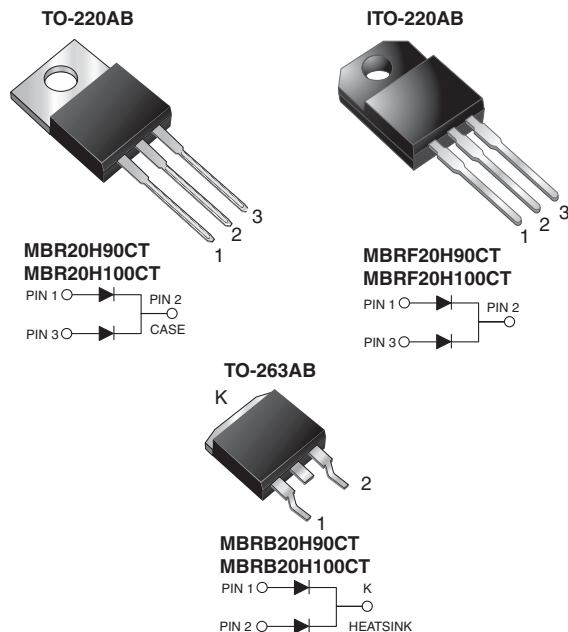


# Dual Common Cathode High Voltage Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



## FEATURES

- Guardring for overvoltage protection
- Low power loss, high efficiency
- Low forward voltage drop
- Low leakage current
- 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)
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://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 and polarity protection application.

## MECHANICAL DATA

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

Molding compound meets UL 94 V-0 flammability rating  
 Base P/N-E3 - RoHS-compliant, commercial grade  
 Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

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

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** As marked

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

## PRIMARY CHARACTERISTICS

|             |               |
|-------------|---------------|
| $I_{F(AV)}$ | 10 A x 2      |
| $V_{RRM}$   | 90 V to 100 V |
| $I_{FSM}$   | 250 A         |
| $I_R$       | 4.5 $\mu$ A   |
| $V_F$       | 0.64          |
| $T_J$ max.  | 175 °C        |

## MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)

| PARAMETER                                                                          | SYMBOL                            | MBR20H90CT         | MBR20H100CT | UNIT |
|------------------------------------------------------------------------------------|-----------------------------------|--------------------|-------------|------|
| Maximum repetitive peak reverse voltage                                            | V <sub>RRM</sub>                  | 90                 | 100         | V    |
| Working peak reverse voltage                                                       | V <sub>RWM</sub>                  | 90                 | 100         |      |
| Maximum DC blocking voltage                                                        | V <sub>DC</sub>                   | 90                 | 100         |      |
| Maximum average forward rectified current                                          | total device<br>per diode         | I <sub>F(AV)</sub> | 20          | A    |
|                                                                                    |                                   |                    | 10          |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I <sub>FSM</sub>                  | 250                |             |      |
| Peak repetitive reverse current per diode at t <sub>p</sub> = 2.0 μs, 1 kHz        | I <sub>RRM</sub>                  | 1.0                |             |      |
| Voltage rate of change (rated V <sub>R</sub> )                                     | dV/dt                             | 10 000             | V/μs        |      |
| Operating junction and storage temperature range                                   | T <sub>J</sub> , T <sub>STG</sub> | - 65 to + 175      | °C          |      |
| Isolation voltage (ITO-220AB only) from terminal to heatsink t = 1 min             | V <sub>AC</sub>                   | 1500               | V           |      |



| ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |             |                     |                                     |       |               |
|-----------------------------------------------------------------------------------------|-------------|---------------------|-------------------------------------|-------|---------------|
| PARAMETER                                                                               | SYMBOL      | TEST CONDITIONS     |                                     | VALUE | UNIT          |
| Maximum instantaneous forward voltage per diode                                         | $V_F^{(1)}$ | $I_F = 10\text{ A}$ | $T_C = 25\text{ }^{\circ}\text{C}$  | 0.77  | V             |
|                                                                                         |             | $I_F = 10\text{ A}$ | $T_C = 125\text{ }^{\circ}\text{C}$ | 0.64  |               |
|                                                                                         |             | $I_F = 20\text{ A}$ | $T_C = 25\text{ }^{\circ}\text{C}$  | 0.88  |               |
|                                                                                         |             | $I_F = 20\text{ A}$ | $T_C = 125\text{ }^{\circ}\text{C}$ | 0.73  |               |
| Maximum reverse current at working peak reverse voltage per diode                       | $I_R^{(2)}$ | Rated $V_R$         | $T_J = 25\text{ }^{\circ}\text{C}$  | 4.5   | $\mu\text{A}$ |
|                                                                                         |             |                     | $T_J = 125\text{ }^{\circ}\text{C}$ | 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                                                 | $R_{\theta JC}$ | 2.0 | 5.8  | 2.0  | $^{\circ}\text{C/W}$ |

