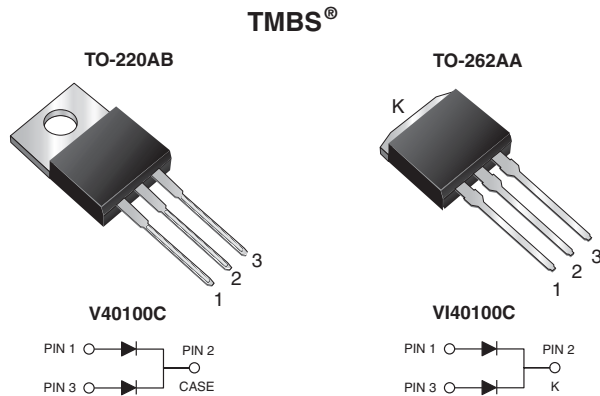


# Dual High Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low  $V_F = 0.38 \text{ V}$  at  $I_F = 5 \text{ A}$ 


## FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Low thermal resistance
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- 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 20 A           |
| $V_{RRM}$                     | 100 V              |
| $I_{FSM}$                     | 250 A              |
| $V_F$ at $I_F = 20 \text{ A}$ | 0.61 V             |
| $T_J$ 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

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

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

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs max.

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

| PARAMETER  | SYMBOL         | V40100C       | VI40100C | UNIT       |
|--|----------------|---------------|----------|------------|
| Max. repetitive peak reverse voltage   | $V_{RRM}$      | 100           |          | V          |
| Max. average forward rectified current (fig. 1)  | $I_{F(AV)}$    | per device    | 40       | A          |
|  |                | per diode     | 20       |            |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$      | 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 <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> | 0.47 | -    | V    |
|  | I <sub>F</sub> = 10 A  |                         |                               | 0.54 | -    |      |
|  | I <sub>F</sub> = 20 A  |                         |                               | 0.67 | 0.73 |      |
|  | I <sub>F</sub> = 5 A   | T <sub>A</sub> = 125 °C |                               | 0.38 | -    |      |
|  | I <sub>F</sub> = 10 A  |                         |                               | 0.45 | -    |      |
|  | I <sub>F</sub> = 20 A  |                         |                               | 0.61 | 0.67 |      |
| Reverse current at rated V <sub>R</sub> per diode                          | V <sub>R</sub> = 70 V  | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 9    | -    | μA   |
|  |                        | T <sub>A</sub> = 125 °C |                               | 10   | -    | mA   |
|  | V <sub>R</sub> = 100 V | T <sub>A</sub> = 25 °C  |                               | -    | 1000 | μA   |
|  |                        | T <sub>A</sub> = 125 °C |                               | 21   | 45   | mA   |

**Notes**

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                  |         |          |      |
|---|------------------|---------|----------|------|
| PARAMETER   | SYMBOL           | V40100C | VI40100C | UNIT |
| Typical thermal resistance per diode                                    | R <sub>θJC</sub> | 2.0     |          | °C/W |

| ORDERING INFORMATION (Example) |                               |                 |              |               |               |
|--------------------------------|-------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE                        | PREFERRED P/N                 | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                       | V40100C-M3/4W                 | 1.85            | 4W           | 50/tube       | Tube          |
| TO-262AA                       | VI40100C-M3/4W                | 1.45            | 4W           | 50/tube       | Tube          |
| TO-220AB                       | V40100CHM3/4W <sup>(1)</sup>  | 1.85            | 4W           | 50/tube       | Tube          |
| TO-262AA                       | VI40100CHM3/4W <sup>(1)</sup> | 1.45            | 4W           | 50/tube       | Tube          |

**Note**

- (1) AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES**

(T<sub>A</sub> = 25 °C unless otherwise noted)

