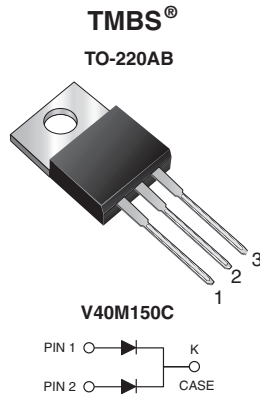


Dual High-Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low $V_F = 0.55 \text{ V}$ 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


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.

MECHANICAL DATA

Case: TO-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} | 150 V |
| I_{FSM} | 160 A |
| V_F at $I_F = 20 \text{ A}$ ($T_A = 125 \text{ °C}$) | 0.75 V |
| T_J max. | 175 °C |
| Package | TO-220AB |
| Diode variations | Common cathode |

| MAXIMUM RATINGS ($T_A = 25 \text{ °C}$ unless otherwise noted) | | | |
|--|----------------|-------------|------|
| PARAMETER | SYMBOL | V40M150C | UNIT |
| Maximum repetitive peak reverse voltage | V_{RRM} | 150 | V |
| Maximum average forward rectified current (fig. 1) | | 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} | 160 | A |
| Operating junction and storage temperature range | T_J, T_{STG} | -40 to +175 | °C |

| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | |
|--|----------------------|-----------------------------------|-------------|------|------|---------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage per diode | $I_F = 5\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 0.69 | - | V |
| | $I_F = 10\text{ A}$ | | | 0.84 | - | |
| | $I_F = 20\text{ A}$ | | | 1.15 | 1.43 | |
| | $I_F = 5\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ | | 0.55 | - | |
| | $I_F = 10\text{ A}$ | | | 0.64 | - | |
| | $I_F = 20\text{ A}$ | | | 0.75 | 0.82 | |
| Reverse current per diode | $V_R = 100\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$ | $I_R^{(2)}$ | 2 | - | μA |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 2.5 | - | mA |
| | $V_R = 150\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$ | | - | 250 | μA |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 5 | 25 | mA |

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
 (2) Pulse test: Pulse width $\leq 5\text{ ms}$

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | |
|---|------------|-----------------------|----------|--------------------|
| PARAMETER | | SYMBOL | V40M150C | UNIT |
| Typical thermal resistance (1) | per diode | $R_{\theta JC}$ | 1.8 | $^\circ\text{C/W}$ |
| | per device | | 1.2 | |
| | per device | $R_{\theta JA}^{(2)}$ | 52 | |

Notes

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient $dP_D/dT_J < 1/R_{\theta JA}$
 (2) Free air, without heatsink

| ORDERING INFORMATION (Example) | | | | | |
|---------------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB | V40M150C-M3/4W | 1.89 | 4W | 50/tube | Tube |

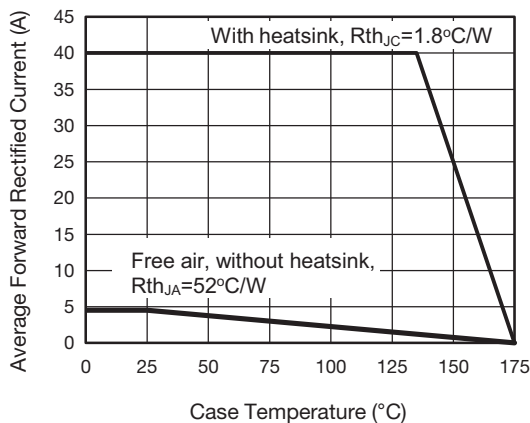
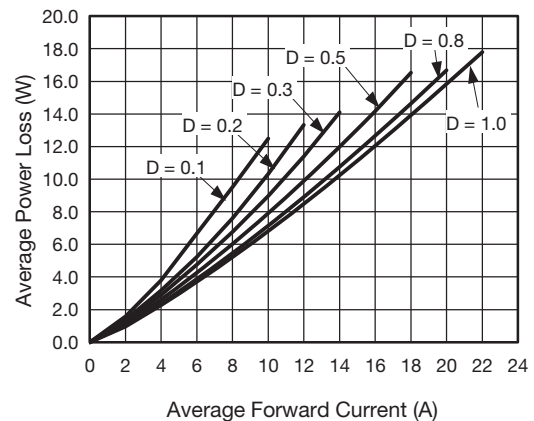
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

 Fig. 1 - Maximum Forward Current Derating Curve
 ($D = \text{Duty Cycle} = 0.5$)


