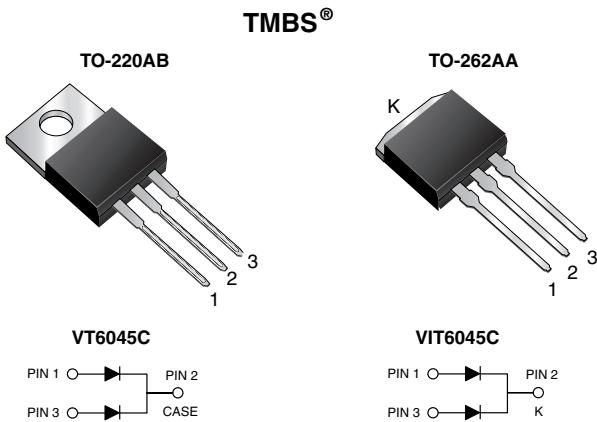


## Dual Low-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F$  = 0.33 V at  $I_F$  = 10 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)



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

| MAXIMUM RATINGS ( $T_A$ = 25 °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   |                   | 30          |          |      |
| per diode  |                   |             |          |      |
| 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 ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |                      |                           |                      |      |                    |  |
|---|----------------------|---------------------------|----------------------|------|--------------------|--|
| PARAMETER   | TEST CONDITIONS      |                           | SYMBOL               | TYP. | MAX.               |  |
| Instantaneous forward voltage per diode                                       | $I_F = 10 \text{ A}$ | $T_A = 25^\circ\text{C}$  | $V_F$ <sup>(1)</sup> | 0.44 | -                  |  |
|   | $I_F = 15 \text{ A}$ |                           |                      | 0.47 | -                  |  |
|   | $I_F = 30 \text{ A}$ |                           |                      | 0.54 | 0.64               |  |
|   | $I_F = 10 \text{ A}$ | $T_A = 125^\circ\text{C}$ |                      | 0.33 | -                  |  |
|   | $I_F = 15 \text{ A}$ |                           |                      | 0.37 | -                  |  |
|   | $I_F = 30 \text{ A}$ |                           |                      | 0.47 | 0.56               |  |
| Reverse current per diode   | $V_R = 45 \text{ V}$ | $T_A = 25^\circ\text{C}$  | $I_R$ <sup>(2)</sup> | -    | 3000 $\mu\text{A}$ |  |
|   |                      | $T_A = 125^\circ\text{C}$ |                      | 18   | 50 mA              |  |

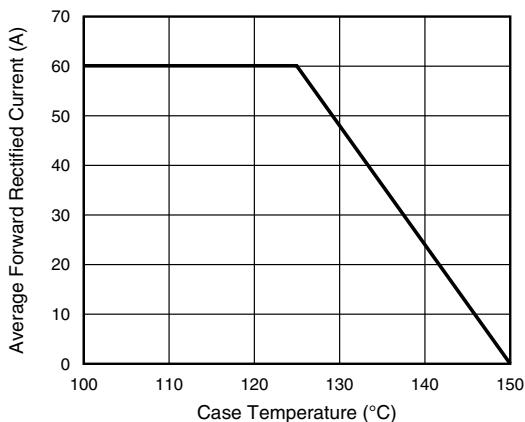
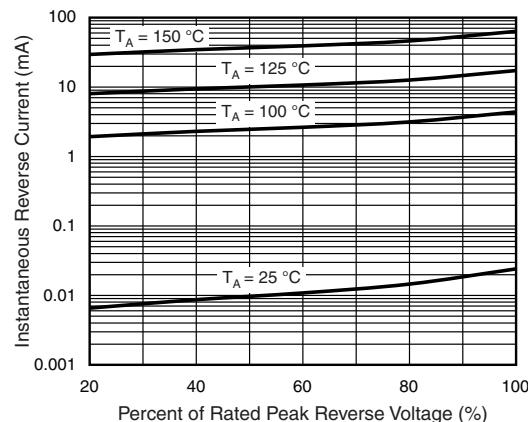
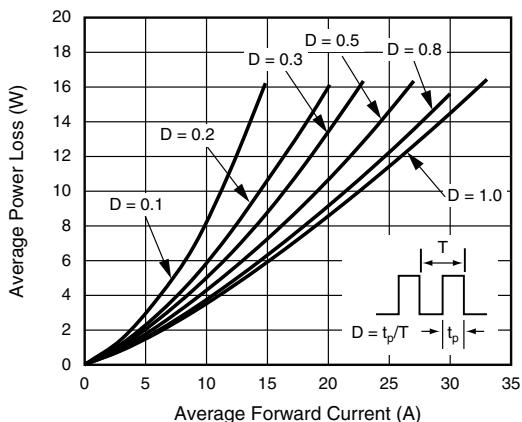
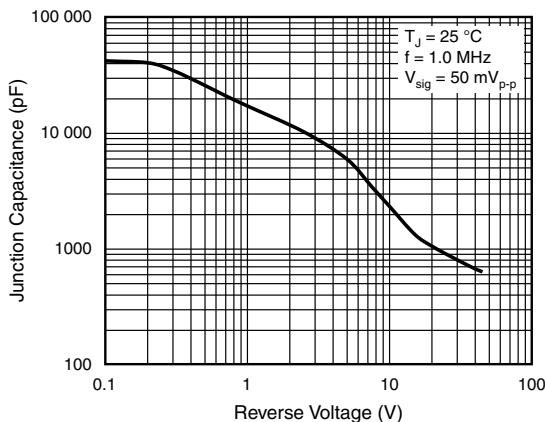
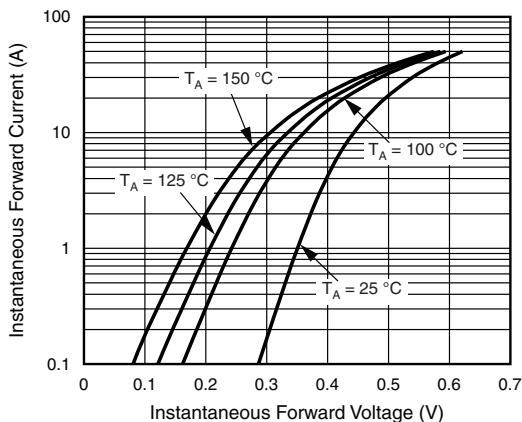
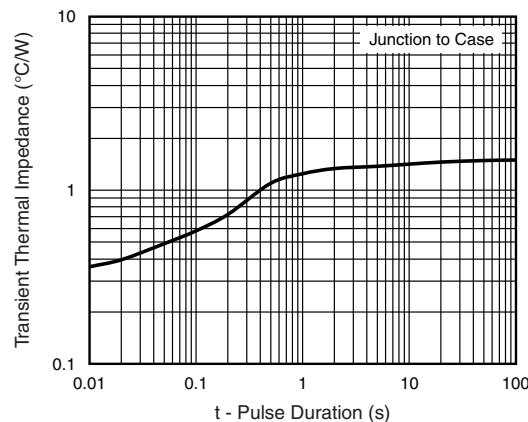
**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width  $\leq 40 \text{ ms}$ 

| THERMAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |  |            |                       |          |                    |
|--|--|------------|-----------------------|----------|--------------------|
| PARAMETER  |  | SYMBOL     | VT6045C               | VIT6045C | UNIT               |
| Typical thermal resistance   |  | per diode  | $R_{\theta\text{JC}}$ | 1.5      | $^\circ\text{C/W}$ |
|  |  | per device |                       | 0.8      |                    |

| ORDERING INFORMATION (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          |
| TO-220AB                       | VT6045CHM3/4W <sup>(1)</sup>  | 1.89            | 4W           | 50/tube       | Tube          |
| TO-262AA                       | VIT6045CHM3/4W <sup>(1)</sup> | 1.46            | 4W           | 50/tube       | Tube          |

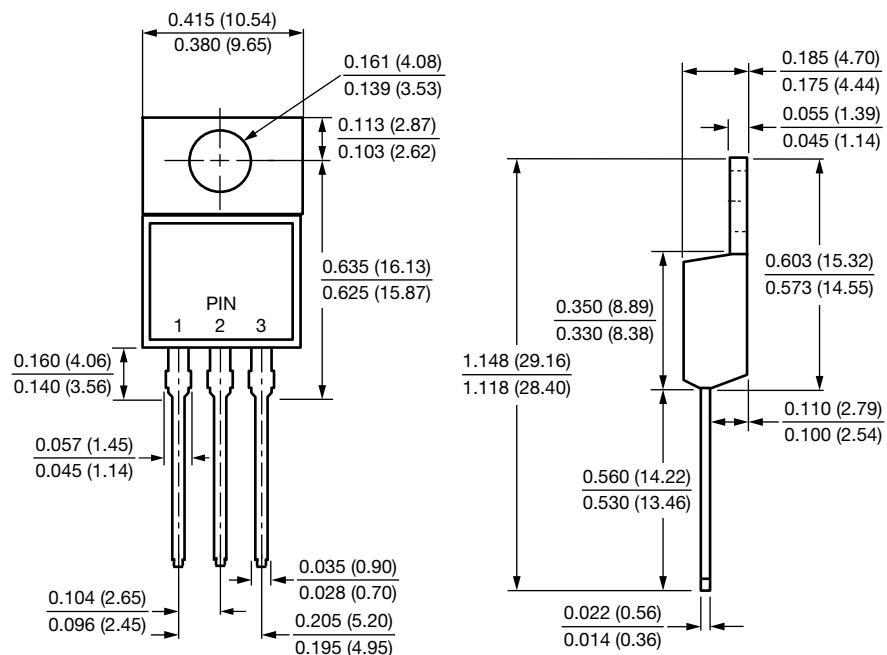
**Note**

(1) AEC-Q101 qualified

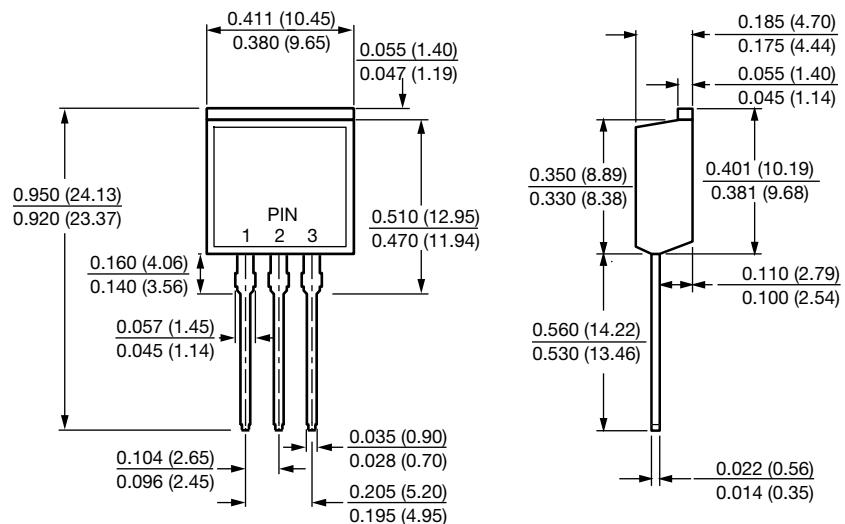
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**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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