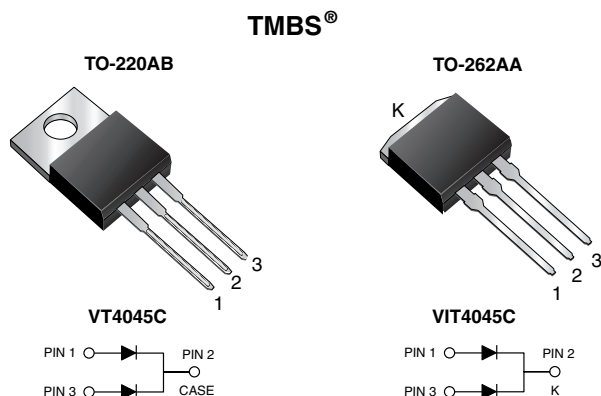




## Dual Low-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.28\text{ V}$  at  $I_F = 5.0\text{ A}$



### 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
- 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.

### 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 maximum

| PRIMARY CHARACTERISTICS      |                     |
|------------------------------|---------------------|
| $I_{F(AV)}$                  | 2 x 20 A            |
| $V_{RRM}$                    | 45 V                |
| $I_{FSM}$                    | 240 A               |
| $V_F$ at $I_F = 20\text{ A}$ | 0.41 V              |
| $T_J$ max.                   | 150 °C              |
| Package                      | TO-220AB, TO-262AA  |
| Diode variations             | Dual common cathode |

| MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)                              |            |                                   |             |          |      |
|----------------------------------------------------------------------------------------------|------------|-----------------------------------|-------------|----------|------|
| PARAMETER                                                                                    |            | SYMBOL                            | VT4045C     | VIT4045C | UNIT |
| Maximum repetitive peak reverse voltage                                                      |            | V <sub>RRM</sub>                  | 45          |          | V    |
| Maximum average forward rectified current (fig. 1)                                           | per device | I <sub>F(AV)</sub>                | 40          |          | A    |
|                                                                                              | per diode  |                                   | 20          |          |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode |            | I <sub>FSM</sub>                  | 240         |          | A    |
| Operating junction and storage temperature range                                             |            | T <sub>J</sub> , T <sub>STG</sub> | -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> | 0.41 | -    | V    |
|                                                                            | I <sub>F</sub> = 10 A |                         |                               | 0.44 | -    |      |
|                                                                            | I <sub>F</sub> = 20 A |                         |                               | 0.50 | 0.58 |      |
|                                                                            | I <sub>F</sub> = 5 A  | T <sub>A</sub> = 125 °C |                               | 0.28 | -    |      |
|                                                                            | I <sub>F</sub> = 10 A |                         |                               | 0.33 | -    |      |
|                                                                            | I <sub>F</sub> = 20 A |                         |                               | 0.41 | 0.50 |      |
| Reverse current per diode                                                  | V <sub>R</sub> = 45 V | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | -    | 3000 | μA   |
|                                                                            |                       | T <sub>A</sub> = 125 °C |                               | 18   | 50   | 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 <sub>A</sub> = 25 °C unless otherwise noted) |            |                  |         |          |      |
|-------------------------------------------------------------------------|------------|------------------|---------|----------|------|
| PARAMETER                                                               |            | SYMBOL           | VT4045C | VIT4045C | UNIT |
| Typical thermal resistance                                              | per diode  | R <sub>θJC</sub> | 1.5     |          | °C/W |
|                                                                         | per device |                  | 0.8     |          |      |

| ORDERING INFORMATION (Example) |                               |                 |              |               |               |
|--------------------------------|-------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE                        | PREFERRED P/N                 | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                       | VT4045C-M3/4W                 | 1.89            | 4W           | 50/tube       | Tube          |
| TO-262AA                       | VIT4045C-M3/4W                | 1.46            | 4W           | 50/tube       | Tube          |
| TO-220AB                       | VT4045CHM3/4W <sup>(1)</sup>  | 1.89            | 4W           | 50/tube       | Tube          |
| TO-262AA                       | VIT4045CHM3/4W <sup>(1)</sup> | 1.46            | 4W           | 50/tube       | Tube          |

