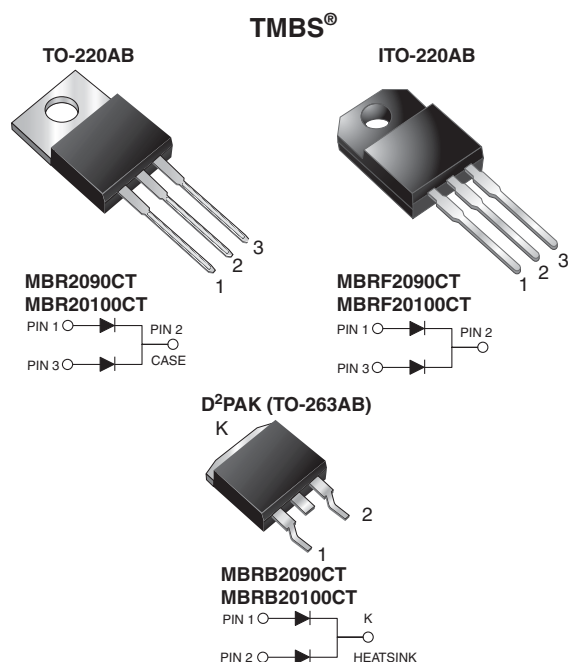




## Dual Common-Cathode High Voltage Trench MOS Barrier Schottky Rectifier



### DESIGN SUPPORT TOOLS


[click logo to get started](#)

| 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, D <sup>2</sup> PAK (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/doc299912](http://www.vishay.com/doc299912)


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, D<sup>2</sup>PAK (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 <sub>A</sub> = 25 °C unless otherwise noted)                                          |                                   |             |            |      |
|----------------------------------------------------------------------------------------------------------|-----------------------------------|-------------|------------|------|
| PARAMETER                                                                                                | SYMBOL                            | MBR2090CT   | MBR20100CT | UNIT |
| Maximum repetitive peak reverse voltage                                                                  | V <sub>RRM</sub>                  | 90          | 100        | V    |
| Working peak reverse voltage                                                                             | V <sub>RWM</sub>                  | 90          | 100        | V    |
| Maximum DC blocking voltage                                                                              | V <sub>DC</sub>                   | 90          | 100        | V    |
| Maximum average forward rectified current at T <sub>C</sub> = 133 °C                                     | total device                      | 20          |            | A    |
|                                                                                                          | per diode                         | 10          |            |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode             | I <sub>FSM</sub>                  | 150         |            | A    |
| Non-repetitive avalanche energy at T <sub>J</sub> = 25 °C, L = 60 mH per diode                           | E <sub>AS</sub>                   | 130         |            | mJ   |
| Peak repetitive reverse current at t <sub>p</sub> = 2 μs, 1 kHz, T <sub>J</sub> = 38 °C ± 2 °C per diode | I <sub>RRM</sub>                  | 0.5         |            | A    |
| Voltage rate of change (rated V <sub>R</sub> )                                                           | dV/dt                             | 10 000      |            | V/μs |
| Isolation voltage (ITO-220AB only) from terminal to heatsink t = 1 min                                   | V <sub>AC</sub>                   | 1500        |            | V    |
| Operating junction and storage temperature range                                                         | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 |            | °C   |



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                       |                         |                               |      |      |
|----------------------------------------------------------------------------|-----------------------|-------------------------|-------------------------------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS       |                         | SYMBOL                        | MAX. | UNIT |
| Maximum instantaneous forward voltage per diode                            | I <sub>F</sub> = 10 A | T <sub>C</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.80 | V    |
|                                                                            | I <sub>F</sub> = 10 A | T <sub>C</sub> = 125 °C |                               | 0.65 |      |
|                                                                            | I <sub>F</sub> = 20 A | T <sub>C</sub> = 125 °C |                               | 0.75 |      |
| Maximum reverse current per diode at working peak reverse voltage          |                       | T <sub>J</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 100  | μA   |
|                                                                            |                       | T <sub>J</sub> = 125 °C |                               | 6.0  | mA   |

