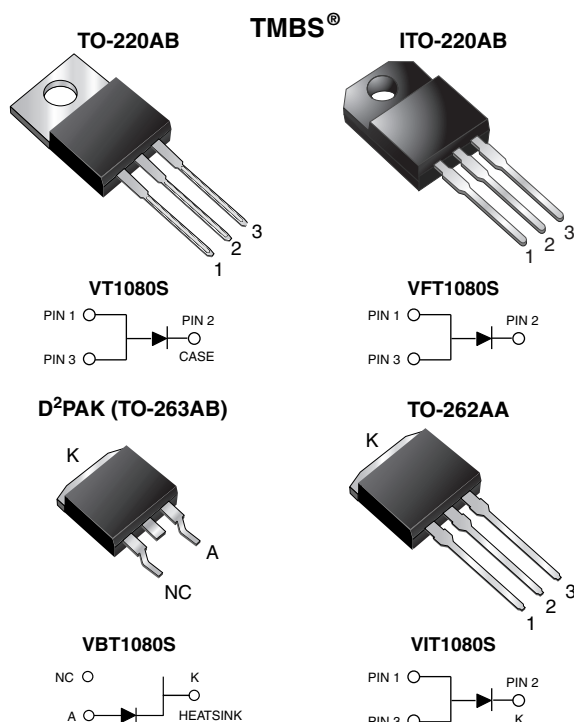


## Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.52 \text{ V}$  at  $I_F = 5 \text{ A}$



### LINKS TO ADDITIONAL RESOURCES



### 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

### PRIMARY CHARACTERISTICS

|                               |                                                    |
|-------------------------------|----------------------------------------------------|
| $I_{F(AV)}$                   | 10 A                                               |
| $V_{RRM}$                     | 80 V                                               |
| $I_{FSM}$                     | 100 A                                              |
| $V_F$ at $I_F = 10 \text{ A}$ | 0.60 V                                             |
| $T_J \text{ max.}$            | 150 °C                                             |
| Package                       | TO-220AB, ITO-220AB,<br>D²PAK (TO-263AB), TO-262AA |
| Circuit configuration         | Single                                             |

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

| PARAMETER                                                                                                         | SYMBOL         | VT1080S     | VFT1080S | VBT1080S | VIT1080S | UNIT |
|-------------------------------------------------------------------------------------------------------------------|----------------|-------------|----------|----------|----------|------|
| Maximum repetitive peak reverse voltage                                                                           | $V_{RRM}$      | 80          |          |          |          | V    |
| Maximum average forward rectified current (fig. 1)                                                                | $I_{F(AV)}$    | 10          |          |          |          | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load                                | $I_{FSM}$      | 100         |          |          |          | A    |
| Non-repetitive avalanche energy at $T_J = 25 \text{ °C}$ , $L = 60 \text{ mH}$                                    | $E_{AS}$       | 110         |          |          |          | mJ   |
| Peak repetitive reverse current at $t_p = 2 \text{ } \mu\text{s}$ , 1 kHz, $T_J = 38 \text{ °C} \pm 2 \text{ °C}$ | $I_{RRM}$      | 1.0         |          |          |          | A    |
| Isolation voltage (ITO-220AB only) from terminal to heatsink, $t = 1 \text{ min}$                                 | $V_{AC}$       | 1500        |          |          |          | V    |
| Operating junction and storage temperature range                                                                  | $T_J, T_{STG}$ | -55 to +150 |          |          |          | °C   |



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                        |                         |                               |              |      |      |
|----------------------------------------------------------------------------|------------------------|-------------------------|-------------------------------|--------------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS        |                         | SYMBOL                        | TYP.         | MAX. | UNIT |
| Breakdown voltage                                                          | I <sub>R</sub> = 10 mA | T <sub>A</sub> = 25 °C  | V <sub>BR</sub>               | 80 (minimum) | -    | V    |
| Instantaneous forward voltage                                              | I <sub>F</sub> = 5 A   | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.57         | -    | V    |
|                                                                            | I <sub>F</sub> = 10 A  |                         |                               | 0.67         | 0.81 |      |
|                                                                            | I <sub>F</sub> = 5 A   | T <sub>A</sub> = 125 °C |                               | 0.52         | -    |      |
|                                                                            | I <sub>F</sub> = 10 A  |                         |                               | 0.60         | 0.70 |      |
| Reverse current                                                            | V <sub>R</sub> = 80 V  | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 20           | 600  | μA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 10           | 20   | mA   |

