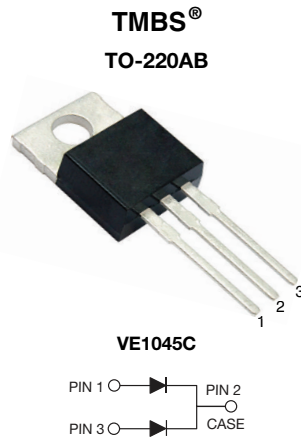


Dual Low-Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low $V_F = 0.37\text{ V}$ at $I_F = 2.5\text{ A}$


FEATURES

- Power pack
- 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

TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching power supplies, freewheeling diodes, DC/DC converters, and polarity protection application.

MECHANICAL DATA

Case: TO-220AB

 Molding compound meets UL 94 V-0 flammability rating
 Base P/N-E3 - RoHS-compliant, commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS

| | |
|---|----------------|
| $I_{F(AV)}$ | 2 x 5.0 A |
| V_{RRM} | 45 V |
| I_{FSM} | 70 A |
| V_F at $I_F = 5.0\text{ A}$ ($T_A = 125\text{ °C}$) | 0.47 V |
| T_J max. | 150 °C |
| Package | TO-220AB |
| Diode variations | Common cathode |

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)

| PARAMETER | SYMBOL | VE1045C-E3 | UNIT |
|--|----------------|-------------|------|
| Maximum repetitive peak reverse voltage | V_{RRM} | 45 | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | per device | 10 |
| | | per diode | 5.0 |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | I_{FSM} | 70 | A |
| Operating junction and storage temperature range | T_J, T_{STG} | -40 to +150 | °C |

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ °C}$ unless otherwise noted)

| PARAMETER | TEST CONDITIONS | SYMBOL | TYP. | MAX. | UNIT |
|---|--|---|------|------|---------------|
| Instantaneous forward voltage per diode | $I_F = 2.5\text{ A}$ $I_F = 5.0\text{ A}$ | $T_A = 25\text{ °C}$ | 0.47 | - | V |
| | | | 0.54 | 0.62 | |
| | $I_F = 2.5\text{ A}$ $I_F = 5.0\text{ A}$ | $T_A = 125\text{ °C}$ | 0.37 | - | |
| | | | 0.47 | 0.56 | |
| Reverse current per diode | $V_R = 45\text{ V}$ | $T_A = 25\text{ °C}$ $T_A = 125\text{ °C}$ | - | 250 | μA |
| | | | 3 | 10 | 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 | VE1045C-E3 | UNIT |
| Typical thermal resistance | per diode | $R_{\theta JC}$ | 4.0 | $^\circ\text{C/W}$ |
| | per device | | 2.5 | |
| | per device | $R_{\theta JA}^{(1)(2)}$ | 55 | |

Notes

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

| ORDERING INFORMATION (Example) | | | | | |
|---------------------------------------|---------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB | VE1045C-E3/45 | 1.93 | 45 | 50/tube | Tube |

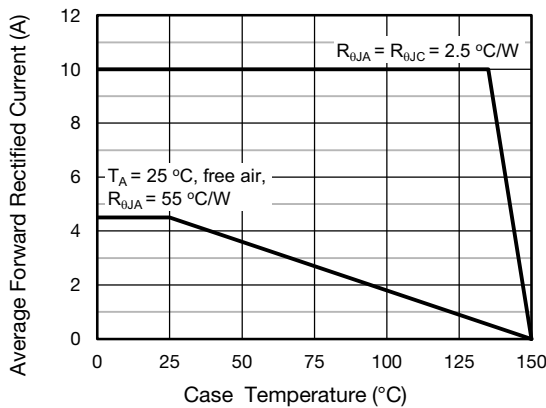
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

