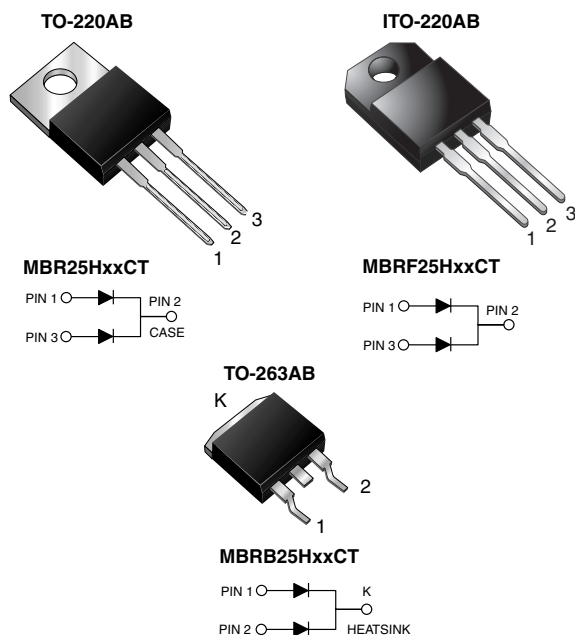




## Dual Common Cathode Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



## FEATURES

- Power pack
- Guardring for overvoltage protection
- Lower power losses, 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 low voltage, high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, or 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 15 A                      |
| $V_{RRM}$        | 35 V to 60 V                  |
| $I_{FSM}$        | 150 A                         |
| $V_F$            | 0.54 V, 0.60 V                |
| $I_R$            | 100 $\mu$ A                   |
| $T_J$ max.       | 175 °C                        |
| Package          | TO-220AB, ITO-220AB, TO-263AB |
| Diode variations | Common cathode                |

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

| PARAMETER                                                                                       | SYMBOL             | MBR25H35CT | MBR25H45CT | MBR25H50CT | MBR25H60CT | 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         |      |
| Max. average forward<br>rectified current (fig. 1)                                              | I <sub>F(AV)</sub> | 30         |            |            |            | A    |
|                                                                                                 |                    | 15         |            |            |            |      |
| Non-repetitive avalanche energy per diode<br>at 25 °C, I <sub>AS</sub> = 4 A, L = 10 mH         | E <sub>AS</sub>    | 80         |            |            |            | mJ   |
| Peak forward surge current 8.3 ms single half<br>sine-wave superimposed on rated load per diode | I <sub>FSM</sub>   | 150        |            |            |            | A    |
| Peak repetitive reverse surge current per diode<br>at t <sub>p</sub> = 2.0 μs, 1 kHz            | I <sub>RRM</sub>   | 1.0        |            | 0.5        |            | A    |
| Peak non-repetitive reverse energy<br>(8/20 μs waveform)                                        | E <sub>RSM</sub>   | 25         |            | 20         |            | mJ   |

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

| PARAMETER                                                                                                     | SYMBOL            | MBR25H35CT    | MBR25H45CT | MBR25H50CT | MBR25H60CT | UNIT               |
|---------------------------------------------------------------------------------------------------------------|-------------------|---------------|------------|------------|------------|--------------------|
| Electrostatic discharge capacitor voltage<br>Human body model: $C = 100\text{ pF}$ , $R = 1.5\text{ k}\Omega$ | $V_C$             | 25            |            |            |            | kV                 |
| Voltage rate of change (rated $V_R$ )                                                                         | $dV/dt$           | 10 000        |            |            |            | V/ $\mu\text{s}$   |
| Operating junction and storage temperature range                                                              | $T_J$ , $T_{STG}$ | - 65 to + 175 |            |            |            | $^{\circ}\text{C}$ |
| Isolation voltage (ITO-220AB only)<br>from terminal to heatsink $t = 1\text{ min}$                            | $V_{AC}$          | 1500          |            |            |            | V                  |

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

| PARAMETER                                       | SYMBOL                        | TEST CONDITIONS       |                         | MBR25H35CT<br>MBR25H45CT |      | MBR25H50CT<br>MBR25H60CT |      | UNIT |
|-------------------------------------------------|-------------------------------|-----------------------|-------------------------|--------------------------|------|--------------------------|------|------|
|                                                 |                               |                       |                         | TYP.                     | MAX. | TYP.                     | MAX. |      |
| Maximum instantaneous forward voltage per diode | V <sub>F</sub> <sup>(1)</sup> | I <sub>F</sub> = 15 A | T <sub>J</sub> = 25 °C  | -                        | 0.64 | -                        | 0.70 | V    |
|                                                 |                               |                       | T <sub>J</sub> = 125 °C | 0.50                     | 0.54 | 0.56                     | 0.60 |      |
|                                                 |                               | I <sub>F</sub> = 30 A | T <sub>J</sub> = 25 °C  | -                        | 0.74 | -                        | 0.85 |      |
|                                                 |                               |                       | T <sub>J</sub> = 125 °C | 0.63                     | 0.67 | 0.68                     | 0.72 |      |
| Maximum reverse current per diode               | I <sub>R</sub> <sup>(2)</sup> | Rated V <sub>R</sub>  | T <sub>J</sub> = 25 °C  | -                        | 100  | -                        | 100  | μA   |
|                                                 |                               |                       | T <sub>J</sub> = 125 °C | 6.0                      | 20   | 4.0                      | 20   | 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** ( $T_C = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER                                      | SYMBOL          | MBR | MBRF | MBRB | UNIT                 |
|------------------------------------------------|-----------------|-----|------|------|----------------------|
| Thermal resistance, junction to case per diode | $R_{\theta JC}$ | 1.5 | 4.5  | 1.5  | $^{\circ}\text{C/W}$ |