## Note

(1) AEC-Q101 qualified

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

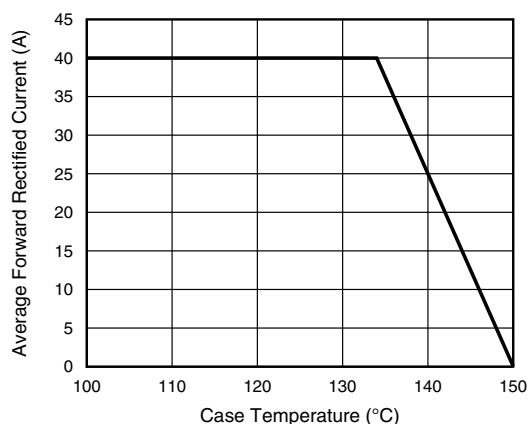


Fig. 1 - Maximum Forward Current Derating Curve

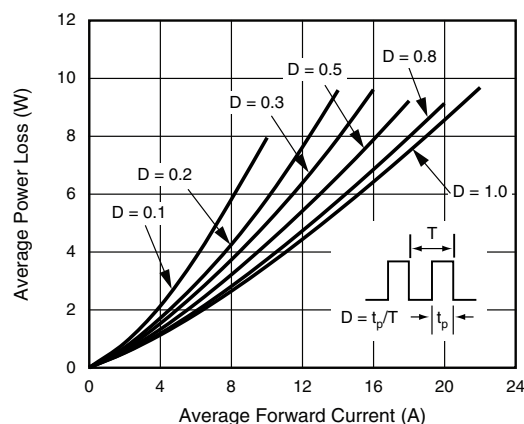


Fig. 2 - Forward Power Loss Characteristics Per Diode

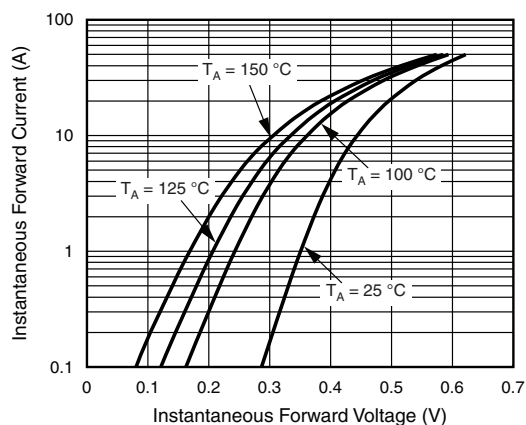


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

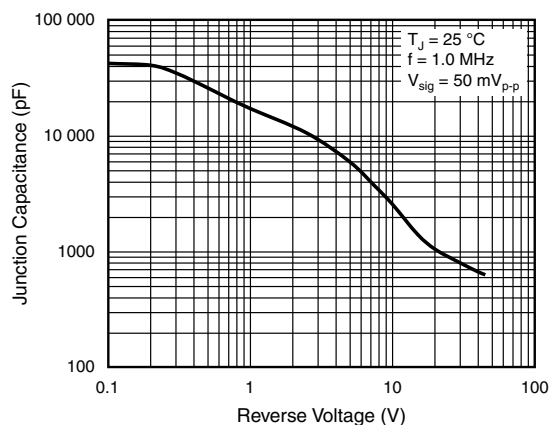