**Notes**

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

(2) Pulse test: Pulse width  $\leq 40\text{ ms}$

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                 |         |          |          |          |                      |
|---------------------------------------------------------------------------------------------|-----------------|---------|----------|----------|----------|----------------------|
| PARAMETER                                                                                   | SYMBOL          | VT1080S | VFT1080S | VBT1080S | VIT1080S | UNIT                 |
| Typical thermal resistance                                                                  | $R_{\theta JC}$ | 2.2     | 5.5      | 2.2      | 2.2      | $^{\circ}\text{C/W}$ |

| <b>ORDERING INFORMATION</b> (Example) |                |                 |              |               |               |
|---------------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE                               | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                              | VT1080S-E3/4W  | 1.88            | 4W           | 50/tube       | Tube          |
| ITO-220AB                             | VFT1080S-E3/4W | 1.73            | 4W           | 50/tube       | Tube          |
| D <sup>2</sup> PAK (TO-263AB)         | VBT1080S-E3/4W | 1.36            | 4W           | 50/tube       | Tube          |
| D <sup>2</sup> PAK (TO-263AB)         | VBT1080S-E3/8W | 1.36            | 8W           | 800/reel      | Tape and reel |
| TO-262AA                              | VIT1080S-E3/4W | 1.43            | 4W           | 50/tube       | Tube          |



