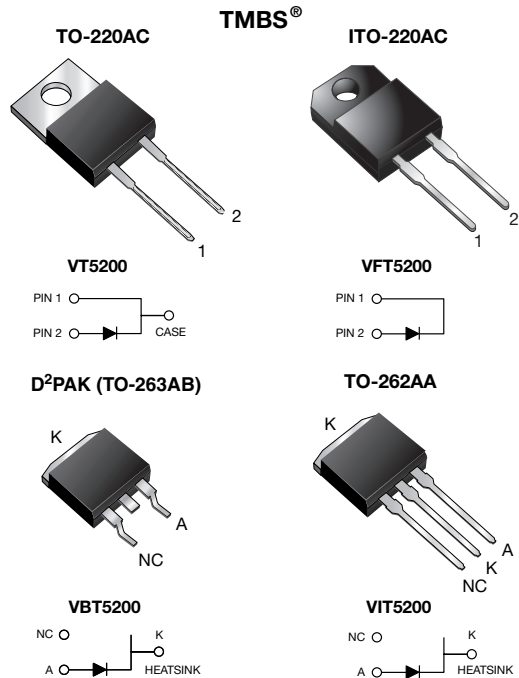


Trench MOS Barrier Schottky Rectifier

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


FEATURES

- Trench MOS Schottky technology
- 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-220AC, ITO-220AC and TO-262AA package)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


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-220AC, ITO-220AC, 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 max.

LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS | |
|--------------------------------|--|
| $I_{F(AV)}$ | 5.0 A |
| V_{RRM} | 200 V |
| I_{FSM} | 80 A |
| V_F at $I_F = 5.0 \text{ A}$ | 0.65 V |
| T_J max. | 150 °C |
| Package | TO-220AC, ITO-220AC, D ² PAK (TO-263AB), TO-262AA |
| Circuit configuration | Single |

| MAXIMUM RATINGS ($T_A = 25 \text{ °C}$ unless otherwise noted) | | | | | | |
|---|----------------|--------|-------------|---------|---------|------------------|
| PARAMETER | SYMBOL | VT5200 | VFT5200 | VBT5200 | VIT5200 | UNIT |
| Max. repetitive peak reverse voltage | V_{RRM} | | 200 | | | V |
| Max. average forward rectified current (fig. 1) | $I_{F(AV)}$ | | 5.0 | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | | 80 | | | A |
| Non-repetitive avalanche energy at $T_J = 25 \text{ °C}$, $L = 60 \text{ mH}$ | E_{AS} | | 30 | | | mJ |
| Peak repetitive reverse current at $t_p = 2 \text{ } \mu\text{s}$, 1 kHz, $T_J = 38 \text{ °C} \pm 2 \text{ °C}$ | I_{RRM} | | 0.5 | | | A |
| Voltage rate of change (rated V_R) | dV/dt | | 10 000 | | | V/ μs |
| Isolation voltage (ITO-220AC only) from terminal to heatsink $t = 1 \text{ min}$ | 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 | 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 | 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 | VT5200 | VFT5200 | VBT5200 | VIT5200 | UNIT |
| Typical thermal resistance | R _{θJC} | 3.5 | 7.0 | 3.5 | 3.5 | °C/W |

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|---------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AC | VT5200-E3/4W | 1.82 | 4W | 50/tube | Tube |
| ITO-220AC | VFT5200-E3/4W | 1.65 | 4W | 50/tube | Tube |
| D ² PAK (TO-263AB) | VBT5200-E3/4W | 1.36 | 4W | 50/tube | Tube |
| D ² PAK (TO-263AB) | VBT5200-E3/8W | 1.36 | 8W | 800/reel | Tape and reel |
| TO-262AA | VIT5200-E3/4W | 1.44 | 4W | 50/tube | Tube |



