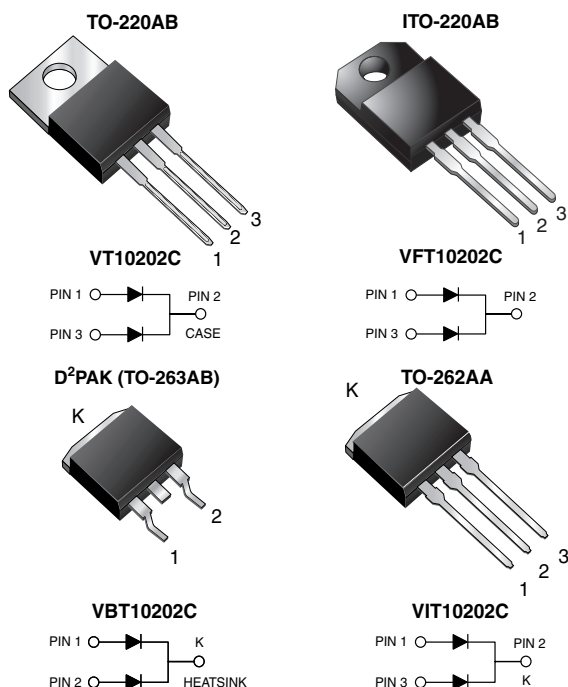


**Dual High Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier**Ultra Low  $V_F = 0.58 \text{ V}$  at  $I_F = 2.5 \text{ A}$ **LINKS TO ADDITIONAL RESOURCES**

| PRIMARY CHARACTERISTICS                                    |                                                 |
|------------------------------------------------------------|-------------------------------------------------|
| $I_{F(AV)}$                                                | 2 x 5 A                                         |
| $V_{RRM}$                                                  | 200 V                                           |
| $I_{FSM}$                                                  | 100 A                                           |
| $V_F$ at $I_F = 5 \text{ A}$ ( $T_A = 125^\circ\text{C}$ ) | 0.65 V                                          |
| $T_J$ max.                                                 | 175 °C                                          |
| Package                                                    | TO-220AB, ITO-220AB, D²PAK (TO-263AB), TO-262AA |
| Circuit configuration                                      | Common cathode                                  |

**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](http://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.

| MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)                                  |                                   |             |           |           |           |      |
|--------------------------------------------------------------------------------------------------|-----------------------------------|-------------|-----------|-----------|-----------|------|
| PARAMETER                                                                                        | SYMBOL                            | VT10202C    | VFT10202C | VBT10202C | VIT10202C | UNIT |
| Maximum repetitive peak reverse voltage                                                          | V <sub>RRM</sub>                  | 200         |           |           |           | V    |
| Maximum average forward rectified current<br>(fig. 1) <div>per device</div> <div>per diode</div> | I <sub>F(AV)</sub>                | 10          |           |           |           | A    |
|                                                                                                  |                                   | 5           |           |           |           |      |
| Maximum DC reverse voltage                                                                       | V <sub>DC</sub>                   | 160         |           |           |           | V    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode     | I <sub>FSM</sub>                  | 100         |           |           |           | A    |
| Voltage rate of change (rated V <sub>R</sub> )                                                   | dV/dt                             | 10 000      |           |           |           | V/μs |
| Operating junction and storage temperature range                                                 | T <sub>J</sub> , T <sub>STG</sub> | -40 to +175 |           |           |           | °C   |



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                        |                         |                |      |      |      |
|----------------------------------------------------------------------------|------------------------|-------------------------|----------------|------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS        |                         | SYMBOL         | TYP. | MAX. | UNIT |
| Instantaneous forward voltage per diode <sup>(1)</sup>                     | I <sub>F</sub> = 2.5 A | T <sub>A</sub> = 25 °C  | V <sub>F</sub> | 0.74 | -    | V    |
|                                                                            | I <sub>F</sub> = 5.0 A |                         |                | 0.80 | 0.88 |      |
|                                                                            | 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 <sup>(2)</sup>                                             | V <sub>R</sub> = 160 V | T <sub>A</sub> = 25 °C  | I <sub>R</sub> | 0.2  | -    | μA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                | 0.4  | -    | mA   |
|                                                                            | V <sub>R</sub> = 200 V | T <sub>A</sub> = 25 °C  |                | -    | 150  | μA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                | 1.0  | 5    | mA   |

