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# MBR3030PT – MBR3060PT

## 30A SCHOTTKY BARRIER RECTIFIER

## 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 (Notes 1 & 2)**

## 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 – Tin. Plated Leads Solderable per MIL-STD-202, Method 208 e3
- Polarity: As Marked on Body
- Marking: Type Number
- Weight: 5.6 grams (Approximate)

## Ordering Information (Note 3)

| Part Number | Case | Packaging |
|---|---|---|
| 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: 1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. For packaging details, visit our website at http://www.diodes.com/datasheets/ap02008.pdf.

## Maximum Ratings and Electrical Characteristics (@$T_A$ = +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 3050PT | 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°C<br>Total Device (See Fig. 7) | $I_O$ | 30 | | | | | | A |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$ | 200 | | | | | | A |
| Forward Voltage Drop @ $I_F$ = 20A, $T_C$ = +25°C<br>per element (Note 6) @ $I_F$ = 20A, $T_C$ =+125°C<br>@ $I_F$ = 30A, $T_C$ = +25°C<br>@ $I_F$ = 30A, $T_C$ =+125°C | $V_{FM}$ | — | 0.60 | 0.76 | 0.72 | 0.75 | 0.65<br>0.80<br>0.75 | V |
| Peak Reverse Current @ $T_C$ = +25°C<br>at Rated DC Blocking Voltage, per element @ $T_C$ = +125°C | $I_{RM}$ | 1.0 | 60 | | | 5.0 | 100 | mA |
| Typical Total Capacitance (Note 5) | $C_T$ | 500 | | | | | | pF |
| Typical Thermal Resistance Junction to Case (Note 4) | $R_{\theta Jc}$ | 1.4 | | | | | | °C/W |
| Voltage Rate of Change (Rated $V_R$) | dV/dt | 10,000 | | | | | | V/µs |
| Operating Temperature Range | $T_j$ | -65 to +150 | | | | | | °C |
| Storage Temperature Range | $T_{STG}$ | -65 to +175 | | | | | | °C |

Notes: 4. Thermal resistance junction to case mounted on heatsink.
5. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.
6. Pulse width ≤300 µs, duty cycle ≤2%.
7. RoHS revision 13.2.2003. Glass and high temperature solder exemptions applied. See *EU Directive Annex Notes 5 and 7.*

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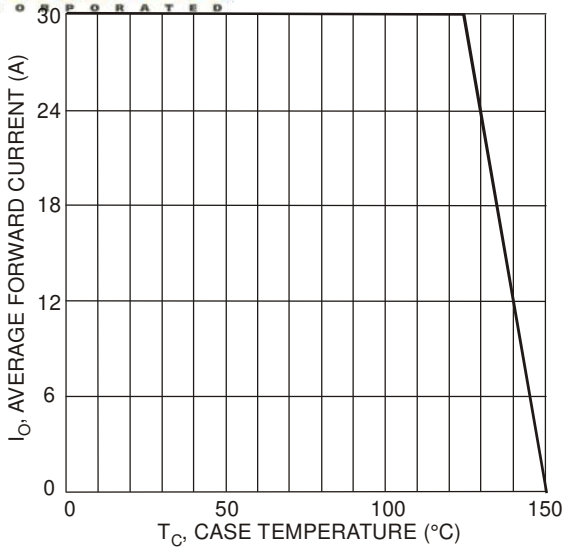



