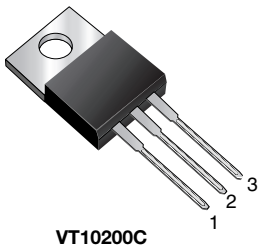
# Trench MOS Barrier Schottky Rectifier

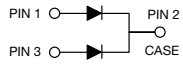
Ultra Low VF = 0.58 V at IF = 2.5 A

TMBS®

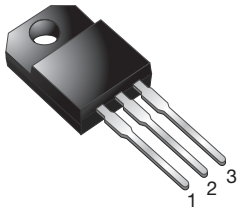
TO-220AB



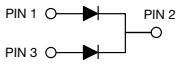

VT10200C



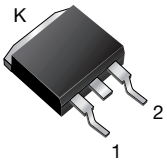

ITO-220AB



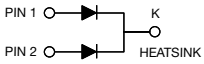

VFT10200C



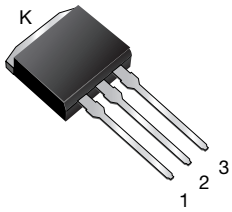

D²PAK (TO-263AB)



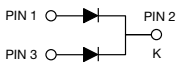

VBT10200C




TO-262AA




VIT10200C




## LINKS TO ADDITIONAL RESOURCES

3D Models

| PRIMARY CHARACTERISTICS | |
|---|---|
| $I_{F(AV)}$ | 2 x 5.0 A |
| $V_{RRM}$ | 200 V |
| $I_{FSM}$ | 80 A |
| $V_F$ at $I_F$ = 5.0 A | 0.65 V |
| $T_J$ max. | 150 °C |
| Package | TO-220AB, ITO-220AB, D²PAK (TO-263AB), TO-262AA |
| 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 (for D²PAK (TO-263AB) package)
- Solder dip 275 °C max. 10 s, per JESD 22-B106 (for TO-220AB, ITO-220AB and TO-262AA package)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb e3 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, ITO-220AB, D²PAK (TO-263AB) and TO-262AA
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


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| **MAXIMUM RATINGS** ($T_A$ = 25 °C unless otherwise noted) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **PARAMETER** | | **SYMBOL** | **VT10200C** | **VFT10200C** | **VBT10200C** | **VIT10200C** | **UNIT** |
| Maximum repetitive peak reverse voltage | | $V_{RRM}$ | 200 | | | | V |
| Maximum average forward rectified current (fig. 1) | per device | $I_{F(AV)}$ | 10.0 | | | | A |
| | per diode | | 5.0 | | | | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | | $I_{FSM}$ | 80 | | | | A |
| Non-repetitive avalanche energy at $T_J$ = 25 °C, L = 60 mH per diode | | $E_{AS}$ | 30 | | | | mJ |
| Peak repetitive reverse current at $t_p$ = 2 µs, 1 kHz, $T_J$ = 38 °C ± 2 °C per diode | | $I_{RRM}$ | 0.5 | | | | A |
| Voltage rate of change (rated $V_R$) | | dV/dt | 10 000 | | | | V/µs |
| Isolation voltage (ITO-220AB only) from terminal to heatsink t = 1 min | | $V_{AC}$ | 1500 | | | | V |
| 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 | $V_{BR}$ | 200 (min.) | - | V |
| Instantaneous forward voltage per diode | $I_F$ = 2.5 A | $T_A$ = 25 °C | $V_F$ (1) | 0.81 | - | V |
| | $I_F$ = 5.0 A | | | 1.10 | 1.60 | |
| | $I_F$ = 2.5 A | $T_A$ = 125 °C | | 0.58 | - | |
| | $I_F$ = 5.0 A | | | 0.65 | 0.73 | |
| Reverse current per diode | $V_R$ = 180 V | $T_A$ = 25 °C | $I_R$ (2) | 1.7 | - | µA |
| | | $T_A$ = 125 °C | | 1.8 | - | mA |
| | $V_R$ = 200 V | $T_A$ = 25 °C | | - | 150 | µA |
| | | $T_A$ = 125 °C | | 2.5 | 10 | 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** | **VT10200C** | **VFT10200C** | **VBT10200C** | **VIT10200C** | **UNIT** |
| Typical thermal resistance | per diode | $R_{\theta JC}$ | 3.5 | 7.0 | 3.5 | 3.5 | °C/W |
| | per device | | 2.5 | 5.5 | 2.5 | 2.5 | |