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width  $\leq 5\text{ ms}$ 

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |            |                                    |          |           |           |           |      |
|-------------------------------------------------------------------------|------------|------------------------------------|----------|-----------|-----------|-----------|------|
| PARAMETER                                                               |            | SYMBOL                             | VT10202C | VFT10202C | VBT10202C | VIT10202C | UNIT |
| Typical thermal resistance                                              | per diode  | R <sub>θJC</sub>                   | 3.4      | 6.8       | 3.4       | 3.4       | °C/W |
|                                                                         | per device | R <sub>θJC</sub>                   | 2.2      | 4.4       | 2.2       | 2.2       |      |
|                                                                         | per device | R <sub>θJA</sub> <sup>(1)(2)</sup> | 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 <sup>2</sup> PAK (TO-263AB)  | VBT10202C-M3/4W | 1.37            | 4W           | 50/tube       | Tube          |
| D <sup>2</sup> 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 ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

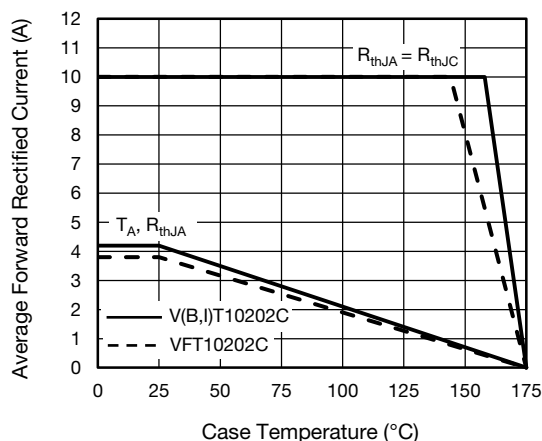


Fig. 1 - Maximum Forward Current Derating Curve (D = Duty Cycle = 0.5)

