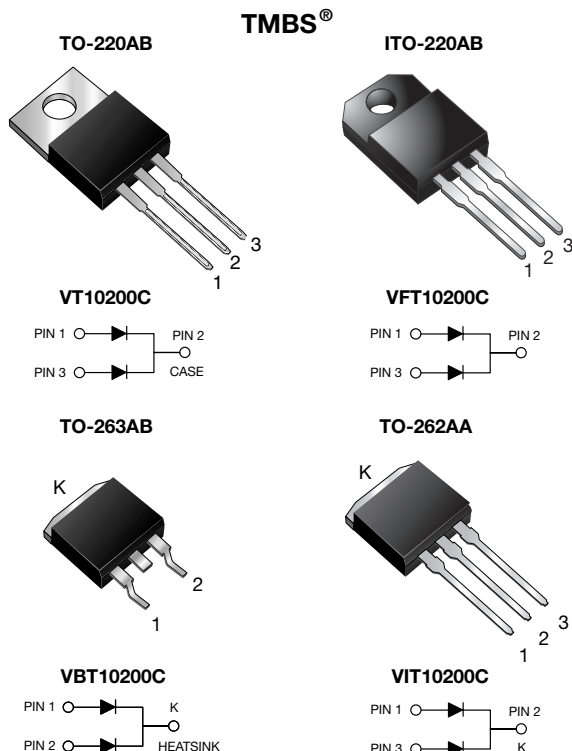




## Trench MOS Barrier Schottky Rectifier

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 TO-263AB package)
- Solder dip 275 °C max. 10 s, per JESD 22-B106 (for TO-220AB, ITO-220AB and TO-262AA package)
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

RoHS  
COMPLIANT

## TYPICAL APPLICATIONS

For use in high frequency converters, switching power supplies, freewheeling diodes, OR-ing diode, dc-to-dc converters and reverse battery protection.

## MECHANICAL DATA

**Case:** TO-220AB, ITO-220AB, 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

## PRIMARY CHARACTERISTICS

|                                |           |
|--------------------------------|-----------|
| $I_{F(AV)}$                    | 2 x 5.0 A |
| $V_{RRM}$                      | 200 V     |
| $I_{FSM}$                      | 80 A      |
| $V_F$ at $I_F = 5.0 \text{ A}$ | 0.65 V    |
| $T_J$ max.                     | 150 °C    |

MAXIMUM RATINGS ( $T_A = 25 \text{ °C}$  unless otherwise noted)

| PARAMETER                                                                                                | SYMBOL                            | VT10200C      | VFT10200C | VBT10200C | VIT10200C | UNIT |
|----------------------------------------------------------------------------------------------------------|-----------------------------------|---------------|-----------|-----------|-----------|------|
| Maximum repetitive peak reverse voltage                                                                  | V <sub>RRM</sub>                  | 200           |           |           |           | V    |
| Maximum average forward rectified current (fig. 1) <div>per device</div> <div>per diode</div>            | I <sub>F(AV)</sub>                | 10.0          |           |           |           | A    |
|                                                                                                          |                                   | 5.0           |           |           |           |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode             | I <sub>FSM</sub>                  | 80            |           |           |           | A    |
| Non-repetitive avalanche energy at T <sub>J</sub> = 25 °C, L = 60 mH per diode                           | E <sub>AS</sub>                   | 30            |           |           |           | mJ   |
| Peak repetitive reverse current at t <sub>p</sub> = 2 μs, 1 kHz, T <sub>J</sub> = 38 °C ± 2 °C per diode | I <sub>RRM</sub>                  | 0.5           |           |           |           | A    |
| Voltage rate of change (rated V <sub>R</sub> )                                                           | dV/dt                             | 10 000        |           |           |           | V/μs |
| Isolation voltage (ITO-220AB only) from terminal to heatsink t = 1 min                                   | V <sub>AC</sub>                   | 1500          |           |           |           | V    |
| Operating junction and storage temperature range                                                         | T <sub>J</sub> , T <sub>STG</sub> | - 40 to + 150 |           |           |           | °C   |