| **ORDERING INFORMATION** (Example) | | | | | |
|---|---|---|---|---|---|
| **PACKAGE** | **PREFERRED P/N** | **UNIT WEIGHT (g)** | **PACKAGE CODE** | **BASE QUANTITY** | **DELIVERY MODE** |
| TO-220AB | VT10200C-E3/4W | 1.88 | 4W | 50/tube | Tube |
| ITO-220AB | VFT10200C-E3/4W | 1.72 | 4W | 50/tube | Tube |
| $D^2PAK$ (TO-263AB) | VBT10200C-E3/4W | 1.37 | 4W | 50/tube | Tube |
| $D^2PAK$ (TO-263AB) | VBT10200C-E3/8W | 1.37 | 8W | 800/reel | Tape and reel |
| TO-262AA | VIT10200C-E3/4W | 1.44 | 4W | 50/tube | Tube |


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## RATINGS AND CHARACTERISTICS CURVES ($T_A$ = 25 °C unless otherwise noted)

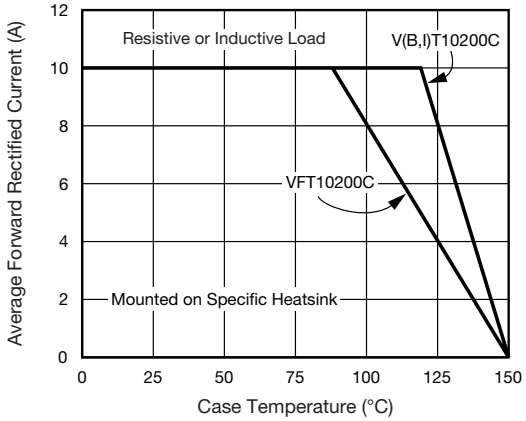



Fig. 1 - Maximum Forward Current Derating Curve

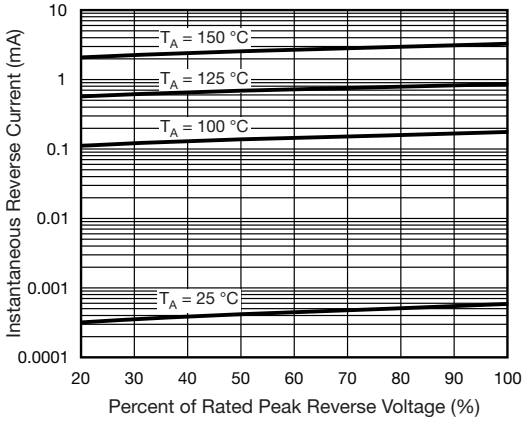



Fig. 4 - Typical Reverse Characteristics Per Diode

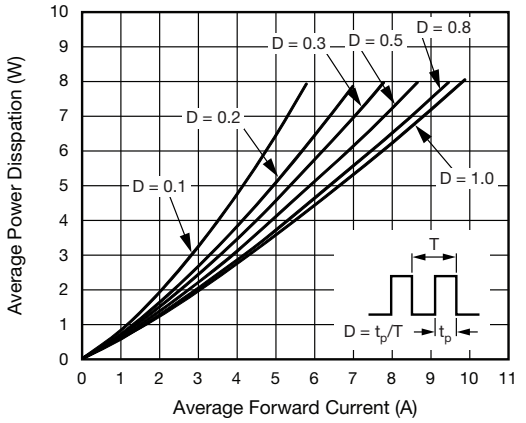



Fig. 2 - Forward Power Loss Characteristics Per Device

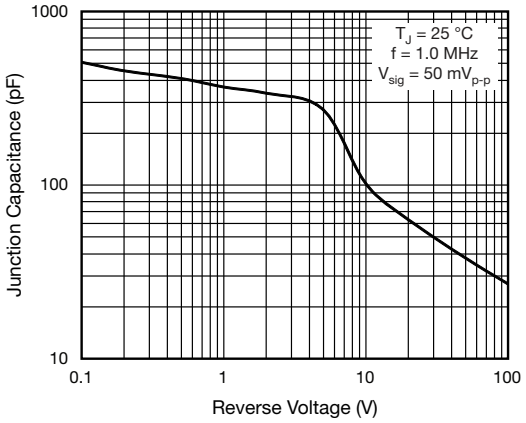



Fig. 5 - Typical Junction Capacitance Per Diode

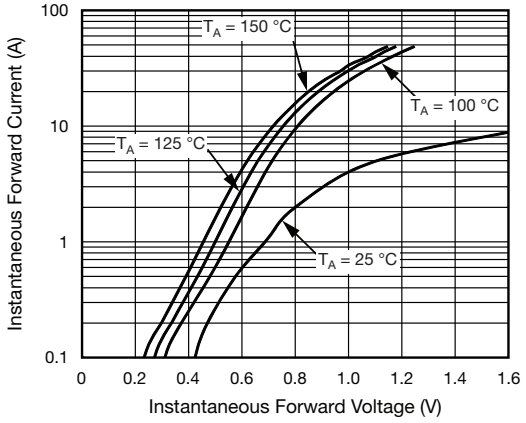



Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

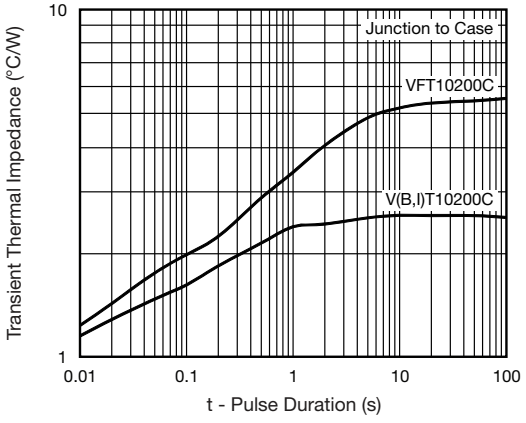
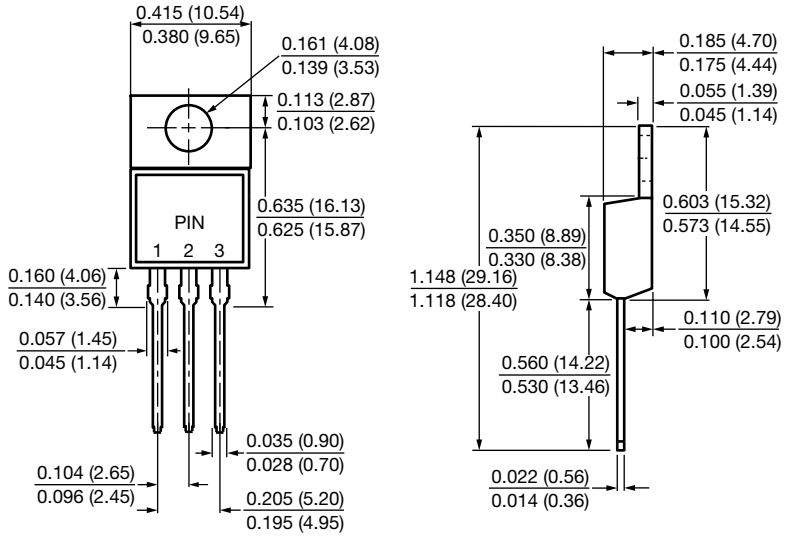



