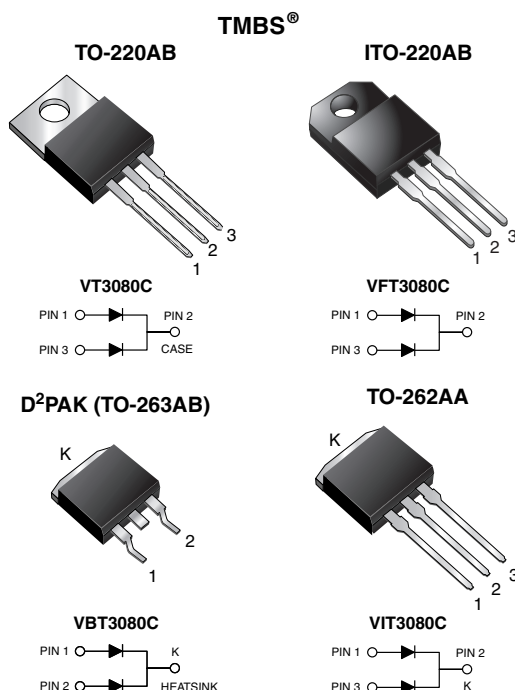


## Dual Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.46\text{ V}$  at  $I_F = 5\text{ A}$



### LINKS TO ADDITIONAL RESOURCES



3D Models

| PRIMARY CHARACTERISTICS      |                                                 |
|------------------------------|-------------------------------------------------|
| $I_{F(AV)}$                  | 2 x 15 A                                        |
| $V_{RRM}$                    | 80 V                                            |
| $I_{FSM}$                    | 150 A                                           |
| $V_F$ at $I_F = 15\text{ A}$ | 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 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

### 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

| MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)                                          |                                               |             |          |          |          |      |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------|----------|----------|----------|------|
| PARAMETER                                                                                                | SYMBOL                                        | VT3080C     | VFT3080C | VBT3080C | VIT3080C | UNIT |
| Maximum repetitive peak reverse voltage                                                                  | V <sub>RRM</sub>                              | 80          |          |          |          | V    |
| Maximum average forward rectified current (fig. 1)                                                       | per device<br>I <sub>F(AV)</sub><br>per diode | 30          |          |          |          | A    |
|                                                                                                          |                                               | 15          |          |          |          |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode             | I <sub>FSM</sub>                              | 150         |          |          |          | A    |
| Non-repetitive avalanche energy at T <sub>J</sub> = 25 °C, L = 60 mH per diode                           | E <sub>AS</sub>                               | 160         |          |          |          | 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>                              | 1.0         |          |          |          | A    |
| 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>             | -55 to +150 |          |          |          | °C   |



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                        |                         |                               |      |      |      |
|----------------------------------------------------------------------------|------------------------|-------------------------|-------------------------------|------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS        |                         | SYMBOL                        | TYP. | MAX. | UNIT |
| Instantaneous forward voltage per diode                                    | I <sub>F</sub> = 5 A   | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.52 | -    | V    |
|                                                                            | I <sub>F</sub> = 7.5 A |                         |                               | 0.58 | -    |      |
|                                                                            | I <sub>F</sub> = 15 A  |                         |                               | 0.75 | 0.82 |      |
|                                                                            | I <sub>F</sub> = 5 A   | T <sub>A</sub> = 125 °C |                               | 0.46 | -    |      |
|                                                                            | I <sub>F</sub> = 7.5 A |                         |                               | 0.52 | -    |      |
|                                                                            | I <sub>F</sub> = 15 A  |                         |                               | 0.65 | 0.70 |      |
| Reverse current per diode                                                  | V <sub>R</sub> = 80 V  | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 30   | 700  | μA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 20   | 35   | 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 ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |            |                 |         |          |          |          |                      |
|--------------------------------------------------------------------------------------|------------|-----------------|---------|----------|----------|----------|----------------------|
| PARAMETER                                                                            |            | SYMBOL          | VT3080C | VFT3080C | VBT3080C | VIT3080C | UNIT                 |
| Typical thermal resistance                                                           | per diode  | $R_{\theta JC}$ | 2.5     | 6.0      | 2.5      | 2.5      | $^{\circ}\text{C/W}$ |
|                                                                                      | per device |                 | 2.0     | 5.0      | 2.0      | 2.0      |                      |

