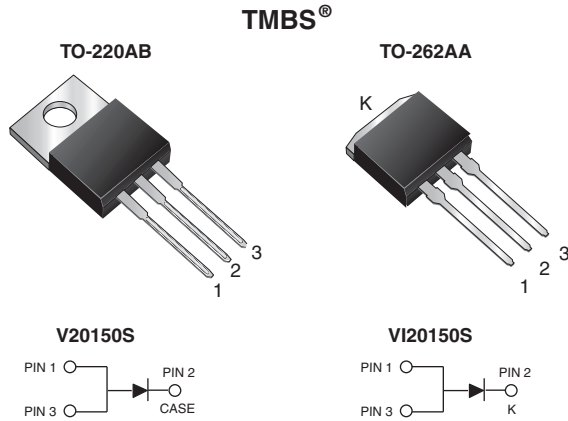


# High-Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low  $V_F = 0.55 \text{ V}$  at  $I_F = 5 \text{ A}$ 


## FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Solder bath temperature 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 reserve battery protection.

## MECHANICAL DATA

**Case:** TO-220AB and TO-262AA

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       |                    |
|-------------------------------|--------------------|
| $I_{F(AV)}$                   | 20 A               |
| $V_{RRM}$                     | 150 V              |
| $I_{FSM}$                     | 160 A              |
| $V_F$ at $I_F = 20 \text{ A}$ | 0.75 V             |
| $T_J \text{ max.}$            | 150 °C             |
| Package                       | TO-220AB, TO-262AA |
| Diode variations              | Single             |

| MAXIMUM RATINGS ( $T_A = 25 \text{ °C}$ unless otherwise noted)                    |                |             |          |            |
|--|----------------|-------------|----------|------------|
| PARAMETER  | SYMBOL         | V20150S     | VI20150S | UNIT       |
| Maximum repetitive peak reverse voltage  | $V_{RRM}$      | 150         |          | V          |
| Maximum average forward rectified current (fig. 1)                                 | $I_{F(AV)}$    | 20          |          | A          |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 160         |          | A          |
| Voltage rate of change (rated $V_R$ )  | dV/dt          | 10 000      |          | V/ $\mu$ s |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | -55 to +150 |          | °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  | $I_F = 5\text{ A}$   | $T_A = 25\text{ }^\circ\text{C}$  | $V_F^{(1)}$ | 0.69 | -    | V             |
|  | $I_F = 10\text{ A}$  |                                   |             | 0.84 | -    |               |
|  | $I_F = 20\text{ A}$  |                                   |             | 1.15 | 1.43 |               |
|  | $I_F = 5\text{ A}$   | $T_A = 125\text{ }^\circ\text{C}$ |             | 0.55 | -    |               |
|  | $I_F = 10\text{ A}$  |                                   |             | 0.64 | -    |               |
|  | $I_F = 20\text{ A}$  |                                   |             | 0.75 | 0.82 |               |
| Reverse current  | $V_R = 100\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$  | $I_R^{(2)}$ | 2    | -    | $\mu\text{A}$ |
|  |                      | $T_A = 125\text{ }^\circ\text{C}$ |             | 2.5  | -    | mA            |
|  | $V_R = 150\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$  |             | -    | 250  | $\mu\text{A}$ |
|  |                      | $T_A = 125\text{ }^\circ\text{C}$ |             | 5    | 25   | mA            |

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width  $\leq 40\text{ ms}$ 

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                       |         |          |                    |
|---|-----------------------|---------|----------|--------------------|
| PARAMETER   | SYMBOL                | V20150S | VI20150S | UNIT               |
| Typical thermal resistance  | $R_{\theta\text{JC}}$ | 2.0     |          | $^\circ\text{C/W}$ |

| <b>ORDERING INFORMATION</b> (Example) |                |                 |              |               |               |
|---------------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE                               | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                              | V20150S-M3/4W  | 1.88            | 4W           | 50/tube       | Tube          |
| TO-262AA                              | VI20150S-M3/4W | 1.45            | 4W           | 50/tube       | Tube          |