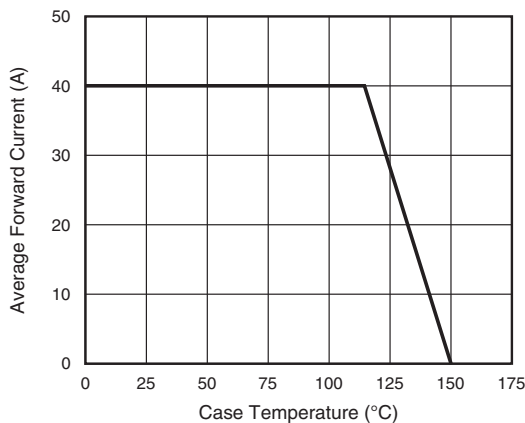


Fig. 1 - Forward Current Derating Curve

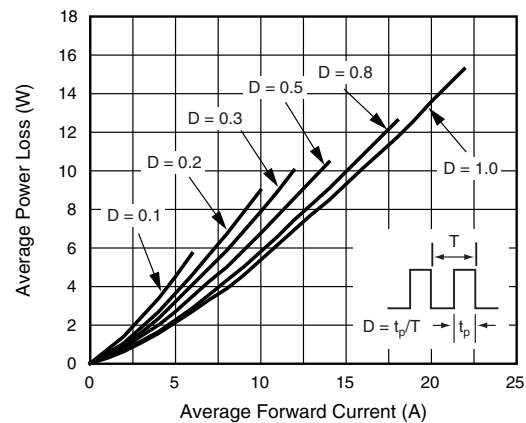


Fig. 2 - Forward Power Loss Characteristics Per Diode

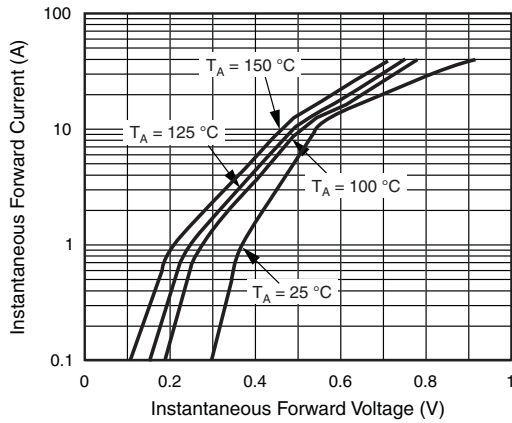


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

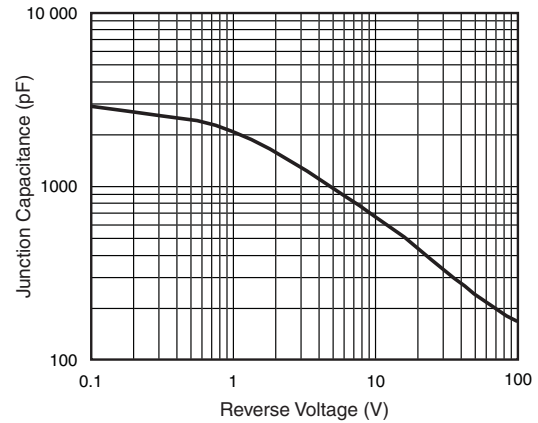


Fig. 5 - Typical Junction Capacitance Per Diode

