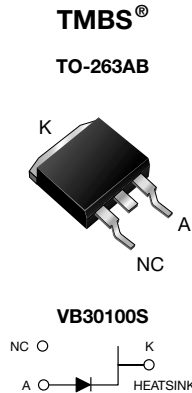


High-Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low $V_F = 0.39\text{ V}$ at $I_F = 5\text{ A}$


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
- 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-263AB

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

| PRIMARY CHARACTERISTICS | |
|------------------------------|----------------|
| Package | TO-263AB |
| $I_{F(AV)}$ | 30 A |
| V_{RRM} | 100 V |
| I_{FSM} | 250 A |
| V_F at $I_F = 30\text{ A}$ | 0.69 V |
| T_J max. | 150 °C |
| Diode variations | Common cathode |

| MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | |
|--|----------------|---------------|------------|
| PARAMETER | SYMBOL | VB30100S | UNIT |
| Maximum repetitive peak reverse voltage | V_{RRM} | 100 | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | 30 | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 250 | 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 ⁽¹⁾ | $I_F = 5\text{ A}$ | $T_A = 25\text{ °C}$ | V_F | 0.47 | - | V | |
| | | | | $I_F = 10\text{ A}$ | 0.55 | | - |
| | | | | $I_F = 30\text{ A}$ | 0.80 | | 0.91 |
| | $I_F = 5\text{ A}$ | $T_A = 125\text{ °C}$ | | 0.39 | - | | |
| | | | | $I_F = 10\text{ A}$ | 0.49 | | - |
| | | | | $I_F = 30\text{ A}$ | 0.69 | | 0.78 |
| Reverse current ⁽²⁾ | $V_R = 70\text{ V}$ | $T_A = 25\text{ °C}$ | I_R | 27 | - | μ A | |
| | | $T_A = 125\text{ °C}$ | | 11 | - | mA | |
| | $V_R = 100\text{ V}$ | $T_A = 25\text{ °C}$ | | 70 | 1000 | μ A | |
| | | $T_A = 125\text{ °C}$ | | 23 | 45 | mA | |

Notes

⁽¹⁾ Pulse test: 300 μ s 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 | VB30100S | UNIT |
| Typical thermal resistance | $R_{\theta JC}$ | 2.0 | $^\circ\text{C/W}$ |

| ORDERING INFORMATION (Example) | | | | | |
|---------------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-263AB | VB30100S-M3/4W | 1.380 | 4W | 50/tube | Tube |
| TO-263AB | VB30100S-M3/8W | 1.380 | 8W | 800/reel | Tape and reel |

