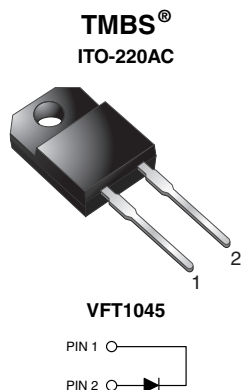


# Low Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.41\text{ V}$  at  $I_F = 5\text{ A}$



## 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
- 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 converters, switching power supplies, freewheeling diodes, OR-ing diode, DC/DC converters, and reverse battery protection.

## PRIMARY CHARACTERISTICS

|                              |           |
|------------------------------|-----------|
| $I_{F(AV)}$                  | 10 A      |
| $V_{RRM}$                    | 45 V      |
| $I_{FSM}$                    | 100 A     |
| $V_F$ at $I_F = 10\text{ A}$ | 0.52 V    |
| $T_J$ max.                   | 150 °C    |
| Package                      | ITO-220AC |
| Circuit configuration        | Single    |

## MECHANICAL DATA

**Case:** ITO-220AC

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            | VFT1045     | UNIT |
|------------------------------------------------------------------------------------|-------------------|-------------|------|
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$         | 45          | V    |
| Maximum DC forward bypassing current (fig. 1)                                      | $I_{F(AV)}^{(1)}$ | 10          | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$         | 100         | 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   |

### Note

(1) With heatsink

| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                       |                         |                               |      |      |      |
|----------------------------------------------------------------------------|-----------------------|-------------------------|-------------------------------|------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS       |                         | SYMBOL                        | TYP. | MAX. | UNIT |
| Instantaneous forward voltage                                              | I <sub>F</sub> = 5 A  | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.50 | -    | V    |
|                                                                            | I <sub>F</sub> = 10 A |                         |                               | 0.57 | 0.68 |      |
|                                                                            | I <sub>F</sub> = 5 A  | T <sub>A</sub> = 125 °C |                               | 0.41 | -    |      |
|                                                                            | I <sub>F</sub> = 10 A |                         |                               | 0.52 | 0.64 |      |
| Reverse current                                                            | V <sub>R</sub> = 45 V | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | -    | 500  | μA   |
|                                                                            |                       | T <sub>A</sub> = 125 °C |                               | 5    | 15   | mA   |

**Notes**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

(2) Pulse test: Pulse width  $\leq 40\text{ ms}$ 

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                       |         |                      |
|---------------------------------------------------------------------------------------------|-----------------------|---------|----------------------|
| PARAMETER                                                                                   | SYMBOL                | VFT1045 | UNIT                 |
| Typical thermal resistance                                                                  | $R_{\theta\text{JC}}$ | 5.5     | $^{\circ}\text{C/W}$ |

| <b>ORDERING INFORMATION</b> (Example) |               |                 |              |               |               |
|---------------------------------------|---------------|-----------------|--------------|---------------|---------------|
| PACKAGE                               | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| ITO-220AC                             | VFT1045-M3/4W | 1.75            | 4W           | 50/tube       | Tube          |

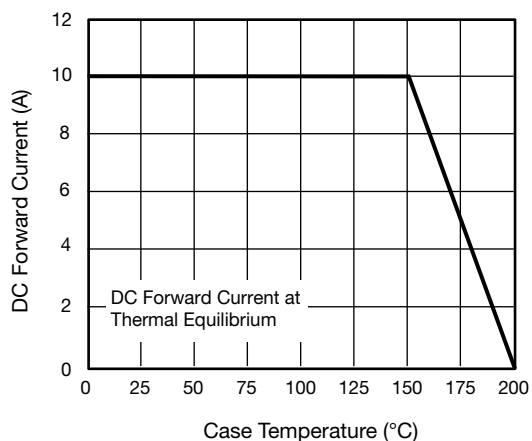
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

