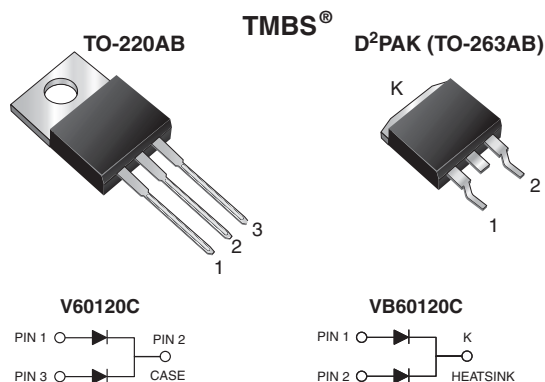


Dual High Voltage Trench MOS Barrier Schottky Rectifier

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



DESIGN SUPPORT TOOLS



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| PRIMARY CHARACTERISTICS | |
|------------------------------|---|
| $I_{F(AV)}$ | 2 x 30 A |
| V_{RRM} | 120 V |
| I_{FSM} | 300 A |
| V_F at $I_F = 30\text{ A}$ | 0.71 V |
| T_J max. | 150 °C |
| Package | TO-220AB, D ² PAK (TO-263AB) |
| Circuit configuration | Common cathode |

FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AB package)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

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 and D²PAK (TO-263AB)
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

| MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | | |
|---|----------------|-------------|----------|------------------|
| PARAMETER | SYMBOL | V60120C | VB60120C | UNIT |
| Maximum repetitive peak reverse voltage | V_{RRM} | 120 | | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | 60 | | A |
| | | 30 | | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | I_{FSM} | 300 | | A |
| Non-repetitive avalanche energy at $T_J = 25\text{ °C}$, $L = 100\text{ mH}$ per diode | E_{AS} | 260 | | mJ |
| Peak repetitive reverse current at $t_p = 2\text{ }\mu\text{s}$, 1 kHz, $T_J = 38\text{ °C} \pm 2\text{ °C}$ per diode | I_{RRM} | 0.5 | | A |
| Voltage rate of change (rated V_R) | dV/dt | 10 000 | | V/ μs |
| Operating junction and storage temperature range | T_J, T_{STG} | -40 to +150 | | °C |



| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | |
|--|-------------------------|-------------------------|-------------------------------|---------------|------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Breakdown voltage | I _R = 1.0 mA | T _A = 25 °C | V _{BR} | 120 (minimum) | - | V |
| Instantaneous forward voltage per diode | I _F = 5 A | T _A = 25 °C | V _F ⁽¹⁾ | 0.48 | - | V |
| | I _F = 15 A | | | 0.66 | - | |
| | I _F = 30 A | | | 0.88 | 0.95 | |
| | I _F = 5 A | T _A = 125 °C | | 0.41 | - | |
| | I _F = 15 A | | | 0.58 | - | |
| | I _F = 30 A | | | 0.71 | 0.75 | |
| Reverse current at rated V _R per diode | V _R = 90 V | T _A = 25 °C | I _R ⁽²⁾ | 14 | - | μA |
| | | T _A = 125 °C | | 11 | - | mA |
| | V _R = 120 V | T _A = 25 °C | | 40 | 500 | μA |
| | | T _A = 125 °C | | 15 | 45 | 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 | V60120C | VB60120C | UNIT |
| Typical thermal resistance per diode | $R_{\theta JC}$ | 2.2 | 2.2 | $^{\circ}\text{C/W}$ |

| ORDERING INFORMATION (Example) | | | | | |
|---------------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB | V60120C-E3/4W | 1.89 | 4W | 50/tube | Tube |
| TO-263AB | VB60120C-E3/4W | 1.38 | 4W | 50/tube | Tube |
| TO-263AB | VB60120C-E3/8W | 1.38 | 8W | 800/reel | Tape and reel |

