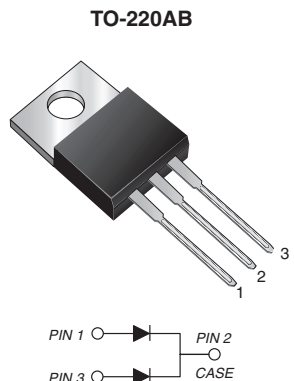


# Dual Common Cathode High Voltage Schottky Rectifier



## FEATURES

- Trench MOS Schottky technology
- Lower power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106
- 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 or polarity protection application

## MECHANICAL DATA

**Case:** TO-220AB

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 max.

| PRIMARY CHARACTERISTICS |                |
|-------------------------|----------------|
| $I_{F(AV)}$             | 2 x 5.0 A      |
| $V_{RRM}$               | 90 V, 100 V    |
| $I_{FSM}$               | 120 A          |
| $V_F$                   | 0.75 V         |
| $T_J$ max.              | 150 °C         |
| Package                 | TO-220AB       |
| Circuit configurations  | Common cathode |

| MAXIMUM RATINGS (T <sub>C</sub> = 25 °C unless otherwise noted)                                          |                                   |                    |            |      |
|----------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------|------------|------|
| PARAMETER                                                                                                | SYMBOL                            | MBR1090CT          | MBR10100CT | UNIT |
| Max. repetitive peak reverse voltage                                                                     | V <sub>RRM</sub>                  | 90                 | 100        | V    |
| Working peak reverse voltage                                                                             | V <sub>RWM</sub>                  | 90                 | 100        | V    |
| Max. DC blocking voltage                                                                                 | V <sub>DC</sub>                   | 90                 | 100        | V    |
| Max. average forward rectified current at T <sub>C</sub> = 105 °C                                        | total device<br>per diode         | I <sub>F(AV)</sub> | 10         | A    |
|                                                                                                          |                                   |                    | 5.0        |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode             | I <sub>FSM</sub>                  | 120                |            | A    |
| Non-repetitive avalanche energy at T <sub>J</sub> = 25 °C, L = 60 mH per diode                           | E <sub>AS</sub>                   | 60                 |            | 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 |
| Operating junction and storage temperature range                                                         | T <sub>J</sub> , T <sub>STG</sub> | - 65 to + 150      |            | °C   |

| ELECTRICAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted) |                        |                         |                               |           |            |      |
|----------------------------------------------------------------------------|------------------------|-------------------------|-------------------------------|-----------|------------|------|
| PARAMETER                                                                  | TEST CONDITIONS        |                         | SYMBOL                        | MBR1090CT | MBR10100CT | UNIT |
| Maximum instantaneous forward voltage per diode                            | I <sub>F</sub> = 5.0 A | T <sub>C</sub> = 125 °C | V <sub>F</sub> <sup>(1)</sup> | 0.75      |            | V    |
|                                                                            | I <sub>F</sub> = 5.0 A | T <sub>C</sub> = 25 °C  |                               | 0.85      |            |      |
| Maximum reverse current per diode at working peak reverse voltage          |                        |                         | I <sub>R</sub> <sup>(2)</sup> | 100       |            | μA   |
|                                                                            |                        |                         |                               | 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** ( $T_C = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER                            | SYMBOL          | MBR1090CT | MBR10100CT | UNIT                 |
|--------------------------------------|-----------------|-----------|------------|----------------------|
| Typical thermal resistance per diode | $R_{\theta JC}$ | 4.4       |            | $^{\circ}\text{C/W}$ |

**ORDERING INFORMATION** (Example)

| PACKAGE  | PREFERRED P/N    | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|----------|------------------|-----------------|--------------|---------------|---------------|
| TO-220AB | MBR10100CT-E3/4W | 1.87            | 4W           | 50/tube       | Tube          |

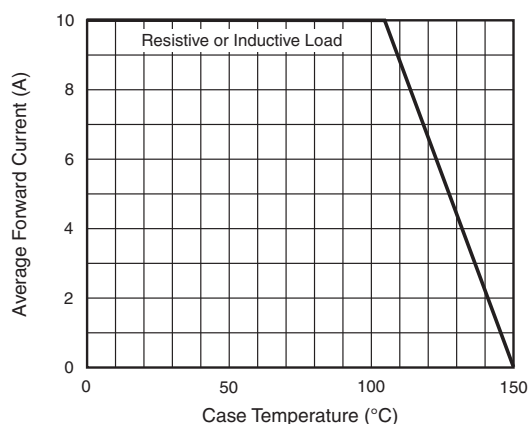
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