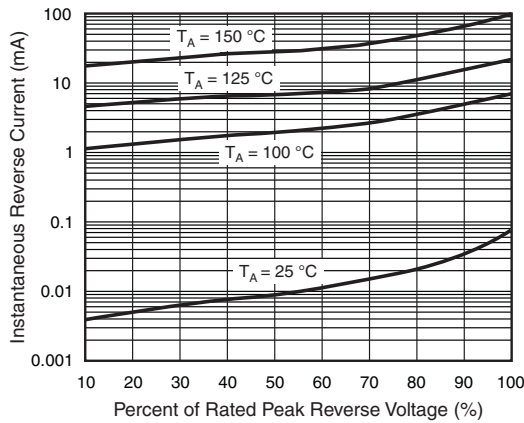


Fig. 4 - Typical Reverse Characteristics Per Diode

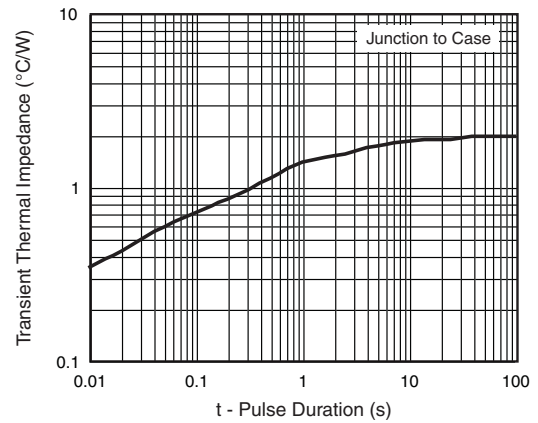
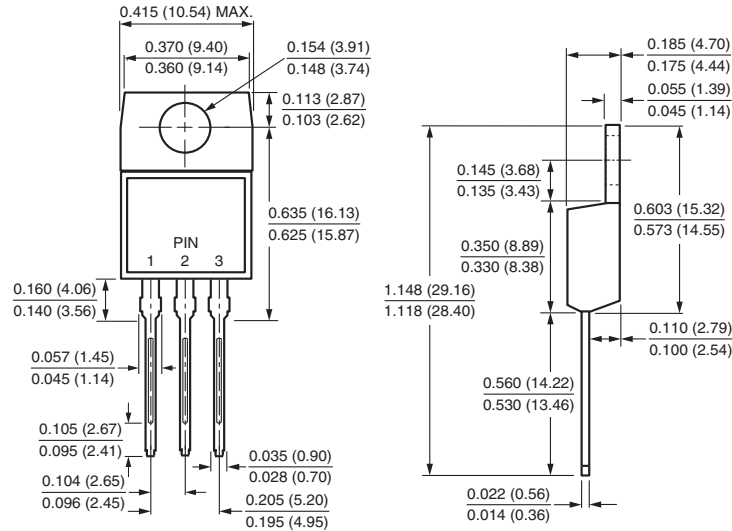


Fig. 6 - Typical Transient Thermal Impedance Per Diode

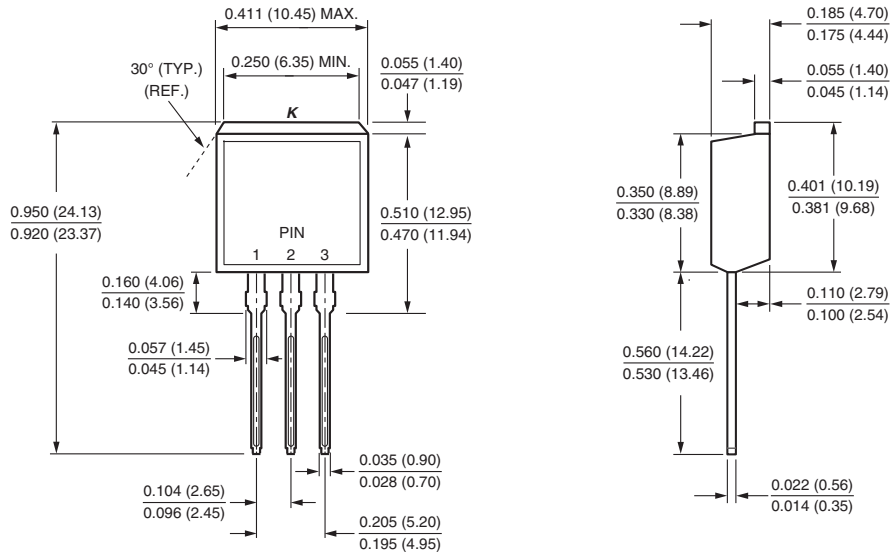


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



TO-262AA





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