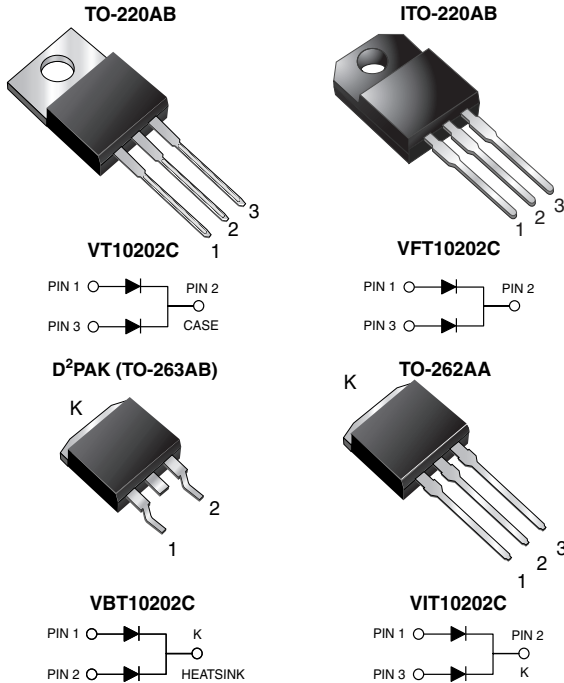




Dual High Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low $V_F = 0.58\text{ V}$ at $I_F = 2.5\text{ A}$



FEATURES

- Trench MOS Schottky technology Gen 2
- 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 bath temperature 275 °C maximum, 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



RoHS COMPLIANT HALOGEN FREE

TYPICAL APPLICATIONS

For use in high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, 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-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 max.

LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS | |
|---|--|
| $I_{F(AV)}$ | 2 x 5 A |
| V_{RRM} | 200 V |
| I_{FSM} | 100 A |
| V_F at $I_F = 5\text{ A}$ ($T_A = 125\text{ °C}$) | 0.65 V |
| T_J max. | 175 °C |
| Package | TO-220AB, ITO-220AB, D ² PAK (TO-263AB), TO-262AA |
| Circuit configuration | Common cathode |

| MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | | | | | |
|--|----------------|-------------|-----------|-----------|-----------|------------|---|
| PARAMETER | SYMBOL | VT10202C | VFT10202C | VBT10202C | VIT10202C | UNIT | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 200 | | | | V | |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | per device | | | | 10 | A |
| | | per diode | | | | 5 | |
| Maximum DC reverse voltage | V_{DC} | 160 | | | | V | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | I_{FSM} | 100 | | | | 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 +175 | | | | °C | |



| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | |
|---|----------------------|-----------------------------------|--------|------|------|---------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage per diode ⁽¹⁾ | $I_F = 2.5\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$ | V_F | 0.74 | - | V |
| | $I_F = 5.0\text{ A}$ | | | 0.80 | 0.88 | |
| | $I_F = 2.5\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ | | 0.58 | - | |
| | $I_F = 5.0\text{ A}$ | | | 0.65 | 0.73 | |
| Reverse current ⁽²⁾ | $V_R = 160\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$ | I_R | 0.2 | - | μA |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 0.4 | - | mA |
| | $V_R = 200\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$ | | - | 150 | μA |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 1.0 | 5 | mA |

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
(2) Pulse test: Pulse width $\leq 5\text{ ms}$

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | | |
|--|------------|-----------------------------------|----------|-----------|-----------|-----------|--------------------|
| PARAMETER | | SYMBOL | VT10202C | VFT10202C | VBT10202C | VIT10202C | UNIT |
| Typical thermal resistance | per diode | $R_{\theta JC}$ | 3.4 | 6.8 | 3.4 | 3.4 | $^\circ\text{C/W}$ |
| | per device | $R_{\theta JC}$ | 2.2 | 4.4 | 2.2 | 2.2 | |
| | per device | $R_{\theta JA}$ ⁽¹⁾⁽²⁾ | 52 | 60 | 52 | 52 | |

Notes

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$
(2) Free air, without heatsink

