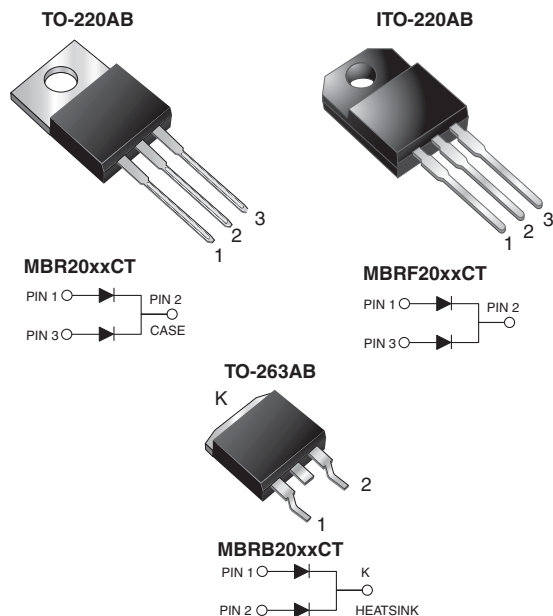


## Dual Common Cathode Schottky Rectifier



### FEATURES

- Power pack
- Guardring for overvoltage protection
- Low power loss, high efficiency
- Very 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)
- 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 low voltage, 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

|                    |                                  |
|--------------------|----------------------------------|
| $I_{F(AV)}$        | 2 x 10 A                         |
| $V_{RRM}$          | 35 V to 60 V                     |
| $I_{FSM}$          | 150 A                            |
| $V_F$              | 0.57 V, 0.70 V                   |
| $T_J \text{ max.}$ | 150 °C                           |
| Package            | TO-220AB, ITO-220AB,<br>TO-263AB |
| Diode variations   | Dual Common Cathode              |

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

| PARAMETER   | SYMBOL             | MBR2035CT     | MBR2045CT | MBR2050CT | MBR2060CT | UNIT |      |
|---|--------------------|---------------|-----------|-----------|-----------|------|------|
| Maximum repetitive peak reverse voltage   | V <sub>RRM</sub>   | 35            | 45        | 50        | 60        | V    |      |
| Working peak reverse voltage  | V <sub>RWM</sub>   | 35            | 45        | 50        | 60        |      |      |
| Maximum DC blocking voltage   | V <sub>DC</sub>    | 35            | 45        | 50        | 60        |      |      |
| Maximum average forward rectified current <div>total device</div> at T <sub>C</sub> = 135 °C <div>per diode</div> | I <sub>F(AV)</sub> | 20            |           |           |           | A    |      |
|   |                    | 10            |           |           |           |      |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode                      | I <sub>FSM</sub>   | 150           |           |           |           |      |      |
| Peak repetitive reverse surge current per diode at t <sub>p</sub> = 2.0 μs, 1 kHz                                 | I <sub>RRM</sub>   | 1.0           |           | 0.5       |           |      |      |
| Voltage rate of change (rated V <sub>R</sub> )  | dV/dt              | 10 000        |           |           |           |      | V/μs |
| Operating junction temperature range  | T <sub>J</sub>     | - 65 to + 150 |           |           |           |      | °C   |
| Storage temperature range   | T <sub>STG</sub>   | - 65 to + 175 |           |           |           |      |      |
| Isolation voltage (ITO-220AB only) from terminal to heatsink t = 1 min  | V <sub>AC</sub>    | 1500          |           |           |           | V    |      |

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER  | SYMBOL                        | TEST CONDITIONS       |                         | MBR2035CT | MBR2045CT | MBR2050CT | MBR2060CT | UNIT |
|--|-------------------------------|-----------------------|-------------------------|-----------|-----------|-----------|-----------|------|
| Maximum instantaneous forward voltage per diode          | V <sub>F</sub> <sup>(1)</sup> | I <sub>F</sub> = 10 A | T <sub>C</sub> = 25 °C  | 0.65      |           | 0.80      |           | V    |
|  |                               | I <sub>F</sub> = 10 A | T <sub>C</sub> = 125 °C | 0.57      |           | 0.70      |           |      |
|  |                               | I <sub>F</sub> = 20 A | T <sub>C</sub> = 25 °C  | 0.84      |           | 0.95      |           |      |
|  |                               | I <sub>F</sub> = 20 A | T <sub>C</sub> = 125 °C | 0.72      |           | 0.85      |           |      |
| Maximum reverse current at DC blocking voltage per diode | I <sub>R</sub> <sup>(2)</sup> | Rated V <sub>R</sub>  | T <sub>C</sub> = 25 °C  | 0.1       |           | 0.15      |           | mA   |
|  |                               |                       | T <sub>C</sub> = 125 °C | 15        |           | 150       |           |      |