## VT10200C, VFT10200C, VBT10200C, VIT10200C

Vishay General Semiconductor



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                         |                         |                               |               |      |      |
|----------------------------------------------------------------------------|-------------------------|-------------------------|-------------------------------|---------------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS         |                         | SYMBOL                        | TYP.          | MAX. | UNIT |
| Breakdown voltage                                                          | I <sub>R</sub> = 1.0 mA | T <sub>A</sub> = 25 °C  | V <sub>BR</sub>               | 200 (minimum) | -    | V    |
| Instantaneous forward voltage per diode                                    | I <sub>F</sub> = 2.5 A  | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.81          | -    | V    |
|                                                                            | I <sub>F</sub> = 5.0 A  |                         |                               | 1.10          | 1.60 |      |
|                                                                            | I <sub>F</sub> = 2.5 A  | T <sub>A</sub> = 125 °C |                               | 0.58          | -    |      |
|                                                                            | I <sub>F</sub> = 5.0 A  |                         |                               | 0.65          | 0.73 |      |
| Reverse current per diode                                                  | V <sub>R</sub> = 180 V  | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 1.7           | -    | μA   |
|                                                                            |                         | T <sub>A</sub> = 125 °C |                               | 1.8           | -    | mA   |
|                                                                            | V <sub>R</sub> = 200 V  | T <sub>A</sub> = 25 °C  |                               | -             | 150  | μA   |
|                                                                            |                         | T <sub>A</sub> = 125 °C |                               | 2.5           | 10   | mA   |

## Notes

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width  $\leq 40\text{ ms}$ 

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |            |                  |          |           |           |           |      |
|-------------------------------------------------------------------------|------------|------------------|----------|-----------|-----------|-----------|------|
| PARAMETER                                                               |            | SYMBOL           | VT10200C | VFT10200C | VBT10200C | VIT10200C | UNIT |
| Typical thermal resistance                                              | per diode  | R <sub>θJC</sub> | 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          |
| TO-263AB                       | VBT10200C-E3/4W | 1.37            | 4W           | 50/tube       | Tube          |
| TO-263AB                       | VBT10200C-E3/8W | 1.37            | 8W           | 800/reel      | Tape and reel |
| TO-262AA                       | VIT10200C-E3/4W | 1.44            | 4W           | 50/tube       | Tube          |

## RATINGS AND CHARACTERISTICS CURVES

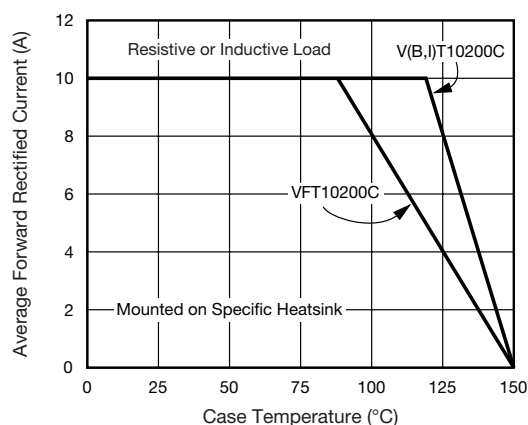
( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

