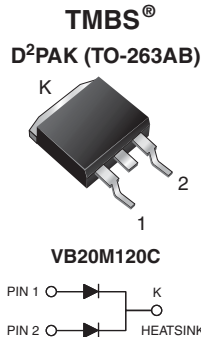


Dual High-Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low $V_F = 0.55 \text{ V}$ at $I_F = 5 \text{ A}$

DESIGN SUPPORT TOOLS
[click logo to get started](#)


| PRIMARY CHARACTERISTICS | |
|-------------------------------|------------------|
| $I_{F(AV)}$ | 2 x 10 A |
| V_{RRM} | 120 V |
| I_{FSM} | 120 A |
| V_F at $I_F = 10 \text{ A}$ | 0.64 V |
| T_J max. | 150 °C |
| Package | D²PAK (TO-263AB) |
| Circuit configuration | Common cathode |

FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
 COMPLIANT
HALOGEN
FREE
 Available

TYPICAL APPLICATIONS

For use in solar cell junction box as a bypass diode for protection, using DC forward current without reverse bias.

MECHANICAL DATA
Case: D²PAK (TO-263AB)

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

E3 and M3 suffix meets JESD 201 class 2 whisker test

Polarity: as marked

| MAXIMUM RATINGS ($T_A = 25 \text{ °C}$ unless otherwise noted) | | | |
|--|----------------|-------------|------------|
| PARAMETER | SYMBOL | VB20M120C | UNIT |
| Maximum repetitive peak reverse voltage | V_{RRM} | 120 | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | per device | 20 |
| | | per diode | 10 |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | I_{FSM} | 120 | A |
| Voltage rate of change (rated V_R) | dV/dt | 10 000 | V/ μ s |
| 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 | $I_F = 5 \text{ A}$ | $T_A = 25 \text{ °C}$ | $V_F^{(1)}$ | 0.65 | - | V |
| | $I_F = 10 \text{ A}$ | | | 0.82 | 0.91 | |
| | $I_F = 5 \text{ A}$ | $T_A = 125 \text{ °C}$ | | 0.55 | - | |
| | $I_F = 10 \text{ A}$ | | | 0.64 | 0.72 | |
| Reverse current per diode | $V_R = 90 \text{ V}$ | $T_A = 25 \text{ °C}$ | $I_R^{(2)}$ | 3 | - | μ A |
| | | $T_A = 125 \text{ °C}$ | | 1.5 | - | mA |
| | $V_R = 120 \text{ V}$ | $T_A = 25 \text{ °C}$ | | - | 700 | μ A |
| | | $T_A = 125 \text{ °C}$ | | 4 | 25 | mA |

Notes

 (1) Pulse test: 300 μ s pulse width, 1 % duty cycle

 (2) Pulse test: Pulse width $\leq 20 \text{ ms}$

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | |
|---|-----------------|-----------|--------------------|
| PARAMETER | SYMBOL | VB20M120C | UNIT |
| Typical thermal resistance per diode | $R_{\theta JC}$ | 2.8 | $^\circ\text{C/W}$ |

| ORDERING INFORMATION (Example) | | | | | |
|---------------------------------------|-----------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-263AB | VB20M120C-E3/4W | 1.37 | 4W | 50/tube | Tube |
| TO-263AB | VB20M120C-E3/8W | 1.37 | 8W | 800/reel | Tape and reel |
| TO-263AB | VB20M120C-M3/I | 1.37 | I | 800/reel | Tape and reel |

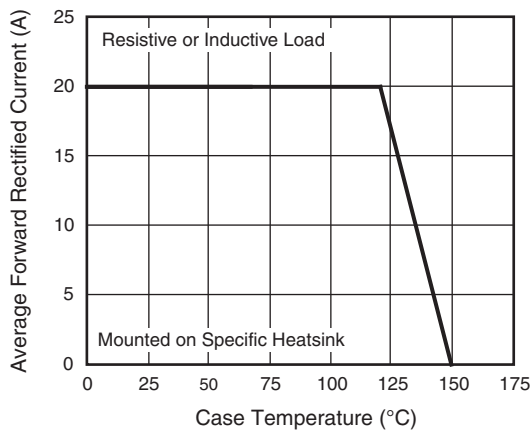
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