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

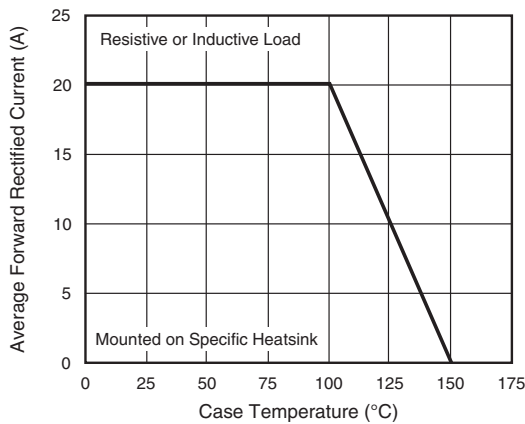


Fig. 1 - Maximum Forward Current Derating Curve

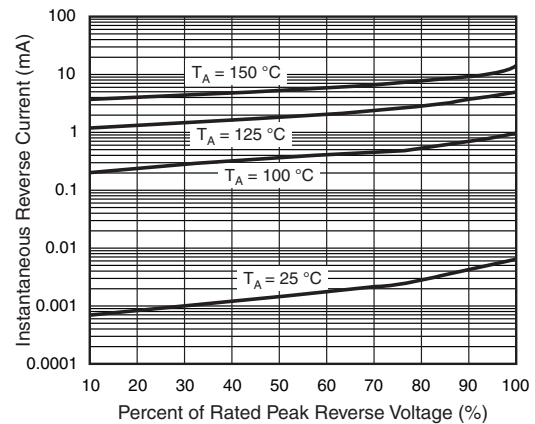


Fig. 4 - Typical Reverse Characteristics

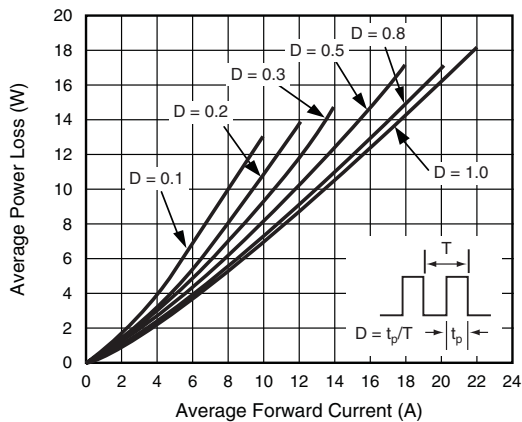


Fig. 2 - Forward Power Dissipation Characteristics

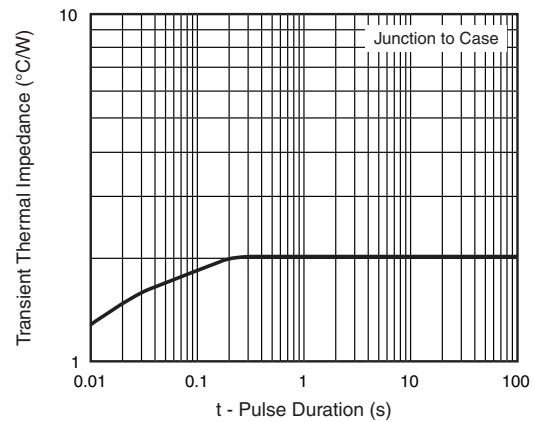


Fig. 5 - Typical Transient Thermal Impedance