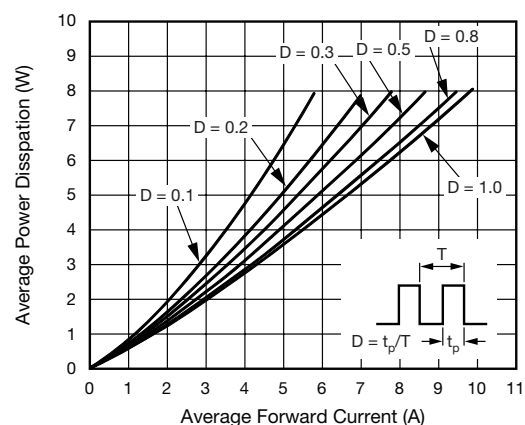


Fig. 2 - Forward Power Loss Characteristics Per Device



# VT10200C, VFT10200C, VBT10200C, VIT10200C

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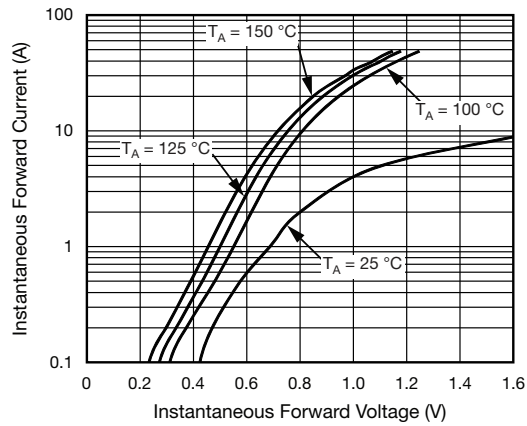


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

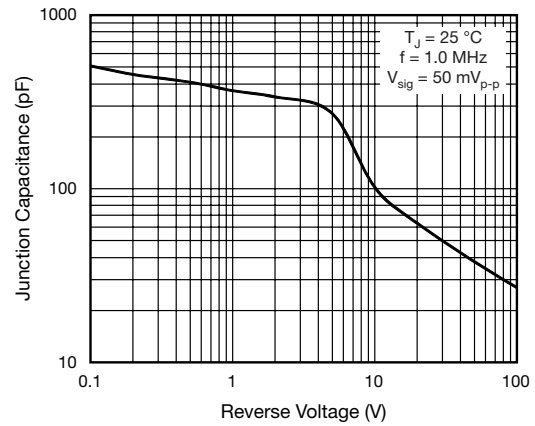


Fig. 5 - Typical Junction Capacitance Per Diode

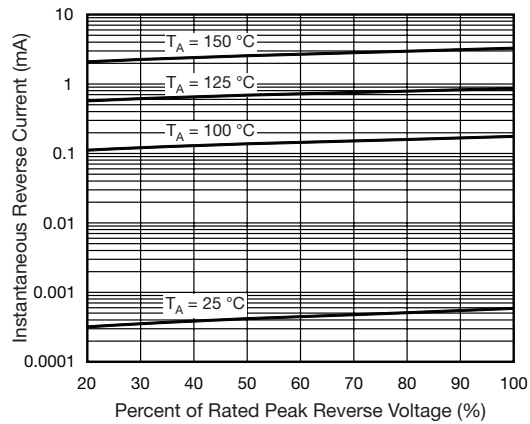


Fig. 4 - Typical Reverse Characteristics Per Diode

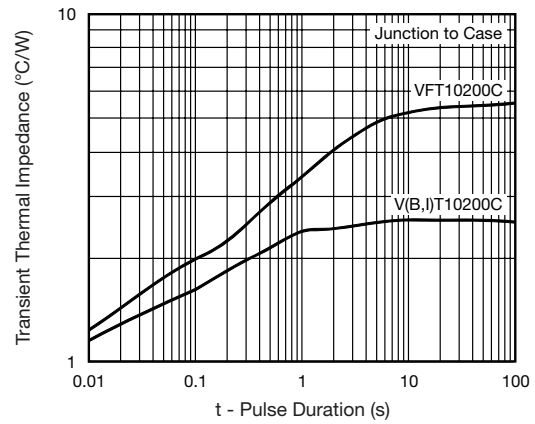


Fig. 6 - Typical Transient Thermal Impedance Per Device

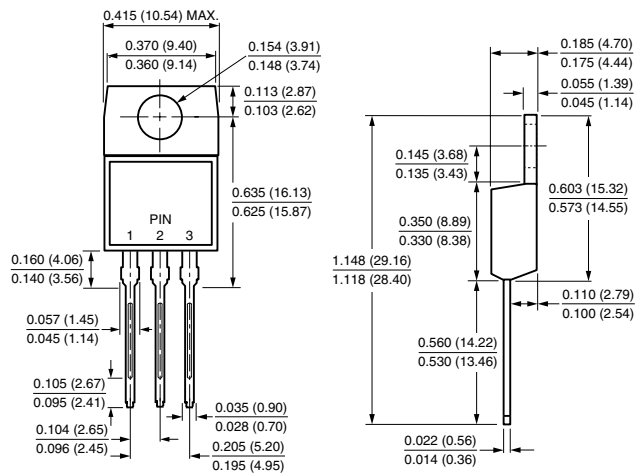
## VT10200C, VFT10200C, VBT10200C, VIT10200C

