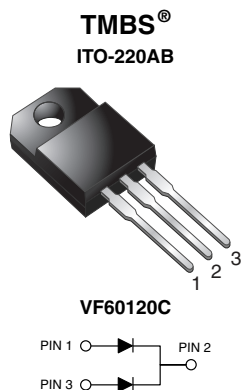


# Dual High-Voltage Trench MOS Barrier Schottky Rectifier

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
- Low thermal resistance
- 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.

## PRIMARY CHARACTERISTICS

|                              |                     |
|------------------------------|---------------------|
| $I_{F(AV)}$                  | 2 x 30 A            |
| $V_{RRM}$                    | 120 V               |
| $I_{FSM}$                    | 300 A               |
| $V_F$ at $I_F = 30\text{ A}$ | 0.71 V              |
| $T_J$ max.                   | 150 °C              |
| Package                      | ITO-220AB           |
| Diode variation              | Dual 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         | VF60120C    | UNIT       |
|----------------------------------------------------------------------------------------------|----------------|-------------|------------|
| Maximum repetitive peak reverse voltage                                                      | $V_{RRM}$      | 120         | V          |
| Maximum average forward rectified current (fig. 1)                                           | $I_{F(AV)}$    | 60          | A          |
|                                                                                              |                | 30          |            |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$      | 300         | A          |
| Isolation voltage from terminal to heatsink $t = 1\text{ min}$                               | $V_{AC}$       | 1500        | V          |
| Voltage rate of change (rated $V_F$ )                                                        | $dV/dt$        | 10 000      | V/ $\mu$ s |
| Operating junction and storage temperature range                                             | $T_J, T_{STG}$ | -40 to +150 | °C         |

| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °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> | 0.48 | -    | V    |
|                                                                            | I <sub>F</sub> = 15 A  |                         |                               | 0.66 | -    |      |
|                                                                            | I <sub>F</sub> = 30 A  |                         |                               | 0.88 | 0.95 |      |
|                                                                            | I <sub>F</sub> = 5 A   | T <sub>A</sub> = 125 °C |                               | 0.41 | -    |      |
|                                                                            | I <sub>F</sub> = 15 A  |                         |                               | 0.58 | -    |      |
|                                                                            | I <sub>F</sub> = 30 A  |                         |                               | 0.71 | 0.75 |      |
| Reverse current at rated V <sub>R</sub> per diode                          | V <sub>R</sub> = 90 V  | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 14   | -    | μA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 11   | -    | mA   |
|                                                                            | V <sub>R</sub> = 120 V | T <sub>A</sub> = 25 °C  |                               | 40   | 500  | μA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 15   | 45   | 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          | VF60120C | UNIT                 |
| Typical thermal resistance                                                                  | per diode  | $R_{\theta JC}$ | 5.0      | $^{\circ}\text{C/W}$ |
|                                                                                             | per device |                 | 3.8      |                      |

| <b>ORDERING INFORMATION</b> (Example) |                |                 |              |               |               |
|---------------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE                               | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| ITO-220AB                             | VF60120C-M3/4W | 1.76            | 4W           | 50/tube       | Tube          |

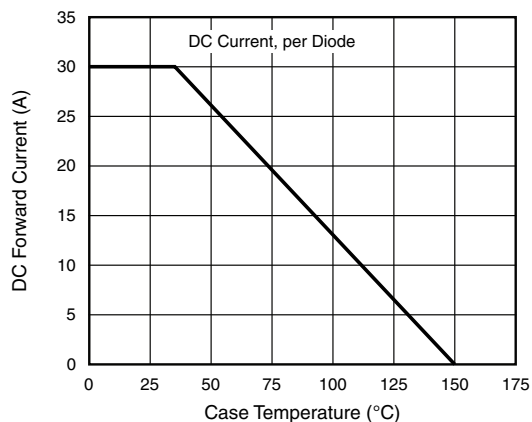
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

