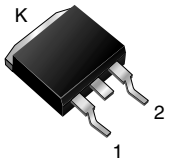
# Dual Trench MOS Barrier Schottky Rectifier

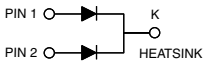
Ultra Low $V_F$ = 0.49 V at $I_F$ = 3 A

**TMBS®**

**TO-263AB**




**VBT1080C**




## 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

## 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 |
| $I_{F(AV)}$ | 2 x 5 A |
| $V_{RRM}$ | 80 V |
| $I_{FSM}$ | 80 A |
| $V_F$ at $I_F$ = 5 A | 0.57 V |
| $T_J$ max. | 150 °C |
| Diode variation | Common cathode |

**MAXIMUM RATINGS** ($T_A$ = 25 °C unless otherwise noted)

| PARAMETER | | SYMBOL | VBT1080C | UNIT |
|---|---|---|---|---|
| Maximum repetitive peak reverse voltage | | $V_{RRM}$ | 80 | V |
| Maximum average forward rectified current (fig. 1) | per device | $I_{F(AV)}$ | 10 | A |
| | per diode | | 5 | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | | $I_{FSM}$ | 80 | A |
| Voltage rate of change (rated $V_R$) | | dV/dt | 10 000 | V/µs |
| Operating junction and storage temperature range | | $T_J$, $T_{STG}$ | - 55 to + 150 | °C |

**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25 °C unless otherwise noted)

| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Instantaneous forward voltage per diode (1) | $I_F$ = 3 A | $T_A$ = 25 °C | $V_F$ | 0.54 | - | V |
| | $I_F$ = 5 A | | | 0.63 | 0.72 | |
| | $I_F$ = 3 A | $T_A$ = 125 °C | | 0.49 | - | |
| | $I_F$ = 5 A | | | 0.57 | 0.66 | |
| Reverse current per diode (2) | $V_R$ = 80 V | $T_A$ = 25 °C | $I_R$ | 12 | 400 | µA |
| | | $T_A$ = 125 °C | | 6 | 15 | mA |

**Notes**

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

(2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted) | | | | |
|---|---|---|---|---|
| PARAMETER | | SYMBOL | VBT1080C | UNIT |
| Typical thermal resistance | per diode | $R_{\theta JC}$ | 3.5 | °C/W |
| | per device | | 2.5 | |

| ORDERING INFORMATION (Example) | | | | | |
|---|---|---|---|---|---|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-263AB | VBT1080C-M3/4W | 1.35 | 4W | 50/tube | Tube |
| TO-263AB | VBT1080C-M3/8W | 1.35 | 8W | 800/reel | Tape and reel |

## RATINGS AND CHARACTERISTICS CURVES

($T_A$ = 25 °C unless otherwise noted)