## Notes

- (1) Pulse test: 300  $\mu\text{s}$  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)

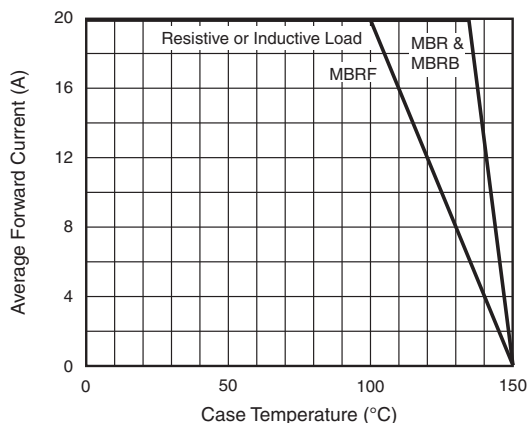


Fig. 1 - Forward Current Derating Curve

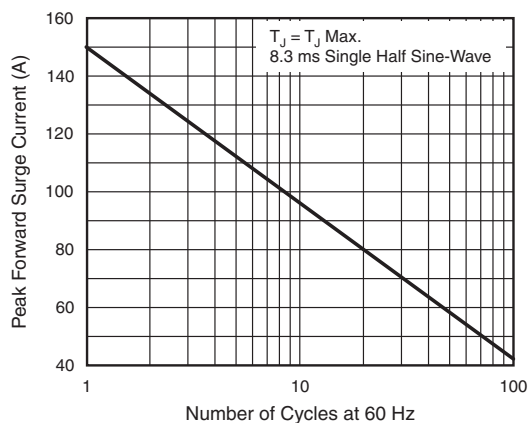


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

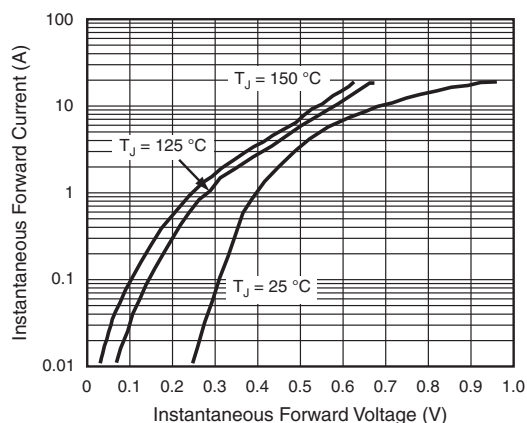


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