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|-----------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB | VT10202C-M3/4W | 1.88 | 4W | 50/tube | Tube |
| D ² PAK (TO-263AB) | VBT10202C-M3/4W | 1.37 | 4W | 50/tube | Tube |
| D ² PAK (TO-263AB) | VBT10202C-M3/8W | 1.37 | 8W | 800/reel | Tape and reel |
| TO-262AA | VIT10202C-M3/4W | 1.44 | 4W | 50/tube | Tube |
| ITO-220AB | VFT10202C-M3/4W | 1.72 | 4W | 50/tube | Tube |



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

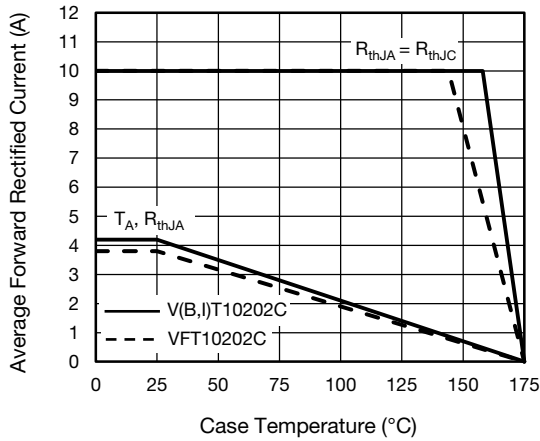


Fig. 1 - Maximum Forward Current Derating Curve (D = Duty Cycle = 0.5)

