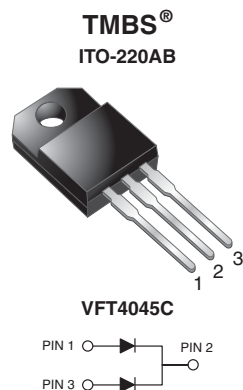




# Dual Low-Voltage Trench MOS Barrier Schottky Rectifier

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 bath temperature 275 °C max. 10 s, per JESD 22-B106
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



**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 |
| $V_{RRM}$                    | 45 V     |
| $I_{FSM}$                    | 240 A    |
| $V_F$ at $I_F = 20\text{ A}$ | 0.41 V   |
| $T_J$ max.                   | 150 °C   |

## MECHANICAL DATA

**Case:** ITO-220AB

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

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

| PARAMETER                                                                          | SYMBOL         | VFT4045C      | UNIT |
|------------------------------------------------------------------------------------|----------------|---------------|------|
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$      | 45            | V    |
| Maximum average forward rectified current (fig. 1)                                 | $I_{F(AV)}$    | 40            | A    |
| per device                                                                         |                | 20            |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 240           | A    |
| Isolation voltage from terminal to heatsink $t = 1\text{ min}$                     | $V_{AC}$       | 1500          | V    |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | - 40 to + 150 | °C   |

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

| PARAMETER                  | SYMBOL          | VFT4045C | UNIT                 |
|----------------------------|-----------------|----------|----------------------|
| Typical thermal resistance | $R_{\theta JC}$ | 5.0      | $^{\circ}\text{C/W}$ |
|                            |                 | 3.5      |                      |

**ORDERING INFORMATION** (Example)

| PACKAGE   | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|-----------|----------------|-----------------|--------------|---------------|---------------|
| ITO-220AB | VFT4045C-M3/4W | 1.76            | 4W           | 50/tube       | Tube          |

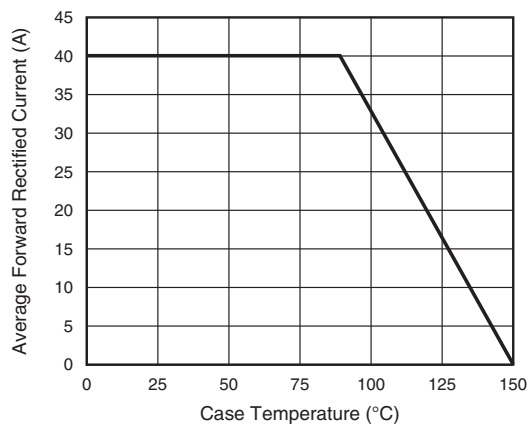
**RATINGS AND CHARACTERISTICS CURVES**( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