Fig. 2 - Forward Power Loss Characteristics Per Diode

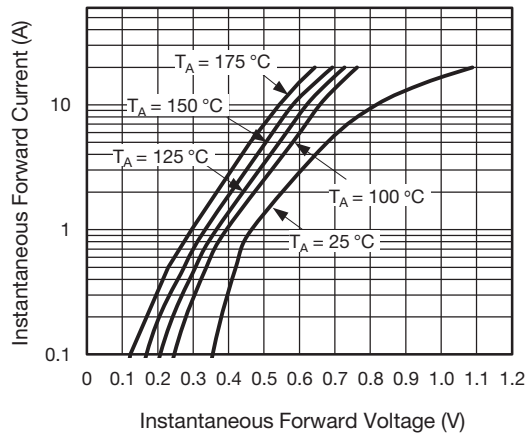


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

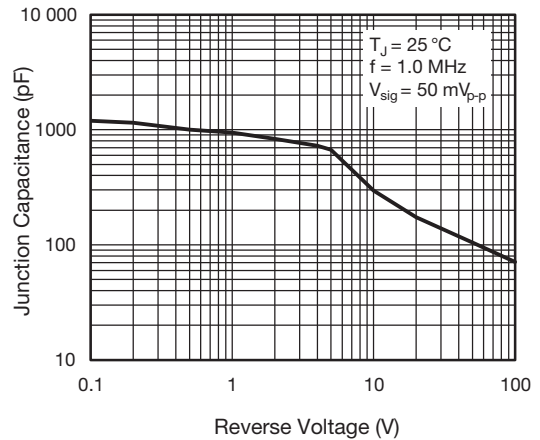


Fig. 5 - Typical Junction Capacitance Per Diode

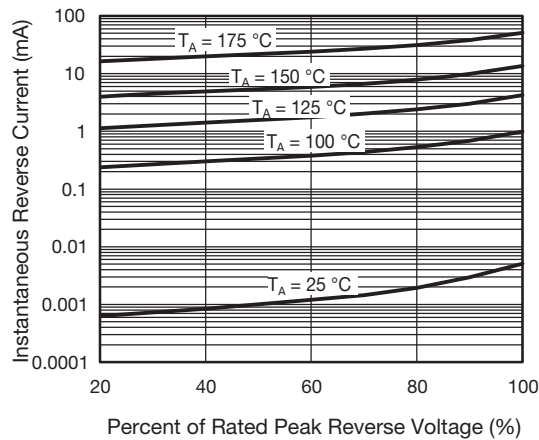


Fig. 4 - Typical Reverse Characteristics Per Diode

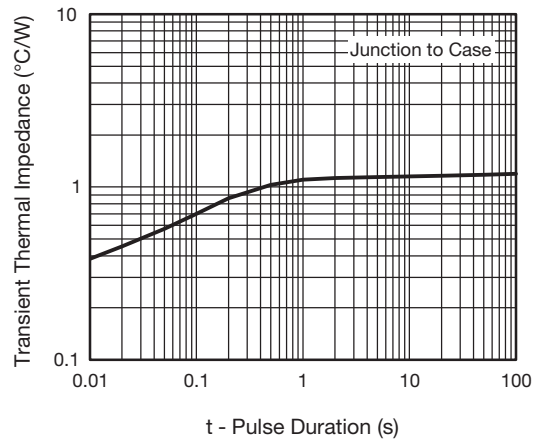
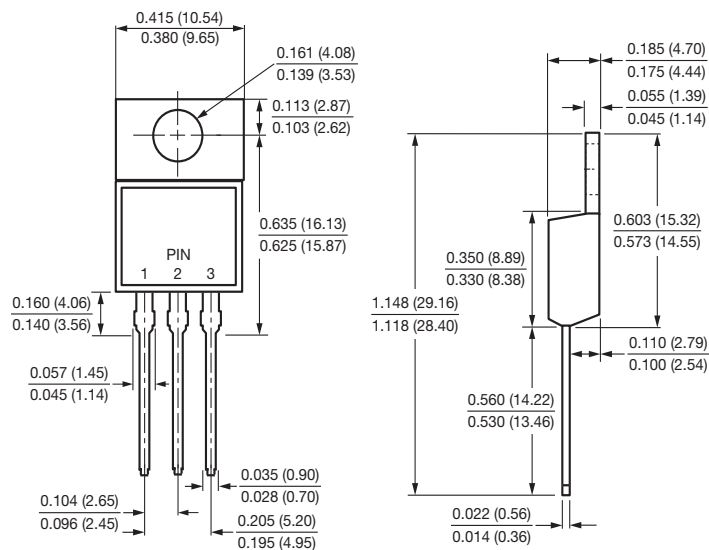


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB





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