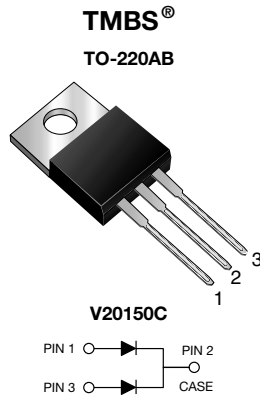


## Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.59\text{ V}$  at  $I_F = 5\text{ A}$



### FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### TYPICAL APPLICATIONS

For use in high frequency converters, switching power supplies, freewheeling diodes, OR-ing diode, dc-to-dc converters and reverse battery protection.

### MECHANICAL DATA

**Case:** TO-220AB

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free and RoHS compliant, commercial grade

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

M3 suffix meets JESD 201 class 1A whisker test

**Polarity:** As marked

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

### PRIMARY CHARACTERISTICS

|                              |          |
|------------------------------|----------|
| $I_{F(AV)}$                  | 2 x 10 A |
| $V_{RRM}$                    | 150 V    |
| $I_{FSM}$                    | 120 A    |
| $V_F$ at $I_F = 10\text{ A}$ | 0.69 V   |
| $T_J$ max.                   | 150 °C   |

### MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)

| PARAMETER   | SYMBOL         | V20150C       | UNIT             |
|---|----------------|---------------|------------------|
| Maximum repetitive peak reverse voltage   | $V_{RRM}$      | 150           | V                |
| Maximum average forward rectified current (fig. 1)  | per device     | 20            | A                |
|   | per diode      | 10            |                  |
| 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 $T_J = 25\text{ °C}$ , $L = 60\text{ mH}$ per diode                                  | $E_{AS}$       | 70            | mJ               |
| Peak repetitive reverse current at $t_p = 2\text{ }\mu\text{s}$ , 1 kHz, $T_J = 38\text{ °C} \pm 2\text{ °C}$ per diode | $I_{RRM}$      | 0.5           | A                |
| Voltage rate of change (rated $V_R$ )   | dV/dt          | 10 000        | V/ $\mu\text{s}$ |
| Operating junction and storage temperature range  | $T_J, T_{STG}$ | - 55 to + 150 | °C               |

| ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                       |                                   |             |               |      |               |
|---|-----------------------|-----------------------------------|-------------|---------------|------|---------------|
| PARAMETER   | TEST CONDITIONS       |                                   | SYMBOL      | TYP.          | MAX. | UNIT          |
| Breakdown voltage   | $I_R = 1.0\text{ mA}$ | $T_A = 25\text{ }^\circ\text{C}$  | $V_{BR}$    | 150 (minimum) | -    | V             |
| Instantaneous forward voltage per diode   | $I_F = 5\text{ A}$    | $T_A = 25\text{ }^\circ\text{C}$  | $V_F^{(1)}$ | 0.79          | -    | V             |
|   | $I_F = 10\text{ A}$   |                                   |             | 1.05          | 1.20 |               |
|   | $I_F = 5\text{ A}$    | $T_A = 125\text{ }^\circ\text{C}$ |             | 0.59          | -    |               |
|   | $I_F = 10\text{ A}$   |                                   |             | 0.69          | 0.75 |               |
| Reverse current per diode   | $V_R = 100\text{ V}$  | $T_A = 25\text{ }^\circ\text{C}$  | $I_R^{(2)}$ | 1.3           | -    | $\mu\text{A}$ |
|   |                       | $T_A = 125\text{ }^\circ\text{C}$ |             | 1.2           | -    | mA            |
|   | $V_R = 150\text{ V}$  | $T_A = 25\text{ }^\circ\text{C}$  |             | -             | 150  | $\mu\text{A}$ |
|   |                       | $T_A = 125\text{ }^\circ\text{C}$ |             | 3             | 15   | 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          | V20150C | UNIT               |
| Typical thermal resistance per diode   | $R_{\theta JC}$ | 2.8     | $^\circ\text{C/W}$ |

| ORDERING INFORMATION (Example) |               |                 |              |               |               |
|--------------------------------|---------------|-----------------|--------------|---------------|---------------|
| PACKAGE                        | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                       | V20150C-M3/4W | 1.88            | 4W           | 50/tube       | Tube          |