**ORDERING INFORMATION** (Example)

| PACKAGE   | PREFERRED P/N                    | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|-----------|----------------------------------|-----------------|--------------|---------------|---------------|
| TO-220AB  | MBR25H45CT-E3/45                 | 1.85            | 45           | 50/tube       | Tube          |
| ITO-220AB | MBRF25H45CT-E3/45                | 1.99            | 45           | 50/tube       | Tube          |
| TO-263AB  | MBRB25H45CT-E3/45                | 1.35            | 45           | 50/tube       | Tube          |
| TO-263AB  | MBRB25H45CT-E3/81                | 1.35            | 81           | 800/reel      | Tape and reel |
| TO-220AB  | MBR25H45CTHE3/45 <sup>(1)</sup>  | 1.85            | 45           | 50/tube       | Tube          |
| ITO-220AB | MBRF25H45CTHE3/45 <sup>(1)</sup> | 1.99            | 45           | 50/tube       | Tube          |
| TO-263AB  | MBRB25H45CTHE3/45 <sup>(1)</sup> | 1.35            | 45           | 50/tube       | Tube          |
| TO-263AB  | MBRB25H45CTHE3/81 <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)

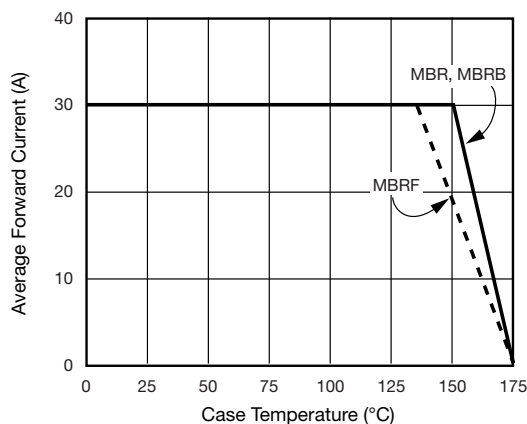


Fig. 1 - Forward Derating Curve (Total)

