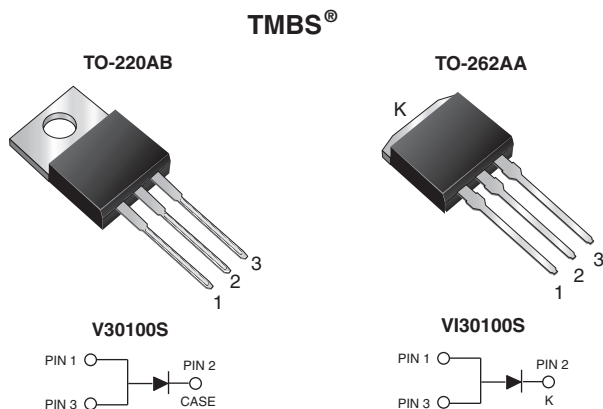


# High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.39\text{ V}$  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
- 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 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

|                              |                    |
|------------------------------|--------------------|
| $I_{F(AV)}$                  | 30 A               |
| $V_{RRM}$                    | 100 V              |
| $I_{FSM}$                    | 250 A              |
| $V_F$ at $I_F = 30\text{ A}$ | 0.69 V             |
| $T_J$ max.                   | 150 °C             |
| Package                      | TO-220AB, TO-262AA |
| Diode variations             | Single             |

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

| PARAMETER                                                                          | SYMBOL         | V30100S     | VI30100S | UNIT       |
|------------------------------------------------------------------------------------|----------------|-------------|----------|------------|
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$      | 100         |          | V          |
| Maximum average forward rectified current (fig. 1)                                 | $I_{F(AV)}$    | 30          |          | A          |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 250         |          | 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 +150 |          | °C         |

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

| PARAMETER                     | TEST CONDITIONS        |                         | SYMBOL                        | TYP. | MAX. | UNIT |
|-------------------------------|------------------------|-------------------------|-------------------------------|------|------|------|
| Instantaneous forward voltage | I <sub>F</sub> = 5 A   | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.47 | -    | V    |
|                               | I <sub>F</sub> = 10 A  |                         |                               | 0.55 | -    |      |
|                               | I <sub>F</sub> = 30 A  |                         |                               | 0.80 | 0.91 |      |
|                               | I <sub>F</sub> = 5 A   | T <sub>A</sub> = 125 °C |                               | 0.39 | -    |      |
|                               | I <sub>F</sub> = 10 A  |                         |                               | 0.49 | -    |      |
|                               | I <sub>F</sub> = 30 A  |                         |                               | 0.69 | 0.78 |      |
| Reverse current               | V <sub>R</sub> = 70 V  | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 27   | -    | μA   |
|                               |                        | T <sub>A</sub> = 125 °C |                               | 11   | -    | mA   |
|                               | V <sub>R</sub> = 100 V | T <sub>A</sub> = 25 °C  |                               | 70   | 1000 | μA   |
|                               |                        | T <sub>A</sub> = 125 °C |                               | 23   | 45   | 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          | V30100S | VI30100S | UNIT                 |
|----------------------------|-----------------|---------|----------|----------------------|
| Typical thermal resistance | $R_{\theta JC}$ | 2.0     |          | $^{\circ}\text{C/W}$ |

**ORDERING INFORMATION** (Example)

| PACKAGE  | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|----------|----------------|-----------------|--------------|---------------|---------------|
| TO-220AB | V30100S-M3/4W  | 1.88            | 4W           | 50/tube       | Tube          |
| TO-262AA | VI30100S-M3/4W | 1.45            | 4W           | 50/tube       | Tube          |

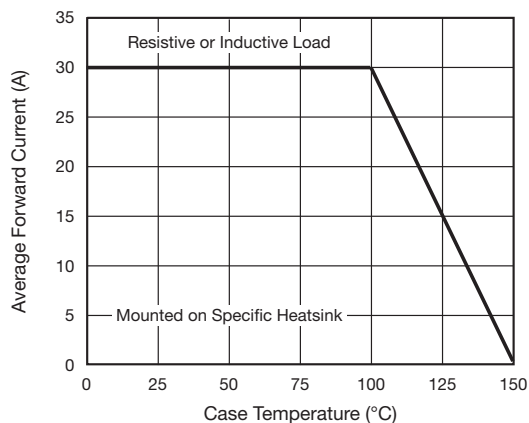
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