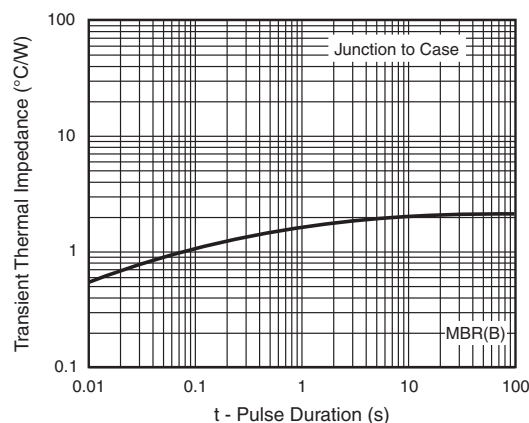


Fig. 6 - Typical Transient Thermal Impedance Per Diode

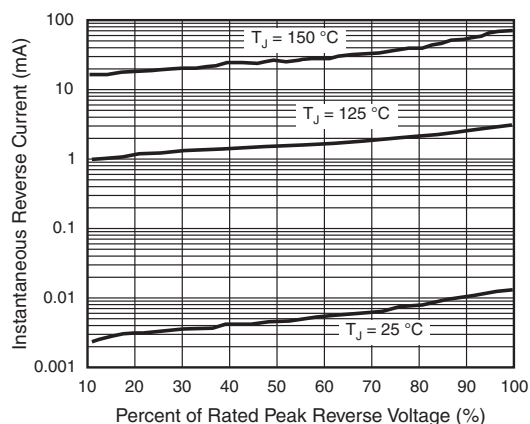


Fig. 4 - Typical Reverse Characteristics Per Diode

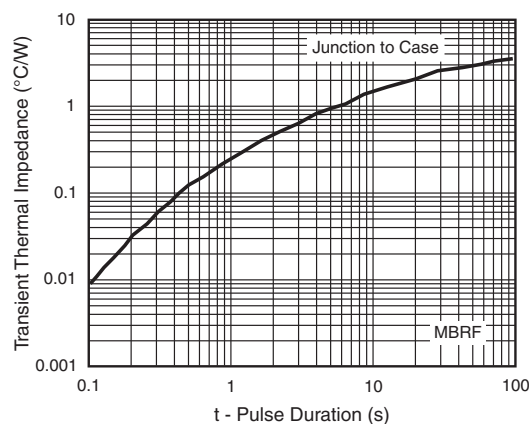


Fig. 7 - Typical Transient Thermal Impedance Per Diode

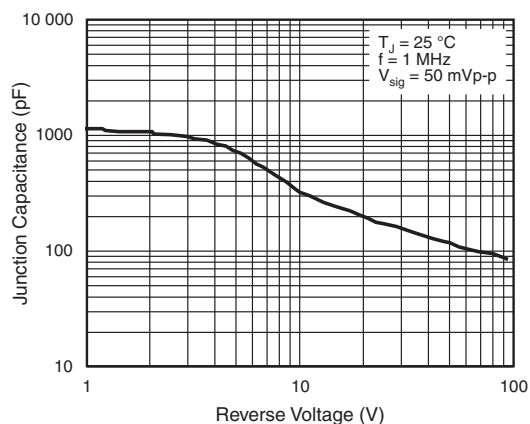
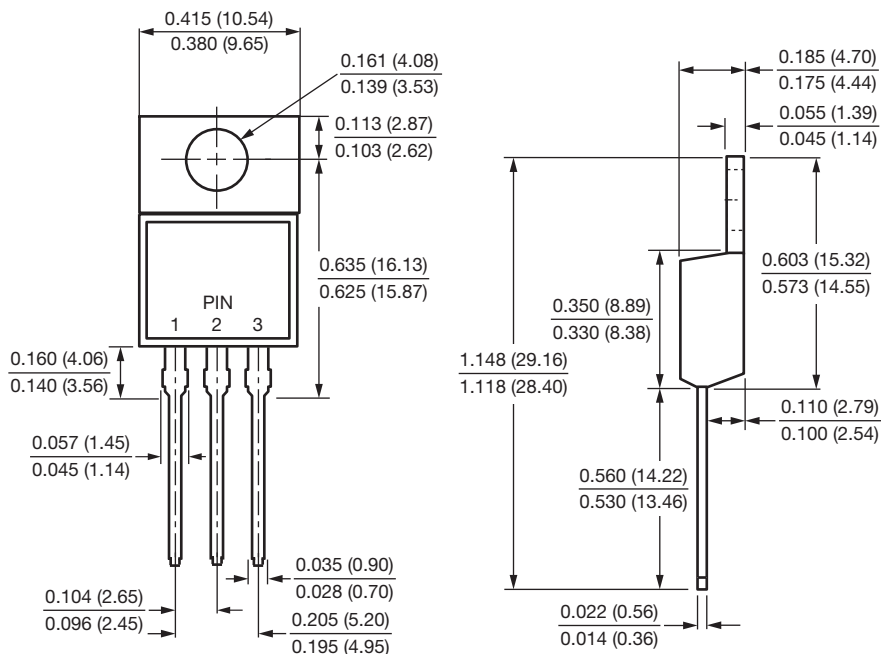