RATINGS AND CHARACTERISTICS CURVES

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

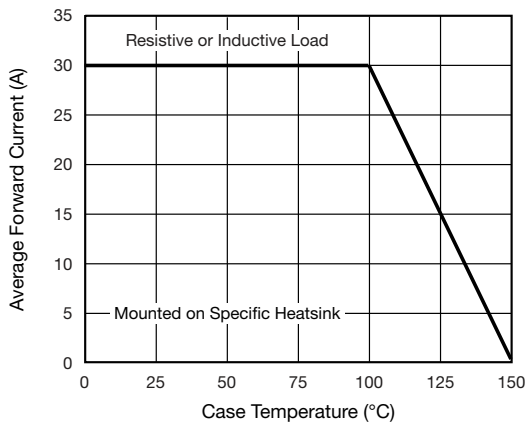


Fig. 1 - Forward Current Derating Curve

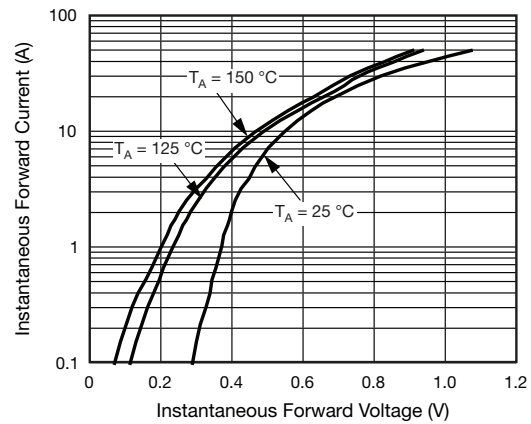


Fig. 3 - Typical Instantaneous Forward Characteristics

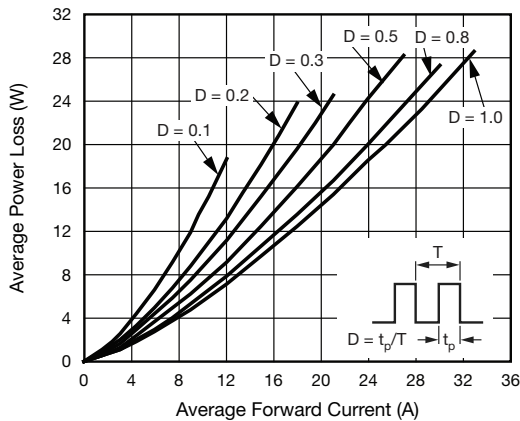


Fig. 2 - Forward Power Loss Characteristics

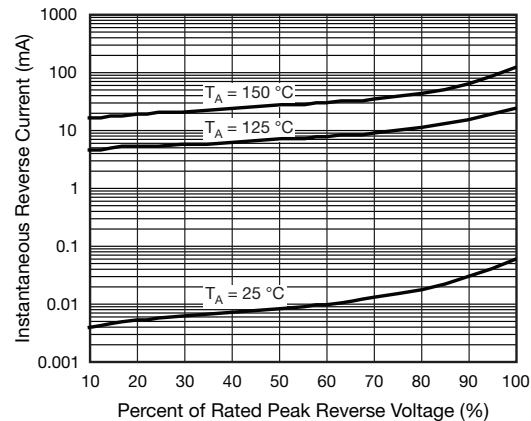


Fig. 4 - Typical Reverse Characteristics

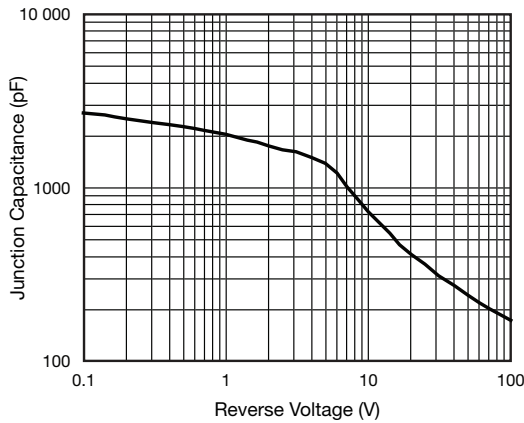


Fig. 5 - Typical Junction Capacitance

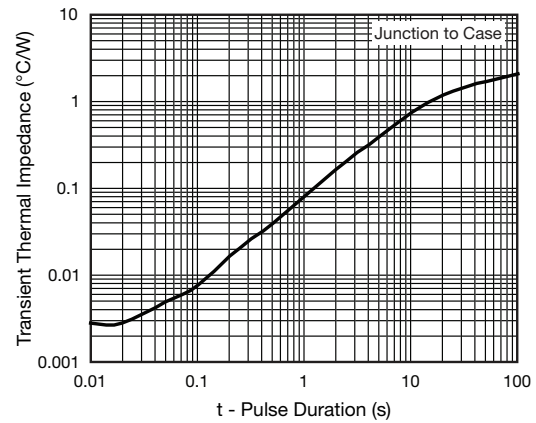
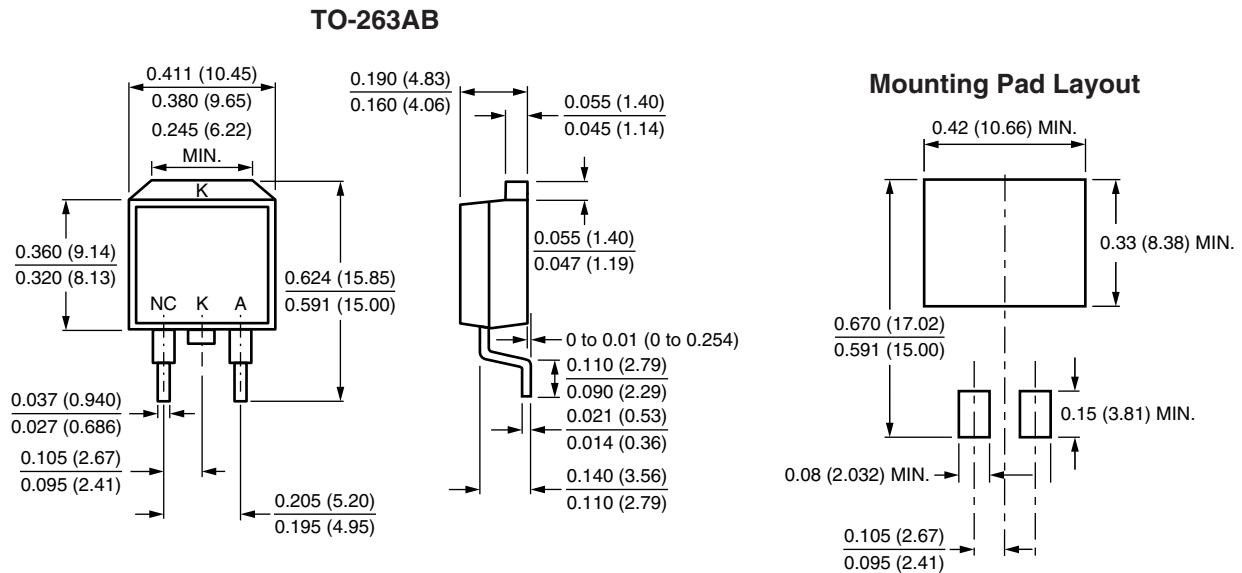


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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