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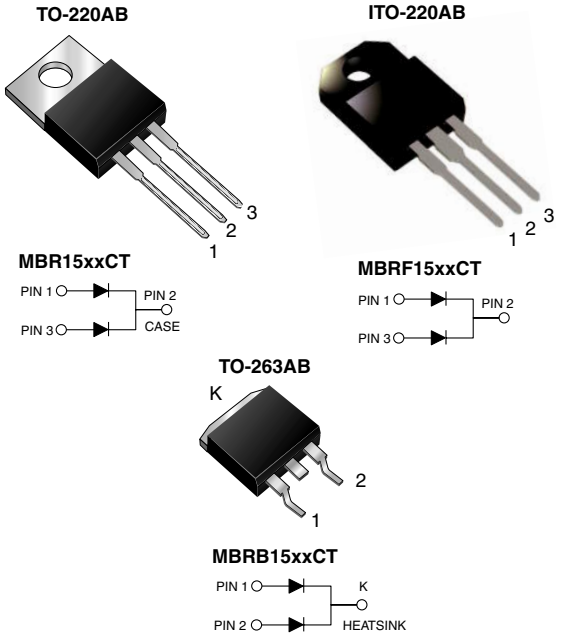
# Dual Common-Cathode Schottky Rectifier




## FEATURES

- Guardring for overvoltage protection
- Lower power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Meets MSL level 1, per J-STD-020C (for TO-263AB package)
- Solder Dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

## TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, freewheeling diodes, dc-to-dc converters or polarity protection application.

## MECHANICAL DATA

**Case:** TO-220AB, ITO-220AB, TO-263AB

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs maximum

| MAJOR RATINGS AND CHARACTERISTICS | |
|---|---|
| $I_{F(AV)}$ | 7.5 A x 2 |
| $V_{RRM}$ | 35 V to 60 V |
| $I_{FSM}$ | 150 A |
| $V_F$ | 0.57 V, 0.65 V |
| $T_j$ max | 150 °C |

**MAXIMUM RATINGS** ($T_C$ = 25 °C unless otherwise noted)

| PARAMETER | | SYMBOL | MBR1535CT | MBR1545CT | MBR1550CT | MBR1560CT | UNIT |
|---|---|---|---|---|---|---|---|
| Maximum repetitive peak reverse voltage | | $V_{RRM}$ | 35 | 45 | 50 | 60 | V |
| Working peak reverse voltage | | $V_{RWM}$ | 35 | 45 | 50 | 60 | V |
| Maximum DC blocking voltage | | $V_{DC}$ | 35 | 45 | 50 | 60 | V |
| Maximum average forward rectified current at $T_C$ = 105 °C | Total device | $I_{F(AV)}$ | 15<br>7.5 | | | | A |
| Peak repetitive forward current at $T_C$ = 105 °C (rated $V_R$, 20 kHz sq. wave) | | $I_{FRM}$ | 15 | | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | | $I_{FSM}$ | 150 | | | | A |
| Peak repetitive reverse surge current per leg at $t_p$ = 2.0 µs, 1 kHz | | $I_{RRM}$ | 1.0 | | 0.5 | | A |
| Voltage rate of change (rated $V_R$) | | dv/dt | 10000 | | | | V/µs |
| Operating junction temperature range | | $T_J$ | - 65 to + 150 | | | | °C |
| Storage temperature range | | $T_{STG}$ | - 65 to + 175 | | | | °C |
| Isolation voltage (ITO-220AB only) From terminal to heatsink t = 1 minute | | $V_{AC}$ | 1500 | | | | V |

| **ELECTRICAL CHARACTERISTICS** ($T_C$ = 25 °C unless otherwise noted) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITIONS** | **SYMBOL** | **MBR1535CT** | **MBR1545CT** | **MBR1550CT** | **MBR1560CT** | **UNIT** |
| Maximum instantaneous forward voltage per leg (1) | at $I_F$ = 7.5 A, $T_C$ = 25 °C<br>at $I_F$ = 7.5 A, $T_C$ = 125 °C<br>at $I_F$ = 15 A, $T_C$ = 25 °C<br>at $I_F$ = 15 A, $T_C$ =125 °C | $V_F$ | -<br>0.57<br>0.84<br>0.72 | | 0.75<br>0.65<br>-<br>- | | V |
| Maximum instantaneous reverse current at rated DC blocking voltage per leg (1) | $T_C$ = 25 °C<br>$T_C$ =125 °C | $I_R$ | 0.1<br>15 | | 1.0<br>50 | | mA |