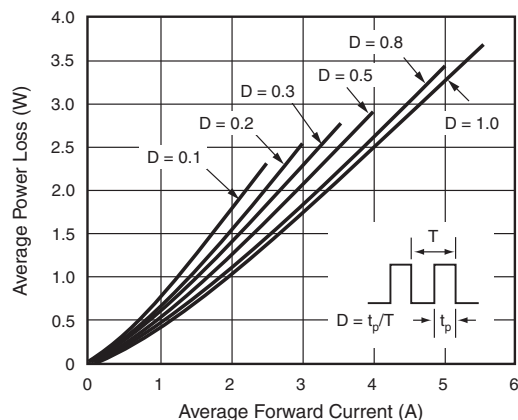


Fig. 3 - Forward Power Loss Characteristics Per Diode

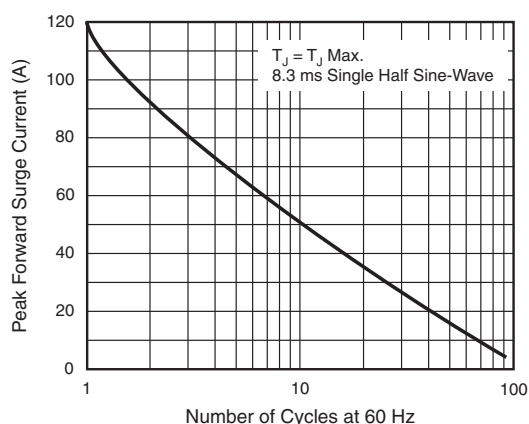


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

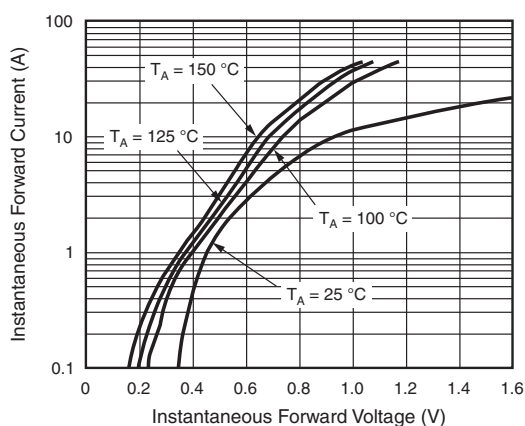


Fig. 4 - Typical Instantaneous Forward Characteristics Per Diode

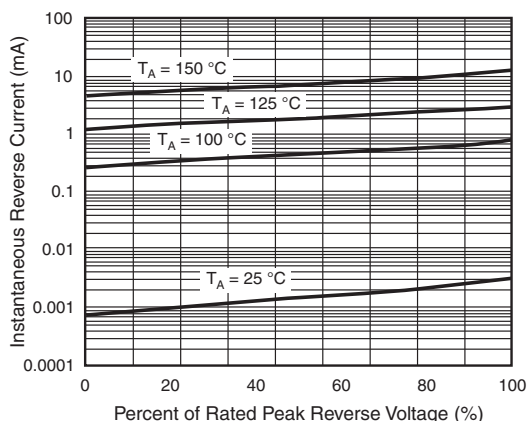


Fig. 5 - Typical Reverse Characteristics Per Diode

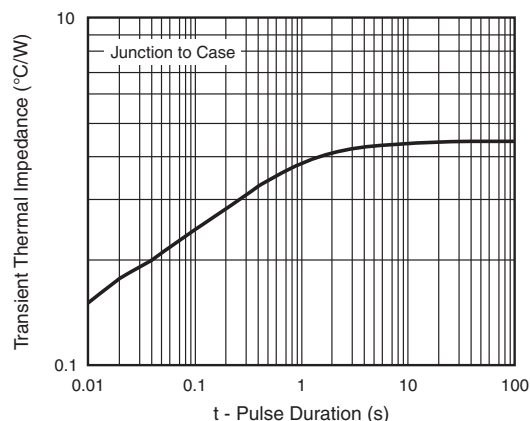


Fig. 7 - Typical Transient Thermal Impedance Per Diode

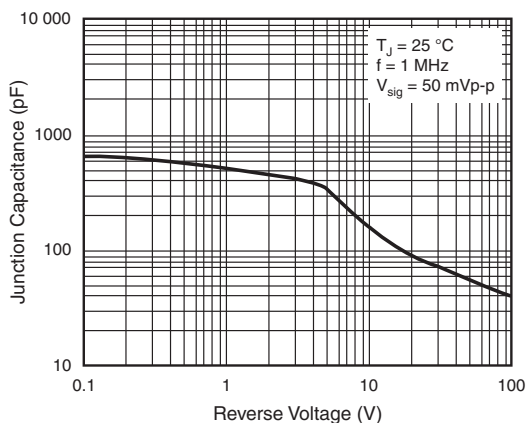
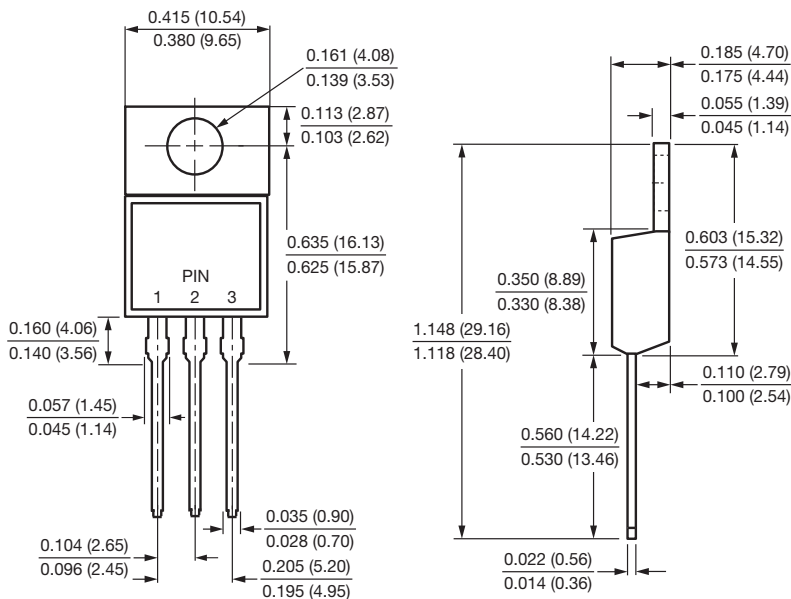


Fig. 6 - Typical Junction Capacitance Per Diode

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**TO-220AB**






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