| ORDERING INFORMATION (Example) |                |                 |              |               |               |
|--------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE                        | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                       | VT3080C-E3/4W  | 1.89            | 4W           | 50/tube       | Tube          |
| ITO-220AB                      | VFT3080C-E3/4W | 1.76            | 4W           | 50/tube       | Tube          |
| D <sup>2</sup> PAK (TO-263AB)  | VBT3080C-E3/4W | 1.39            | 4W           | 50/tube       | Tube          |
| D <sup>2</sup> PAK (TO-263AB)  | VBT3080C-E3/8W | 1.39            | 8W           | 800/reel      | Tape and reel |
| TO-262AA                       | VIT3080C-E3/4W | 1.46            | 4W           | 50/tube       | Tube          |



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

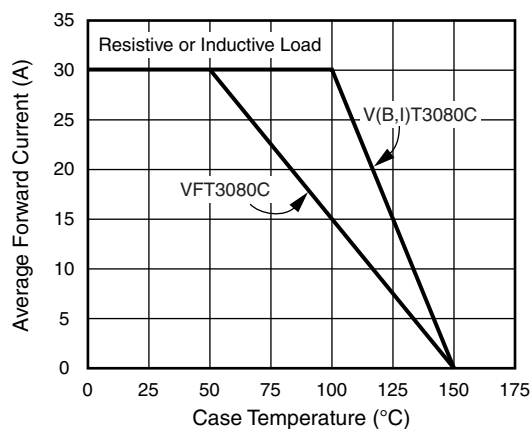


Fig. 1 - Maximum Forward Current Derating Curve

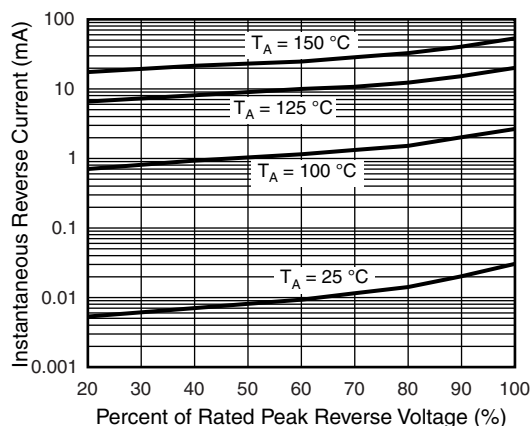


Fig. 4 - Typical Reverse Characteristics Per Diode

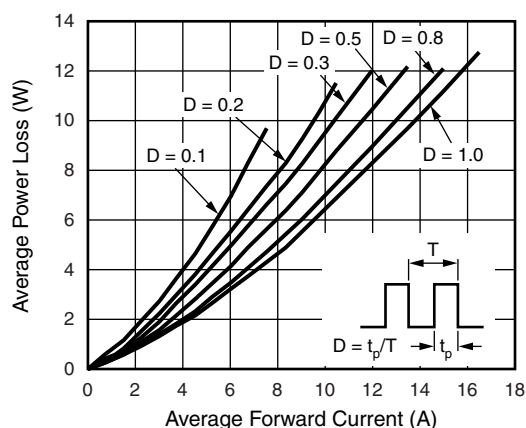


Fig. 2 - Forward Power Loss Characteristics Per Diode

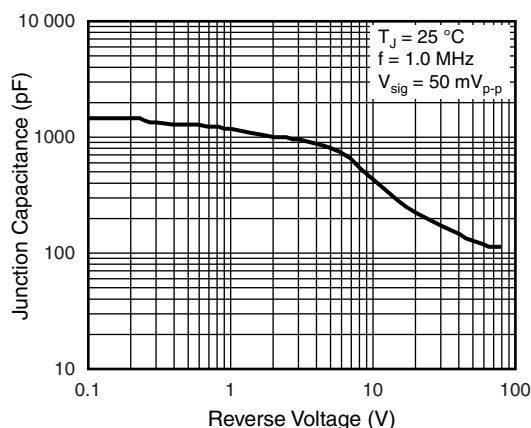


Fig. 5 - Typical Junction Capacitance Per Diode

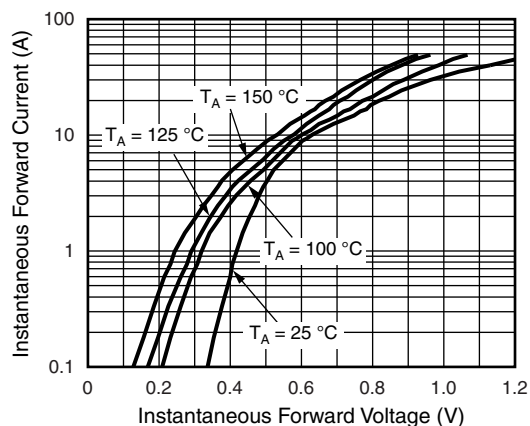


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

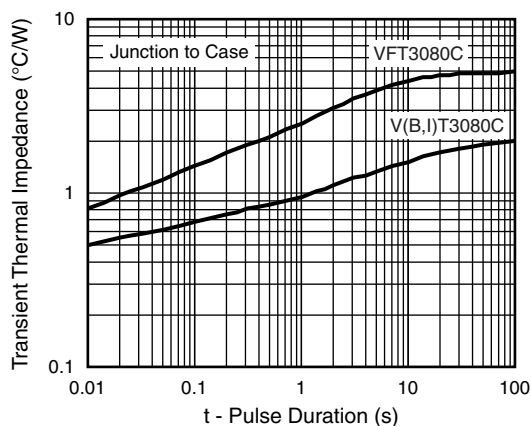
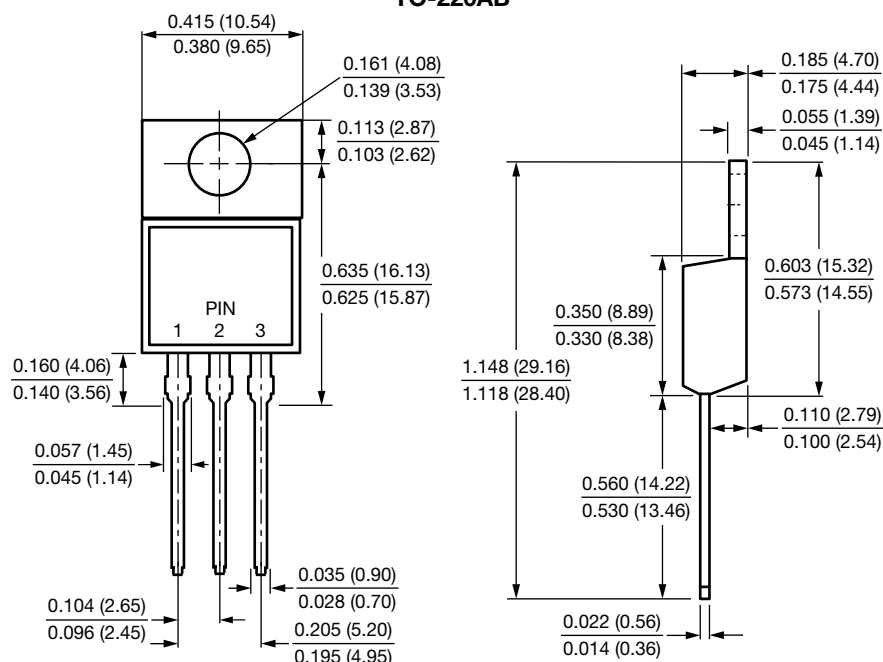


