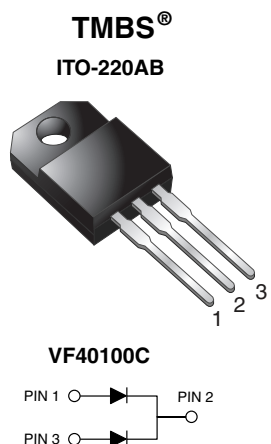


# Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.38\text{ V}$  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.

## MECHANICAL DATA

**Case:** ITO-220AB

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, commercial grade  
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      |                |
|------------------------------|----------------|
| $I_{F(AV)}$                  | 2 x 20 A       |
| $V_{RRM}$                    | 100 V          |
| $I_{FSM}$                    | 250 A          |
| $V_F$ at $I_F = 20\text{ A}$ | 0.61 V         |
| $T_J$ max.                   | 150 °C         |
| Package                      | ITO-220AB      |
| Circuit configuration        | Common cathode |

| MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)                               |             |             |            |
|----------------------------------------------------------------------------------------------|-------------|-------------|------------|
| PARAMETER                                                                                    | SYMBOL      | VF40100C    | UNIT       |
| Maximum repetitive peak reverse voltage                                                      | $V_{RRM}$   | 100         | V          |
| Maximum average forward rectified current<br>(fig. 1)                                        | $I_{F(AV)}$ | 40<br>20    | A          |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$   | 250         | A          |
| Voltage rate of change (rated $V_R$ )                                                        | $dV/dt$     | 10 000      | V/ $\mu$ s |
| Isolation voltage from terminal to heatsink $t = 1\text{ min}$                               | $V_{AC}$    | 1500        | V          |
| Operating junction temperature range                                                         | $T_J$       | -40 to +150 | °C         |
| Storage temperature range                                                                    | $T_{stg}$   | -55 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> | 0.47 | -    | V    |
|                                                                            | I <sub>F</sub> = 10 A  |                         |                               | 0.54 | -    |      |
|                                                                            | I <sub>F</sub> = 20 A  |                         |                               | 0.67 | 0.73 |      |
|                                                                            | I <sub>F</sub> = 5 A   | T <sub>A</sub> = 125 °C |                               | 0.38 | -    |      |
|                                                                            | I <sub>F</sub> = 10 A  |                         |                               | 0.45 | -    |      |
|                                                                            | I <sub>F</sub> = 20 A  |                         |                               | 0.61 | 0.67 |      |
| Reverse current at rated V <sub>R</sub> per diode                          | V <sub>R</sub> = 70 V  | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 9    | -    | μA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 10   | -    | mA   |
|                                                                            | V <sub>R</sub> = 100 V | T <sub>A</sub> = 25 °C  |                               | -    | 1000 | μA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 21   | 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          | VF40100C | UNIT                 |
| Typical thermal resistance per diode                                                        | $R_{\theta JC}$ | 4.0      | $^{\circ}\text{C/W}$ |

| <b>ORDERING INFORMATION</b> (Example) |                |                 |              |               |               |
|---------------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE                               | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| ITO-220AB                             | VF40100C-M3/4W | 1.75            | 4W           | 50/tube       | Tube          |
| ITO-220AB                             | VF40100C-E3/4W | 1.75            | 4W           | 50/tube       | Tube          |

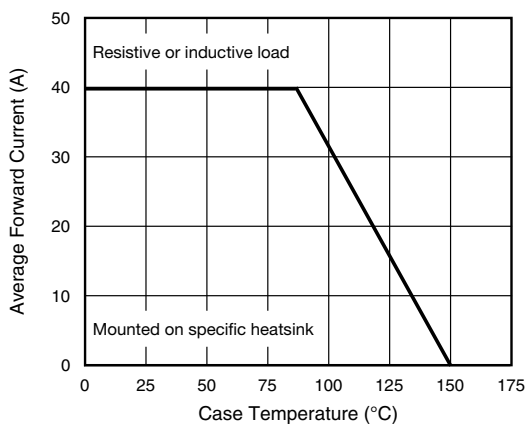
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