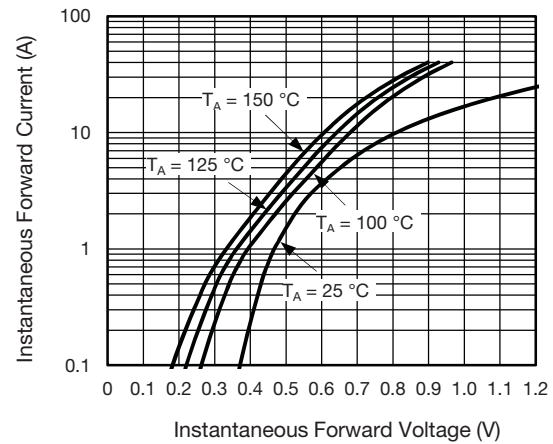


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

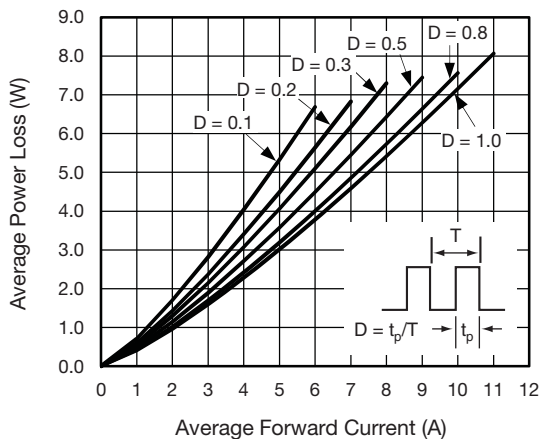


Fig. 2 - Forward Power Loss Characteristics Per Diode

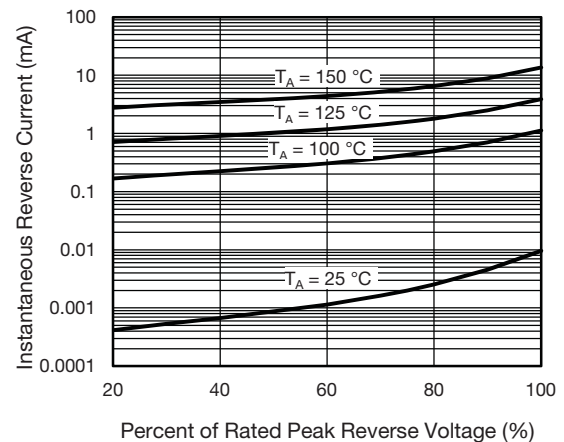


Fig. 4 - Typical Reverse Characteristics Per Diode

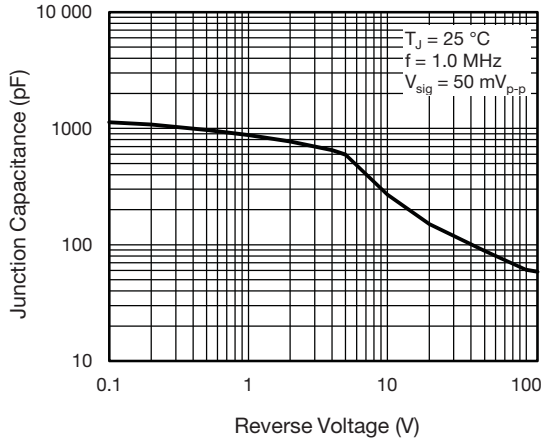


Fig. 5 - Typical Junction Capacitance Per Diode

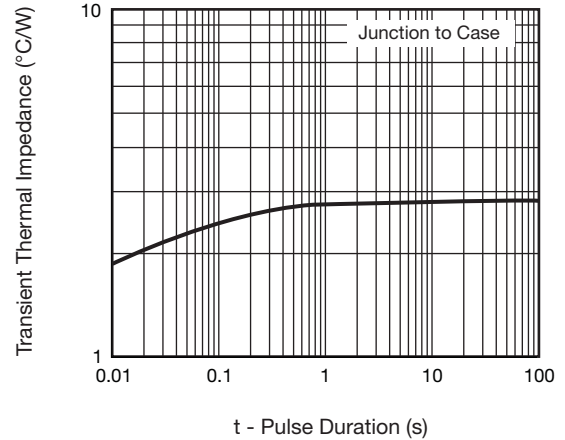
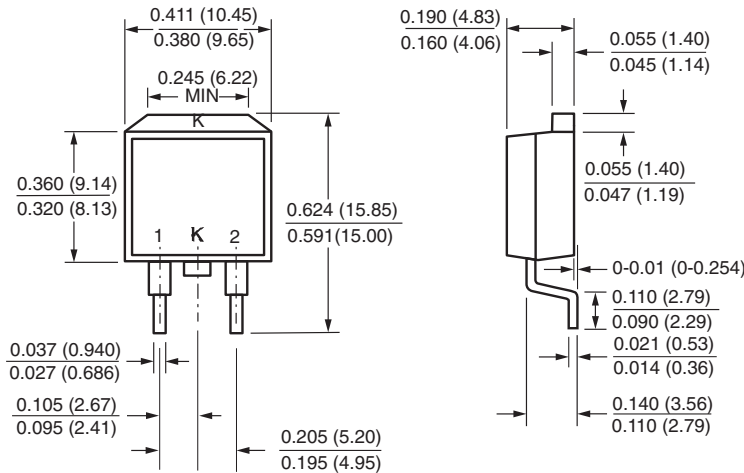


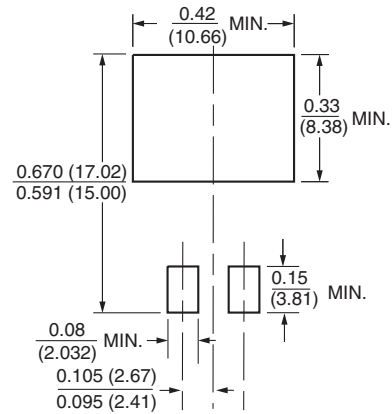
Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D²PAK (TO-263AB)



Mounting Pad Layout





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