Fig. 1 Forward Current Derating Curve, total device

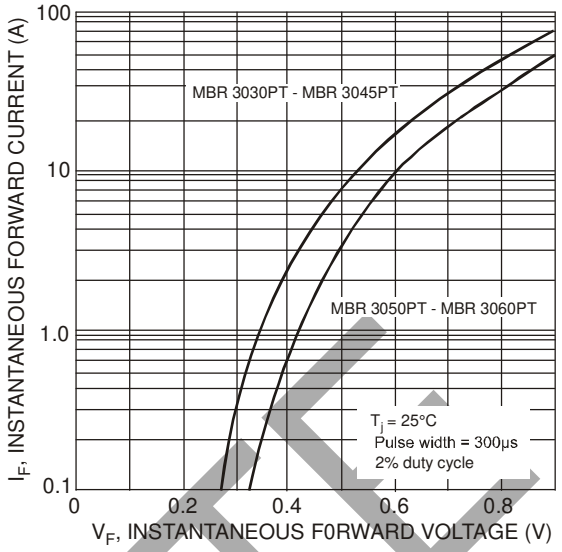



Fig. 2 Typical Forward Characteristics, per element

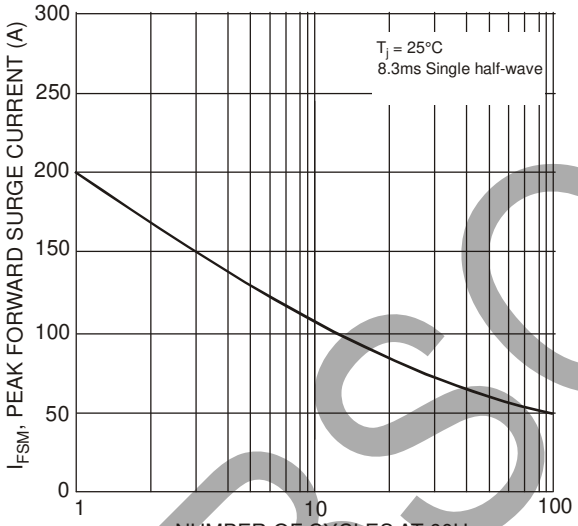



Fig. 3 Max Non-Repetitive Surge Current

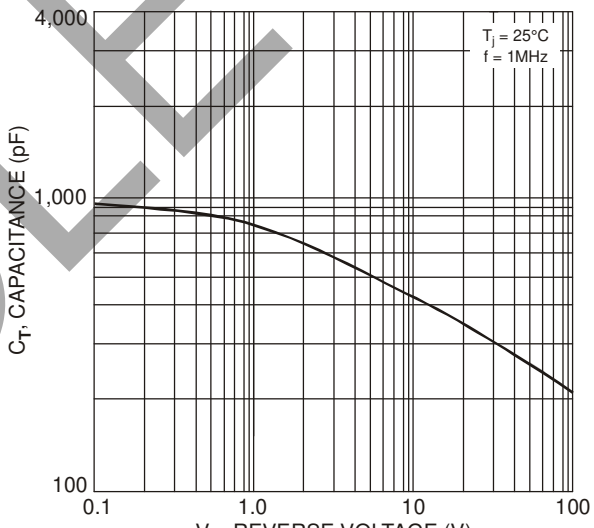



Fig. 4 Typical Total Capacitance

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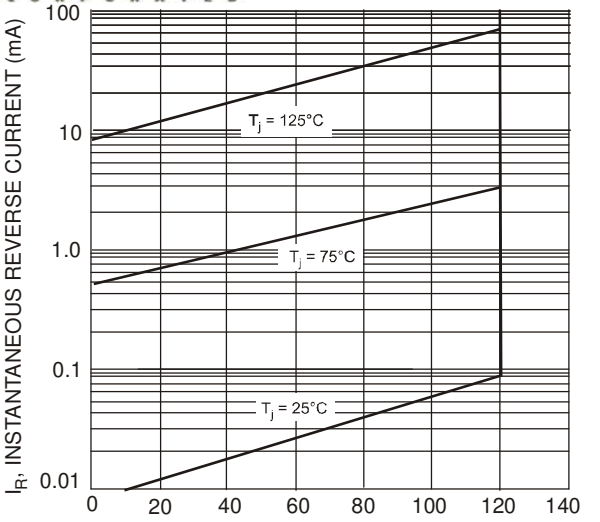
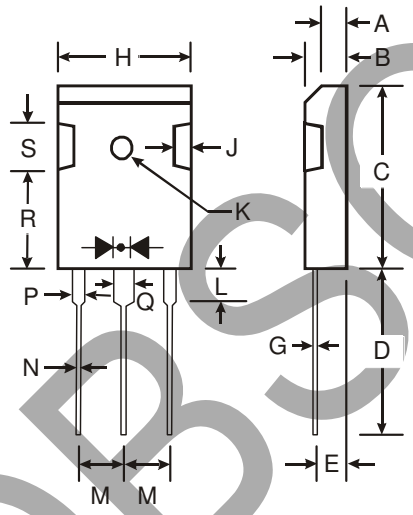



Fig. 5 Typical Reverse Characteristics, per element

## Package Outline Dimensions

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.




| 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** | 2.10 | 2.40 |
| **G** | 0.51 | 0.76 |
| **H** | 15.38 | 16.25 |
| **J** | 1.90 | 2.70 |
| **K** | 2.9∅ | 3.65∅ |
| **L** | 3.78 | 4.50 |
| **M** | 5.20 | 5.70 |
| **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** | | |

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