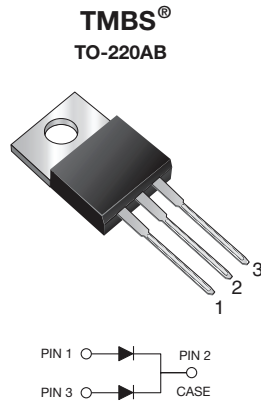


Dual High Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low $V_F = 0.41\text{ V}$ at $I_F = 5\text{ A}$


| PRIMARY CHARACTERISTICS | |
|---------------------------------------|----------------|
| $I_{F(AV)}$ | 2 x 20 A |
| V_{RRM} | 120 V |
| I_{FSM} | 250 A |
| V_F at $I_F = 20\text{ A}$ (125 °C) | 0.62 V |
| T_J max. | 150 °C |
| Package | TO-220AB |
| Diode variation | Common cathode |

FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Solder bath temperature 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: 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

| MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | |
|--|----------------------|-------------|------|
| PARAMETER | SYMBOL | V40120CI | UNIT |
| Maximum repetitive peak reverse voltage | V_{RRM} | 120 | 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} | 250 | A |
| Operating junction temperature range | T_J ⁽¹⁾ | -40 to +150 | °C |
| Storage temperature range | T_{STG} | -55 to +150 | |

Note

⁽¹⁾ The heat generated must be less than the thermal conductivity from junction to ambient: $dP_D/dT_J < 1/R_{\theta JA}$



| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | |
|--|----------------------|-----------------------------------|-------------|------|------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage per diode | $I_F = 5\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 0.48 | - | V |
| | $I_F = 10\text{ A}$ | | | 0.57 | - | |
| | $I_F = 20\text{ A}$ | | | 0.74 | 0.82 | |
| | $I_F = 5\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ | | 0.41 | - | |
| | $I_F = 10\text{ A}$ | | | 0.52 | - | |
| | $I_F = 20\text{ A}$ | | | 0.62 | 0.70 | |
| Reverse current per diode | $V_R = 90\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$ | $I_R^{(2)}$ | 0.01 | - | mA |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 9.0 | - | |
| | $V_R = 120\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$ | | - | 0.7 | |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 20.0 | 38 | |
| Junction capacitance | 4 V, 1MHz | | C_J | 2400 | - | pF |

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 | V40120CI | UNIT |
| Typical thermal resistance per device | $R_{\theta JC}$ | 1.7 | $^\circ\text{C/W}$ |

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|--------------|---------------|---------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| V40120CI-M3/P | 1.88 | P | 50/tube | Tube |

