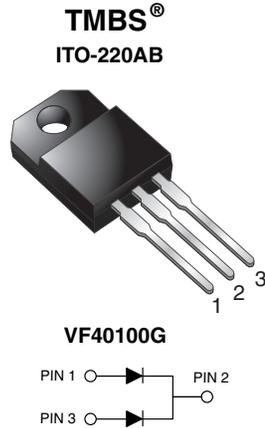


Dual High-Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low $V_F = 0.42\text{ V}$ 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 maximum, 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.

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 | |
|------------------------------|----------------|
| $I_{F(AV)}$ | 2 x 20 A |
| V_{RRM} | 100 V |
| I_{FSM} | 200 A |
| V_F at $I_F = 20\text{ A}$ | 0.67 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 | VF40100G | UNIT |
| Maximum repetitive peak reverse voltage | V_{RRM} | 100 | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | per device | 40 |
| | | per diode | 20 |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | I_{FSM} | 200 | A |
| Voltage rate of change (rated V_R) | dV/dt | 10 000 | V/ μ s |
| Isolation voltage from terminal to heatsink t = 1 min | V_{AC} | 1500 | V |
| Operating junction and storage temperature range | T_J, T_{STG} | -40 to +150 | °C |

| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | |
|---|----------------------|-----------------------------------|----------|----------|------|---------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Breakdown voltage | $I_R = 1\text{ mA}$ | $T_A = 25\text{ }^\circ\text{C}$ | V_{BR} | 100 min. | - | V |
| Instantaneous forward voltage per diode ⁽¹⁾ | $I_F = 5\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$ | V_F | 0.49 | - | |
| | $I_F = 10\text{ A}$ | | | 0.59 | - | |
| | $I_F = 20\text{ A}$ | | | 0.75 | 0.81 | |
| | $I_F = 5\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ | | 0.42 | - | |
| | $I_F = 10\text{ A}$ | | | 0.54 | - | |
| $I_F = 20\text{ A}$ | 0.67 | | 0.73 | | | |
| Reverse current per diode ⁽²⁾ | $V_R = 70\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$ | I_R | 12 | - | μA |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 8 | - | mA |
| | $V_R = 100\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$ | | 55 | 500 | μA |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 21 | 35 | 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 | VF40100G | UNIT |
| Typical thermal resistance per diode | $R_{\theta JC}$ | 5.0 | $^\circ\text{C/W}$ |

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| ITO-220AB | VF40100G-M3/4W | 1.75 | 4W | 50/tube | Tube |

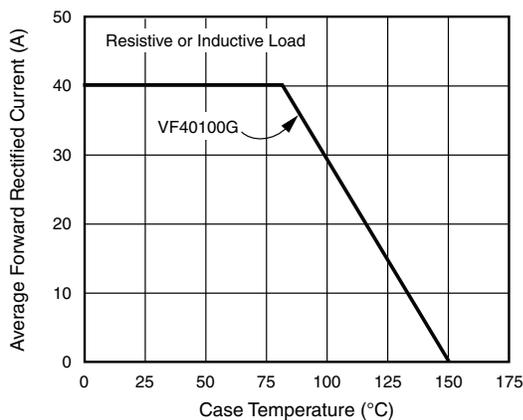
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