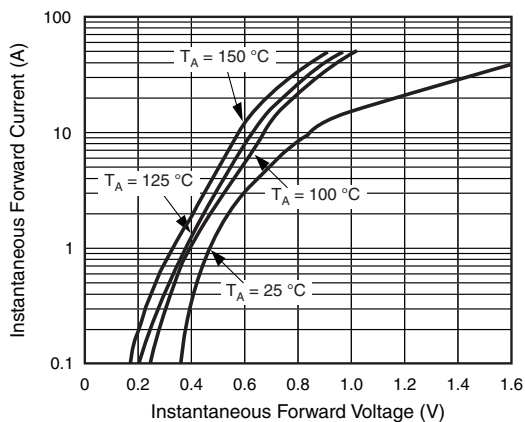


Fig. 3 - Typical Instantaneous Forward Characteristics

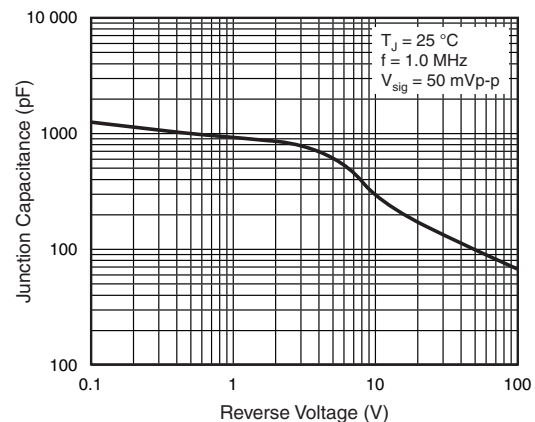
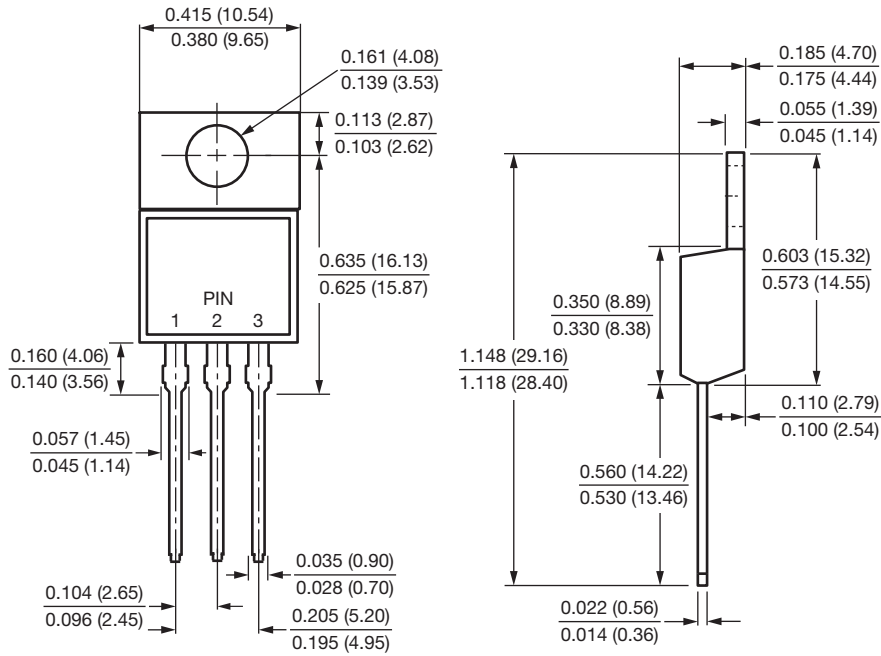


Fig. 6 - Typical Junction Capacitance

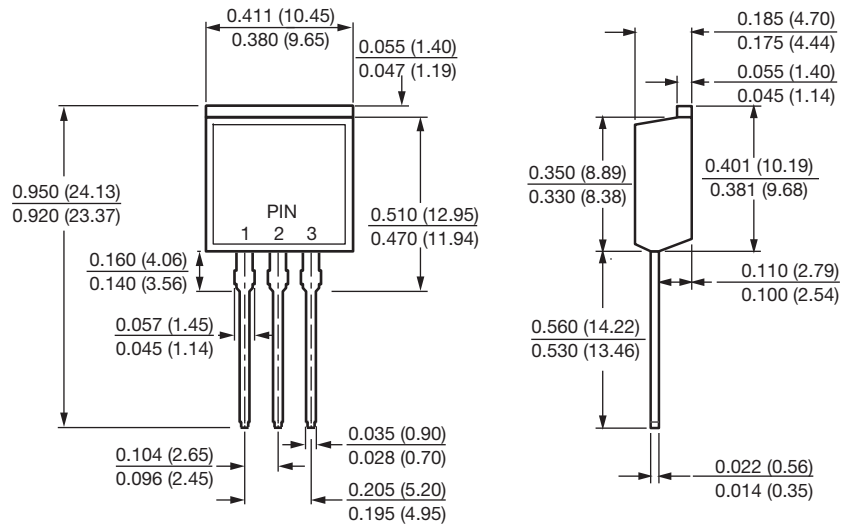


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



TO-262AA





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