**Note:**

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

| **THERMAL CHARACTERISTICS** ($T_C$ = 25 °C unless otherwise noted) | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **MBR** | **MBRF** | **MBRB** | **UNIT** |
| Maximum thermal resistance per leg | $R_{\theta JA}$<br>$R_{\theta JC}$ | 60<br>3.0 | -<br>5.0 | 60<br>3.0 | °C/W |

| **ORDERING INFORMATION** | | | | | |
|---|---|---|---|---|---|
| **PACKAGE** | **PREFERRED P/N** | **UNIT WEIGHT (g)** | **PACKAGE CODE** | **BASE QUANTITY** | **DELIVERY MODE** |
| TO-220AB | MBR1545CT-E3/45 | 1.85 | 45 | 50/Tube | Tube |
| ITO-220AB | MBRF1545CT-E3/45 | 1.99 | 45 | 50/Tube | Tube |
| TO-263AB | MBRB1545CT-E3/45 | 1.35 | 45 | 50/Tube | Tube |
| TO-263AB | MBRB1545CT-E3/81 | 1.35 | 81 | 800/Reel | Tape Reel |

## RATINGS AND CHARACTERISTICS CURVES

($T_A$ = 25 °C unless otherwise noted)

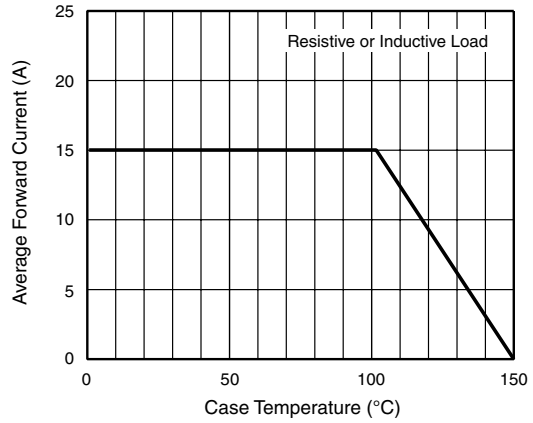



Figure 1. Forward Current Derating Curve

