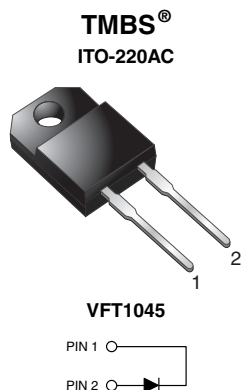


Low Voltage Trench MOS Barrier Schottky Rectifier

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



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 _A = 25 °C unless otherwise noted) | | | | | | |
|--|-----------------------|-------------------------|-------------------------------|------|------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage | I _F = 5 A | T _A = 25 °C | V _F ⁽¹⁾ | 0.50 | - | V |
| | I _F = 10 A | | | 0.57 | 0.68 | |
| | I _F = 5 A | T _A = 125 °C | | 0.41 | - | |
| | I _F = 10 A | | | 0.52 | 0.64 | |
| Reverse current | V _R = 45 V | T _A = 25 °C | I _R ⁽²⁾ | - | 500 | μA |
| | | T _A = 125 °C | | 5 | 15 | mA |

Notes

(1) Pulse test: 300 μs 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 | VFT1045 | UNIT |
| Typical thermal resistance | $R_{\theta\text{JC}}$ | 5.5 | $^{\circ}\text{C/W}$ |

| ORDERING INFORMATION (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 |

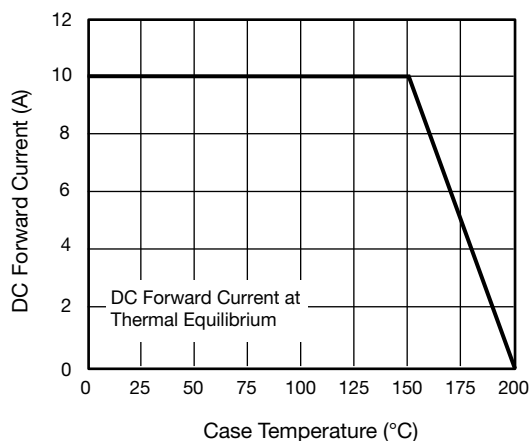
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

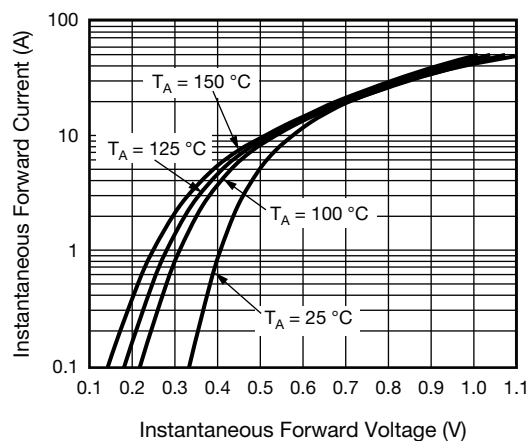


Fig. 2 - Typical Instantaneous Forward Characteristics

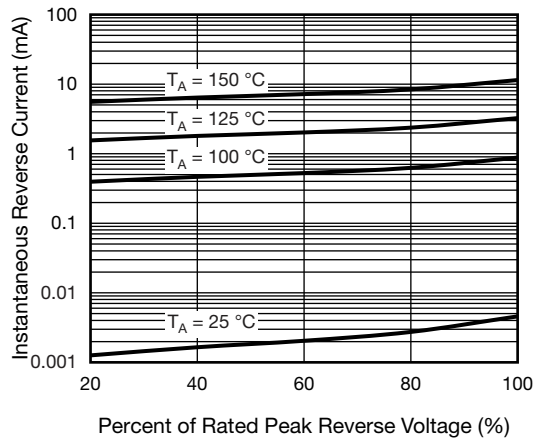


Fig. 3 - Typical Reverse Characteristics

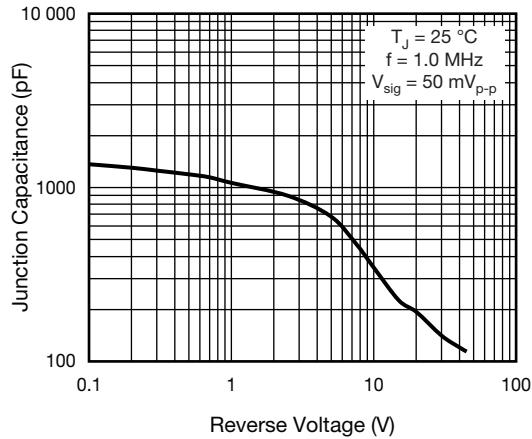


Fig. 4 - Typical Junction Capacitance

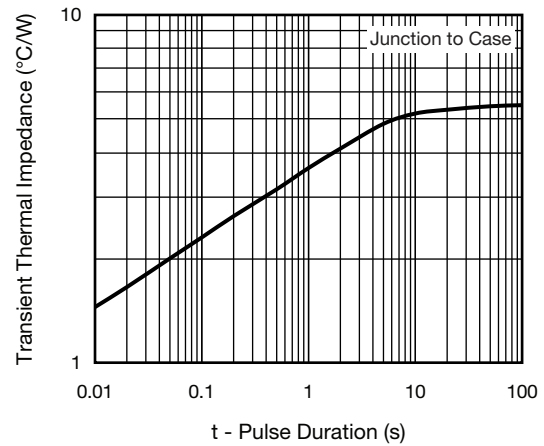
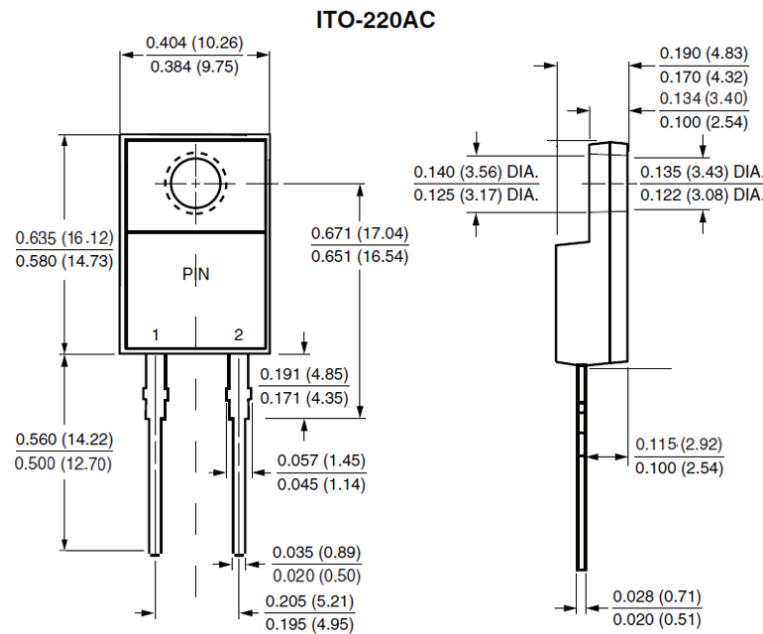


Fig. 5 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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