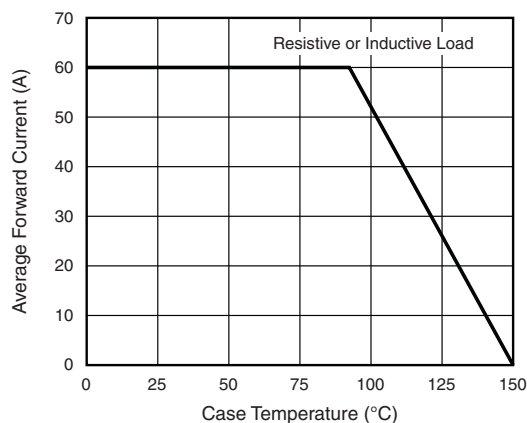
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

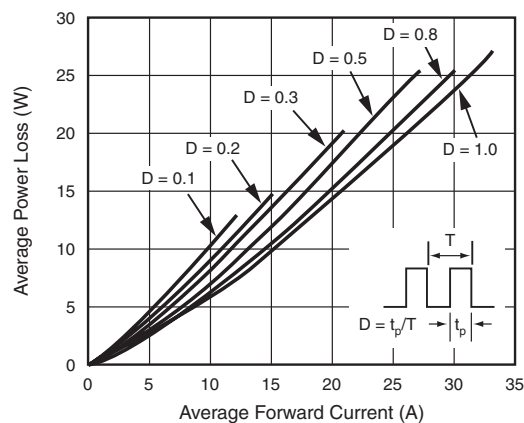


Fig. 2 - Forward Power Loss Characteristics Per Diode

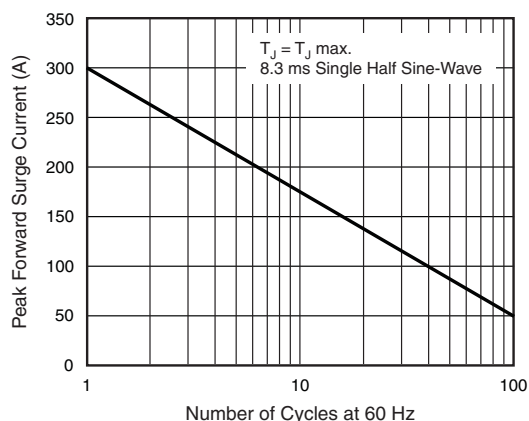


Fig. 3 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

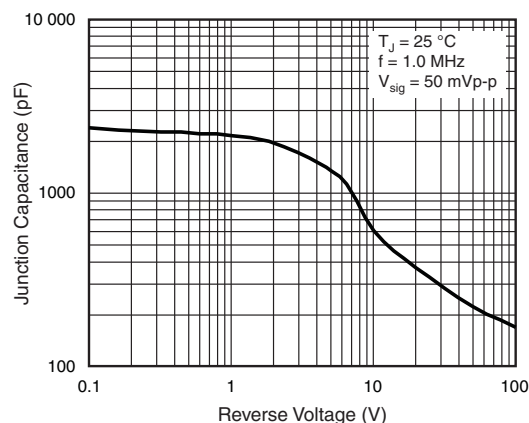


Fig. 6 - Typical Junction Capacitance Per Diode

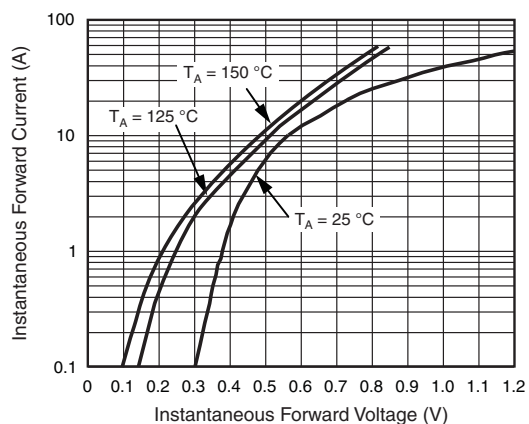


Fig. 4 - Typical Instantaneous Forward Characteristics Per Diode

