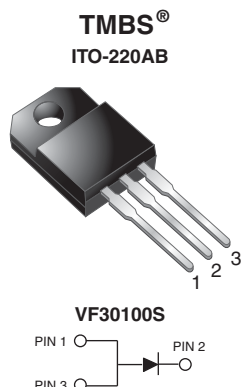


# High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.39\text{ V}$  at  $I_F = 5\text{ A}$



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

## 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

## PRIMARY CHARACTERISTICS

|                              |           |
|------------------------------|-----------|
| $I_{F(AV)}$                  | 30 A      |
| $V_{RRM}$                    | 100 V     |
| $I_{FSM}$                    | 250 A     |
| $V_F$ at $I_F = 30\text{ A}$ | 0.69 V    |
| $T_J$ max.                   | 150 °C    |
| Package                      | ITO-220AB |
| Circuit configuration        | Single    |

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

| PARAMETER                                                                          | SYMBOL         | VF30100S    | UNIT |
|------------------------------------------------------------------------------------|----------------|-------------|------|
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$      | 100         | V    |
| Maximum average forward rectified current (fig. 1)                                 | $I_{F(AV)}$    | 30          | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 250         | A    |
| Isolation voltage from terminal to heat sink $t = 1\text{ min}$                    | $V_{AC}$       | 1500        | V    |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | -40 to +150 | °C   |

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

| PARAMETER                     | TEST CONDITIONS      | SYMBOL      | TYP. | MAX. | UNIT          |
|-------------------------------|----------------------|-------------|------|------|---------------|
| Instantaneous forward voltage | $I_F = 5\text{ A}$   | $V_F^{(1)}$ | 0.47 | -    | V             |
|                               | $I_F = 10\text{ A}$  |             | 0.55 | -    |               |
|                               | $I_F = 30\text{ A}$  |             | 0.80 | 0.91 |               |
|                               | $I_F = 5\text{ A}$   |             | 0.39 | -    |               |
|                               | $I_F = 10\text{ A}$  |             | 0.49 | -    |               |
|                               | $I_F = 30\text{ A}$  |             | 0.69 | 0.78 |               |
| Reverse current               | $V_R = 70\text{ V}$  | $I_R^{(2)}$ | 27   | -    | $\mu\text{A}$ |
|                               | $V_R = 70\text{ V}$  |             | 11   | -    | mA            |
|                               | $V_R = 100\text{ V}$ |             | 70   | 1000 | $\mu\text{A}$ |
|                               | $V_R = 100\text{ V}$ |             | 23   | 45   | 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          | VF30100S | UNIT                 |
|----------------------------|-----------------|----------|----------------------|
| Typical thermal resistance | $R_{\theta JC}$ | 4.0      | $^{\circ}\text{C/W}$ |

**ORDERING INFORMATION** (Example)

| PACKAGE   | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|-----------|----------------|-----------------|--------------|---------------|---------------|
| ITO-220AB | VF30100S-M3/4W | 1.805           | 4W           | 50/tube       | Tube          |