| ORDERING INFORMATION (Example) |                                   |                 |              |               |               |
|--------------------------------|-----------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE                        | PREFERRED P/N                     | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                       | MBR20H100CT-E3/45                 | 1.85            | 45           | 50/tube       | Tube          |
| ITO-220AB                      | MBRF20H100CT-E3/45                | 1.99            | 45           | 50/tube       | Tube          |
| TO-263AB                       | MBRB20H100CT-E3/45                | 1.35            | 45           | 50/tube       | Tube          |
| TO-263AB                       | MBRB20H100CT-E3/81                | 1.35            | 81           | 800/reel      | Tape and reel |
| TO-220AB                       | MBR20H100CTHE3/45 <sup>(1)</sup>  | 1.85            | 45           | 50/tube       | Tube          |
| ITO-220AB                      | MBRF20H100CTHE3/45 <sup>(1)</sup> | 1.99            | 45           | 50/tube       | Tube          |
| TO-263AB                       | MBRB20H100CTHE3/45 <sup>(1)</sup> | 1.35            | 45           | 50/tube       | Tube          |
| TO-263AB                       | MBRB20H100CTHE3/81 <sup>(1)</sup> | 1.35            | 81           | 800/reel      | Tape and reel |

**Note**

(1) AEC-Q101 qualified



## RATINGS AND CHARACTERISTICS CURVES

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

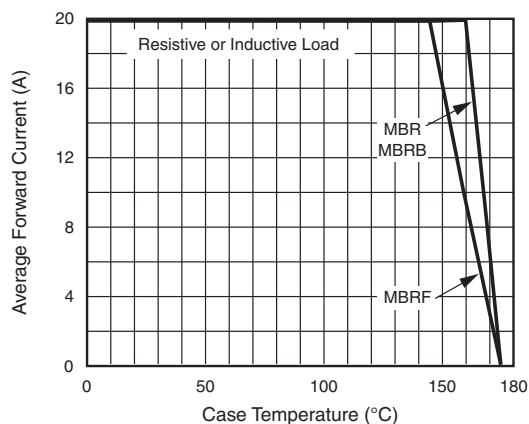


Fig. 1 - Forward Current Derating Curve

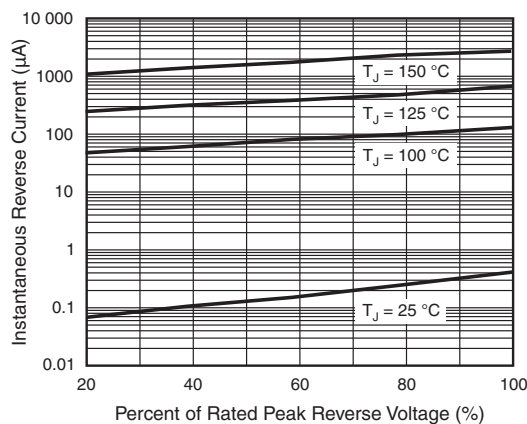


Fig. 4 - Typical Reverse Characteristics Per Diode

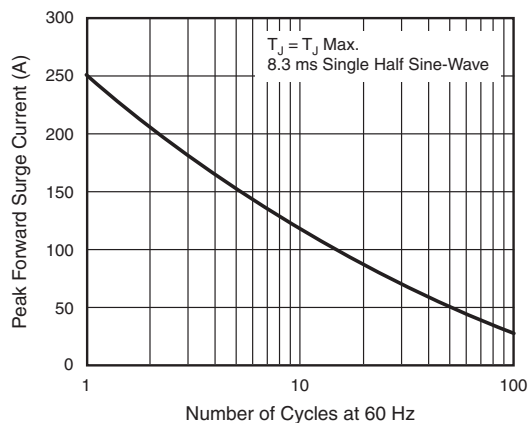


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

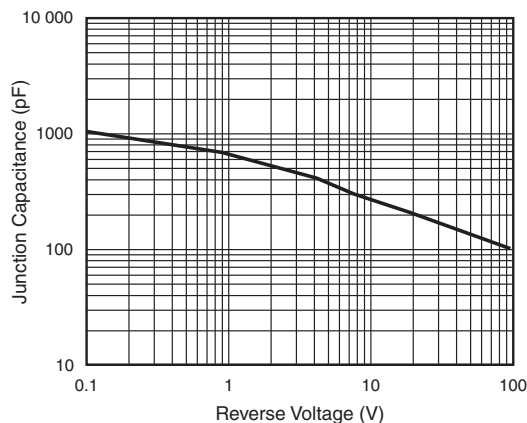


Fig. 5 - Typical Junction Capacitance Per Diode

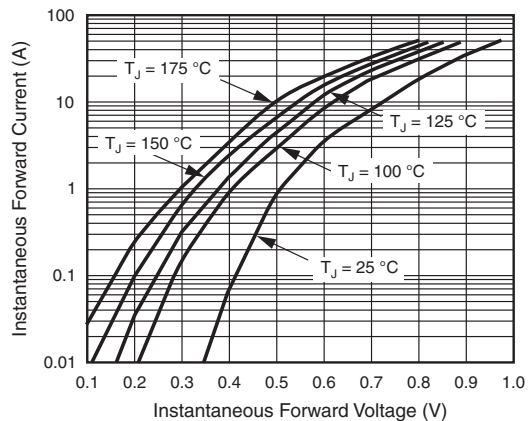


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

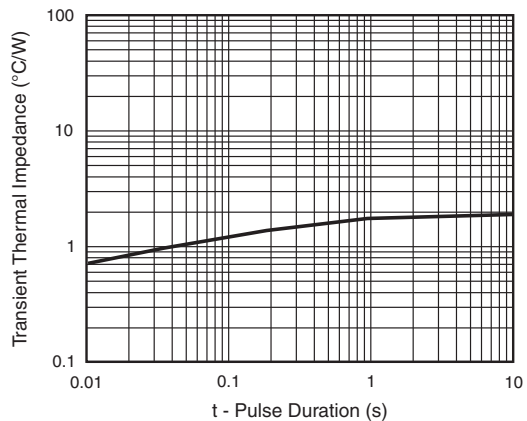
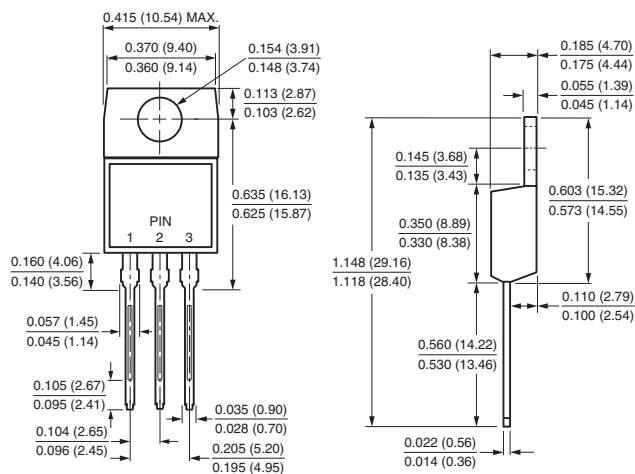


Fig. 6 - Typical Transient Thermal Impedance Per Diode

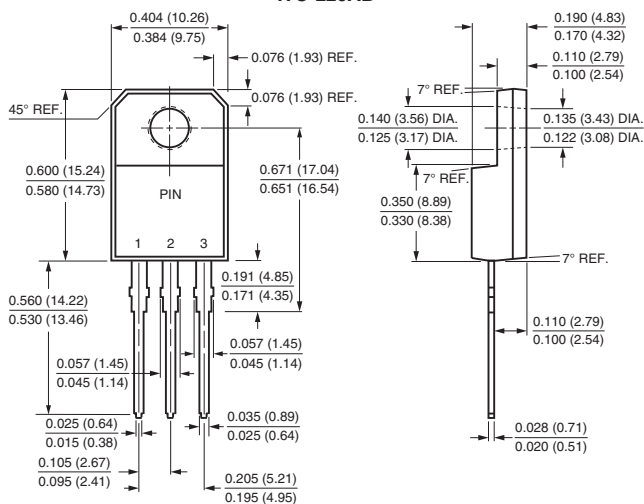


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

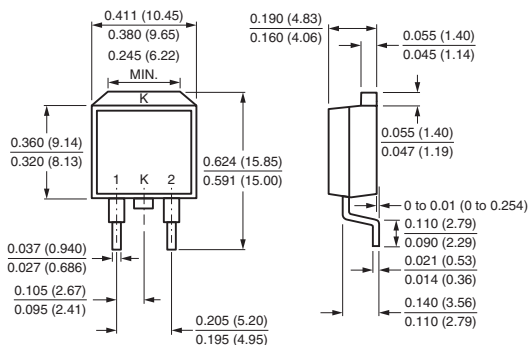
TO-220AB



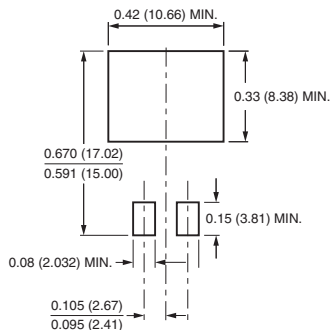
ITO-220AB



TO-263AB



Mounting Pad Layout





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