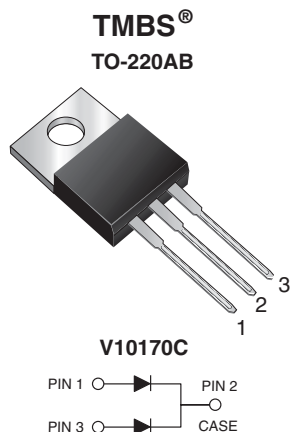


# Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.57\text{ V}$  at  $I_F = 2.5\text{ A}$



## 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
- Material categorization:

For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



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

## TYPICAL APPLICATIONS

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

## MECHANICAL DATA

**Case:** TO-220AB

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS-compliant, and 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 5 A |
| $V_{RRM}$                     | 170 V   |
| $I_{FSM}$                     | 80 A    |
| $V_F$ at $I_F = 5.0\text{ A}$ | 0.65 V  |
| $T_J$ max.                    | 175 °C  |

| MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)                     |                |               |            |
|------------------------------------------------------------------------------------|----------------|---------------|------------|
| PARAMETER                                                                          | SYMBOL         | V10170C       | UNIT       |
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$      | 170           | V          |
| Maximum average forward rectified current (fig. 1)                                 | $I_{F(AV)}$    | 10            | A          |
|                                                                                    |                | 5             |            |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 80            | A          |
| Voltage rate of change (rated $V_R$ )                                              | $dV/dt$        | 10 000        | V/ $\mu$ s |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | - 40 to + 175 | °C         |

| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                                     |             |      |      |               |
|------------------------------------------------------------------------------------------------|-------------------------------------|-------------|------|------|---------------|
| PARAMETER                                                                                      | TEST CONDITIONS                     | SYMBOL      | TYP. | MAX. | UNIT          |
| Instantaneous forward voltage per diode                                                        | $I_F = 2.5\text{ A}$                | $V_F^{(1)}$ | 0.74 | -    | V             |
|                                                                                                | $I_F = 5.0\text{ A}$                |             | 0.84 | 1.03 |               |
|                                                                                                | $I_F = 2.5\text{ A}$                |             | 0.57 | -    |               |
|                                                                                                | $I_F = 5.0\text{ A}$                |             | 0.65 | 0.74 |               |
| Reverse current per diode                                                                      | $V_R = 136\text{ V}$                | $I_R^{(2)}$ | 0.3  | -    | $\mu\text{A}$ |
|                                                                                                | $T_A = 25\text{ }^{\circ}\text{C}$  |             | 0.9  | -    | mA            |
|                                                                                                | $T_A = 125\text{ }^{\circ}\text{C}$ |             | -    | 90   | $\mu\text{A}$ |
|                                                                                                | $V_R = 170\text{ V}$                |             | 1.3  | 10   | mA            |

**Notes**

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

(2) Pulse test: Pulse width  $\leq 20\text{ ms}$ 

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                 |         |                      |
|---------------------------------------------------------------------------------------------|-----------------|---------|----------------------|
| PARAMETER                                                                                   | SYMBOL          | V10170C | UNIT                 |
| Typical thermal resistance                                                                  | $R_{\theta JC}$ | 3.0     | $^{\circ}\text{C/W}$ |
|                                                                                             |                 | 1.7     |                      |

| <b>ORDERING INFORMATION</b> (Example) |               |                 |              |               |               |
|---------------------------------------|---------------|-----------------|--------------|---------------|---------------|
| PACKAGE                               | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                              | V10170C-M3/4W | 1.87            | 4W           | 50/tube       | Tube          |

**RATINGS AND CHARACTERISTICS CURVES**

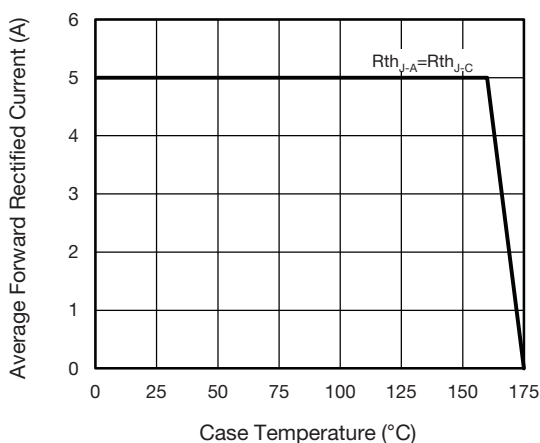
( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