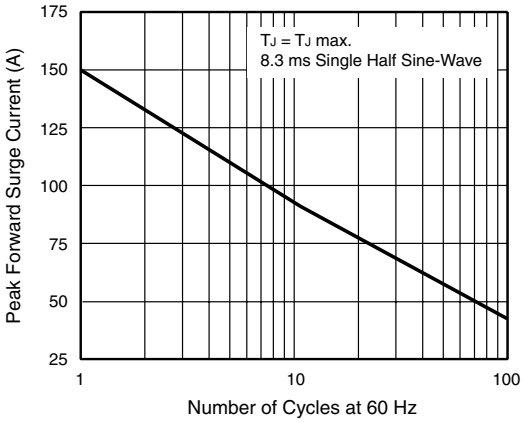



Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Leg

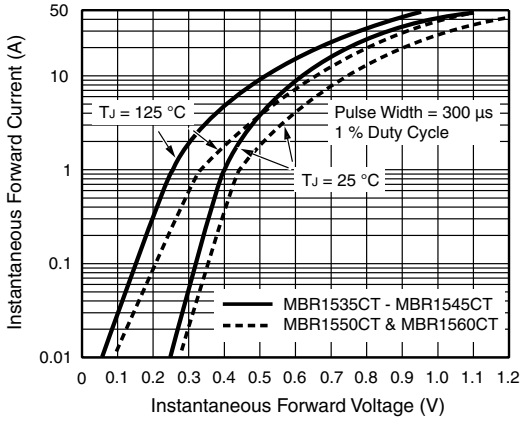



Figure 3. Typical Instantaneous Forward Characteristics Per Leg

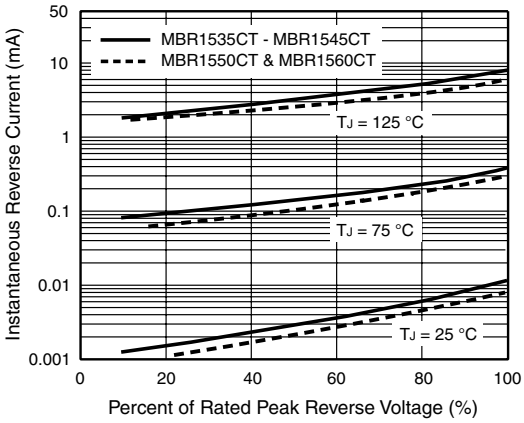



Figure 4. Typical Reverse Characteristics Per Leg

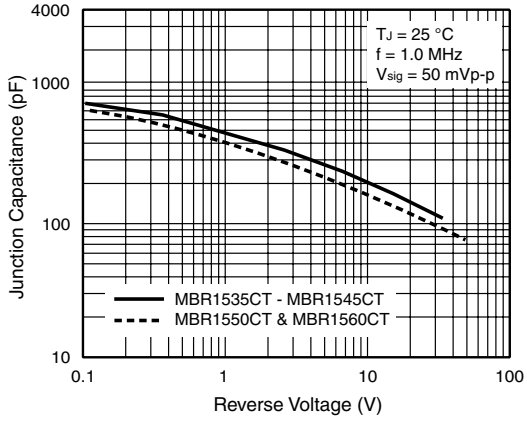



Figure 5. Typical Junction Capacitance Per Leg

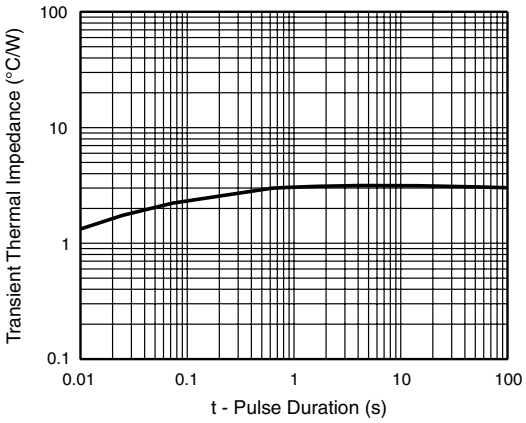
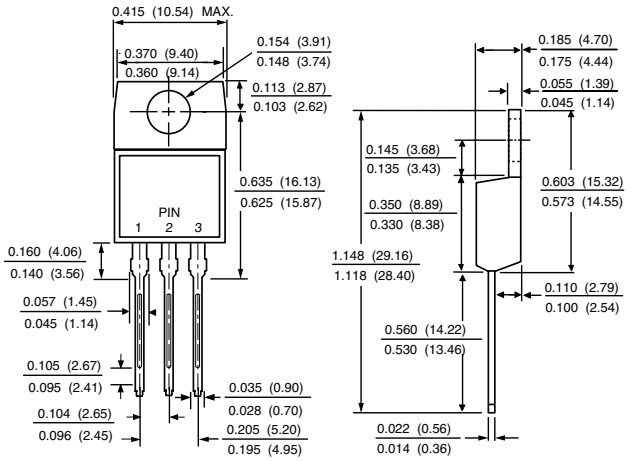


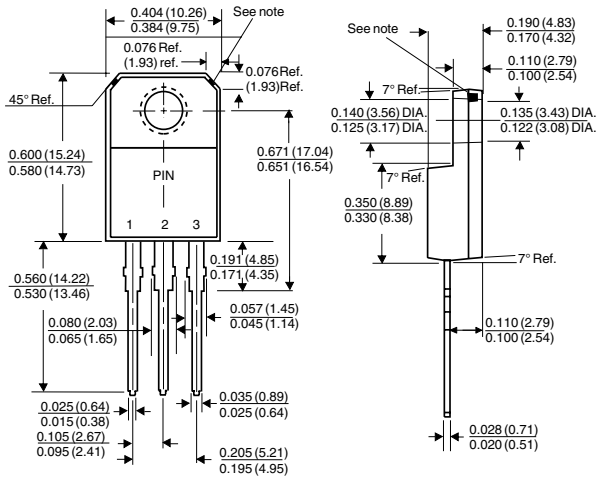

Figure 6. Typical Transient Thermal Impedance Per Leg

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

**TO-220AB**

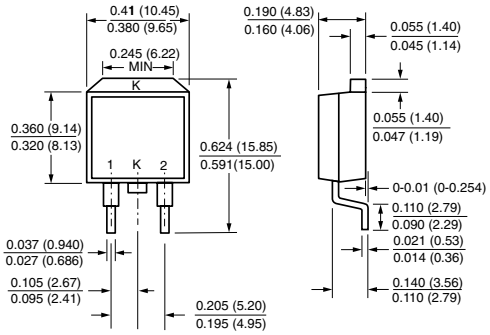



**ITO-220AB**

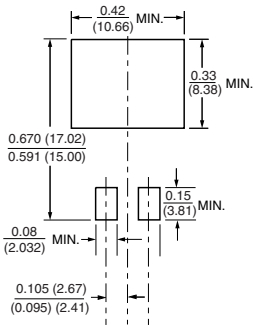



Note: Copper exposure is allowable for 0.005 (0.13) Max. from the body

**TO-263AB**




**Mounting Pad Layout**



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