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

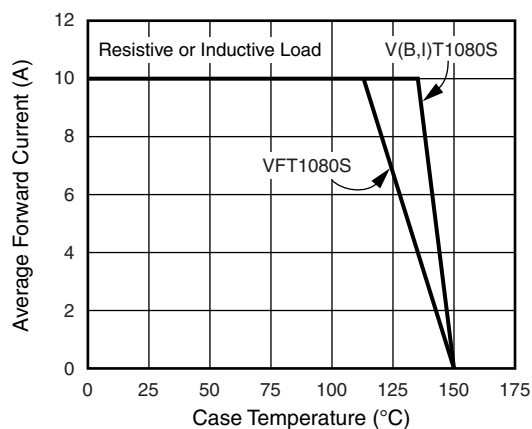


Fig. 1 - Maximum Forward Current Derating Curve

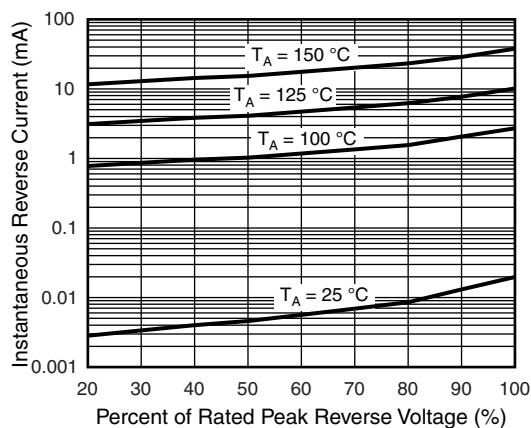


Fig. 4 - Typical Reverse Characteristics

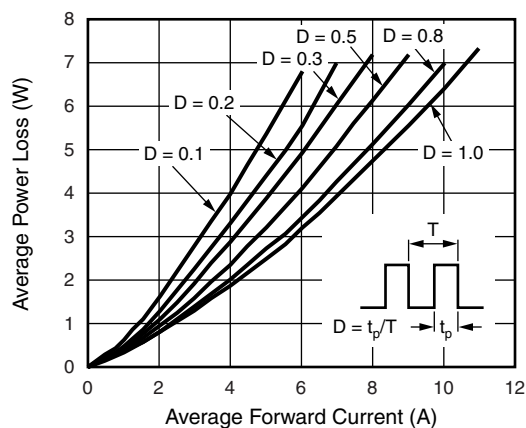


Fig. 2 - Forward Power Loss Characteristics

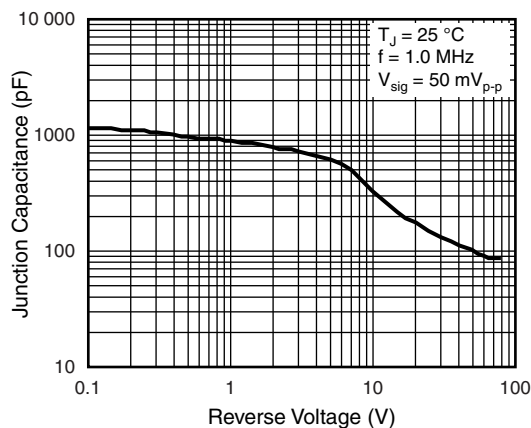


Fig. 5 - Typical Junction Capacitance

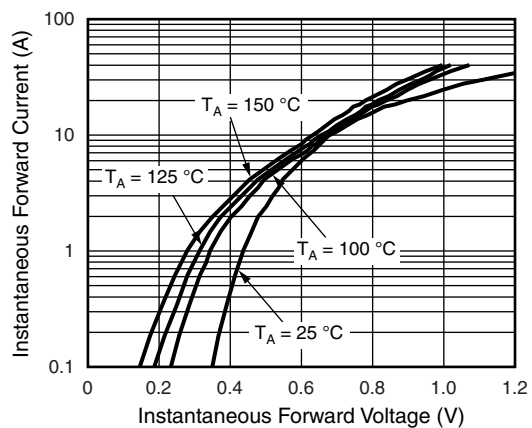


Fig. 3 - Typical Instantaneous Forward Characteristics

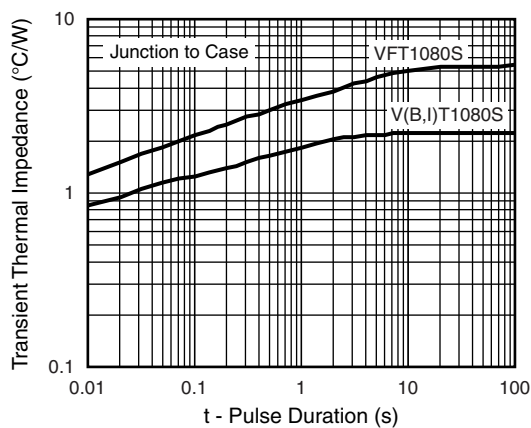
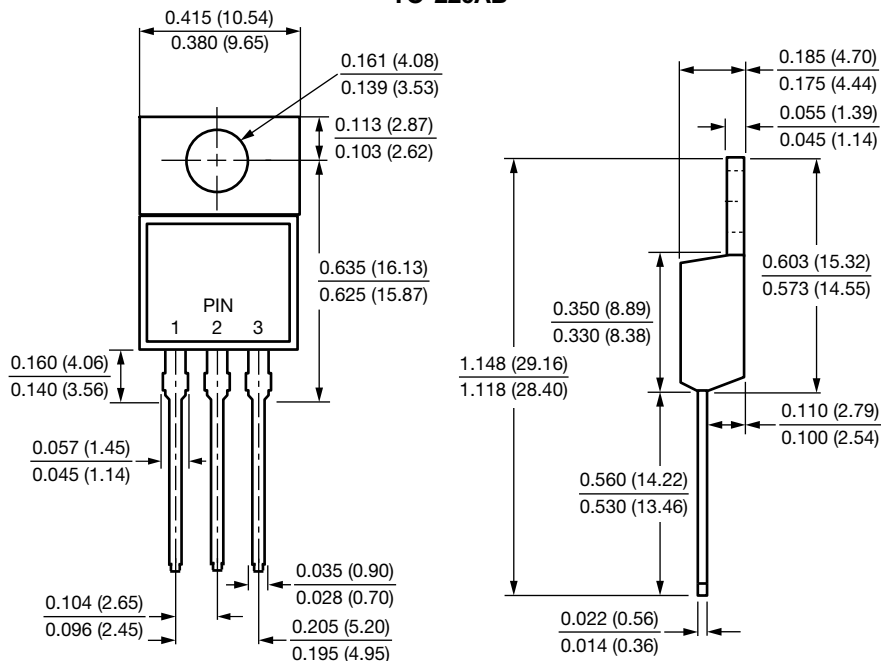


