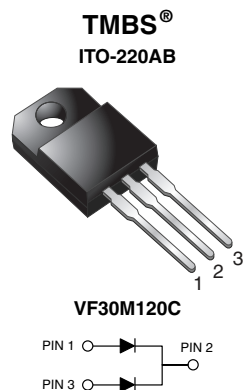


# Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.52 \text{ V}$  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 DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection.

## PRIMARY CHARACTERISTICS

|                               |                |
|-------------------------------|----------------|
| $I_{F(AV)}$                   | 2 x 15 A       |
| $V_{RRM}$                     | 120 V          |
| $I_{FSM}$                     | 150 A          |
| $V_F$ at $I_F = 15 \text{ A}$ | 0.68 V         |
| $T_J$ max.                    | 150 °C         |
| Package                       | ITO-220AB      |
| Circuit configuration         | Common cathode |

## 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         | VF30M120C   | UNIT       |
|------------------------------------------------------------------------------------|----------------|-------------|------------|
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$      | 120         | V          |
| Maximum average forward rectified current (fig. 1)                                 | $I_{F(AV)}$    | 30          | A          |
| per device                                                                         |                | 15          |            |
| per diode                                                                          |                |             |            |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 150         |            |
| Voltage rating of change (rated $V_R$ )                                            | $dV/dt$        | 10 000      | V/ $\mu$ s |
| Isolation voltage from thermal to heatsink $t = 1 \text{ min}$                     | $V_{AC}$       | 1500        | V          |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | -40 to +150 | °C         |

| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                      |                                     |      |      |               |
|------------------------------------------------------------------------------------------------|----------------------|-------------------------------------|------|------|---------------|
| PARAMETER                                                                                      | TEST CONDITIONS      | SYMBOL                              | TYP. | MAX. | UNIT          |
| Instantaneous forward voltage per diode                                                        | $I_F = 5\text{ A}$   | $V_F^{(1)}$                         | 0.60 | -    | V             |
|                                                                                                | $I_F = 7.5\text{ A}$ |                                     | 0.67 | -    |               |
|                                                                                                | $I_F = 15\text{ A}$  |                                     | 0.87 | 0.98 |               |
|                                                                                                | $I_F = 5\text{ A}$   | $T_A = 125\text{ }^{\circ}\text{C}$ | 0.52 | -    |               |
|                                                                                                | $I_F = 7.5\text{ A}$ |                                     | 0.57 | -    |               |
|                                                                                                | $I_F = 15\text{ A}$  |                                     | 0.68 | 0.76 |               |
| Reverse current per diode                                                                      | $V_R = 90\text{ V}$  | $T_A = 25\text{ }^{\circ}\text{C}$  | 3.5  | -    | $\mu\text{A}$ |
|                                                                                                |                      | $T_A = 125\text{ }^{\circ}\text{C}$ | 2    | -    | mA            |
|                                                                                                | $V_R = 120\text{ V}$ | $T_A = 25\text{ }^{\circ}\text{C}$  | -    | 800  | $\mu\text{A}$ |
|                                                                                                |                      | $T_A = 125\text{ }^{\circ}\text{C}$ | 5    | 27   | mA            |

**Notes**

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

(2) Pulse test: Pulse width  $\leq 20\text{ ms}$ 

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                 |           |                      |
|---------------------------------------------------------------------------------------------|-----------------|-----------|----------------------|
| PARAMETER                                                                                   | SYMBOL          | VF30M120C | UNIT                 |
| Typical thermal resistance per diode                                                        | $R_{\theta JC}$ | 4.5       | $^{\circ}\text{C/W}$ |

| <b>ORDERING INFORMATION</b> (Example) |                 |                 |              |               |               |
|---------------------------------------|-----------------|-----------------|--------------|---------------|---------------|
| PACKAGE                               | PREFERRED P/N   | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| ITO-220AB                             | VF30M120C-M3/4W | 1.75            | 4W           | 50/tube       | Tube          |

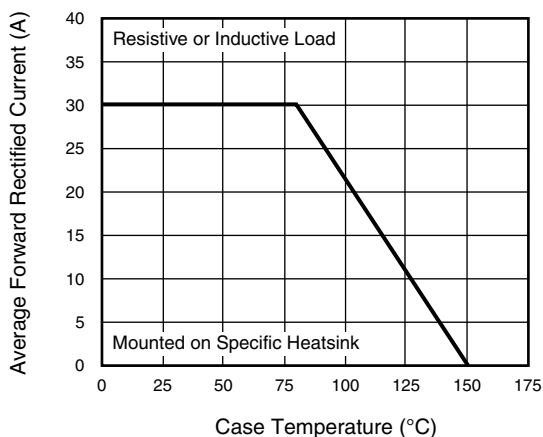
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