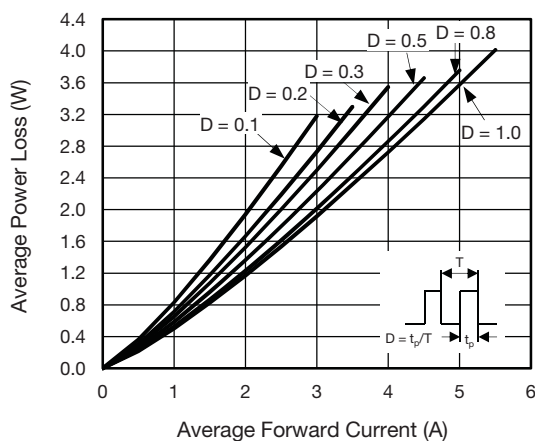


Fig. 2 - Forward Power Loss Characteristics Per Diode

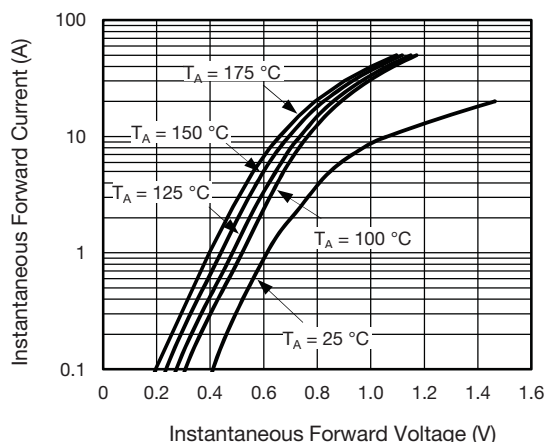


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

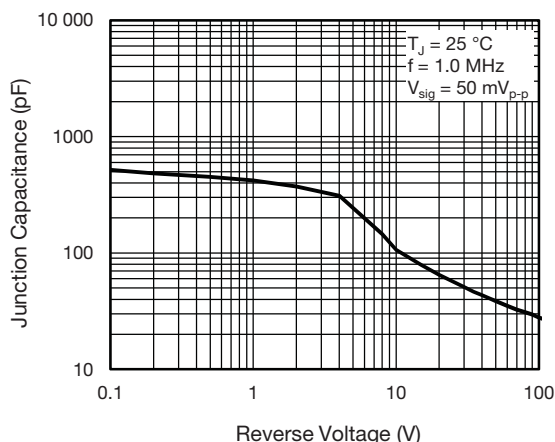


Fig. 5 - Typical Junction Capacitance Per Diode

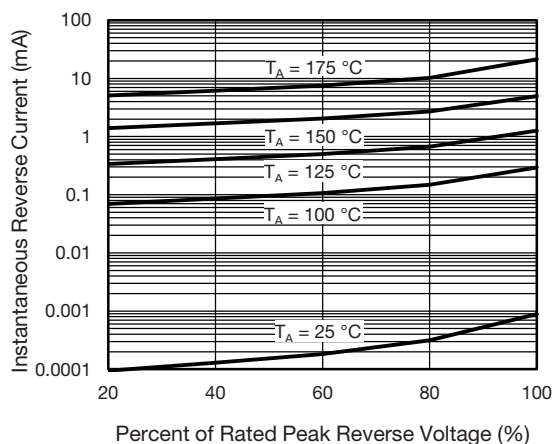


Fig. 4 - Typical Reverse Characteristics Per Diode

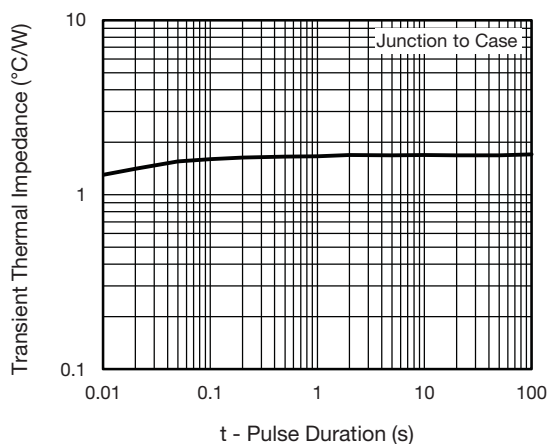
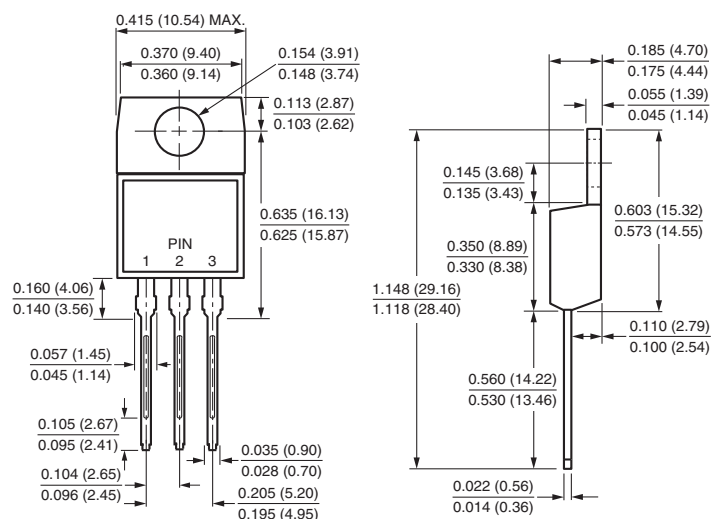


Fig. 6 - Typical Transient Thermal Impedance Per Device

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AB





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