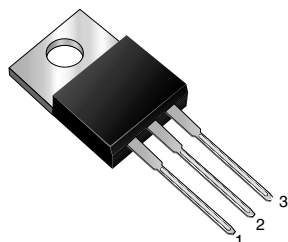




## Dual Common-Cathode High Voltage Schottky Rectifier

TMBS®

TO-220AB



### 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
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

RoHS  
COMPLIANT

### TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, freewheeling diodes, dc-to-dc converters or polarity protection application

### 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      |

### 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 maximum

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

| PARAMETER                                                                                    | SYMBOL         | MBR1090CT     | MBR10100CT | UNIT |
|----------------------------------------------------------------------------------------------|----------------|---------------|------------|------|
| Maximum repetitive peak reverse voltage                                                      | $V_{RRM}$      | 90            | 100        | V    |
| Working peak reverse voltage                                                                 | $V_{RWM}$      | 90            | 100        | V    |
| Maximum DC blocking voltage                                                                  | $V_{DC}$       | 90            | 100        | V    |
| Maximum average forward rectified current at $T_C = 105$ °C total device per diode           | $I_{F(AV)}$    | 10<br>5.0     |            | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$      | 120           |            | A    |
| Non-repetitive avalanche energy at $T_J = 25$ °C, $L = 60$ mH per diode                      | $E_{AS}$       | 60            |            | mJ   |
| Peak repetitive reverse current at $t_p = 2$ μs, 1 kHz, $T_J = 38$ °C ± 2 °C per diode       | $I_{RRM}$      | 0.5           |            | A    |
| Voltage rate of change (rated $V_R$ )                                                        | $dV/dt$        | 10 000        |            | V/μs |
| Operating junction and storage temperature range                                             | $T_J, T_{STG}$ | - 65 to + 150 |            | °C   |

## MBR1090CT, MBR10100CT

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| ELECTRICAL CHARACTERISTICS ( $T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                      |                                                                           |        |              |                     |
|-----------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------|--------|--------------|---------------------|
| PARAMETER                                                                               | TEST CONDITIONS      |                                                                           | SYMBOL | MBR1090CT    | UNIT                |
| Maximum instantaneous forward voltage per diode <sup>(1)</sup>                          | $I_F = 5.0\text{ A}$ | $T_C = 125\text{ }^{\circ}\text{C}$<br>$T_C = 25\text{ }^{\circ}\text{C}$ | $V_F$  | 0.75<br>0.85 | V                   |
| Maximum reverse current per diode at working peak reverse voltage <sup>(2)</sup>        |                      | $T_J = 25\text{ }^{\circ}\text{C}$<br>$T_J = 100\text{ }^{\circ}\text{C}$ | $I_R$  | 100<br>6.0   | $\mu\text{A}$<br>mA |

## Notes

<sup>(1)</sup> Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle<sup>(2)</sup> 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

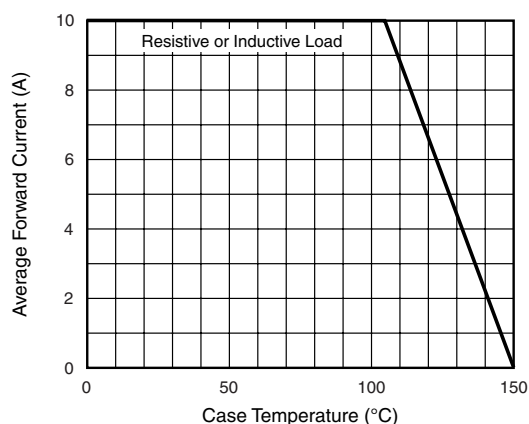
 $(T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Figure 1. Forward Current Derating Curve

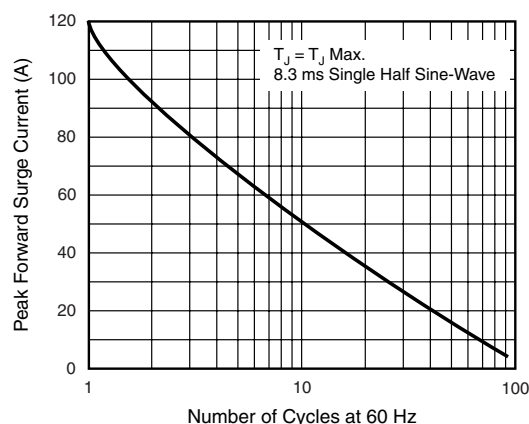


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode



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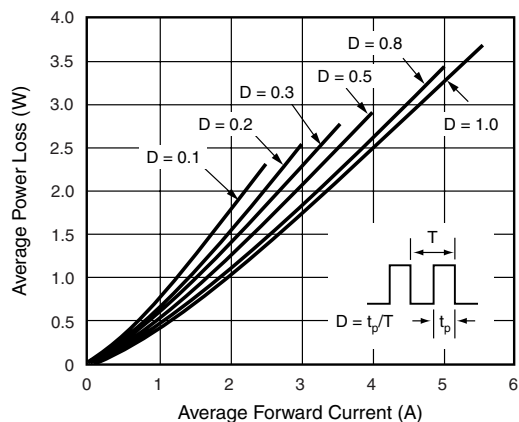


