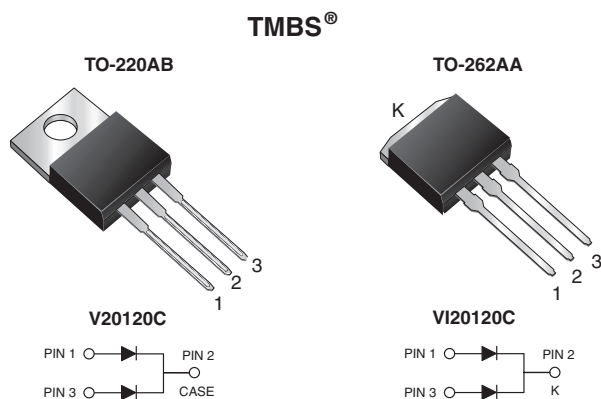


# Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.54 \text{ V}$  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.

## PRIMARY CHARACTERISTICS

|                               |                    |
|-------------------------------|--------------------|
| $I_{F(AV)}$                   | 2 x 10 A           |
| $V_{RRM}$                     | 120 V              |
| $I_{FSM}$                     | 120 A              |
| $V_F$ at $I_F = 10 \text{ A}$ | 0.64 V             |
| $T_J \text{ max.}$            | 150 °C             |
| Package                       | TO-220AB, TO-262AA |
| Diode variation               | Common cathode     |

## 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 max.

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

| PARAMETER                                                                                    | SYMBOL         | V20120C     | VI20120C | UNIT       |
|----------------------------------------------------------------------------------------------|----------------|-------------|----------|------------|
| Max. repetitive peak reverse voltage                                                         | $V_{RRM}$      | 120         |          | V          |
| Max. average forward rectified current (fig. 1)                                              | $I_{F(AV)}$    | 20          |          | A          |
|                                                                                              |                | 10          |          |            |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$      | 120         |          | 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 <sub>A</sub> = 25 °C unless otherwise noted) |                        |                         |                               |      |      |      |
|----------------------------------------------------------------------------|------------------------|-------------------------|-------------------------------|------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS        |                         | SYMBOL                        | TYP. | MAX. | UNIT |
| Instantaneous forward voltage per diode                                    | I <sub>F</sub> = 5 A   | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.62 | -    | V    |
|                                                                            | I <sub>F</sub> = 10 A  |                         |                               | 0.81 | 0.90 |      |
|                                                                            | I <sub>F</sub> = 5 A   | T <sub>A</sub> = 125 °C |                               | 0.54 | -    |      |
|                                                                            | I <sub>F</sub> = 10 A  |                         |                               | 0.64 | 0.72 |      |
| Reverse current per diode                                                  | V <sub>R</sub> = 90 V  | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 8    | -    | μA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 6    | -    | mA   |
|                                                                            | V <sub>R</sub> = 120 V | T <sub>A</sub> = 25 °C  |                               | -    | 700  | μA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 14   | 45   | 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          | V20120C | VI20120C | UNIT                 |
| Typical thermal resistance per diode                                                        | $R_{\theta JC}$ | 2.8     |          | $^{\circ}\text{C/W}$ |

| <b>ORDERING INFORMATION</b> (Example) |                |                 |              |               |               |
|---------------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE                               | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                              | V20120C-M3/4W  | 1.88            | 4W           | 50/tube       | Tube          |
| TO-262AA                              | VI20120C-M3/4W | 1.45            | 4W           | 50/tube       | Tube          |

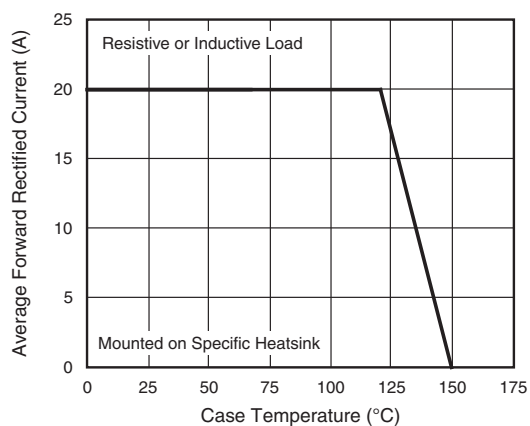
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