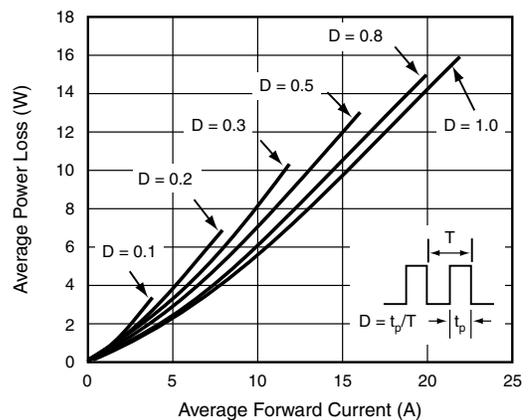


Fig. 2 - Forward Power Loss Characteristics

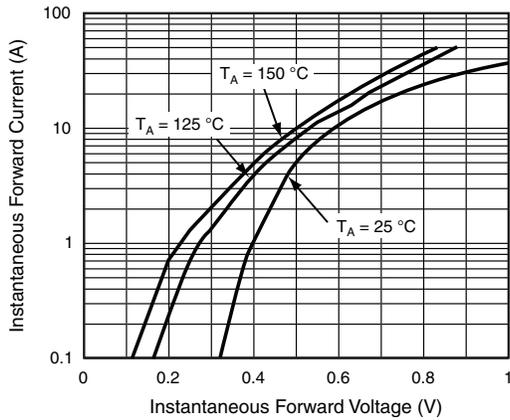


Fig. 3 - Typical Instantaneous Forward Characteristics

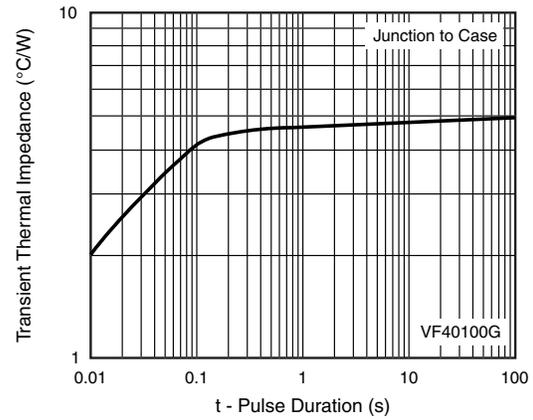


Fig. 6 - Typical Transient Thermal Impedance

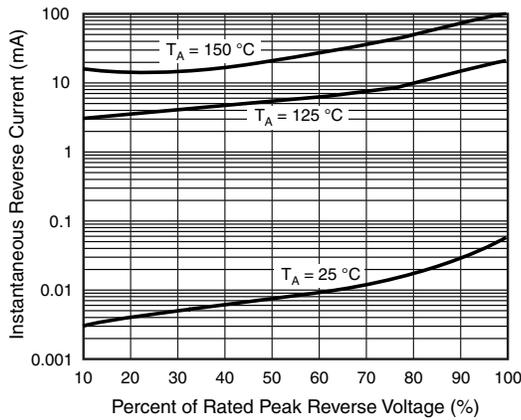


Fig. 4 - Typical Reverse Characteristics

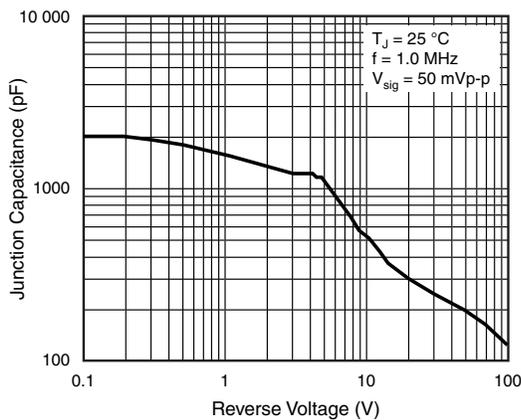
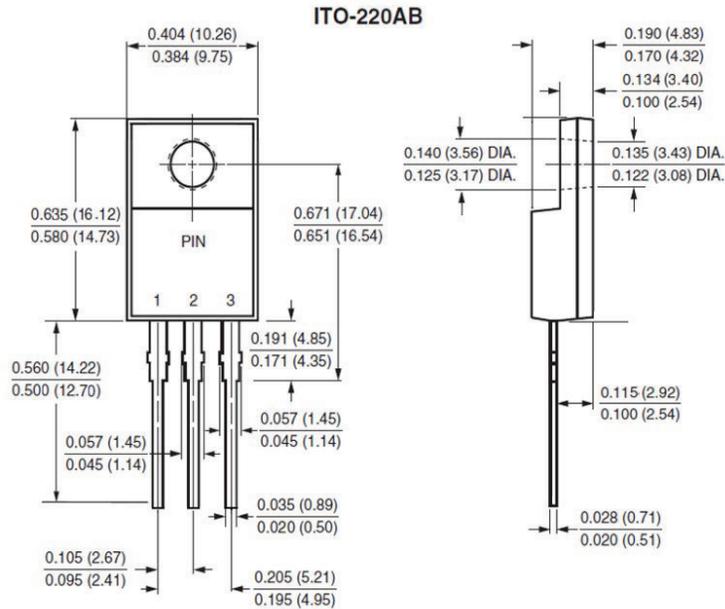


Fig. 5 - Typical Junction Capacitance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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