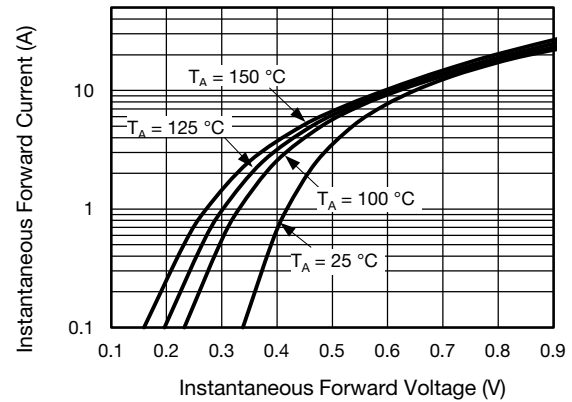


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

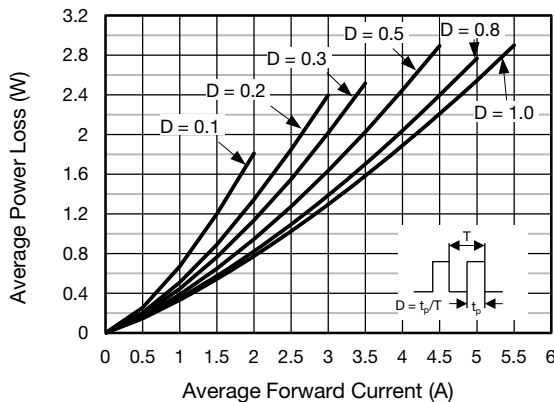


Fig. 2 - Forward Power Loss Characteristics Per Diode

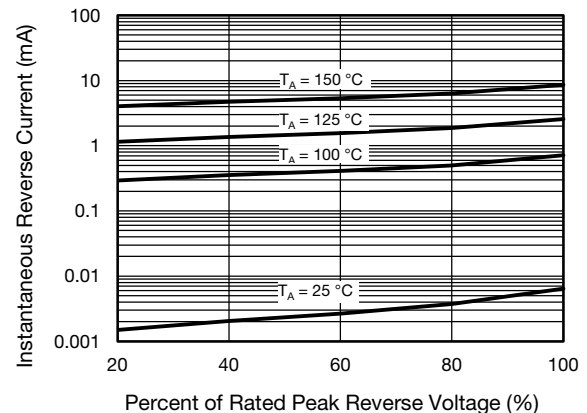


Fig. 4 - Typical Reverse Characteristics Per Diode

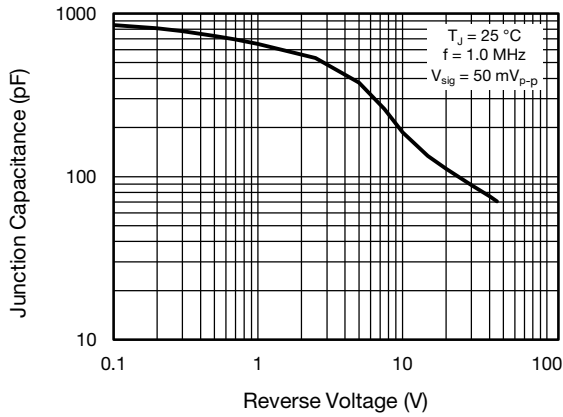


Fig. 5 - Typical Junction Capacitance Per Diode

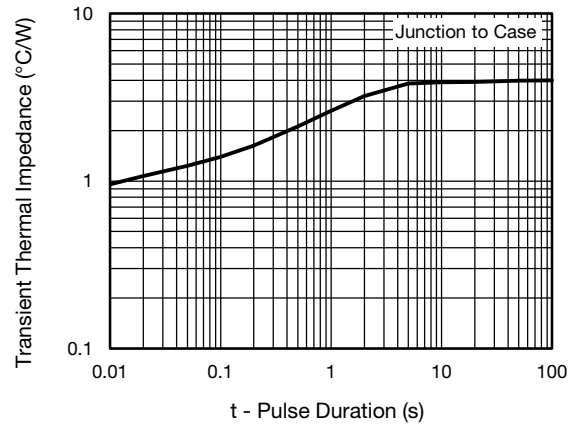
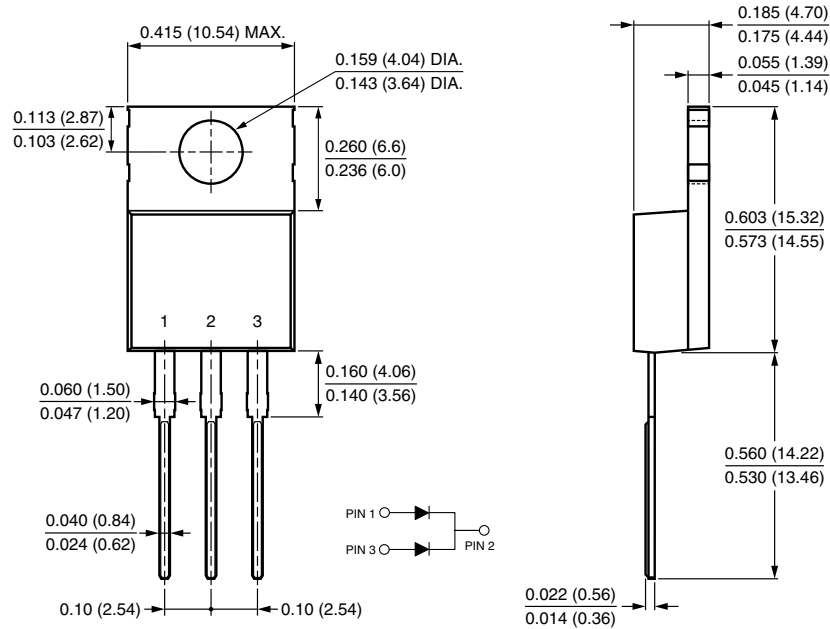


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB





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