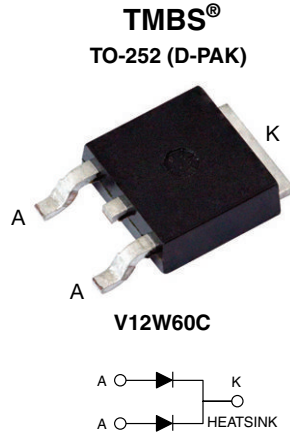


Dual Trench MOS Barrier Schottky Rectifier

 Ultra Low $V_F = 0.38\text{ V}$ at $I_F = 3\text{ A}$


RoHS
COMPLIANT
HALOGEN
FREE

FEATURES

- Trench MOS Schottky technology
- Ideal for automated placement
- Low forward voltage drop, low power losses
- High efficiency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

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-252 (D-PAK)

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

| PRIMARY CHARACTERISTICS | |
|---|---------------------|
| $I_{F(AV)}$ | 2 x 6 A |
| V_{RRM} | 60 V |
| I_{FSM} | 90 A |
| V_F at $I_F = 6\text{ A}$ ($T_A = 125\text{ °C}$) | 0.47 V |
| T_J max. | 150 °C |
| Package | TO-252 (D-PAK) |
| Diode variation | Dual common cathode |

| MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | |
|--|----------------|-------------|------|
| PARAMETER | SYMBOL | V12W60C | UNIT |
| Maximum repetitive peak reverse voltage | V_{RRM} | 60 | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | per device | 12 |
| | | per diode | 6 |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | I_{FSM} | 90 | A |
| 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 |
| Instantaneous forward voltage per diode | $I_F = 3\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 0.47 | - | V |
| | $I_F = 6\text{ A}$ | | | 0.52 | 0.62 | |
| | $I_F = 3\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ | | 0.38 | - | |
| | $I_F = 6\text{ A}$ | | | 0.47 | 0.58 | |
| Reverse current per diode | $V_R = 60\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$ | $I_R^{(2)}$ | - | 3500 | μA |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 9 | 27 | 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 | V12W60C | UNIT |
| Typical thermal resistance | per diode | $R_{\theta JC}$ | 2.8 | $^\circ\text{C/W}$ |
| | per device | | 1.4 | |
| | per device | $R_{\theta JA}^{(1)(2)}$ | 65 | |

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) | | | | |
|---------------------------------------|-----------------|--------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| V12W60C-M3/I | 0.38 | I | 2500/reel | 13" diameter plastic tape and reel |

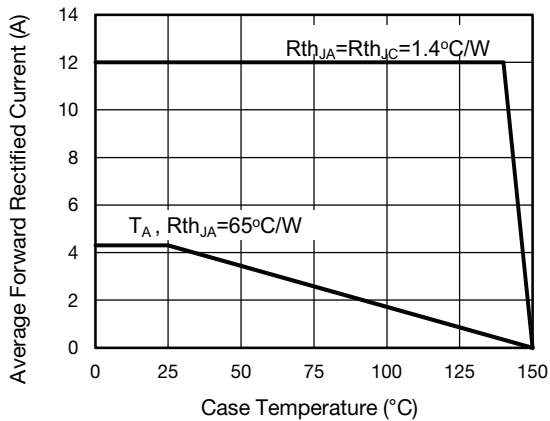
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