**Notes**

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

**THERMAL CHARACTERISTICS** ( $T_C = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER  | SYMBOL          | MBR | MBRF | MBRB | UNIT                 |
|--|-----------------|-----|------|------|----------------------|
| Typical resistance from junction to case per diode | $R_{\theta JC}$ | 2.0 | 5.0  | 2.0  | $^{\circ}\text{C/W}$ |

**ORDERING INFORMATION** (Example)

| PACKAGE   | PREFERRED P/N                   | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|-----------|---------------------------------|-----------------|--------------|---------------|---------------|
| TO-220AB  | MBR2045CT-E3/45                 | 1.85            | 45           | 50/tube       | Tube          |
| ITO-220AB | MBRF2045CT-E3/45                | 1.99            | 45           | 50/tube       | Tube          |
| TO-263AB  | MBRB2045CT-E3/45                | 1.35            | 45           | 50/tube       | Tube          |
| TO-263AB  | MBRB2045CT-E3/81                | 1.35            | 81           | 800/reel      | Tape and reel |
| TO-220AB  | MBR2045CTHE3/45 <sup>(1)</sup>  | 1.85            | 45           | 50/tube       | Tube          |
| ITO-220AB | MBRF2045CTHE3/45 <sup>(1)</sup> | 1.99            | 45           | 50/tube       | Tube          |
| TO-263AB  | MBRB2045CTHE3/45 <sup>(1)</sup> | 1.35            | 45           | 50/tube       | Tube          |
| TO-263AB  | MBRB2045CTHE3/81 <sup>(1)</sup> | 1.35            | 81           | 800/reel      | Tape and reel |

**Note**

- (1) AEC-Q101 qualified



## RATINGS AND CHARACTERISTICS CURVES

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

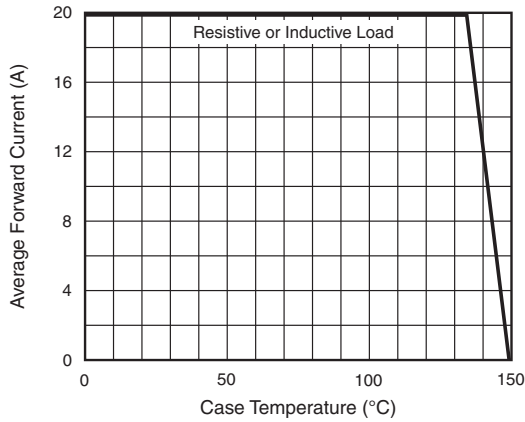


Fig. 1 - Forward Derating Curve (Total)

