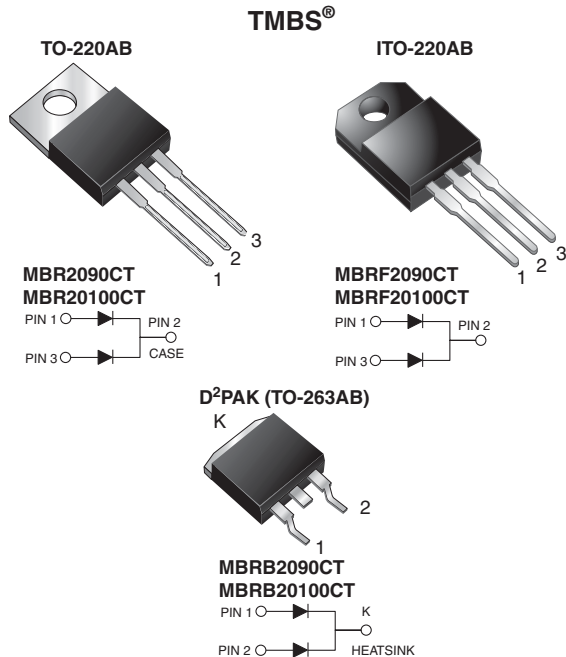


Dual Common-Cathode High Voltage Trench MOS Barrier Schottky Rectifier



DESIGN SUPPORT TOOLS

[click logo to get started](#)

3D
Models Available

| PRIMARY CHARACTERISTICS | |
|-------------------------|---------------------------------------|
| $I_{F(AV)}$ | 2 x 10 A |
| V_{RRM} | 90 V to 100 V |
| I_{FSM} | 150 A |
| V_F | 0.65 V |
| T_J max. | 150 °C |
| Package | TO-220AB, ITO-220AB, D²PAK (TO-263AB) |
| Circuit configuration | Common cathode |

FEATURES

- Trench MOS Schottky technology
- Lower power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AB and ITO-220AB package)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: TO-220AB, ITO-220AB, D²PAK (TO-263AB)

Molding compound meets UL 94 V-0 flammability rating
 Base P/N-E3 - RoHS-compliant, commercial grade

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs maximum

| MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted) | | | | |
|--|----------------|--------------|------------|------|
| PARAMETER | SYMBOL | MBR2090CT | MBR20100CT | UNIT |
| Maximum repetitive peak reverse voltage | V_{RRM} | 90 | 100 | V |
| Working peak reverse voltage | V_{RWM} | 90 | 100 | V |
| Maximum DC blocking voltage | V_{DC} | 90 | 100 | V |
| Maximum average forward rectified current at $T_C = 133$ °C | $I_{F(AV)}$ | total device | | A |
| | | per diode | | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | I_{FSM} | 150 | | A |
| Non-repetitive avalanche energy at $T_J = 25$ °C, $L = 60$ mH per diode | E_{AS} | 130 | | mJ |
| Peak repetitive reverse current at $t_p = 2$ μs, 1 kHz, $T_J = 38$ °C ± 2 °C per diode | I_{RRM} | 0.5 | | A |
| Voltage rate of change (rated V_F) | dV/dt | 10 000 | | V/μs |
| Isolation voltage (ITO-220AB only) from terminal to heatsink $t = 1$ min | V_{AC} | 1500 | | V |
| Operating junction and storage temperature range | T_J, T_{STG} | -65 to +150 | | °C |



| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | |
|--|---------------------|-----------------------------------|-------------|------|---------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | MAX. | UNIT |
| Maximum instantaneous forward voltage per diode | $I_F = 10\text{ A}$ | $T_C = 25\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 0.80 | V |
| | $I_F = 10\text{ A}$ | $T_C = 125\text{ }^\circ\text{C}$ | | 0.65 | |
| | $I_F = 20\text{ A}$ | $T_C = 125\text{ }^\circ\text{C}$ | | 0.75 | |
| Maximum reverse current per diode at working peak reverse voltage | | $T_J = 25\text{ }^\circ\text{C}$ | $I_R^{(2)}$ | 100 | μA |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 6.0 | mA |