Fig. 6 - Typical Transient Thermal Impedance Per Device

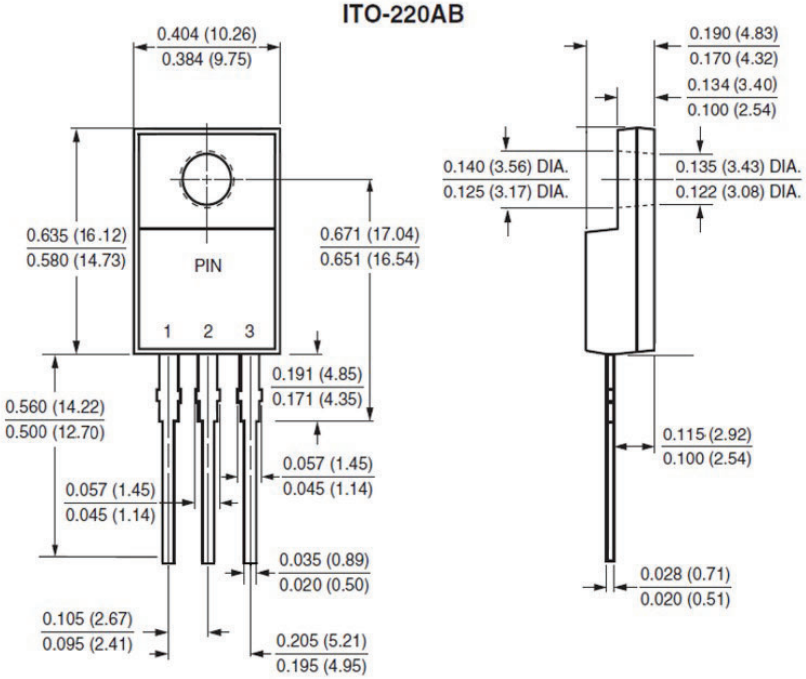

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**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**TO-220AB**



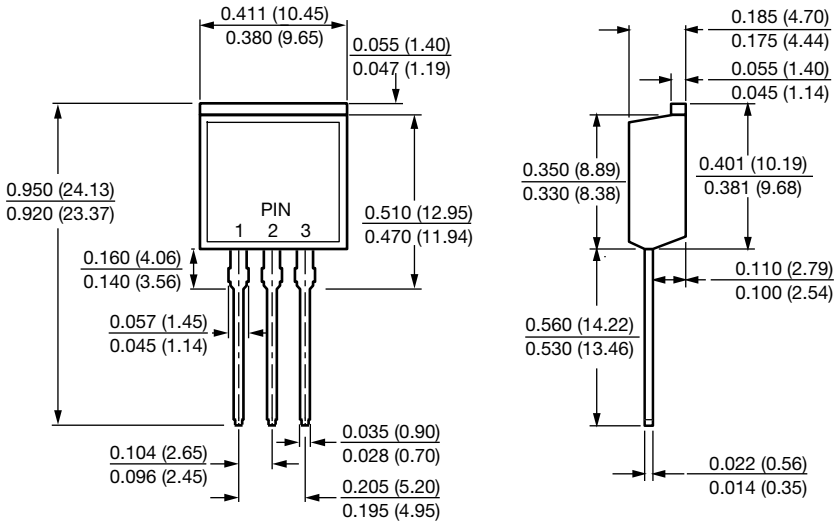

**ITO-220AB**



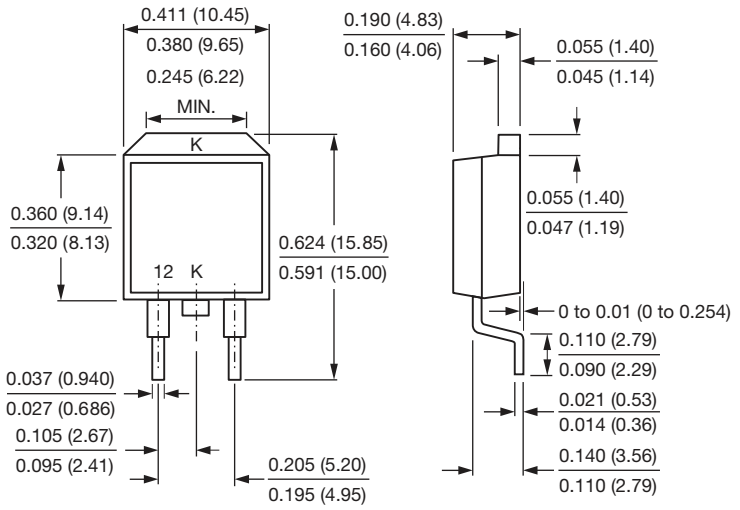


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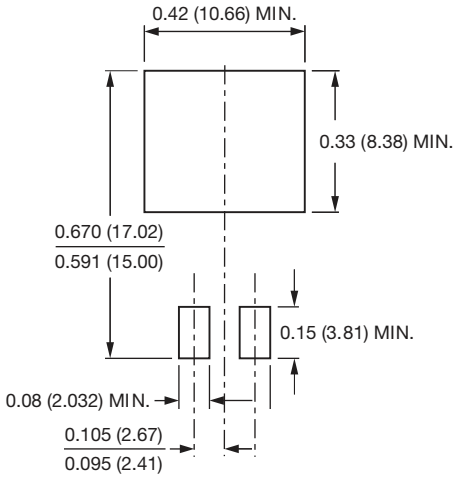
**TO-262AA**




**D²PAK (TO-263AB)**




**Mounting Pad Layout**





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