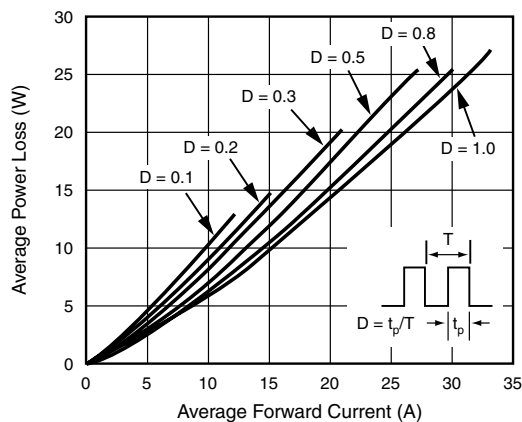


Fig. 2 - Forward Power Loss Characteristics Per Diode

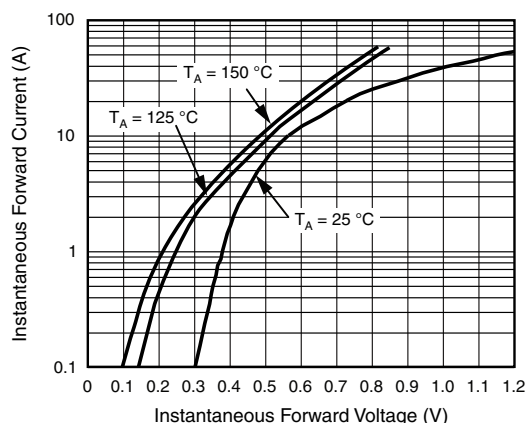


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

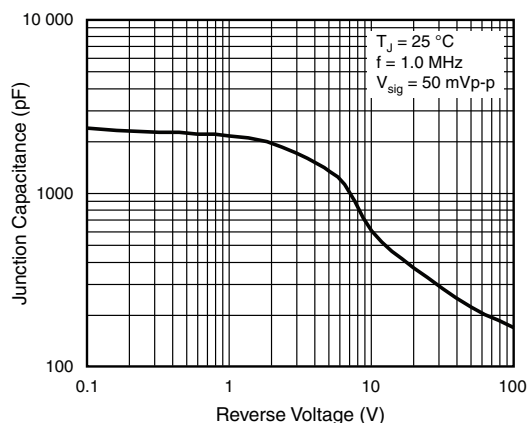


Fig. 5 - Typical Junction Capacitance Per Diode

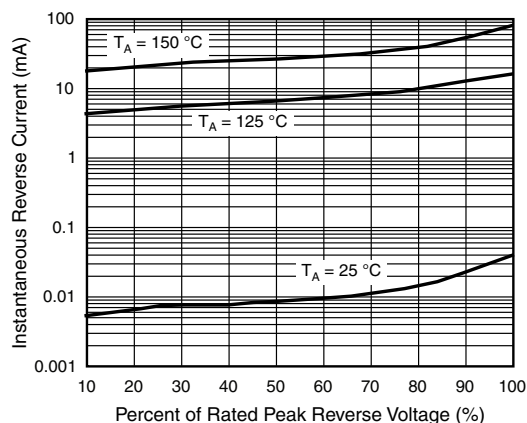
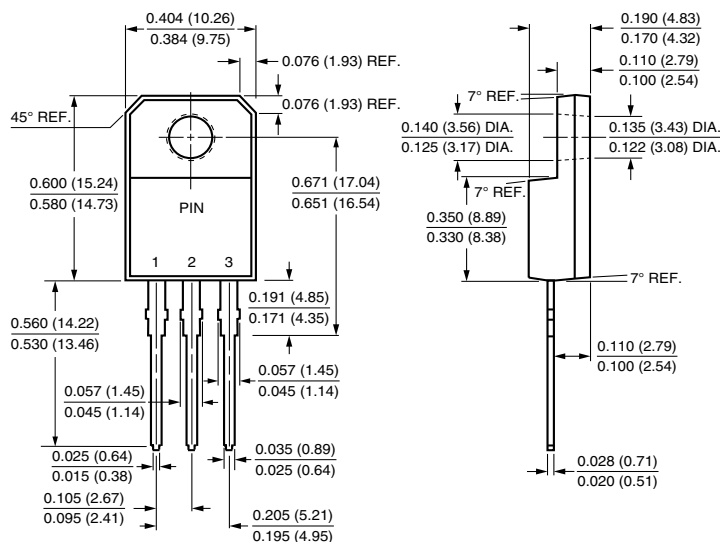


Fig. 4 - Typical Reverse Characteristics Per Diode

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### ITO-220AB





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