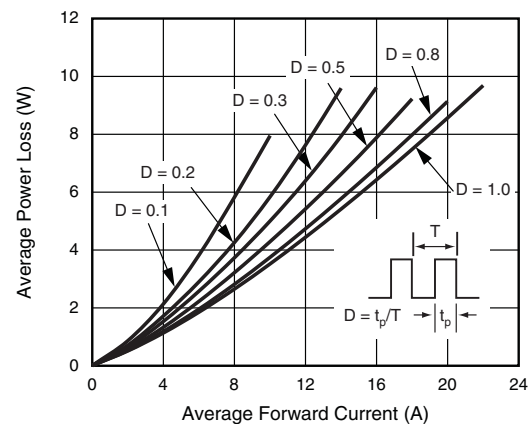


Fig. 2 - Forward Power Loss Characteristics Per Diode

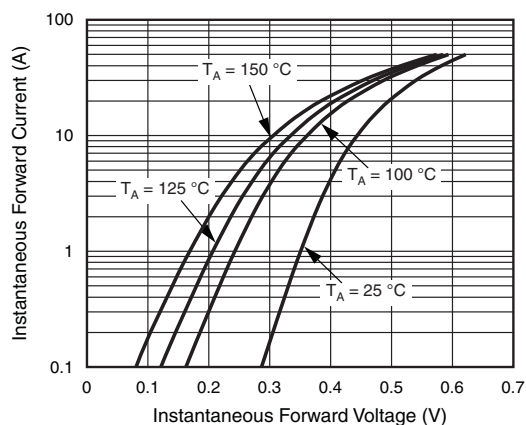


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

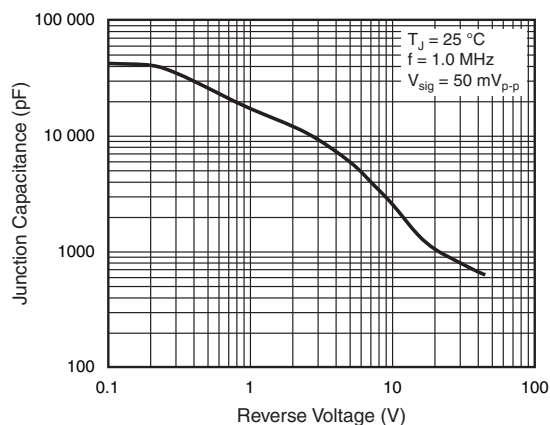


Fig. 5 - Typical Junction Capacitance Per Diode

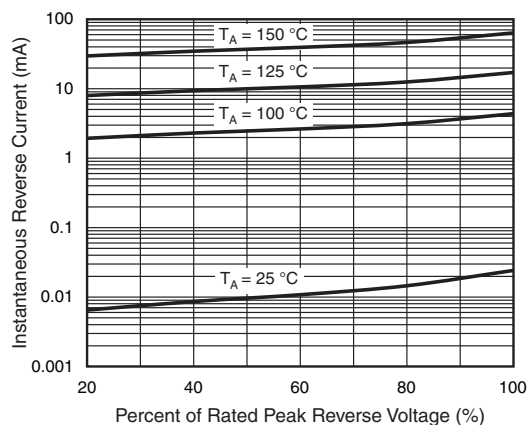


Fig. 4 - Typical Reverse Characteristics Per Diode

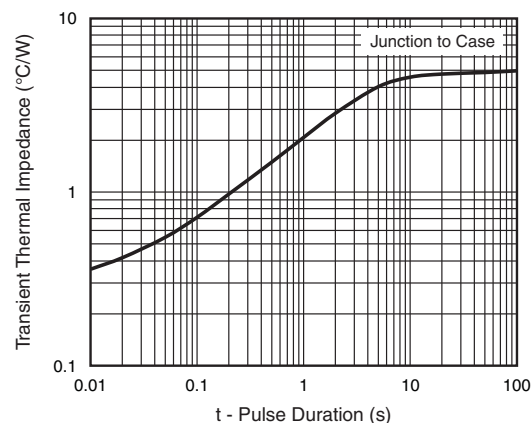
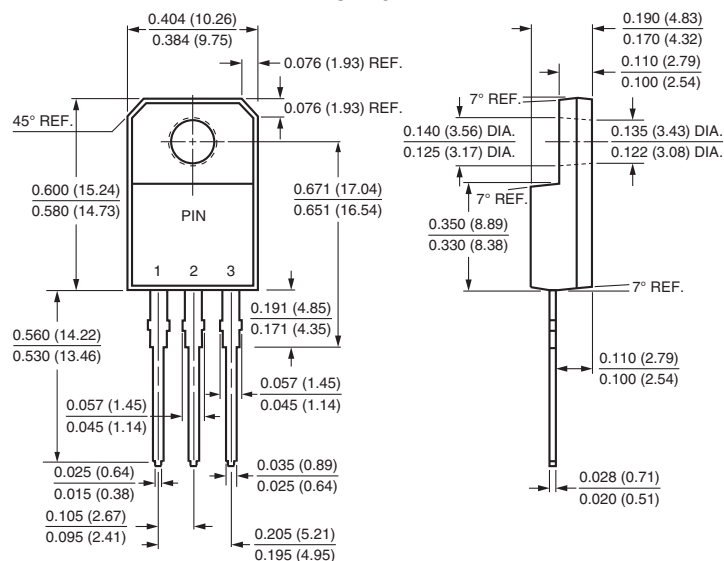


Fig. 6 - Typical Transient Thermal Impedance Per Diode

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)**ITO-220AB**



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