Fig. 6 - Typical Transient Thermal Impedance

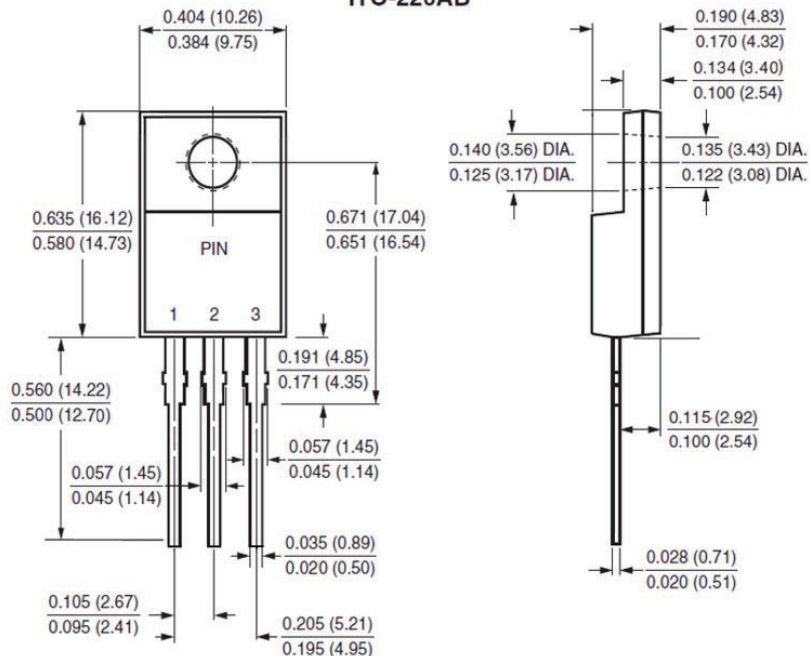


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AB

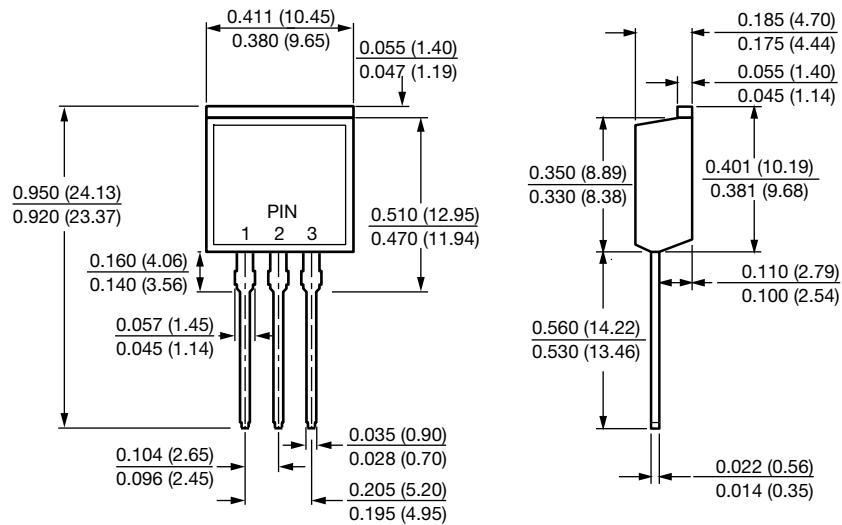


### ITO-220AB

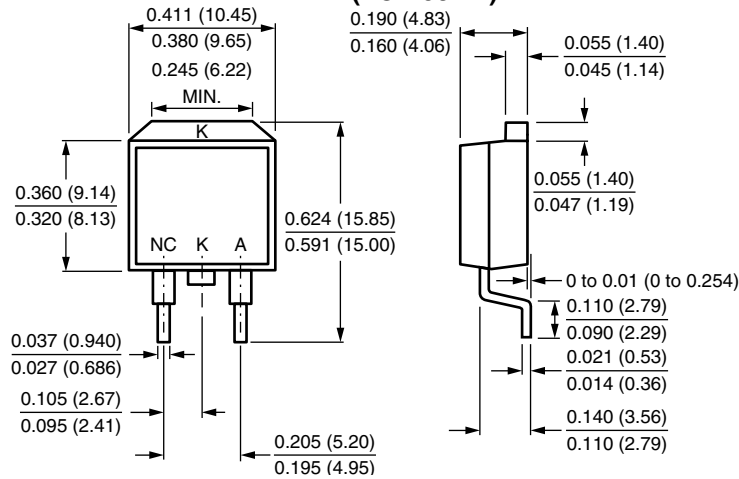




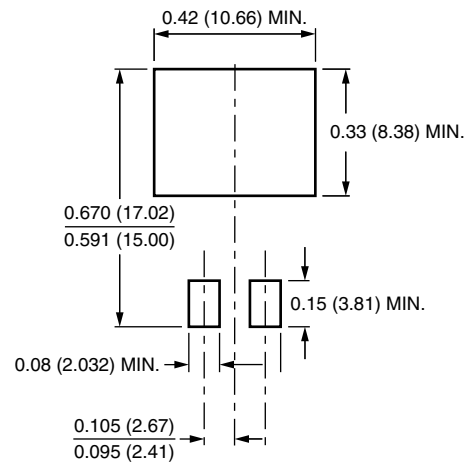
**TO-262AA**



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



**Mounting Pad Layout**





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