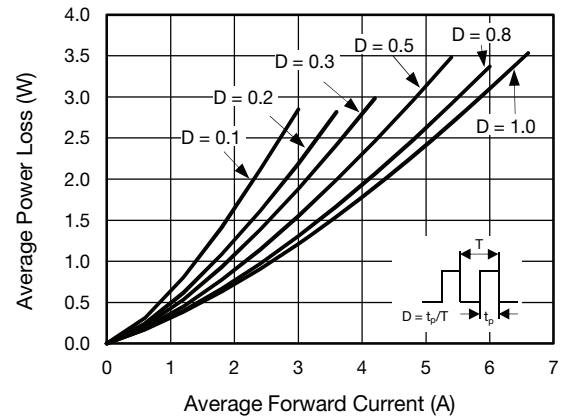


Fig. 2 - Forward Power Loss Characteristics Per Diode

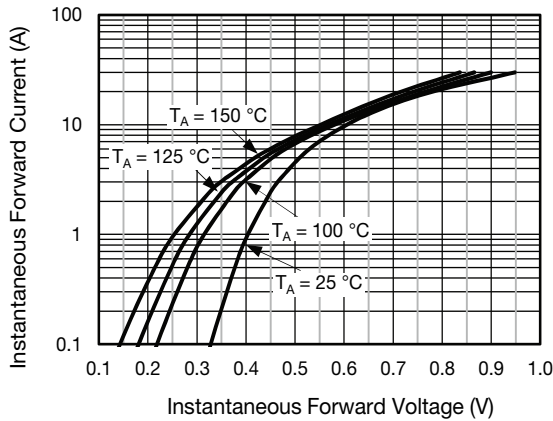


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

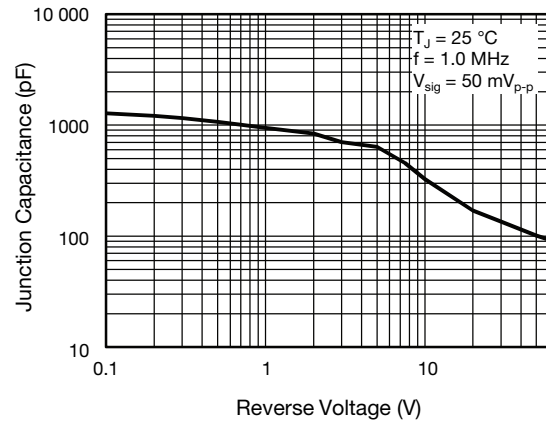


Fig. 5 - Typical Junction Capacitance Per Diode

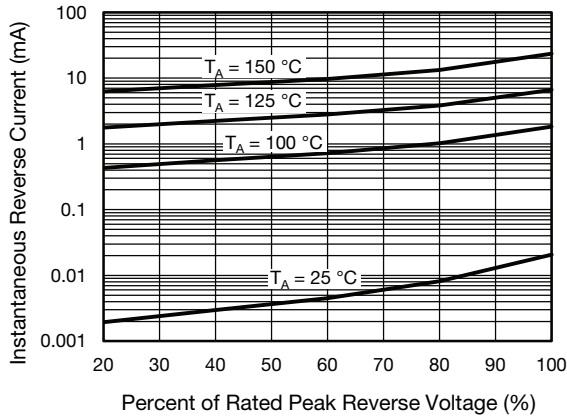


Fig. 4 - Typical Reverse Characteristics Per Diode

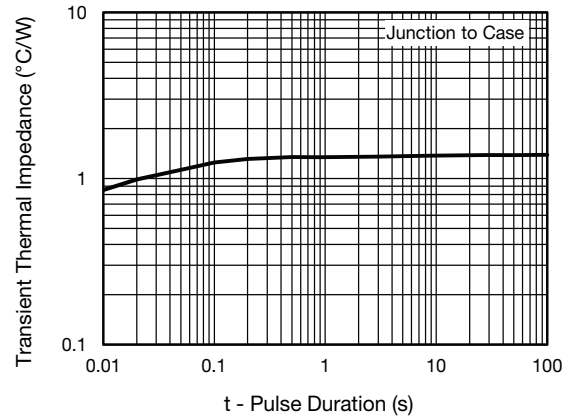
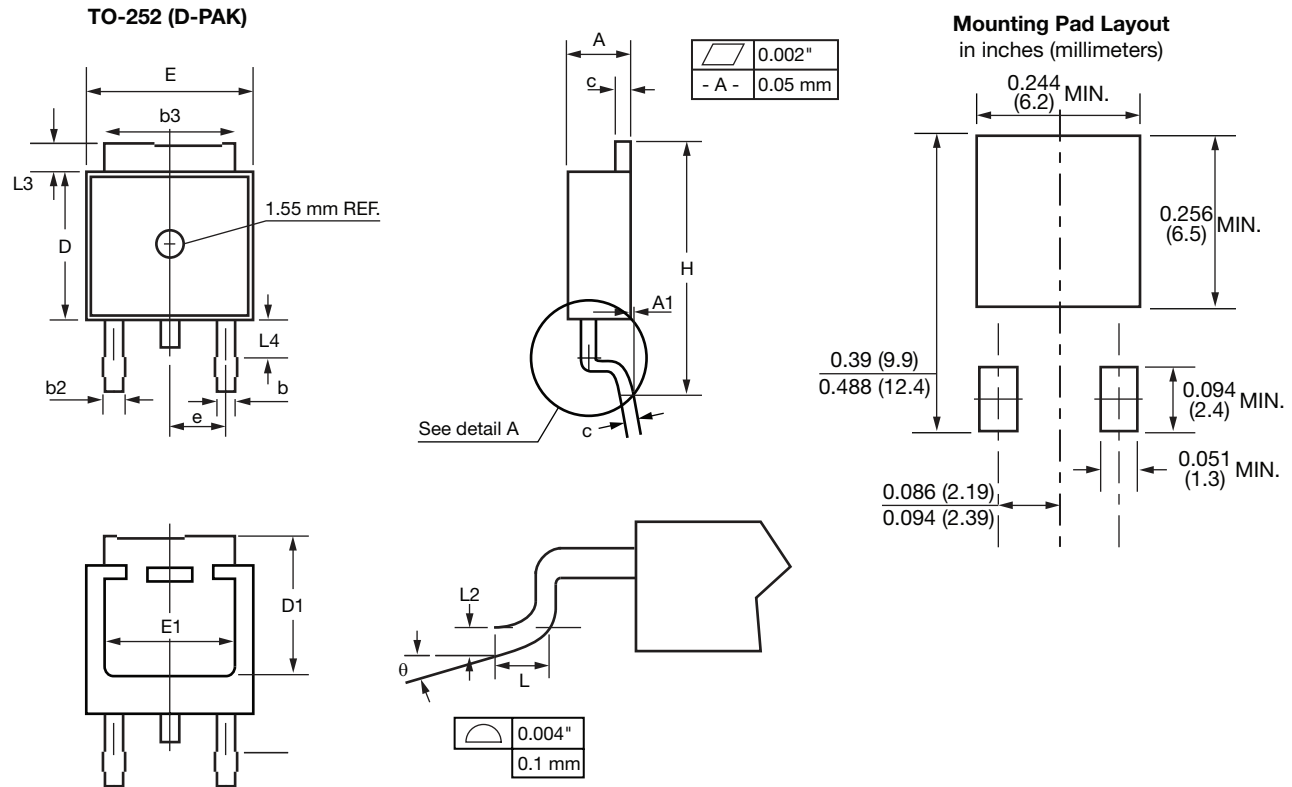


Fig. 6 - Typical Transient Thermal Impedance Per Device

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)


| SYMBOL | INCHES | | MILLIMETERS | |
|--------|------------|-------|-------------|-------|
| | MIN. | MAX. | MIN. | MAX. |
| A | 0.086 | 0.094 | 2.19 | 2.38 |
| A1 | - | 0.005 | - | 0.13 |
| b | 0.025 | 0.035 | 0.64 | 0.89 |
| b2 | 0.033 | 0.045 | 0.84 | 1.14 |
| b3 | 0.205 | 0.215 | 5.21 | 5.46 |
| c | 0.018 | 0.024 | 0.46 | 0.61 |
| D | 0.235 | 0.250 | 5.97 | 6.22 |
| D1 | 0.205 | - | 5.21 | - |
| E | 0.250 | 0.265 | 6.35 | 6.73 |
| E1 | 0.190 | - | 4.83 | - |
| e | 0.090 BSC. | | 2.29 BSC. | |
| H | 0.380 | 0.410 | 9.65 | 10.41 |
| L | 0.055 | 0.070 | 1.40 | 1.78 |
| L2 | 0.020 BSC. | | 0.51 BSC. | |
| L3 | 0.035 | 0.050 | 0.89 | 1.27 |
| L4 | 0.025 | 0.039 | 0.64 | 1.01 |
| θ | 0° | 8° | 0° | 8° |

Note

- Conforms to JEDEC TO-252 variation AA except dimension "D"



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