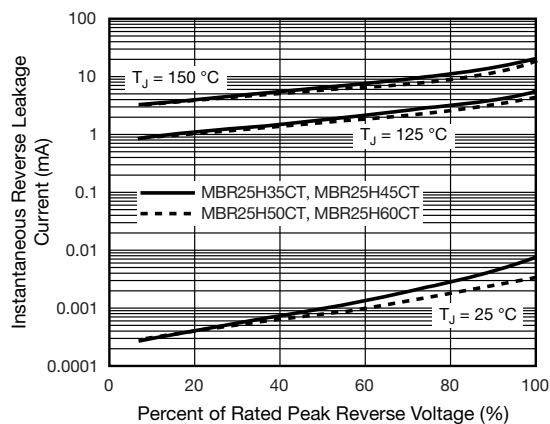


Fig. 4 - Typical Reverse Characteristics Per Diode

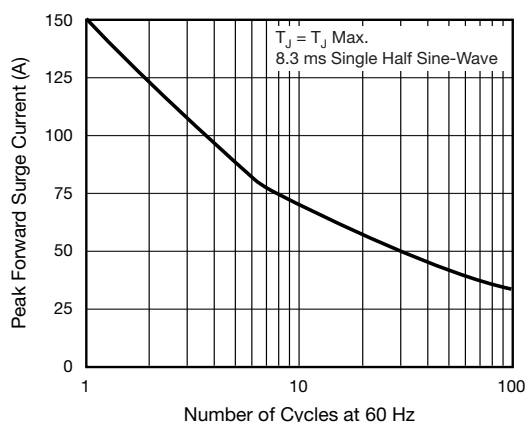


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

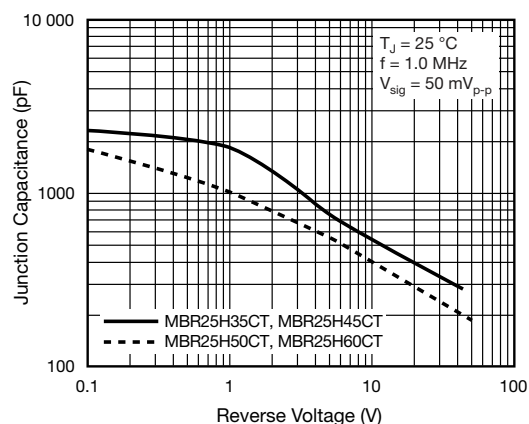


Fig. 5 - Typical Junction Capacitance Per Diode

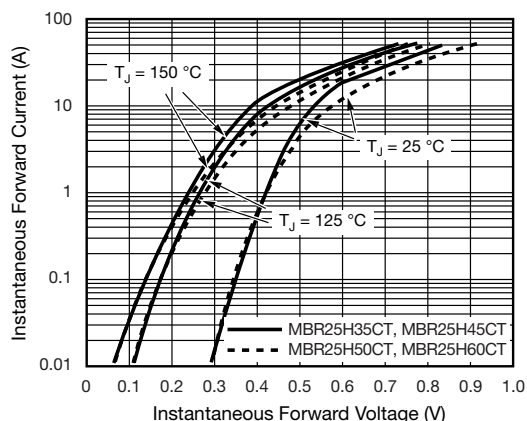


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

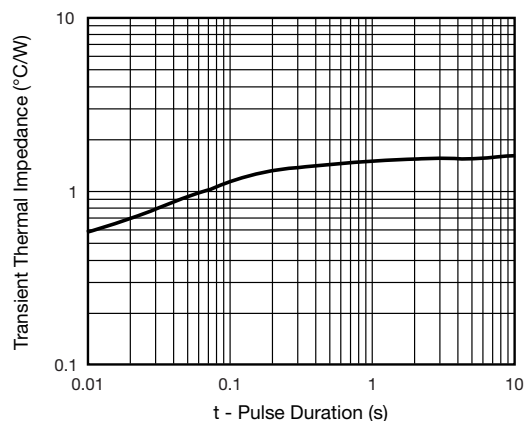
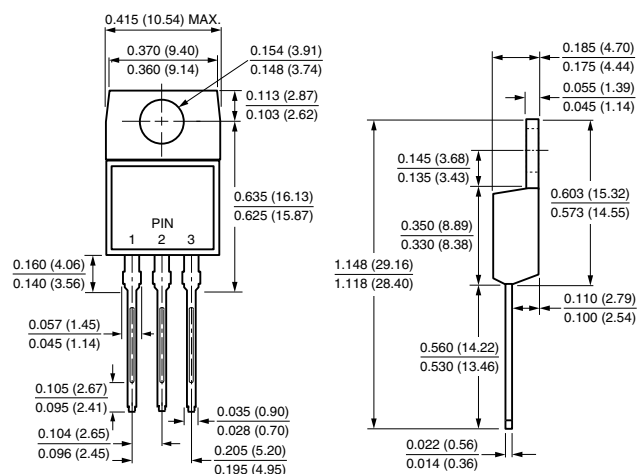


Fig. 6 - Typical Transient Thermal Impedance Per Diode

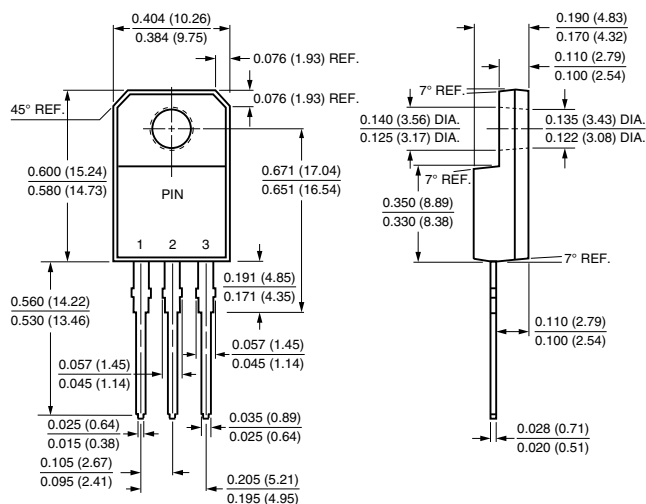


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

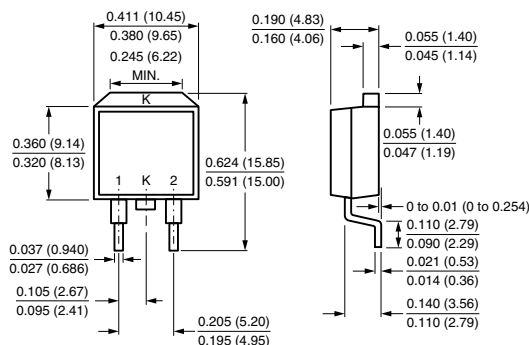
TO-220AB



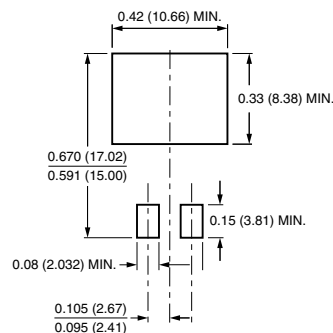
ITO-220AB



TO-263AB



Mounting Pad Layout





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# Mouser Electronics

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[MBR25H50CT-E3/45](#) [MBR25H50CTHE3/45](#) [MBR25H60CT/45](#) [MBR25H60CT-E3/45](#) [MBR25H60CTHE3/45](#)  
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