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width $\leq 40\text{ ms}$

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | |
|---|-----------------|-----|------|------|--------------------|
| PARAMETER | SYMBOL | MBR | MBRF | MBRB | UNIT |
| Typical thermal resistance per diode | $R_{\theta JA}$ | 60 | - | 60 | $^\circ\text{C/W}$ |
| | $R_{\theta JC}$ | 2.0 | 3.5 | 2.0 | |

| ORDERING INFORMATION (Example) | | | | | |
|---------------------------------------|-------------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB | MBR20100CT-E3/4W | 1.88 | 4W | 50/tube | Tube |
| ITO-220AB | MBRF20100CT-E3/4W | 1.75 | 4W | 50/tube | Tube |
| TO-263AB | MBRB20100CT-E3/4W | 1.38 | 4W | 50/tube | Tube |
| TO-263AB | MBRB20100CT-E3/8W | 1.38 | 8W | 800/reel | Tape and reel |

RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

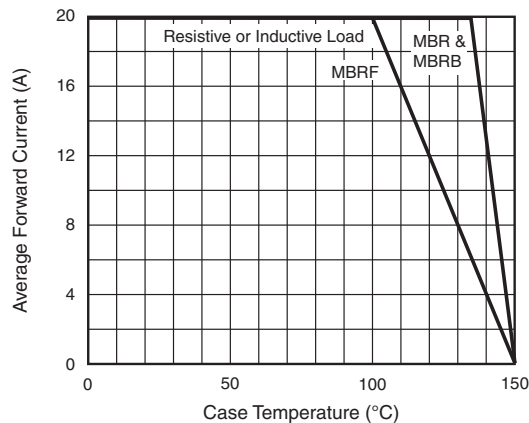


Fig. 1 - Forward Current Derating Curve

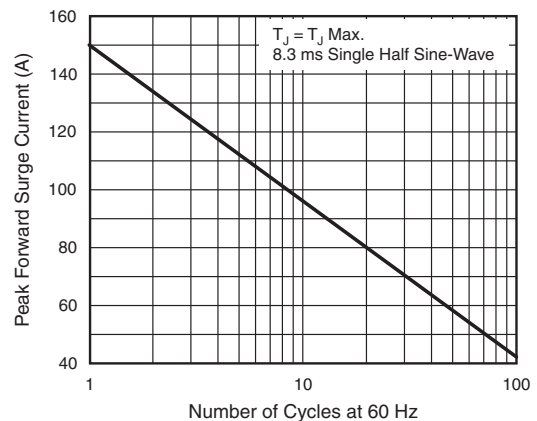


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

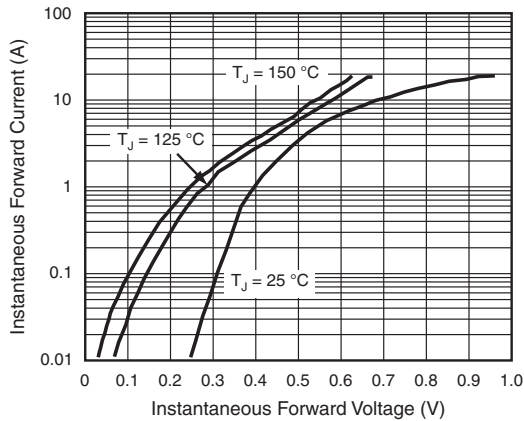


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

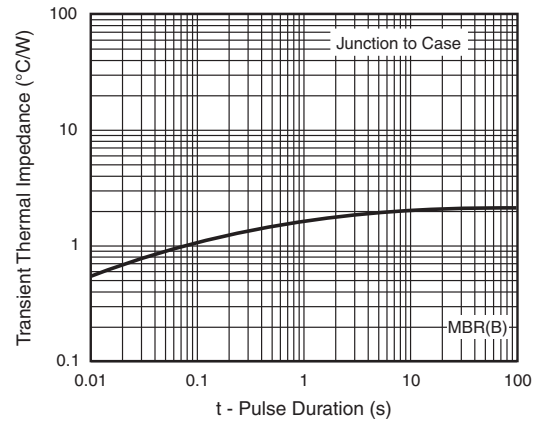


Fig. 6 - Typical Transient Thermal Impedance Per Diode

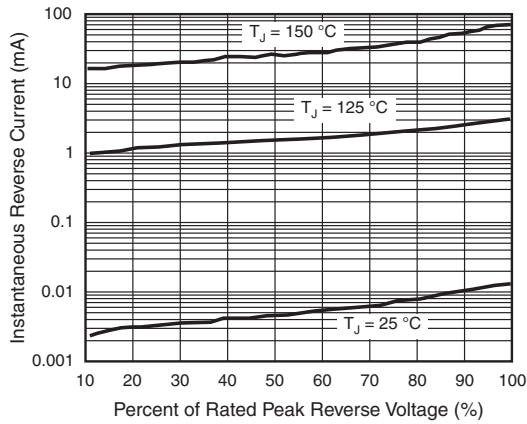


Fig. 4 - Typical Reverse Characteristics Per Diode

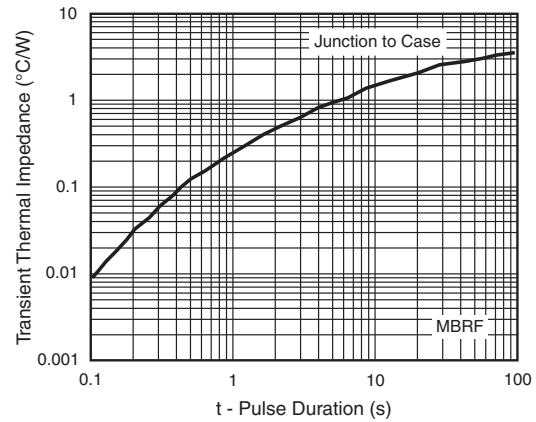


Fig. 7 - Typical Transient Thermal Impedance Per Diode

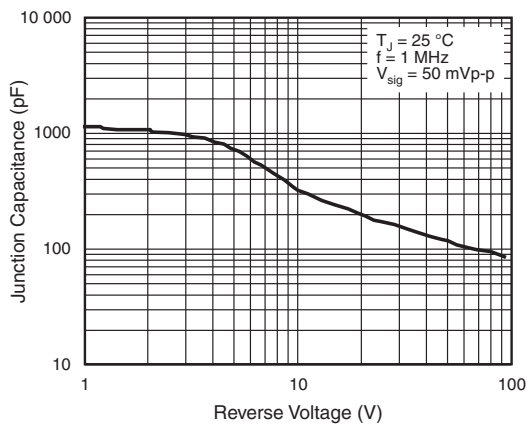
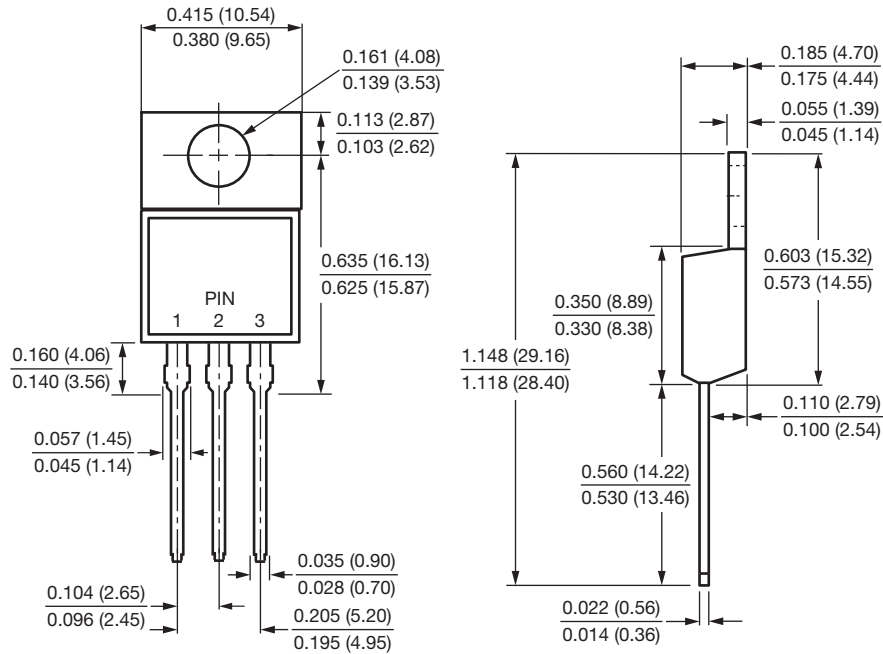


