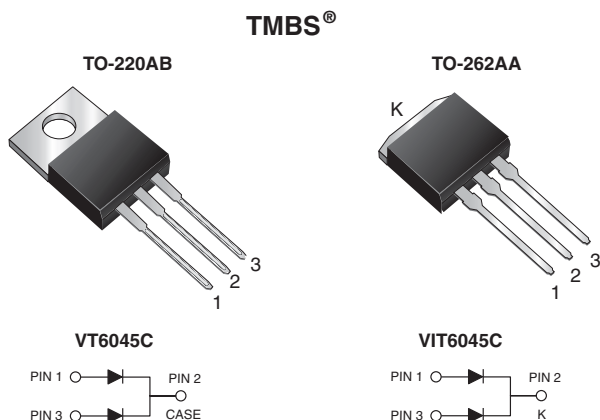


# Dual Low-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.33\text{ V}$  at  $I_F = 10\text{ A}$



## 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

|                              |                    |
|------------------------------|--------------------|
| $I_{F(AV)}$                  | 2 x 30 A           |
| $V_{RRM}$                    | 45 V               |
| $I_{FSM}$                    | 320 A              |
| $V_F$ at $I_F = 30\text{ A}$ | 0.47 V             |
| $T_J$ max.                   | 150 °C             |
| Package                      | TO-220AB, TO-262AA |
| Diode variations             | Common cathode     |

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

| PARAMETER                                                                                    | SYMBOL         | VT6045C     | VIT6045C | UNIT |
|----------------------------------------------------------------------------------------------|----------------|-------------|----------|------|
| Maximum repetitive peak reverse voltage                                                      | $V_{RRM}$      | 45          |          | V    |
| Maximum average forward rectified current (fig. 1)                                           | $I_{F(AV)}$    | 60          |          | A    |
| per device                                                                                   |                |             |          |      |
| per diode                                                                                    |                | 30          |          |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$      | 320         |          | A    |
| 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> = 10 A | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.44 | -    | V    |
|                                                                            | I <sub>F</sub> = 15 A |                         |                               | 0.47 | -    |      |
|                                                                            | I <sub>F</sub> = 30 A |                         |                               | 0.54 | 0.64 |      |
|                                                                            | I <sub>F</sub> = 10 A | T <sub>A</sub> = 125 °C |                               | 0.33 | -    |      |
|                                                                            | I <sub>F</sub> = 15 A |                         |                               | 0.37 | -    |      |
|                                                                            | I <sub>F</sub> = 30 A |                         |                               | 0.47 | 0.56 |      |
| 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           | VT6045C | VIT6045C | UNIT |
| Typical thermal resistance                                              | per diode  | R <sub>θJC</sub> | 1.5     |          | °C/W |
|                                                                         | per device |                  | 0.8     |          |      |

| <b>ORDERING INFORMATION</b> (Example) |                |                 |              |               |               |
|---------------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE                               | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                              | VT6045C-M3/4W  | 1.89            | 4W           | 50/tube       | Tube          |
| TO-262AA                              | VIT6045C-M3/4W | 1.46            | 4W           | 50/tube       | Tube          |

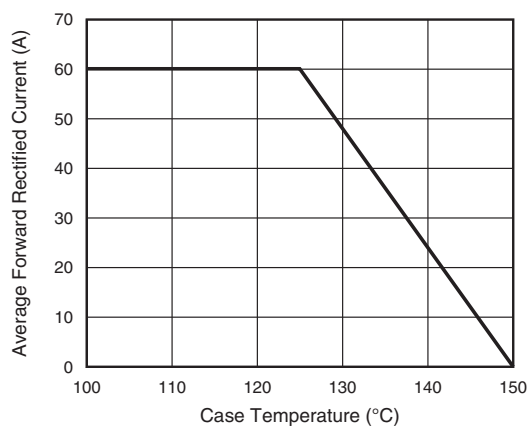
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