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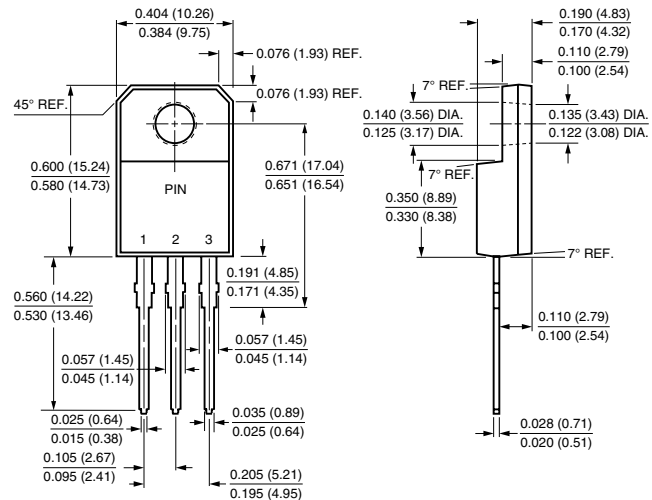


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

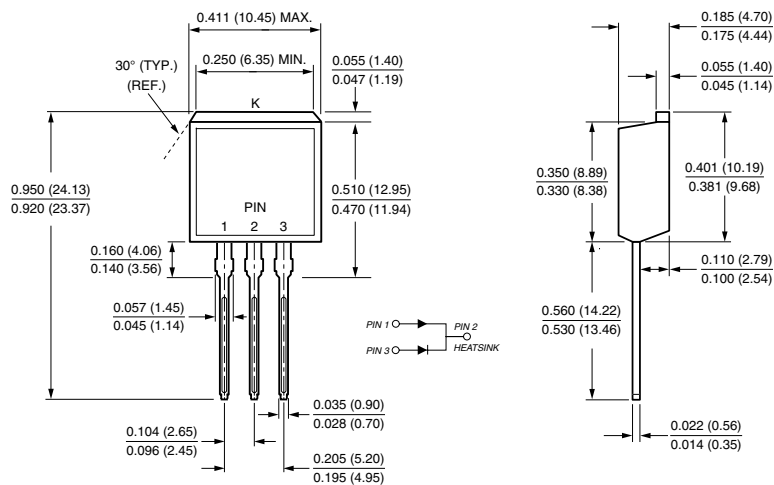
TO-220AB



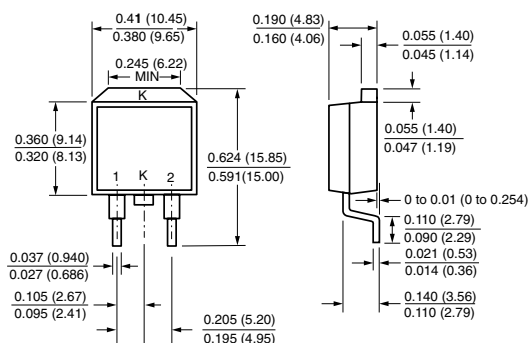
ITO-220AB



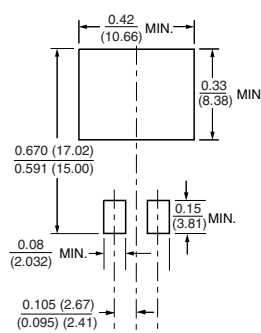
TO-262AA



TO-263AB



Mounting Pad Layout





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