Fig. 6 - Typical Transient Thermal Impedance Per Device

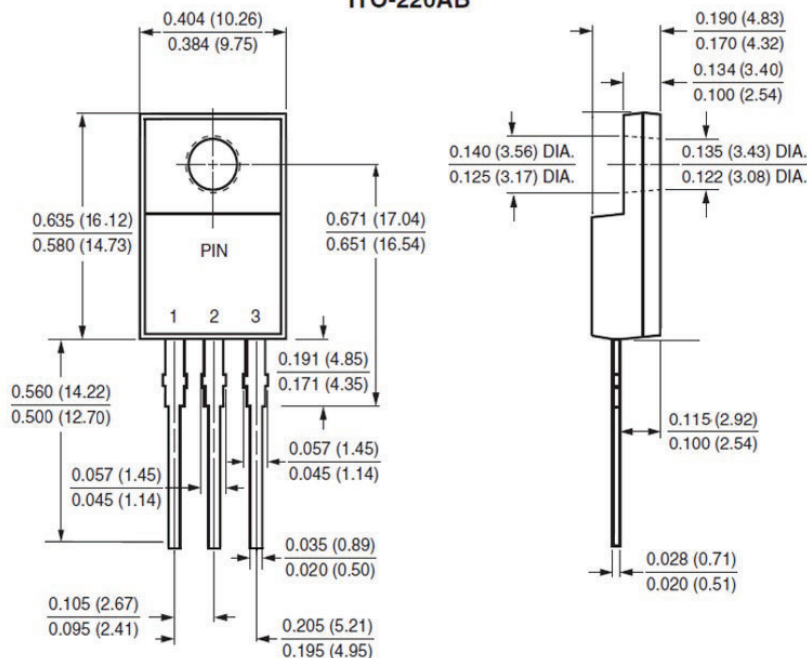


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB

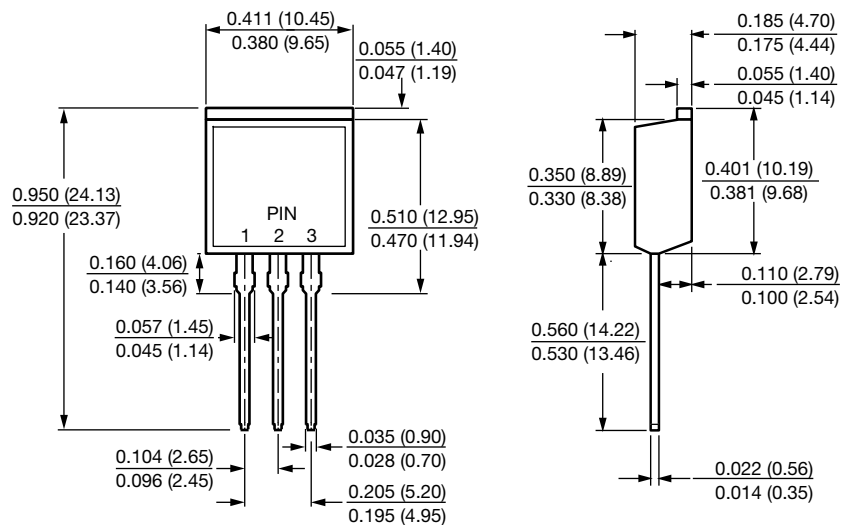


ITO-220AB

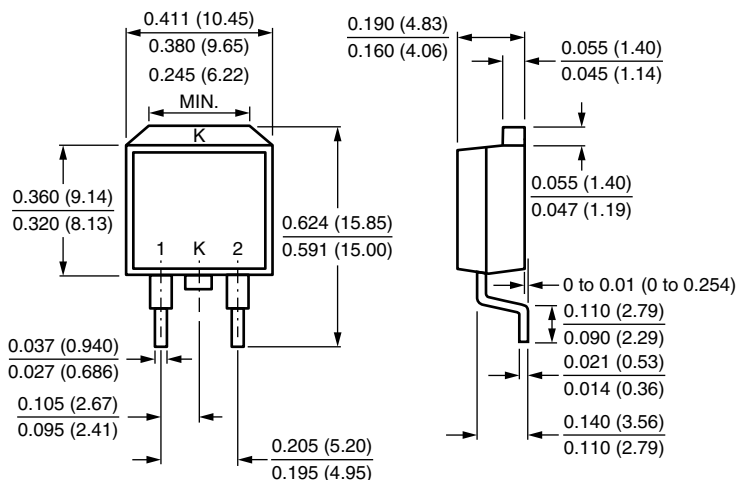




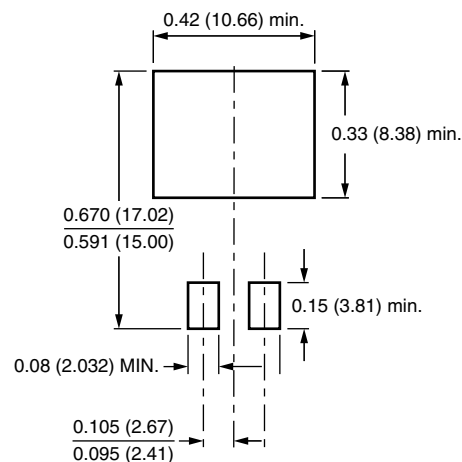
## TO-262AA



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



## Mounting Pad Layout





## Disclaimer

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