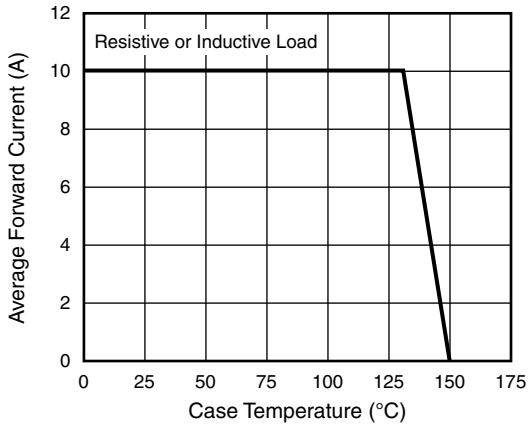



Fig. 1 - Maximum Forward Current Derating Curve

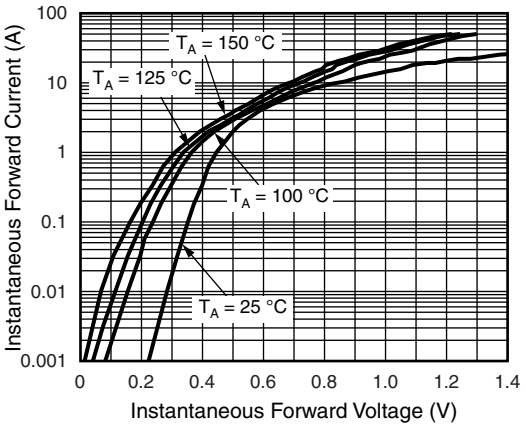



Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

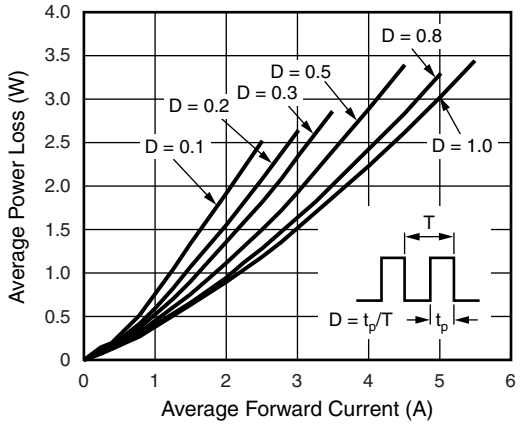



Fig. 2 - Forward Power Loss Characteristics Per Diode

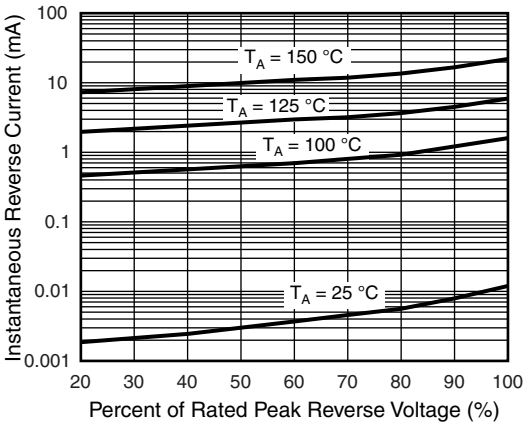



Fig. 4 - Typical Reverse Characteristics Per Diode

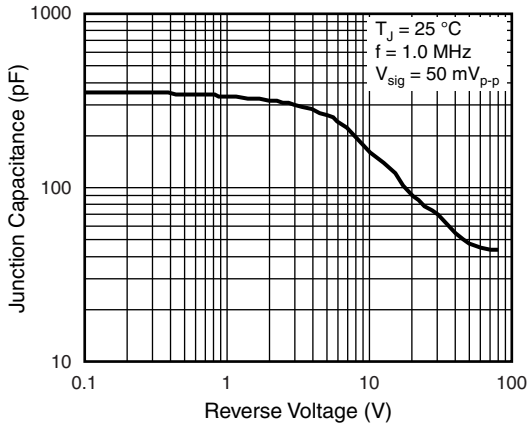



Fig. 5 - Typical Junction Capacitance Per Diode

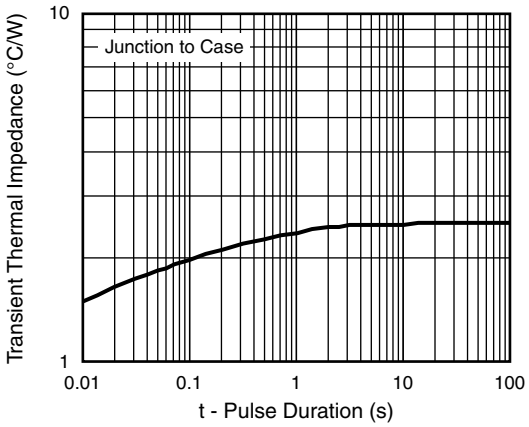
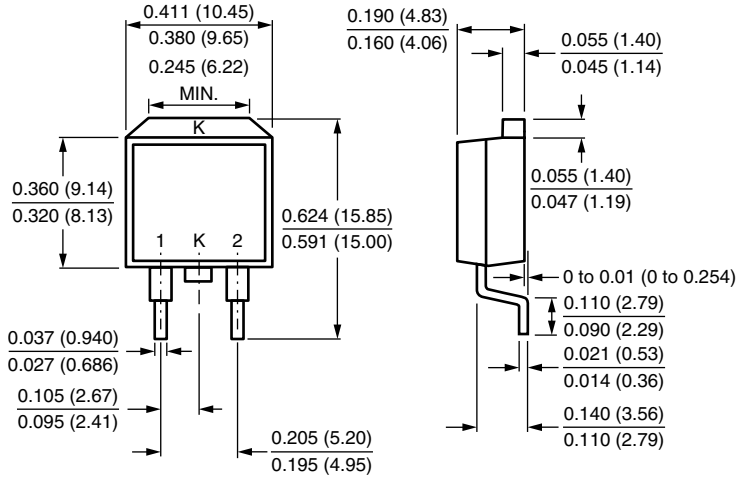


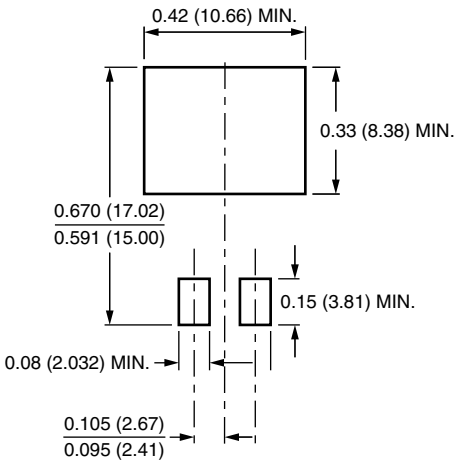

Fig. 6 - Typical Transient Thermal Impedance Per Diode

## **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

### TO-263AB




### Mounting Pad Layout



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