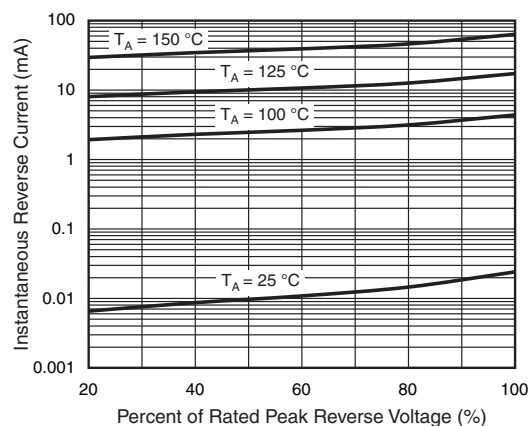


Fig. 4 - Typical Reverse Characteristics Per Diode

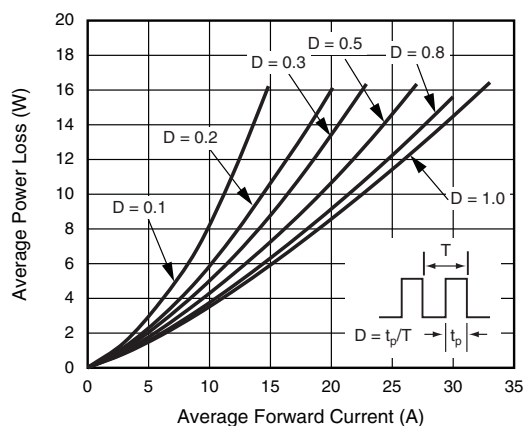


Fig. 2 - Forward Power Loss Characteristics Per Diode

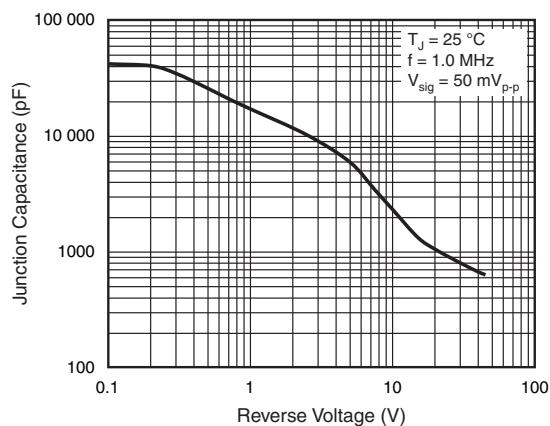


Fig. 5 - Typical Junction Capacitance Per Diode

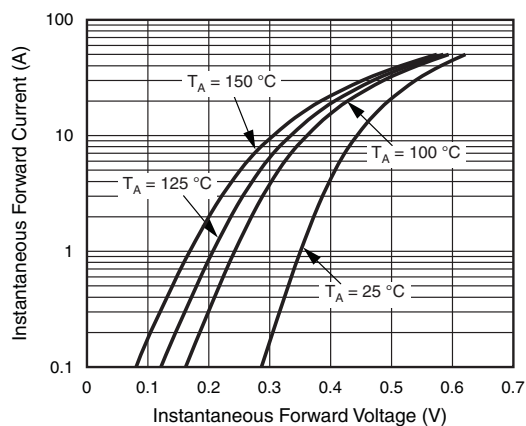


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

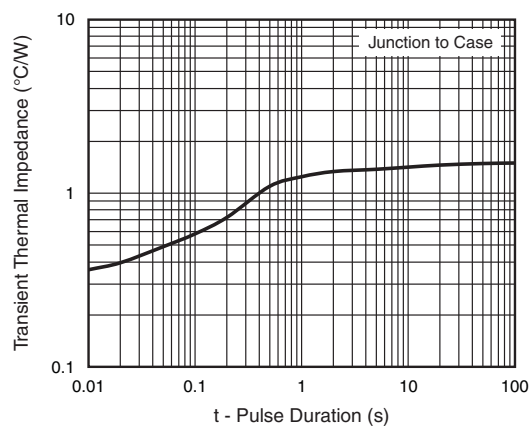
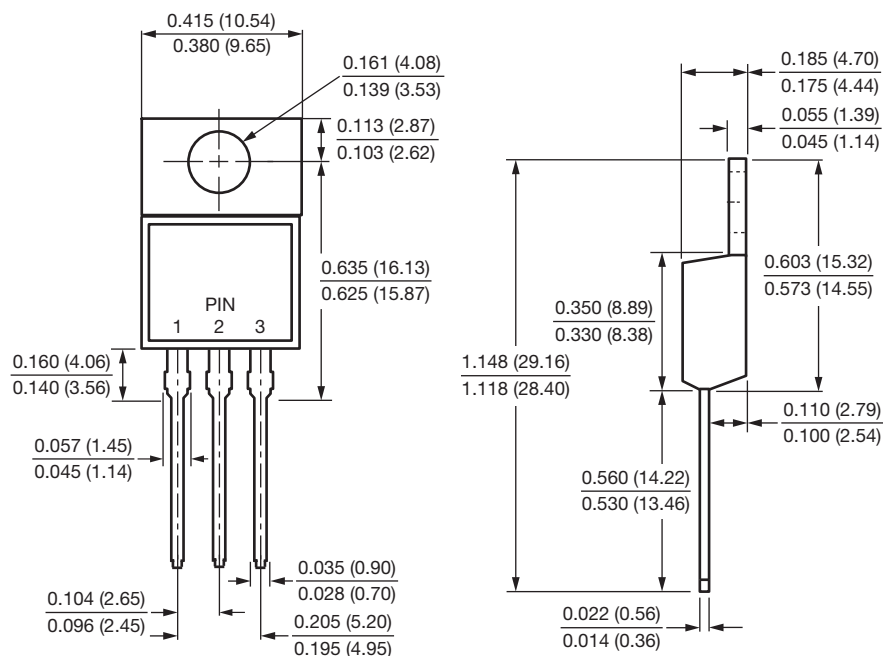


Fig. 6 - Typical Transient Thermal Impedance Per Diode

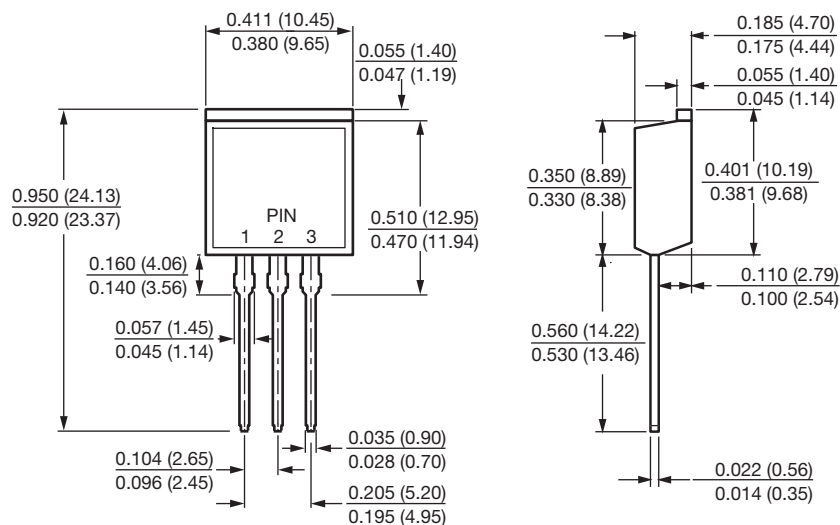


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



TO-262AA





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