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

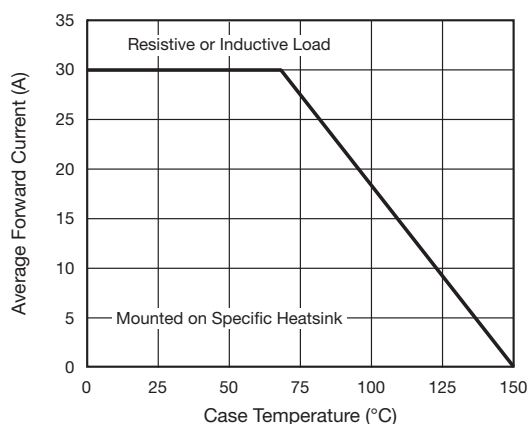


Fig. 1 - Forward Current Derating Curve

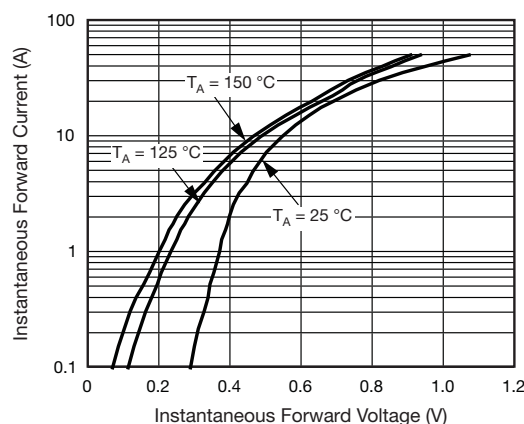


Fig. 3 - Typical Instantaneous Forward Characteristics

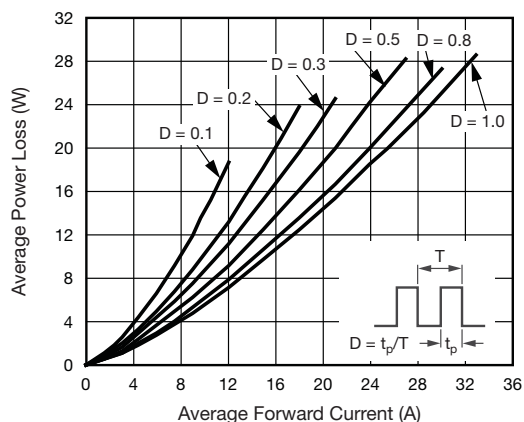


Fig. 2 - Forward Power Loss Characteristics

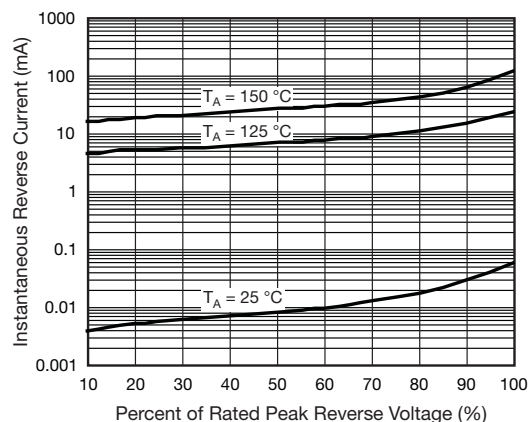


Fig. 4 - Typical Reverse Characteristics

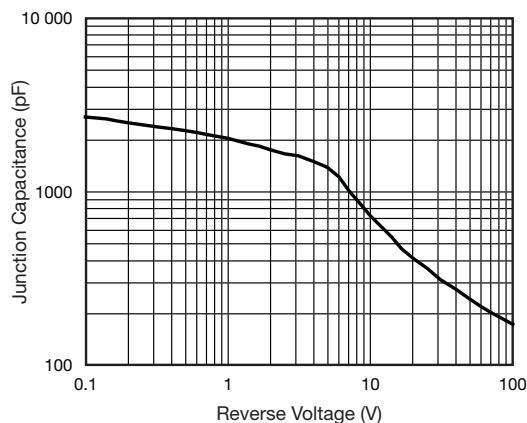


Fig. 5 - Typical Junction Capacitance

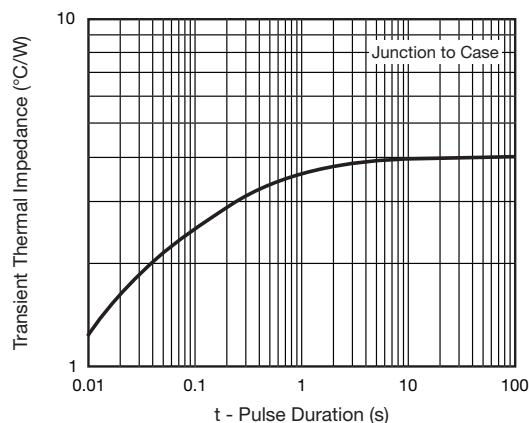
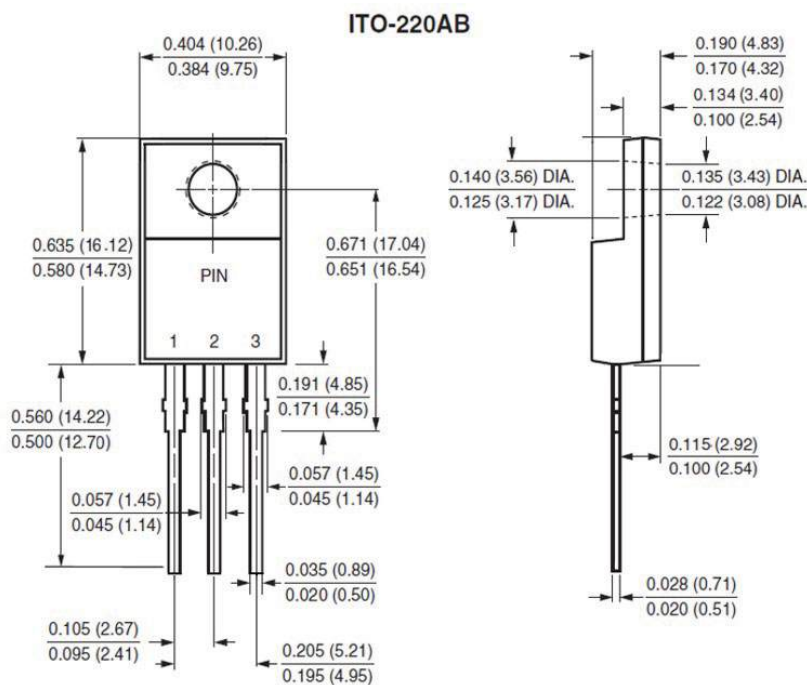


Fig. 6 - Typical Transient Thermal Impedance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)




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