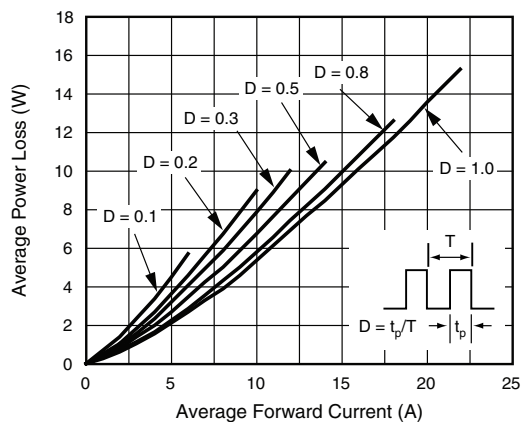


Fig. 2 - Forward Power Loss Characteristics Per Diode

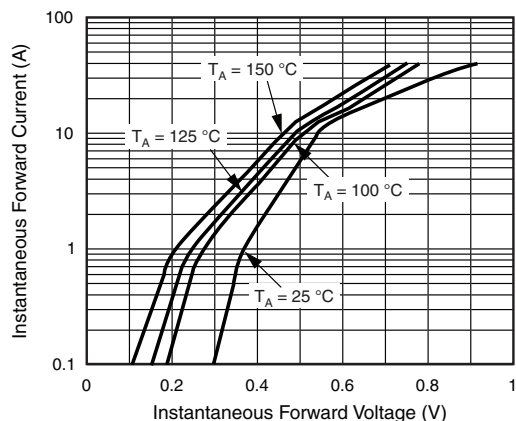


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

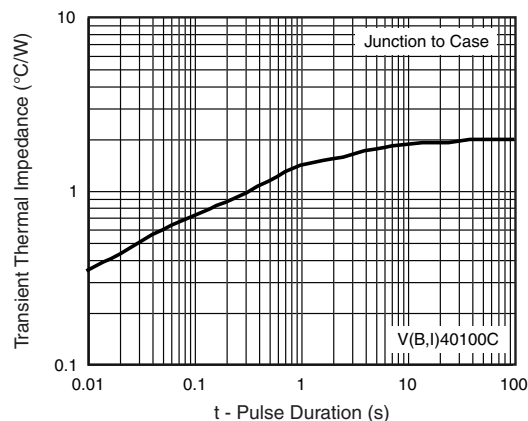


Fig. 6 - Typical Transient Thermal Impedance Per Diode

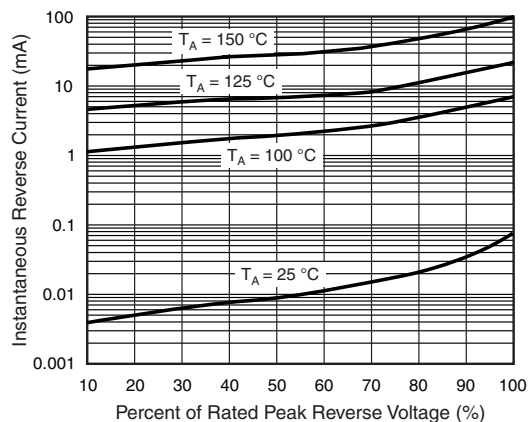


Fig. 4 - Typical Reverse Characteristics Per Diode

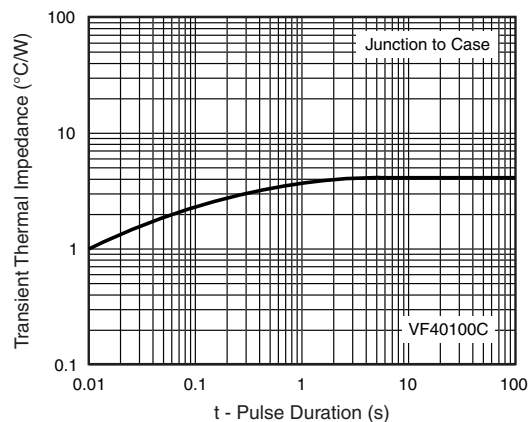


Fig. 7 - Typical Transient Thermal Impedance Per Diode

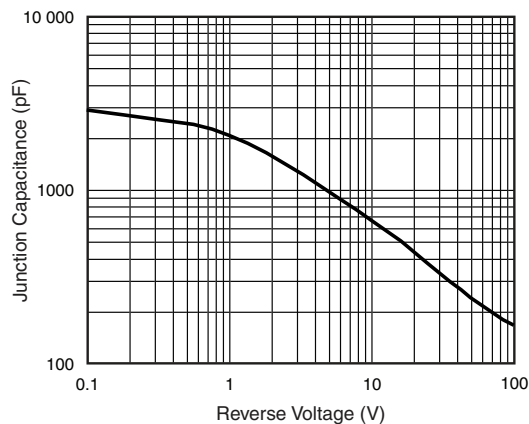
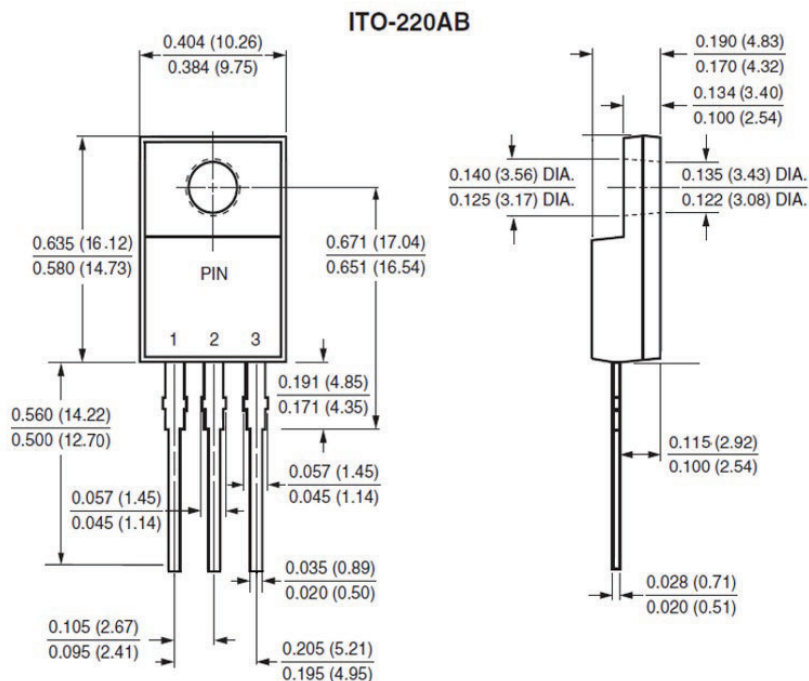


Fig. 5 - Typical Junction Capacitance Per Diode

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




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