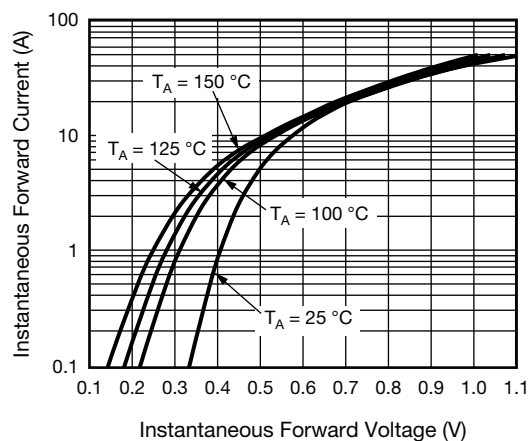


Fig. 2 - Typical Instantaneous Forward Characteristics

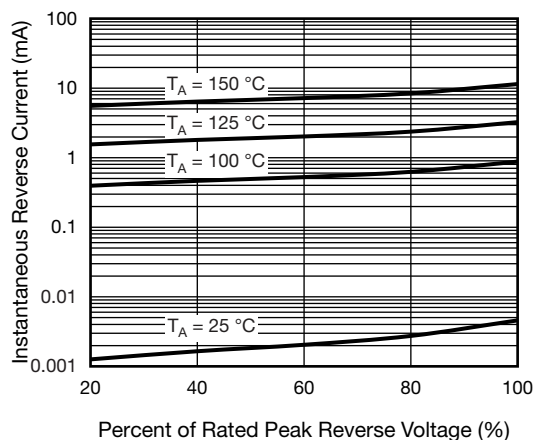


Fig. 3 - Typical Reverse Characteristics

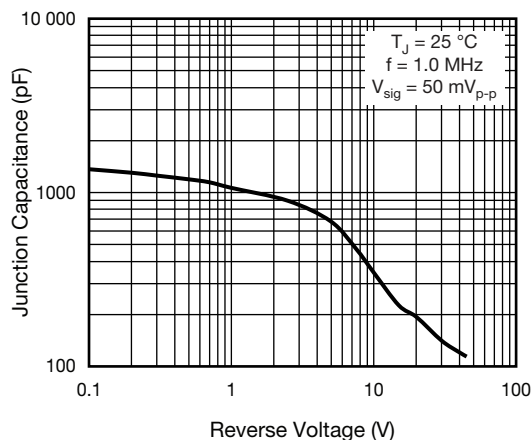


Fig. 4 - Typical Junction Capacitance

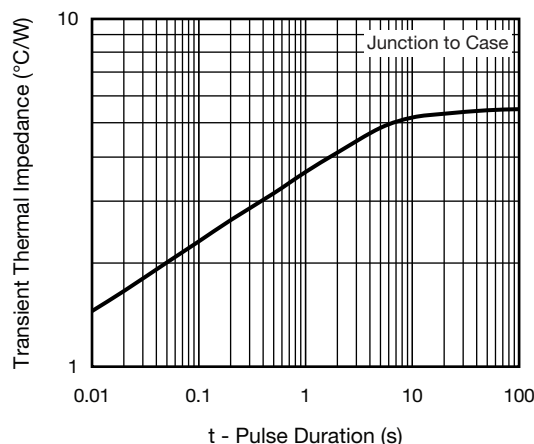
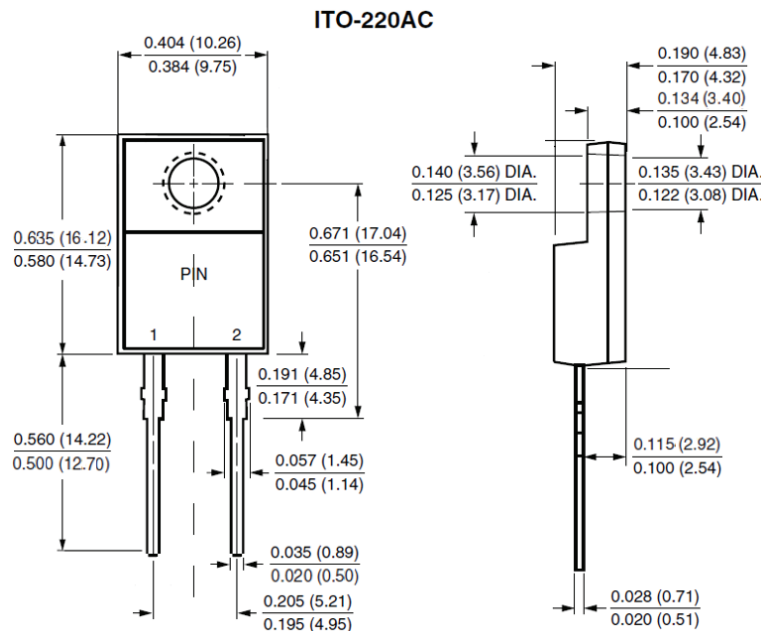


Fig. 5 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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