Fig. 5 - Typical Junction Capacitance Per Diode

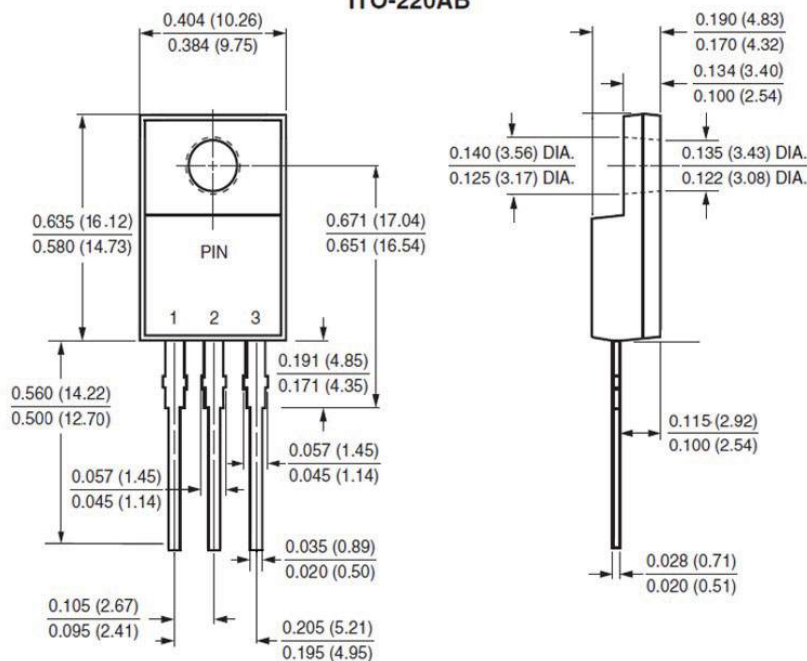


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AB

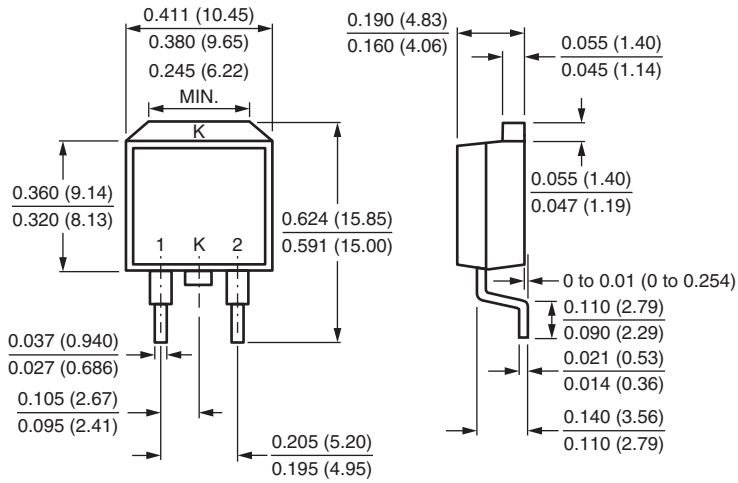


### ITO-220AB

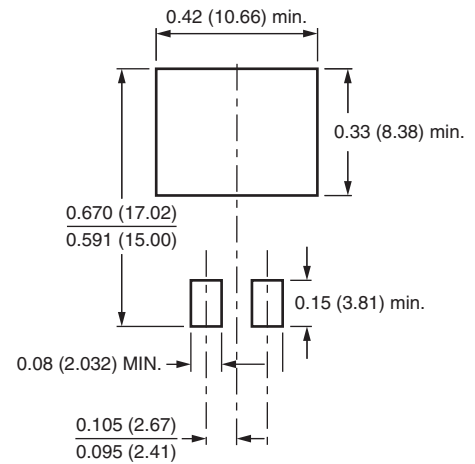




## D<sup>2</sup>PAK (TO-263AB)



## Mounting Pad Layout





## Disclaimer

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