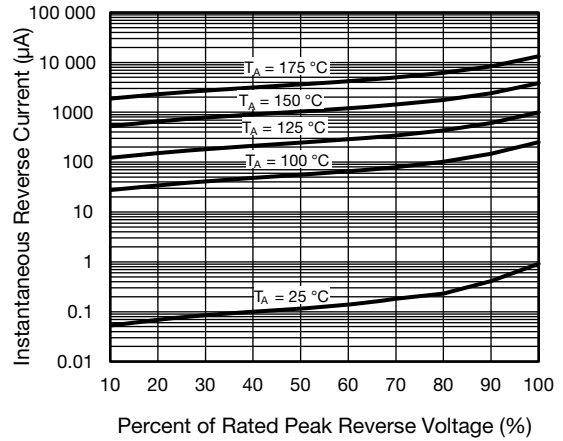


Fig. 4 - Typical Reverse Characteristics Per Diode

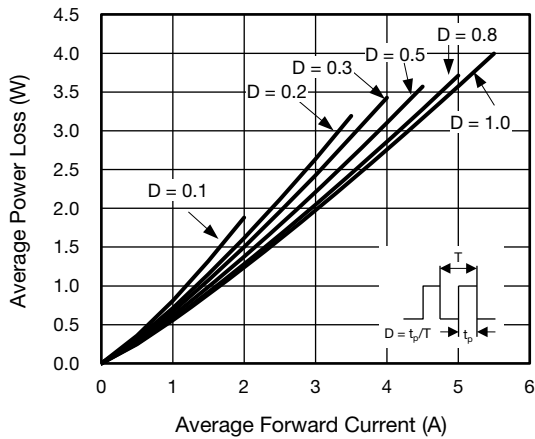


Fig. 2 - Forward Power Loss Characteristics Per Diode

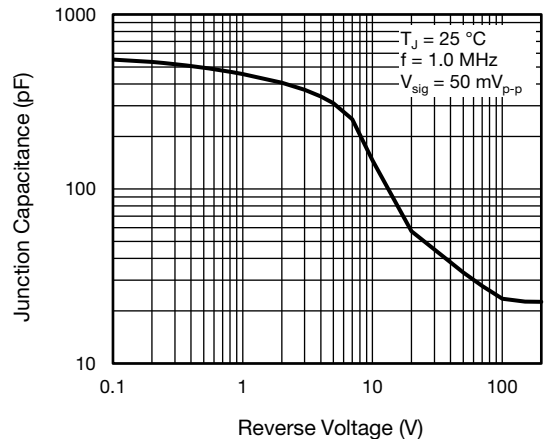


Fig. 5 - Typical Junction Capacitance Per Diode

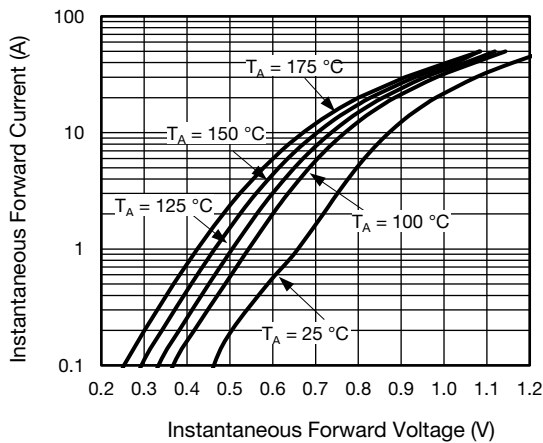


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

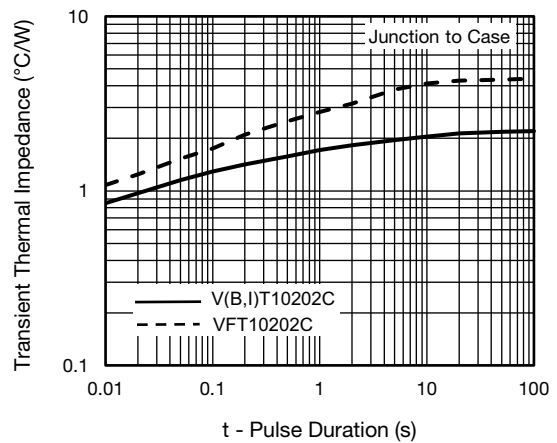
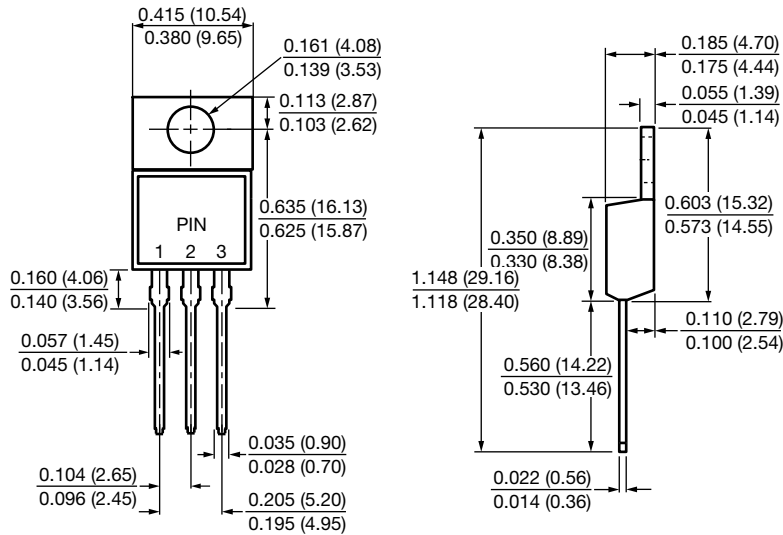