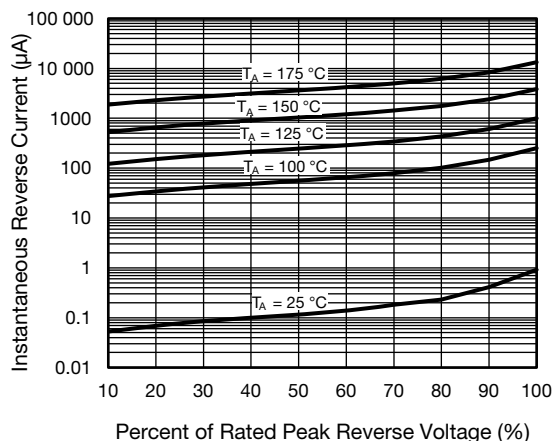


Fig. 4 - Typical Reverse Characteristics Per Diode

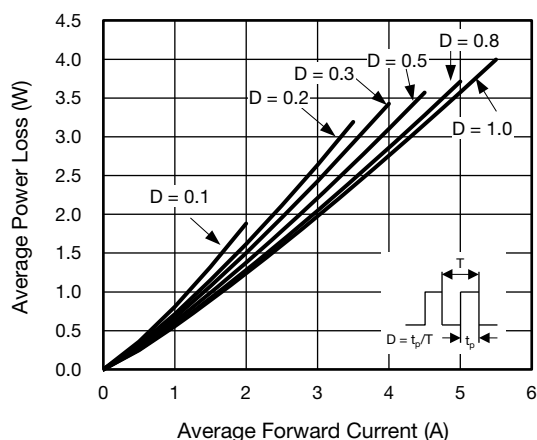


Fig. 2 - Forward Power Loss Characteristics Per Diode

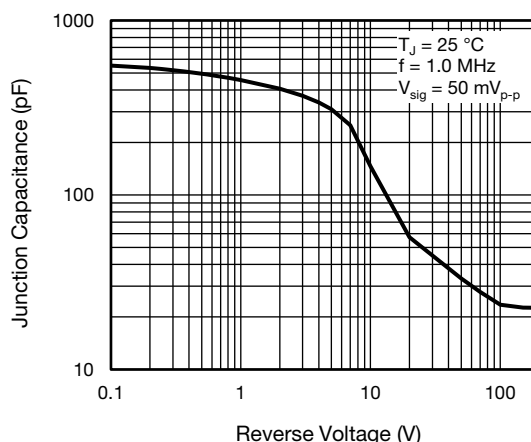


Fig. 5 - Typical Junction Capacitance Per Diode

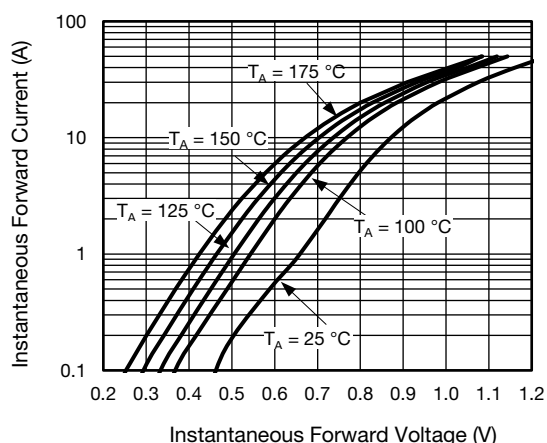


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

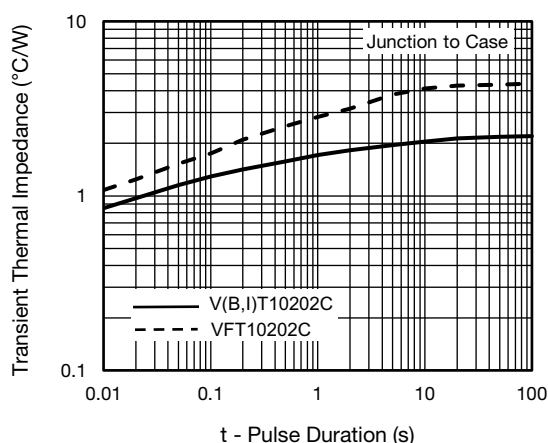
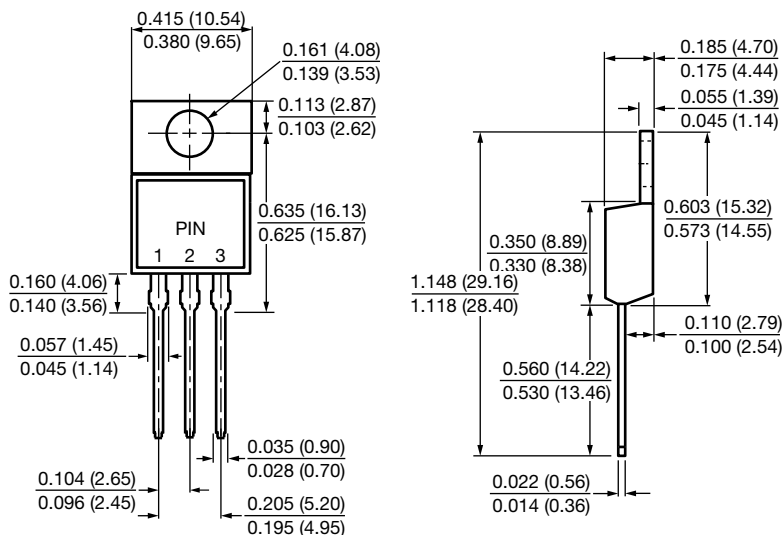