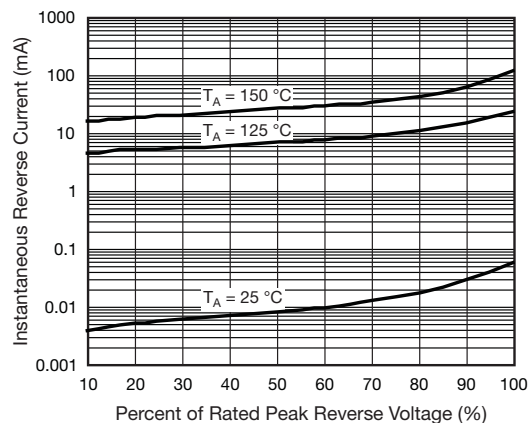


Fig. 4 - Typical Reverse Characteristics

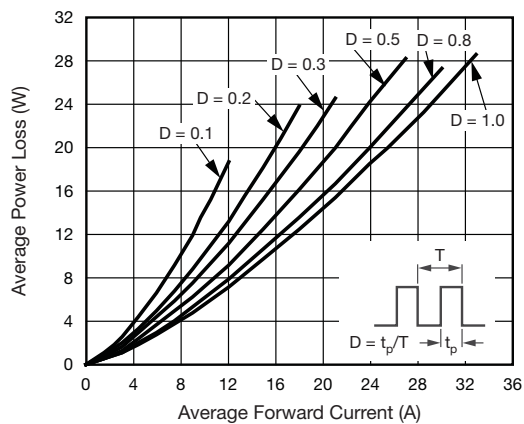


Fig. 2 - Forward Power Loss Characteristics

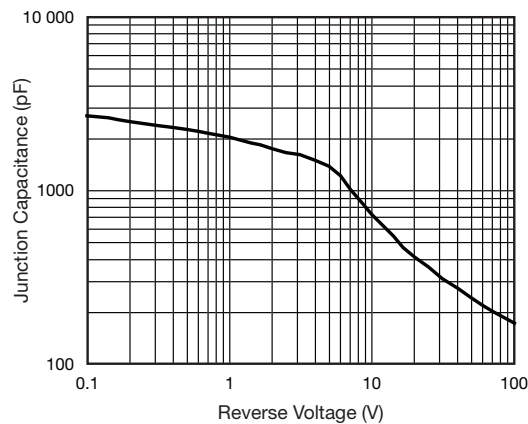


Fig. 5 - Typical Junction Capacitance

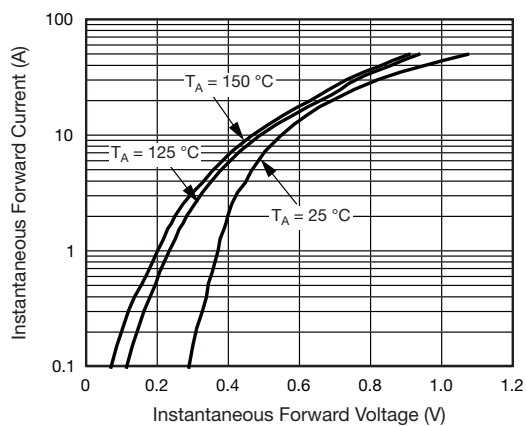


Fig. 3 - Typical Instantaneous Forward Characteristics