Fig. 6 - Typical Transient Thermal Impedance Per Device

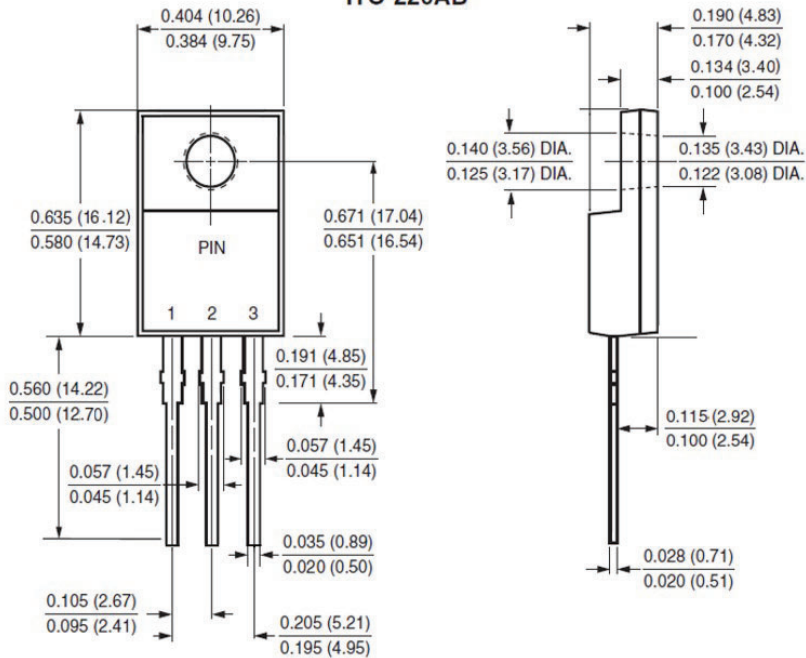


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB

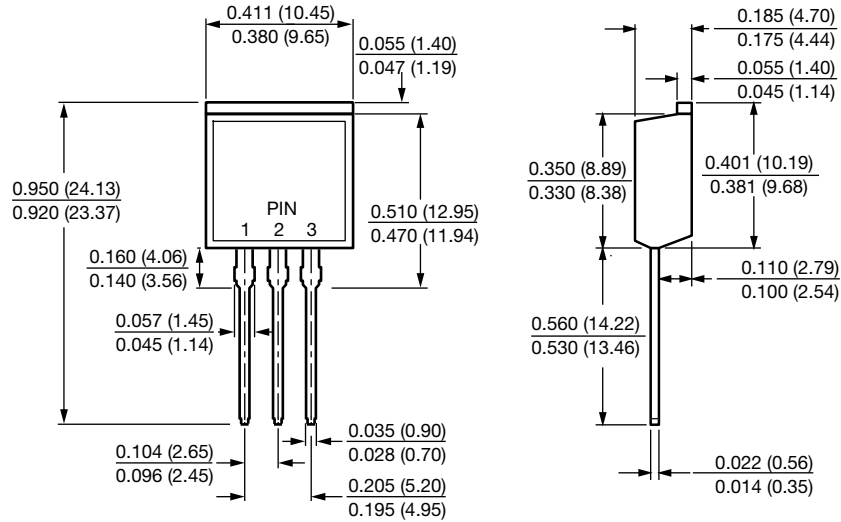


ITO-220AB

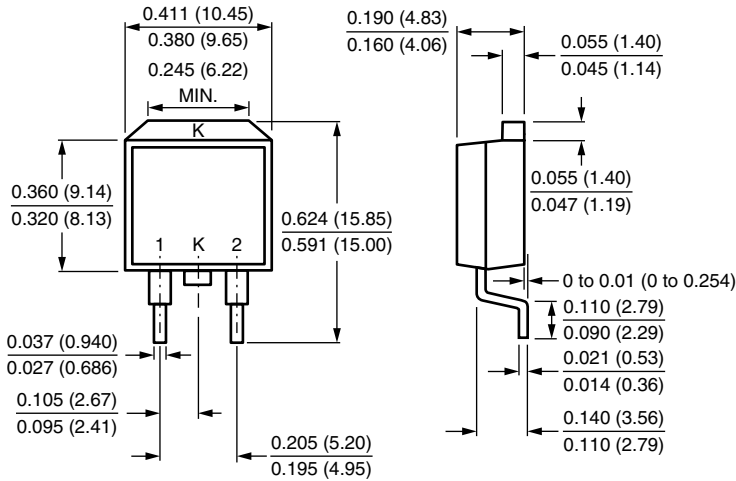




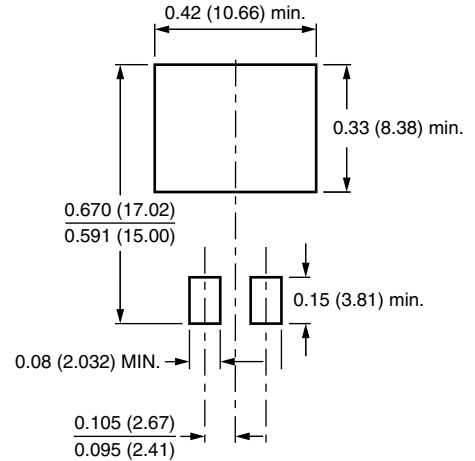
TO-262AA



D²PAK (TO-263AB)



Mounting Pad Layout





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