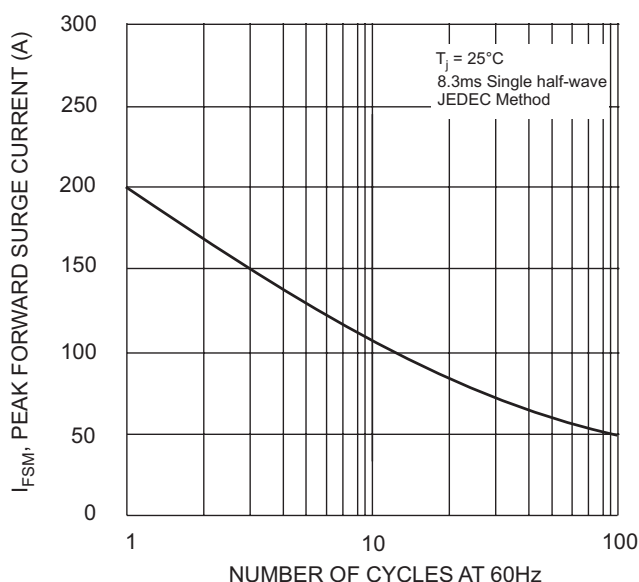


Fig. 3 Max Non-Repetitive Surge Current

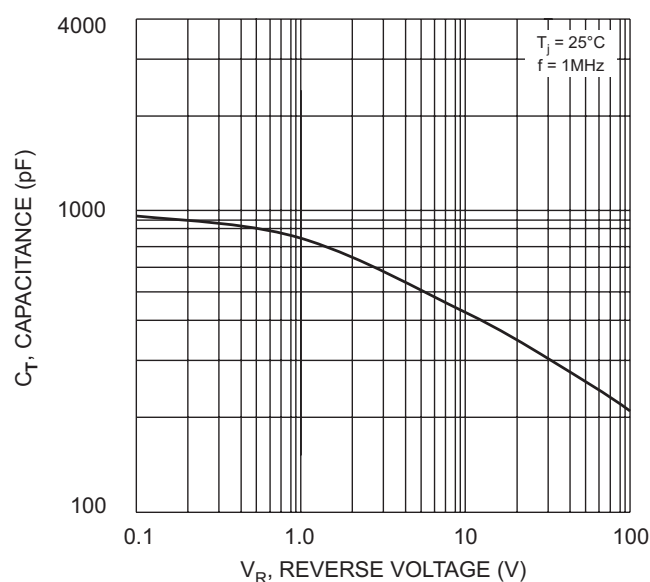


Fig. 4 Typical Total Capacitance

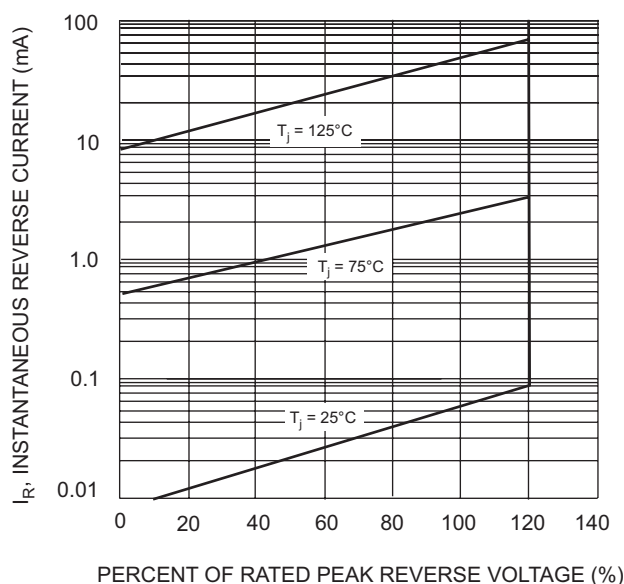


Fig. 5 Typical Reverse Characteristics, per element

**Ordering Information** (Note 5)

| Device    | Packaging | Shipping |
|-----------|-----------|----------|
| MBR3030PT | TO-3P     | 30/Tube  |
| MBR3035PT | TO-3P     | 30/Tube  |
| MBR3040PT | TO-3P     | 30/Tube  |
| MBR3045PT | TO-3P     | 30/Tube  |
| MBR3050PT | TO-3P     | 30/Tube  |
| MBR3060PT | TO-3P     | 30/Tube  |

Notes: 5. For packaging details, visit our website at <http://www.diodes.com/datasheets/ap2008.pdf>.