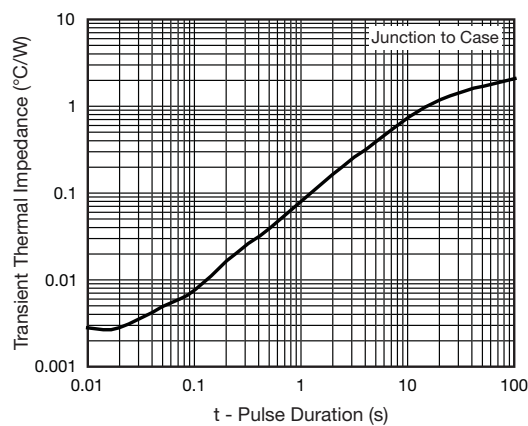
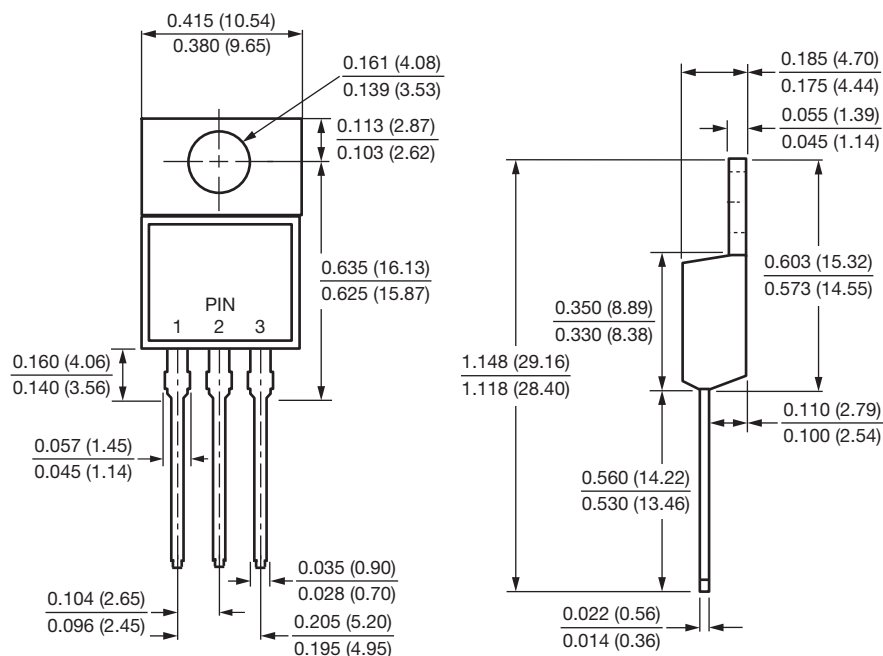


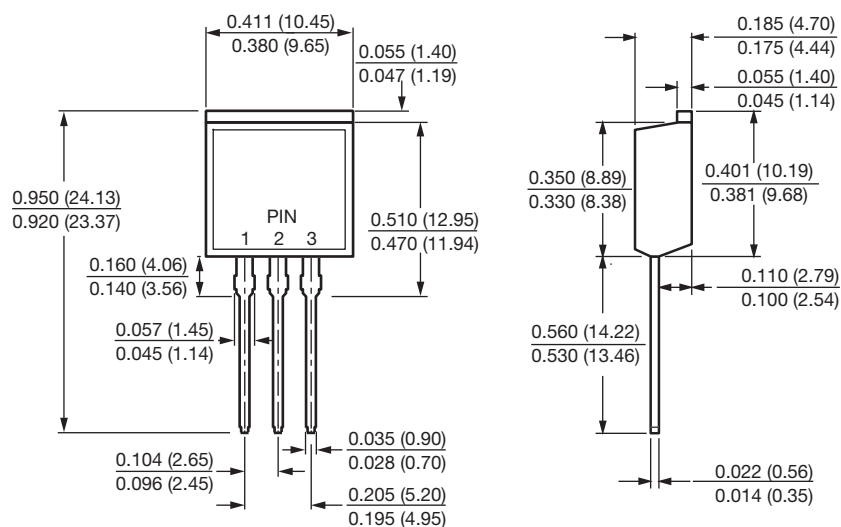
Fig. 6 - Typical Transient Thermal Impedance

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

**TO-220AB**



**TO-262AA**





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