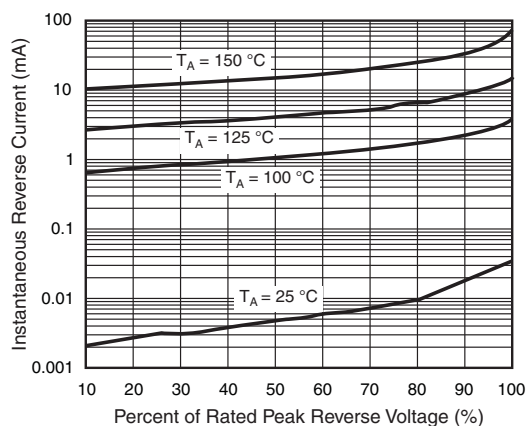


Fig. 4 - Typical Reverse Characteristics Per Diode

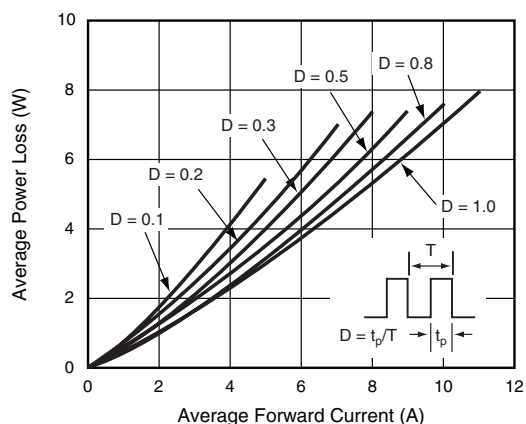


Fig. 2 - Forward Power Loss Characteristics Per Diode

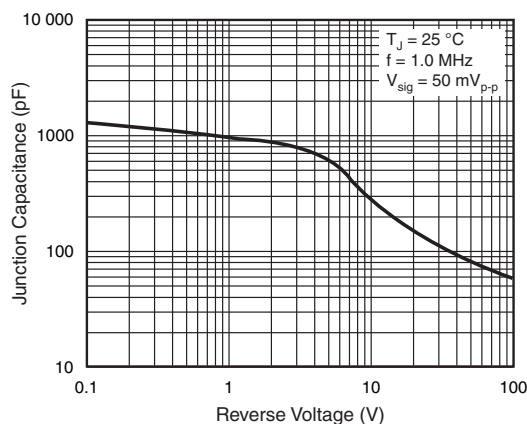


Fig. 5 - Typical Junction Capacitance Per Diode

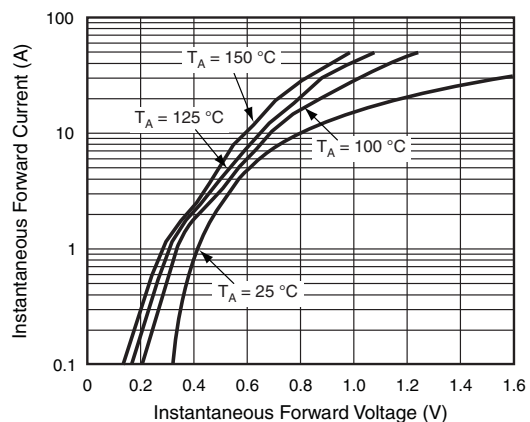