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

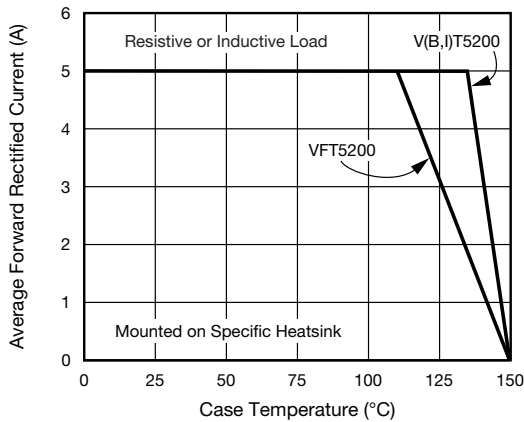


Fig. 1 - Maximum Forward Current Derating Curve

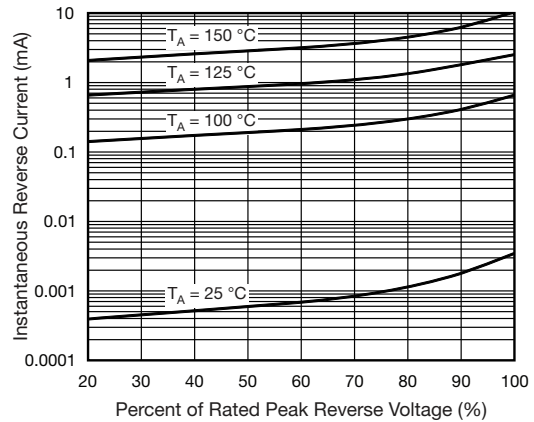


Fig. 4 - Typical Reverse Characteristics

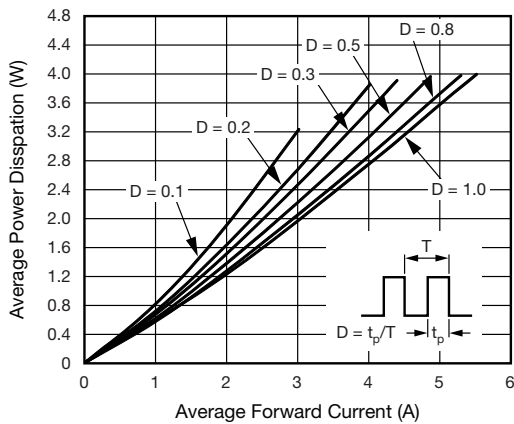


Fig. 2 - Forward Power Dissipation Characteristics

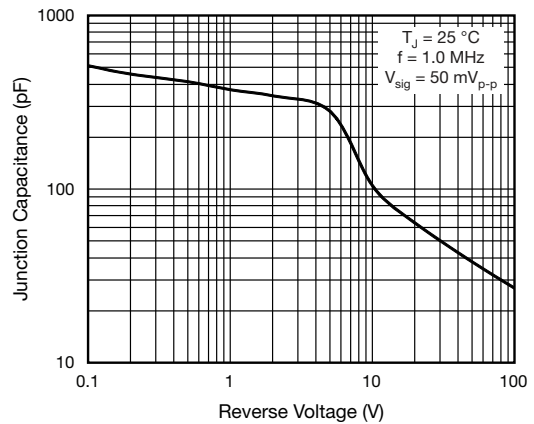


Fig. 5 - Typical Junction Capacitance

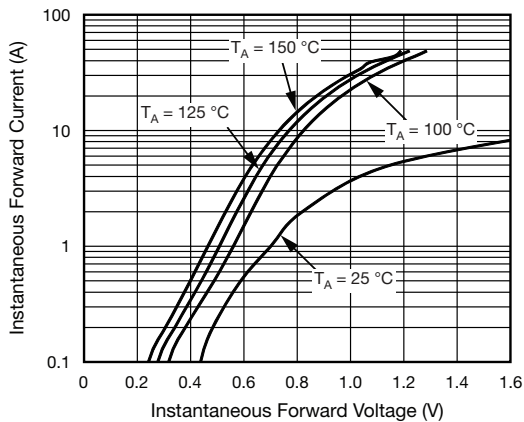


Fig. 3 - Typical Instantaneous Forward Characteristics

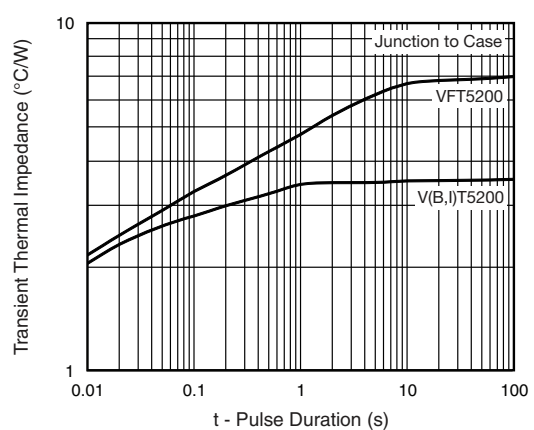
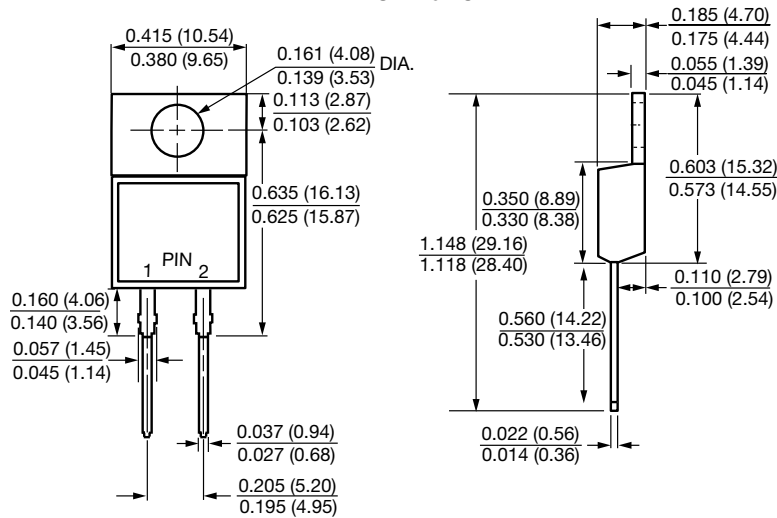