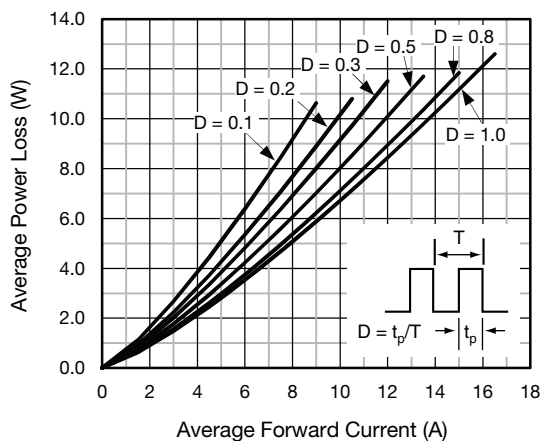


Fig. 2 - Forward Power Loss Characteristics Per Diode

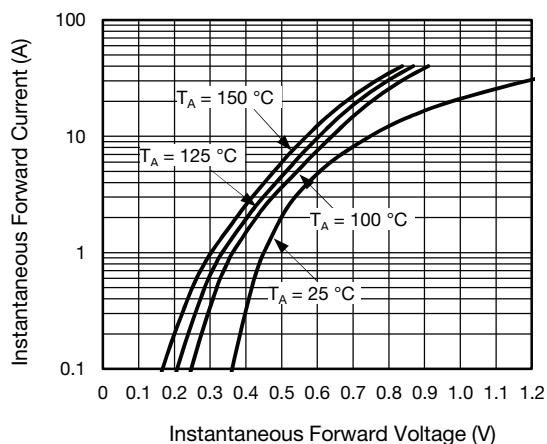


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

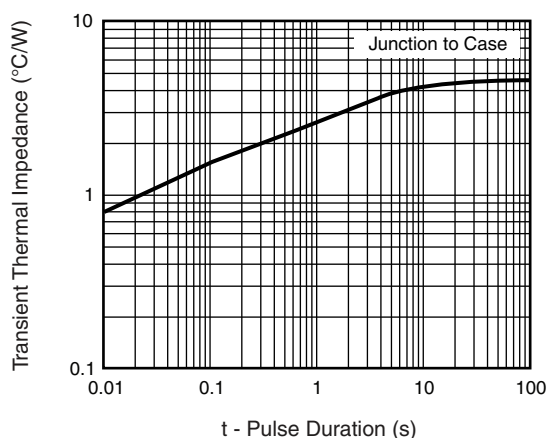


Fig. 6 - Typical Transient Thermal Impedance Per Diode

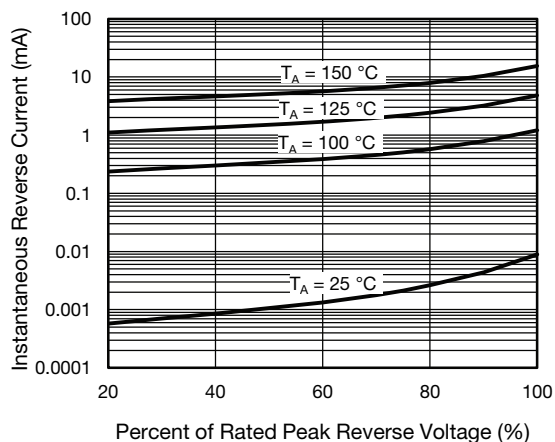


Fig. 4 - Typical Reverse Characteristics Per Diode

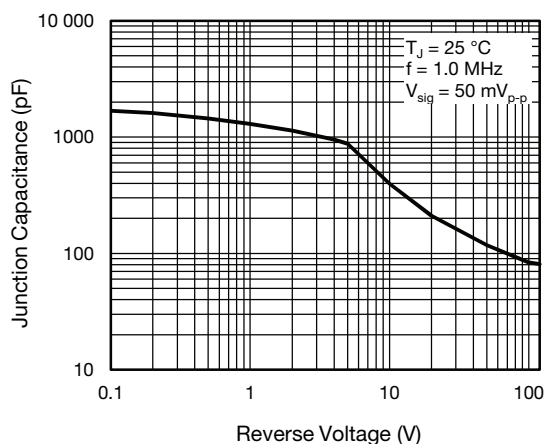
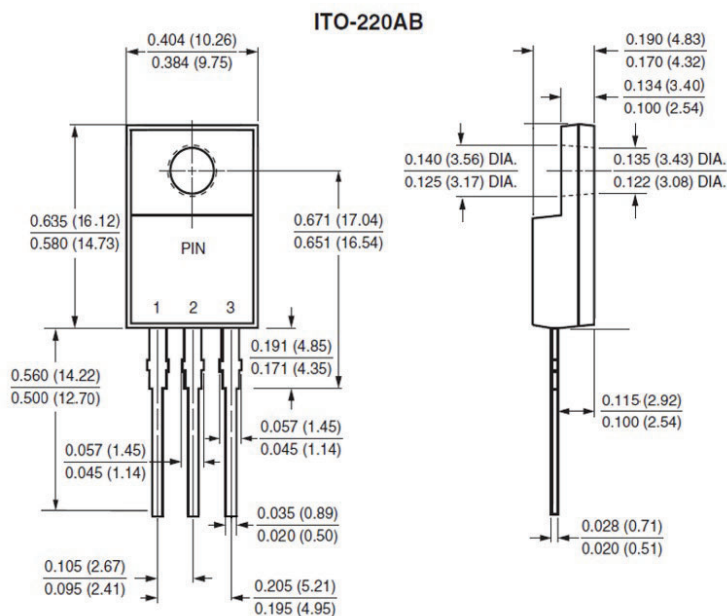


Fig. 5 - Typical Junction Capacitance Per Diode



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





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