Fig. 5 - Typical Junction Capacitance Per Diode

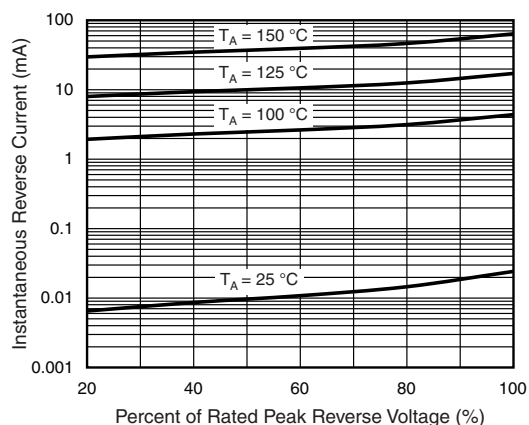


Fig. 4 - Typical Reverse Characteristics Per Diode

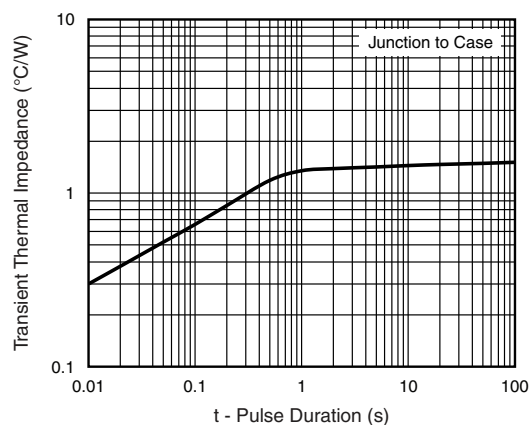
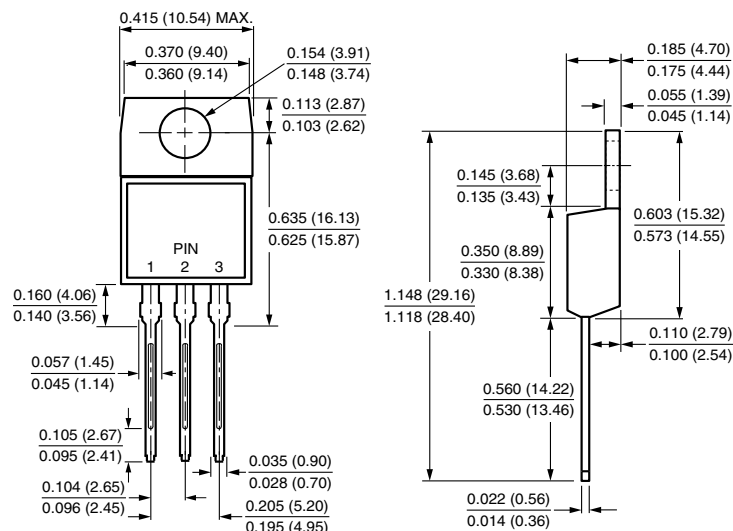


Fig. 6 - Typical Transient Thermal Impedance Per Diode

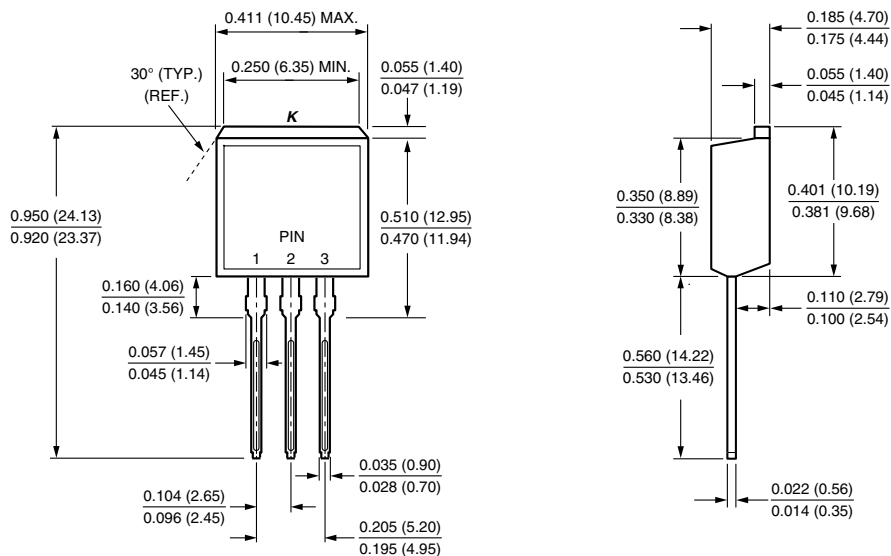


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AB



### TO-262AA





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