Fig. 6 - Typical Transient Thermal Impedance Per Device

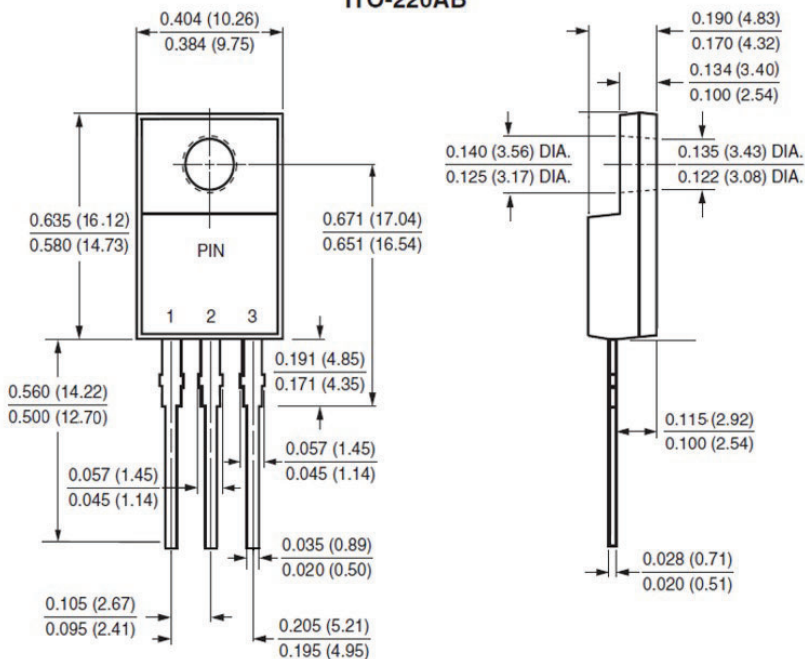


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AB

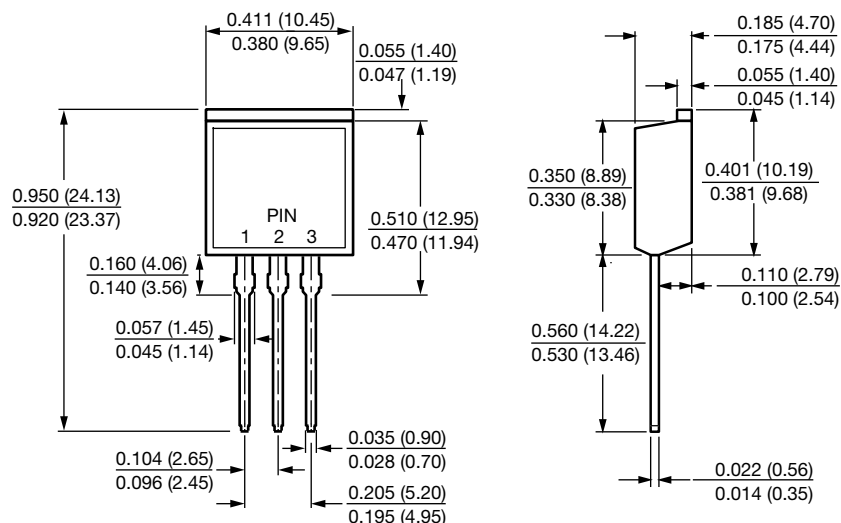


### ITO-220AB

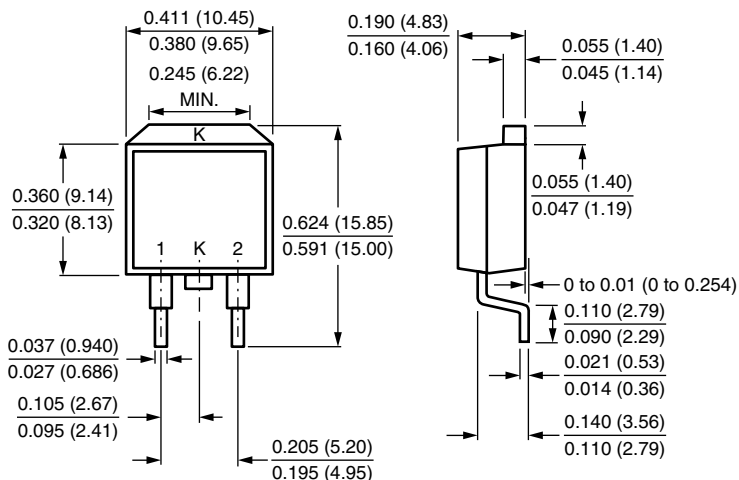




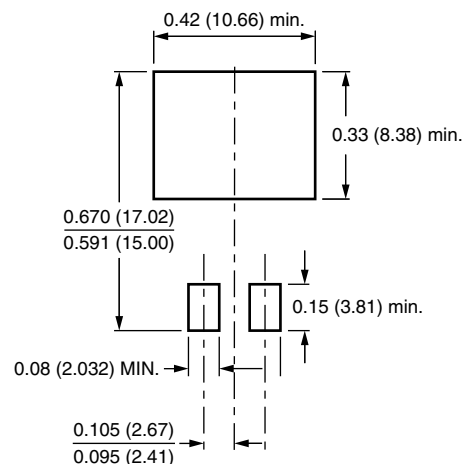
## TO-262AA



## D<sup>2</sup>PAK (TO-263AB)



## Mounting Pad Layout





## Disclaimer

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