Figure 3. Forward Power Loss Characteristics Per Diode

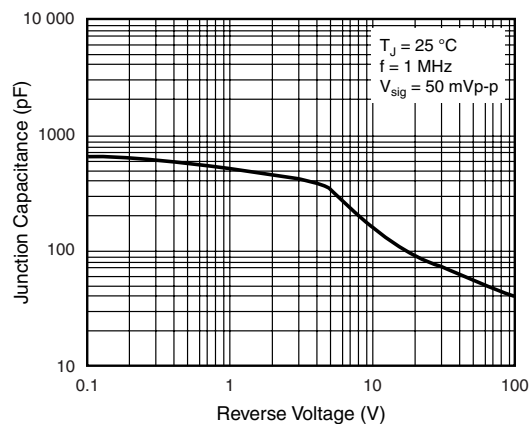


Figure 6. Typical Junction Capacitance Per Diode

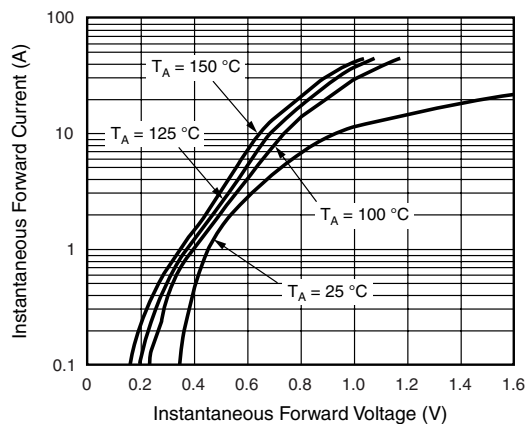


Figure 4. Typical Instantaneous Forward Characteristics Per Diode

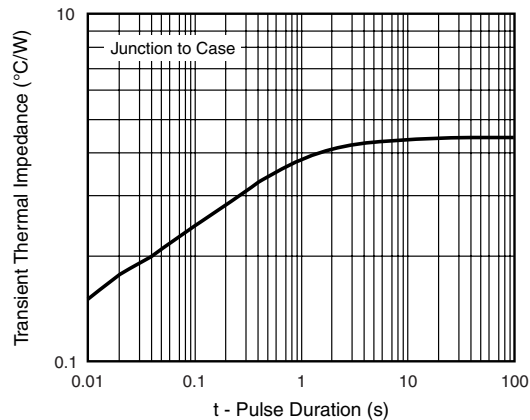


Figure 7. Typical Transient Thermal Impedance Per Diode

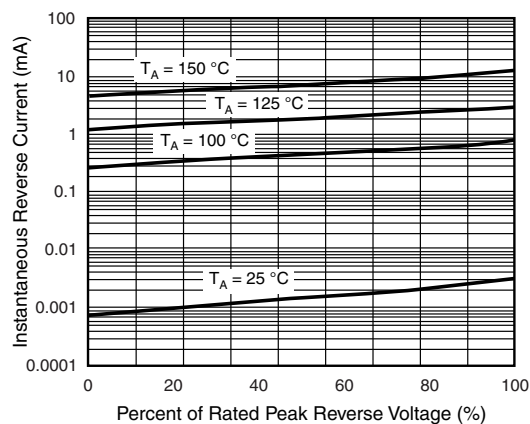
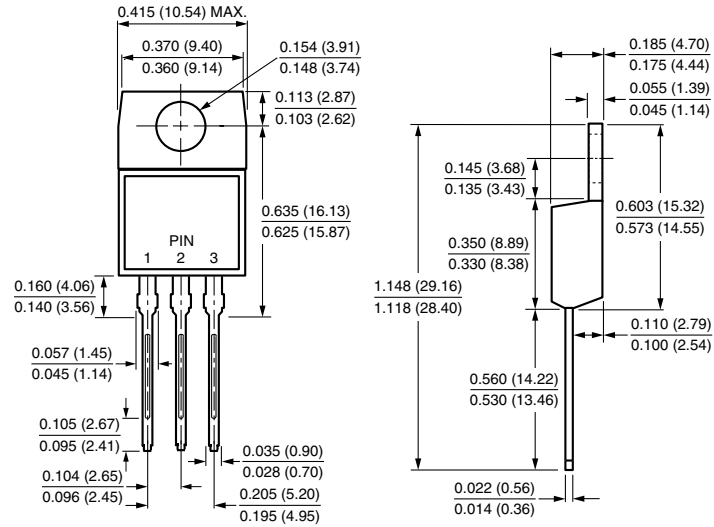


Figure 5. Typical Reverse Characteristics Per Diode

**MBR1090CT, MBR10100CT**

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**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)**TO-220AB**



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- Консультации по применению компонента;
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- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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