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

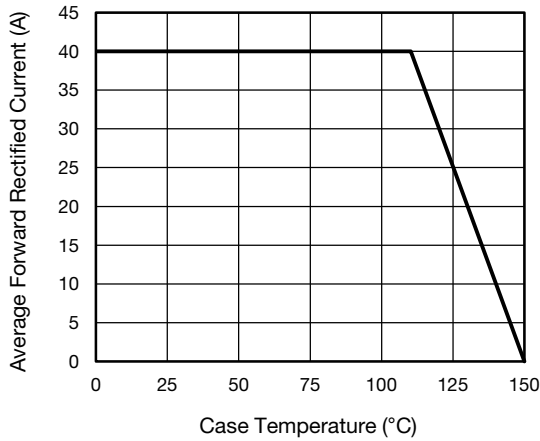


Fig. 1 - Forward Current Derating Curve

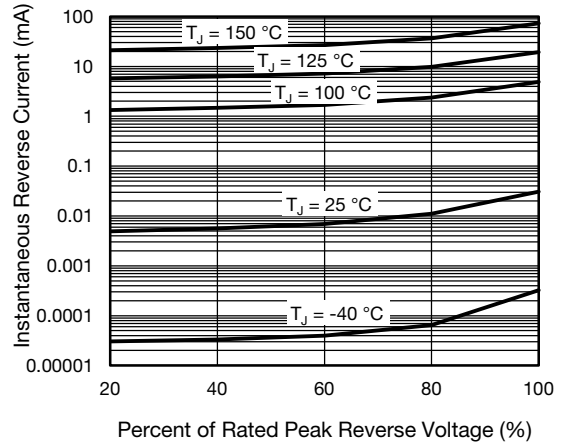


Fig. 4 - Typical Reverse Characteristics Per Diode

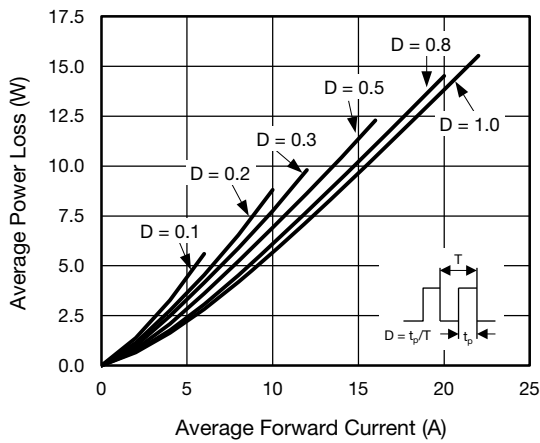


Fig. 2 - Forward Power Loss Characteristics Per Diode

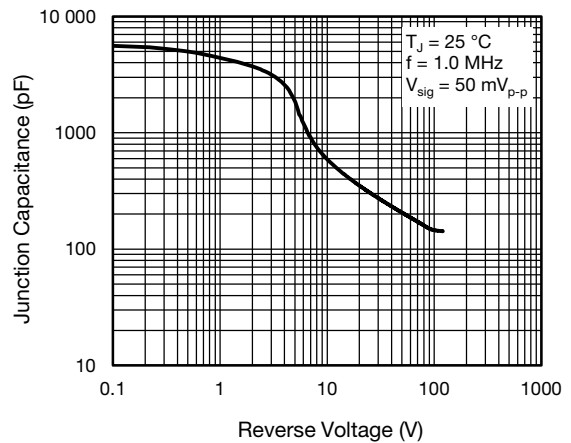


Fig. 5 - Typical Junction Capacitance

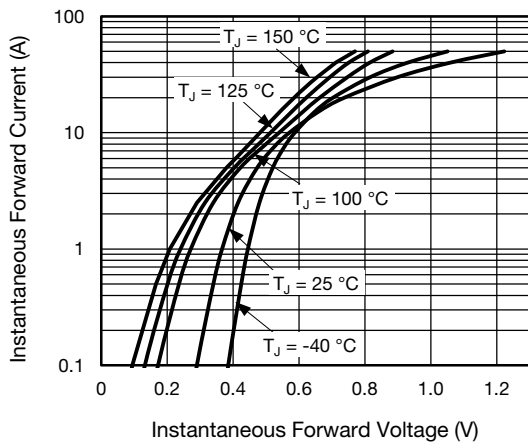


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

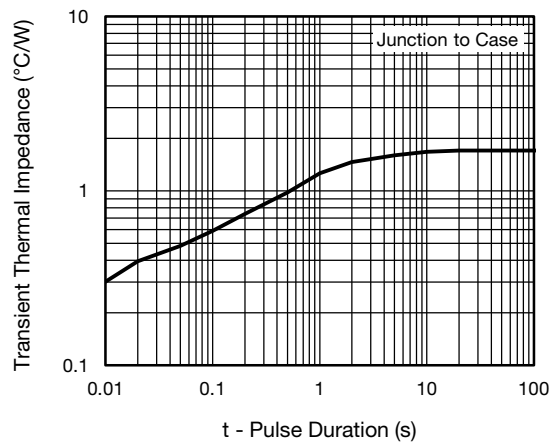
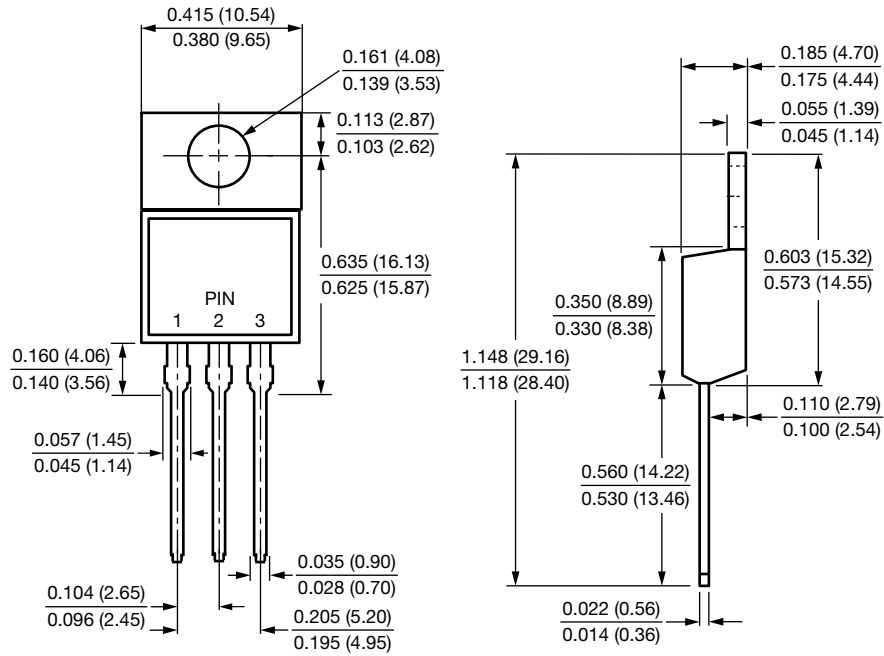


Fig. 6 - Typical Transient Thermal Impedance Per Device



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB





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