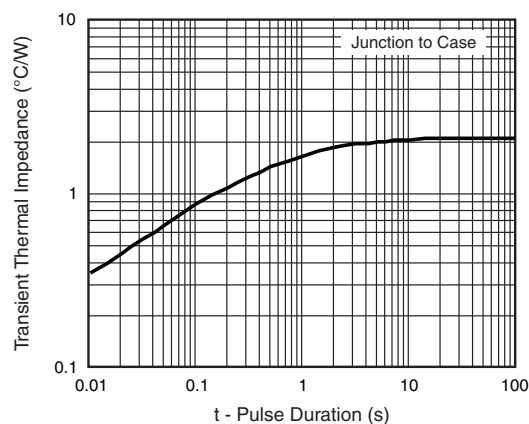


Fig. 7 - Typical Transient Thermal Impedance Per Diode

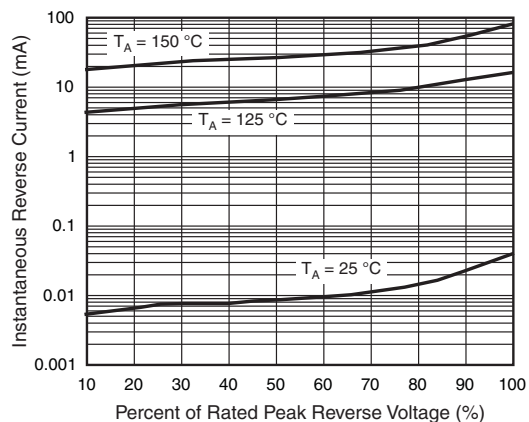
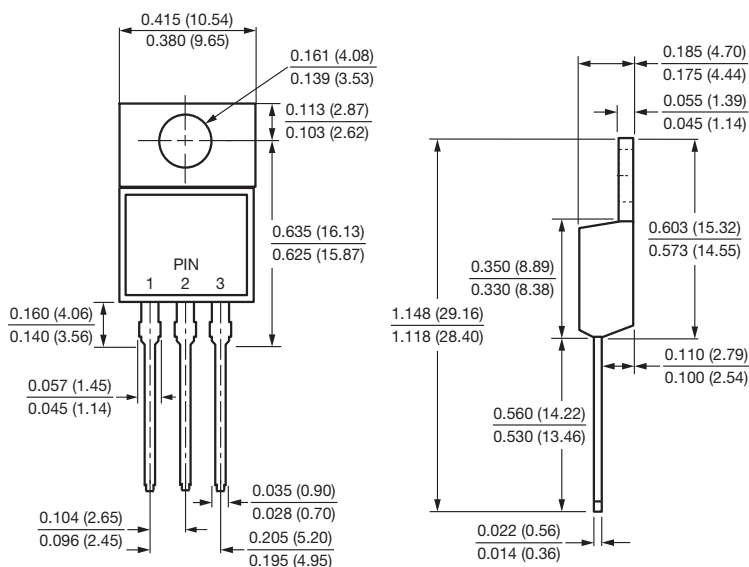


Fig. 5 - Typical Reverse Characteristics Per Diode

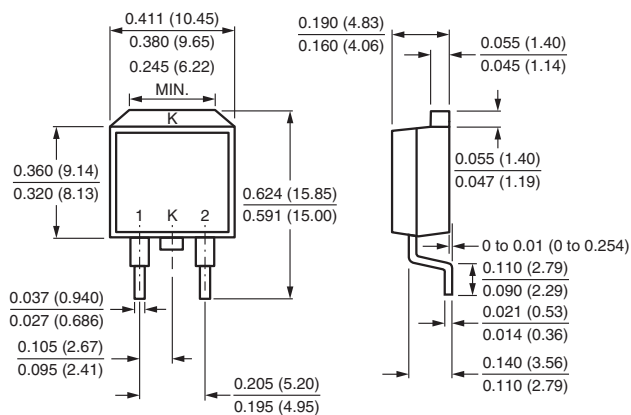


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

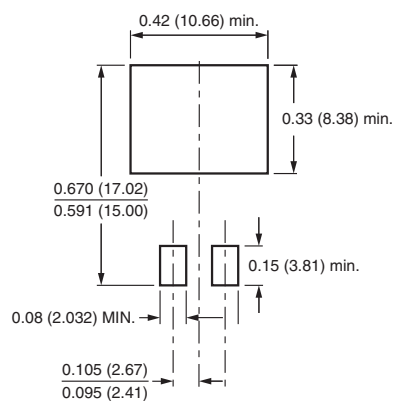
TO-220AB



D²PAK (TO-263AB)



Mounting Pad Layout





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