Fig. 5 - Typical Junction Capacitance Per Diode

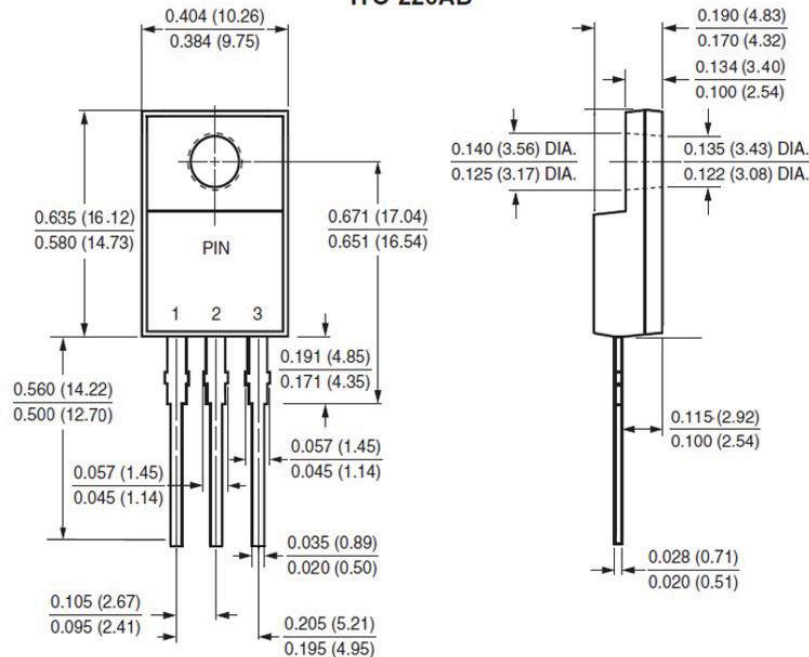


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB

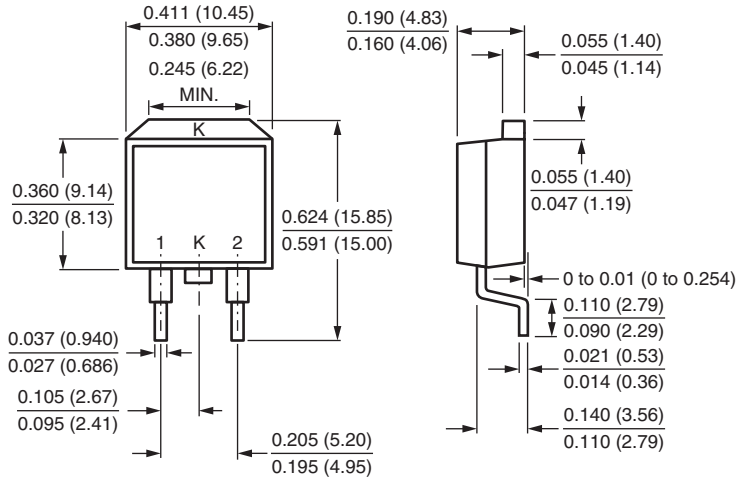


ITO-220AB

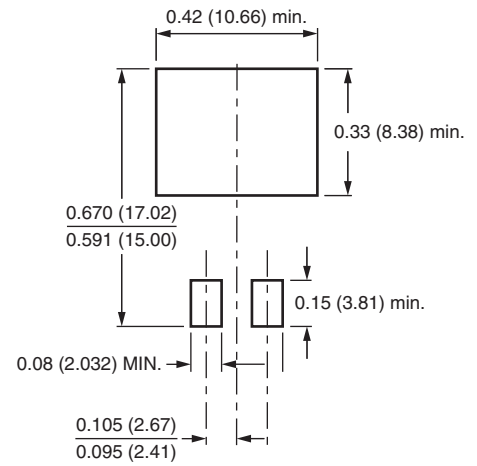




D²PAK (TO-263AB)



Mounting Pad Layout





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