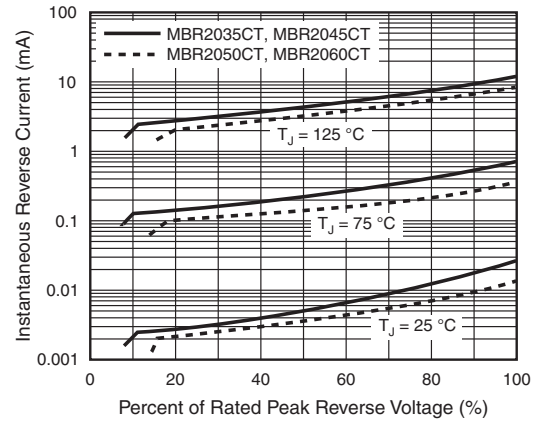


Fig. 4 - Typical Reverse Characteristics Per Diode

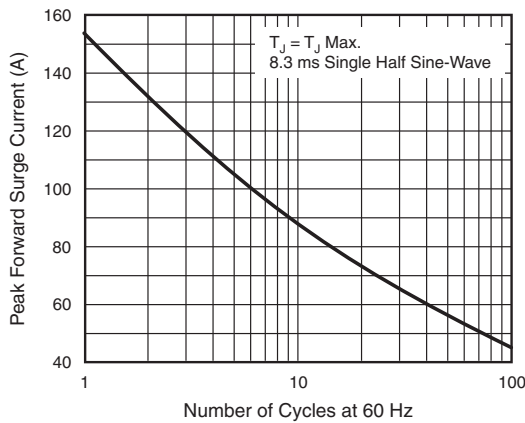


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

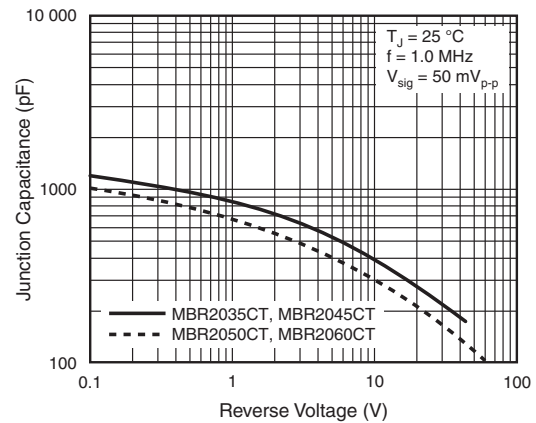


Fig. 5 - Typical Junction Capacitance Per Diode

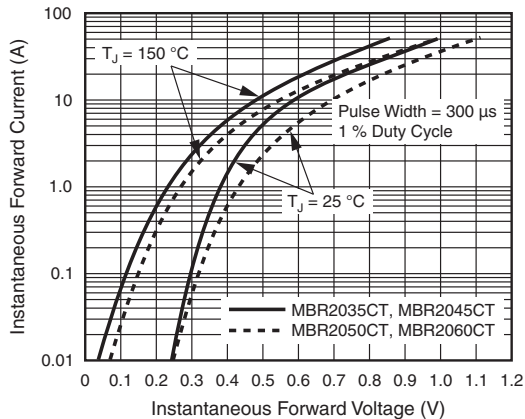


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

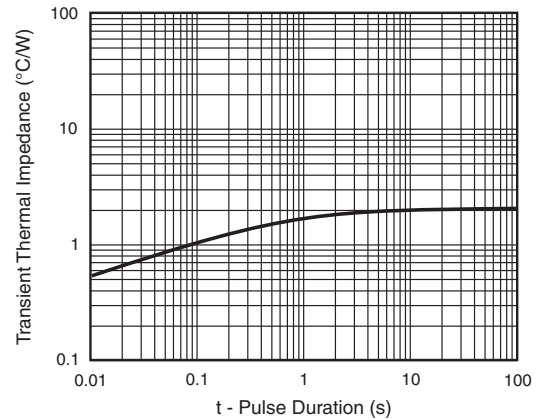
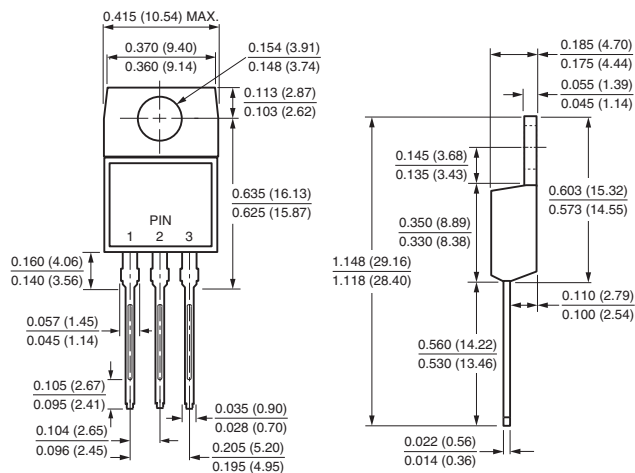


Fig. 6 - Typical Transient Thermal Impedance Per Diode

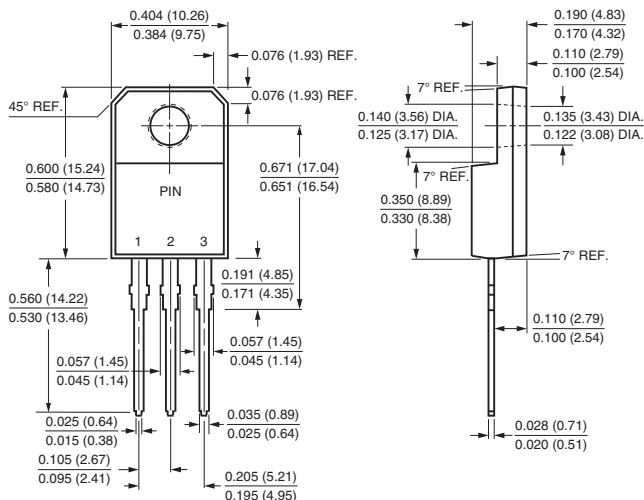


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

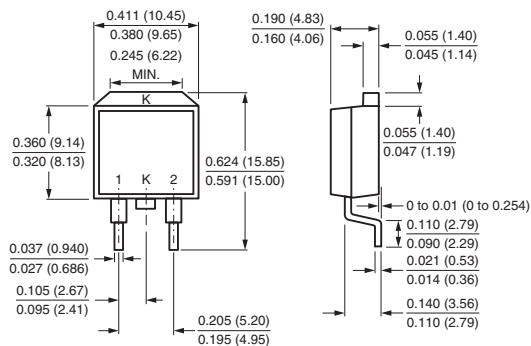
TO-220AB



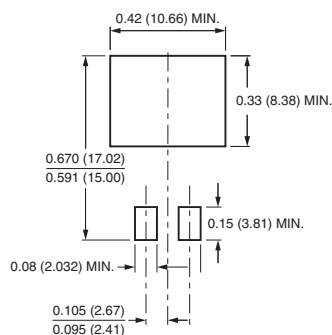
ITO-220AB



TO-263AB



Mounting Pad Layout





## Disclaimer

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