Fig. 6 - Typical Transient Thermal Impedance

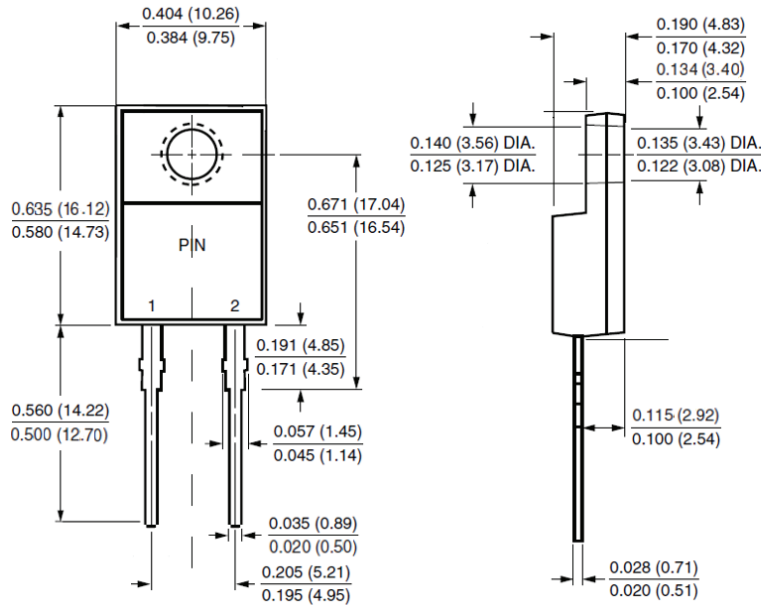


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

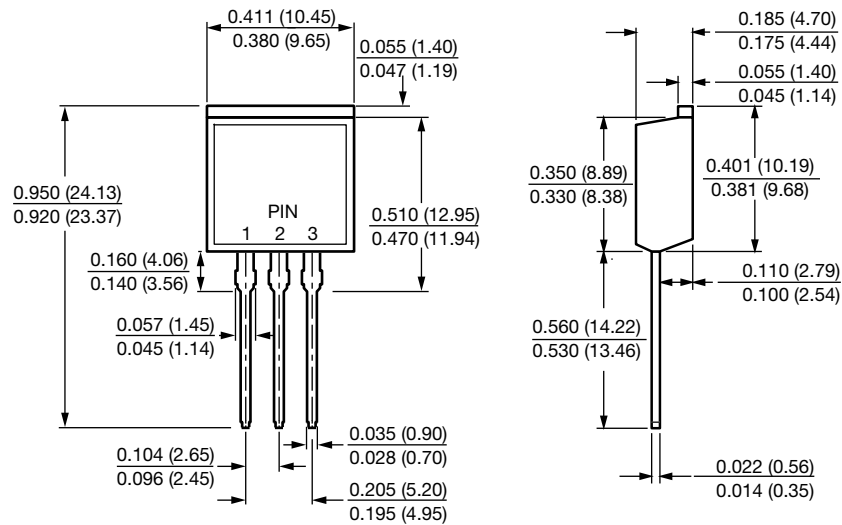
TO-220AC



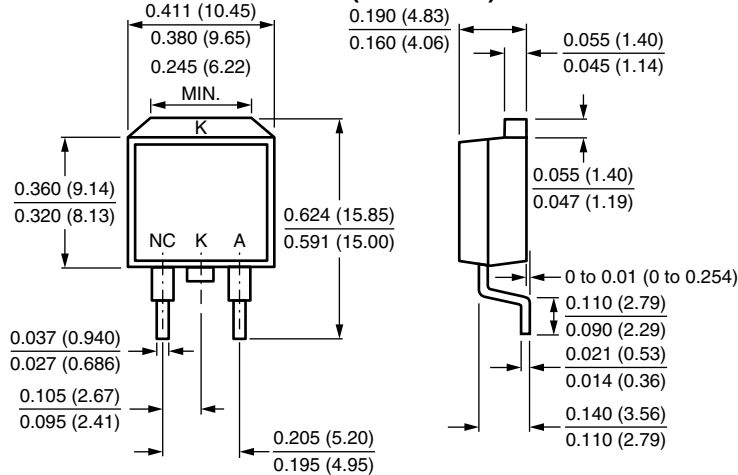
ITO-220AC



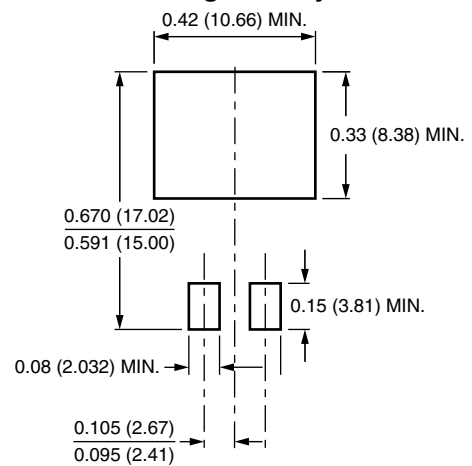
TO-262AA



D²PAK (TO-263AB)



Mounting Pad Layout





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