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

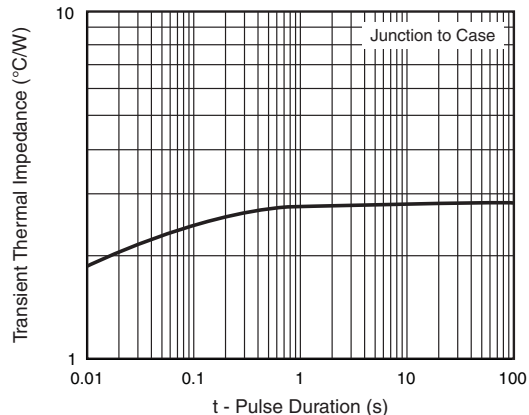
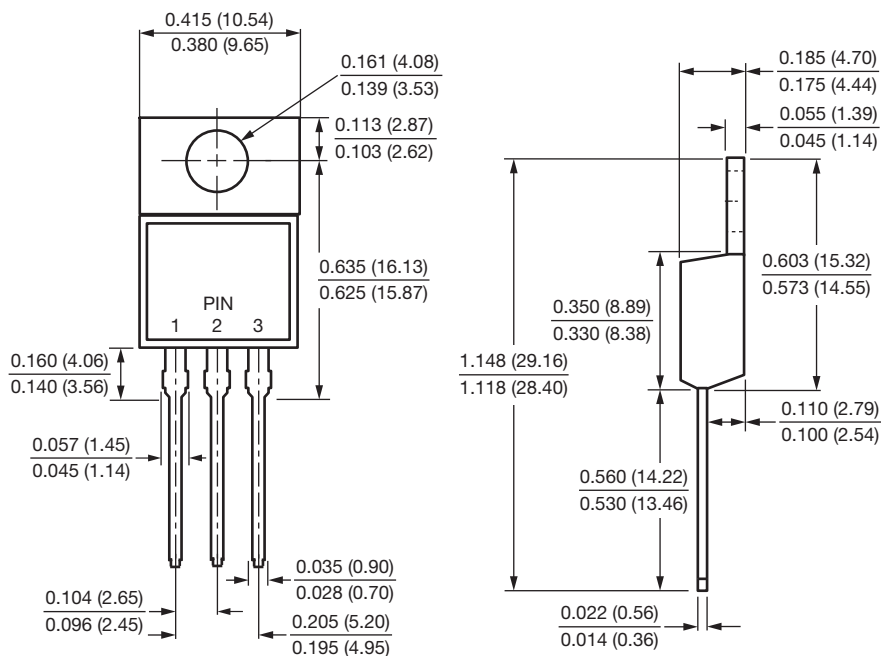


Fig. 6 - Typical Transient Thermal Impedance Per Diode

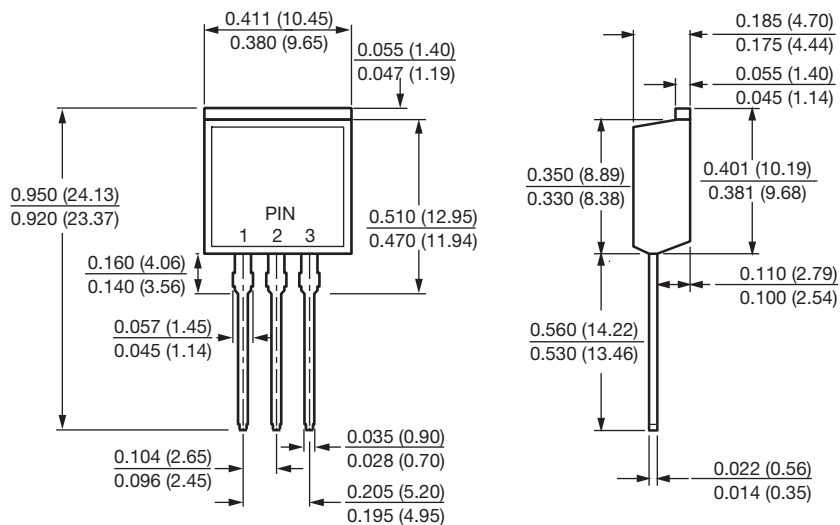


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



TO-262AA





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