**RATINGS AND CHARACTERISTICS CURVES**

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

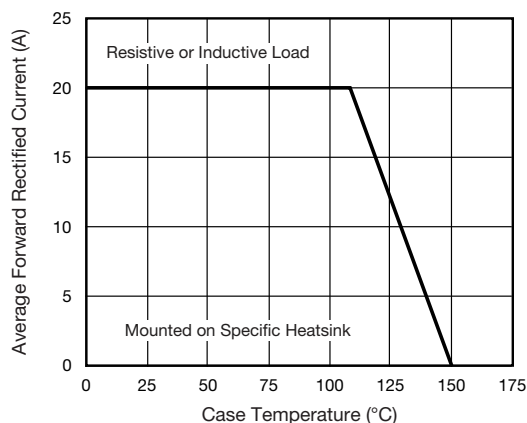


Fig. 1 - Maximum Forward Current Derating Curve

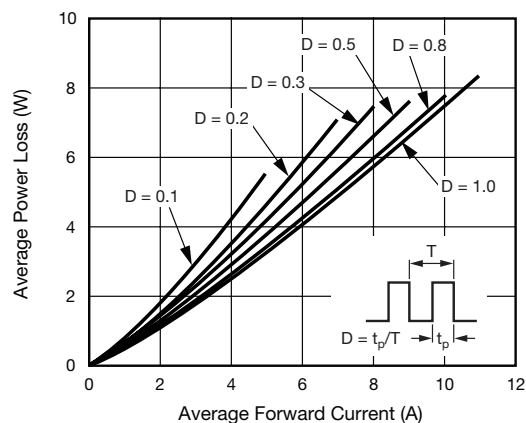


Fig. 2 - Forward Power Loss Characteristics Per Diode

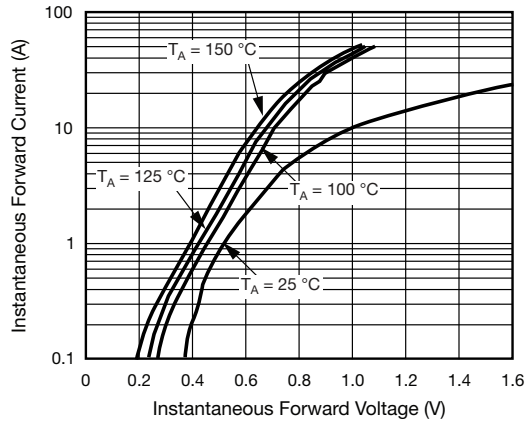


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

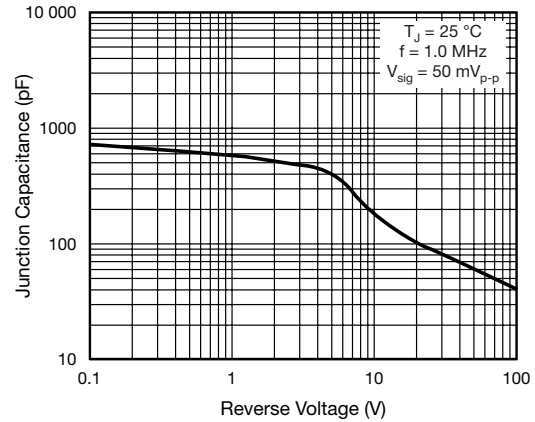


Fig. 5 - Typical Junction Capacitance Per Diode

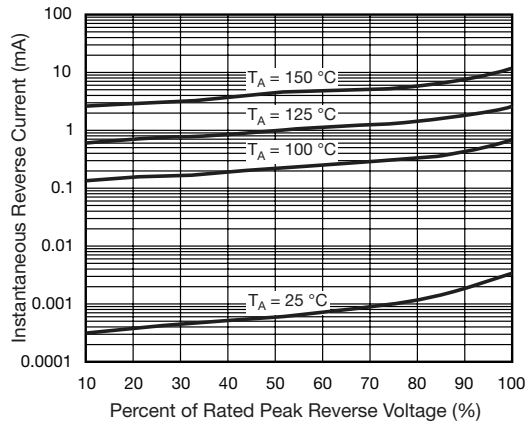


Fig. 4 - Typical Reverse Characteristics Per Diode

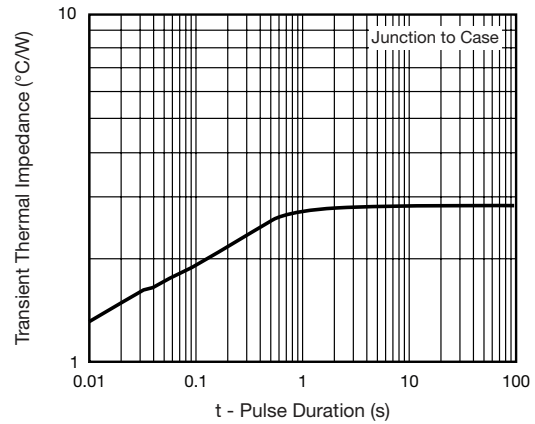
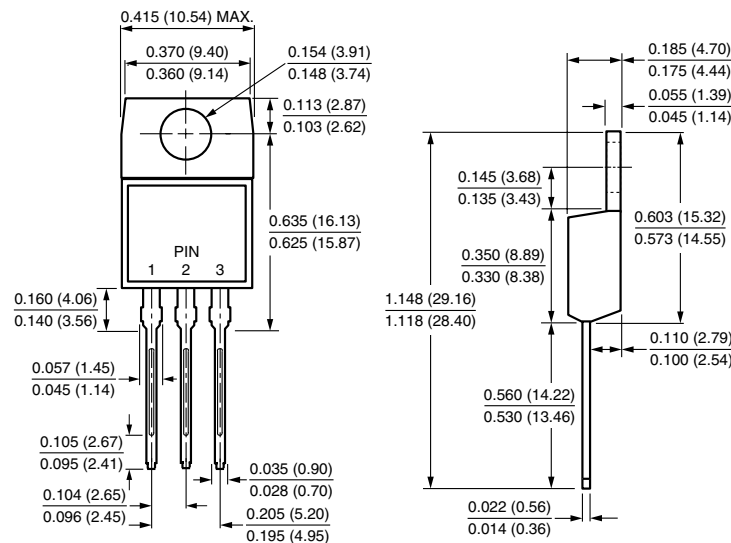


Fig. 6 - Typical Transient Thermal Impedance Per Diode

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

**TO-220AB**





## Disclaimer

All product specifications and data are subject to change without notice.

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