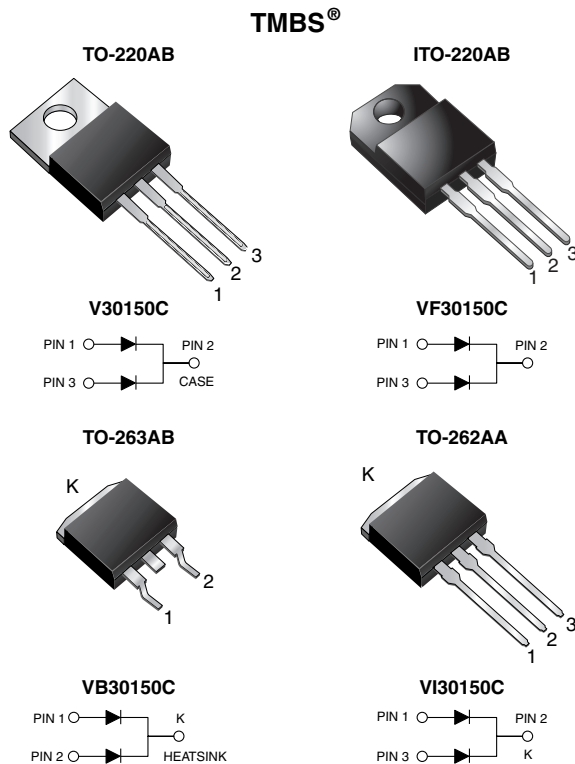


# Dual High Voltage Trench MOS Barrier Schottky Rectifier

 Ultra Low  $V_F = 0.56 \text{ V}$  at  $I_F = 5 \text{ A}$ 


## 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 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, 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.

| PRIMARY CHARACTERISTICS       |   |
|-------------------------------|---|
| $I_{F(AV)}$                   | 2 x 15 A                                |
| $V_{RRM}$                     | 150 V                                   |
| $I_{FSM}$                     | 140 A                                   |
| $V_F$ at $I_F = 15 \text{ A}$ | 0.71 V                                  |
| $T_J \text{ max.}$            | 150 °C                                  |
| Package                       | TO-220AB, ITO-220AB, TO-263AB, TO-262AA |
| Diode variation               | Common cathode                          |

| MAXIMUM RATINGS ( $T_A = 25 \text{ °C}$ unless otherwise noted)  |                |             |          |          |          |                  |
|--|----------------|-------------|----------|----------|----------|------------------|
| PARAMETER  | SYMBOL         | V30150C     | VF30150C | VB30150C | VI30150C | UNIT             |
| Max. repetitive peak reverse voltage   | $V_{RRM}$      | 150         |          |          |          | V                |
| Max. average forward rectified current (fig. 1)  | $I_{F(AV)}$    | per device  |          |          | 30       | A                |
|  |                | per diode   |          |          | 15       |                  |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode                               | $I_{FSM}$      | 140         |          |          |          | A                |
| Non-repetitive avalanche energy at $T_J = 25 \text{ °C}$ , $L = 60 \text{ mH}$ per diode                                   | $E_{AS}$       | 110         |          |          |          | mJ               |
| Peak repetitive reverse current at $t_p = 2 \text{ }\mu\text{s}$ , 1 kHz, $T_J = 38 \text{ °C} \pm 2 \text{ °C}$ per diode | $I_{RRM}$      | 0.5         |          |          |          | A                |
| Voltage rate of change (rated $V_R$ )  | $dV/dt$        | 10 000      |          |          |          | V/ $\mu\text{s}$ |
| 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> = 1.0 mA | T <sub>A</sub> = 25 °C  | V <sub>BR</sub> | 150 (min.)             | -    | V    |      |
| Instantaneous forward voltage per diode <sup>(1)</sup>                     | I <sub>F</sub> = 5 A    | T <sub>A</sub> = 25 °C  | V <sub>F</sub>  | 0.72                   | -    | V    |      |
|  |                         |                         |                 | I <sub>F</sub> = 7.5 A | 0.81 |      | -    |
|  |                         |                         |                 | I <sub>F</sub> = 15 A  | 1.11 |      | 1.36 |
|  | T <sub>A</sub> = 125 °C | I <sub>F</sub> = 5 A    |                 | 0.56                   | -    |      |      |
|  |                         | I <sub>F</sub> = 7.5 A  |                 | 0.61                   | -    |      |      |
|  |                         | I <sub>F</sub> = 15 A   |                 | 0.71                   | 0.79 |      |      |
| Reverse current per diode <sup>(2)</sup>                                   | V <sub>R</sub> = 100 V  | T <sub>A</sub> = 25 °C  | I <sub>R</sub>  | 1.5                    | -    | μA   |      |
|  |                         | T <sub>A</sub> = 125 °C |                 | 2                      | -    | mA   |      |
|  | V <sub>R</sub> = 150 V  | T <sub>A</sub> = 25 °C  |                 | -                      | 200  | μA   |      |
|  |                         | T <sub>A</sub> = 125 °C |                 | 4                      | 20   | mA   |      |

**Notes**

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                  |         |          |          |          |      |
|---|------------------|---------|----------|----------|----------|------|
| PARAMETER   | SYMBOL           | V30150C | VF30150C | VI30150C | VI30150C | UNIT |
| Typical thermal resistance per diode                                    | R <sub>θJC</sub> | 2.2     | 4.5      | 2.2      | 2.2      | °C/W |

| ORDERING INFORMATION (Example) |                |                 |              |               |               |
|--------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE                        | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                       | V30150C-E3/4W  | 1.89            | 4W           | 50/tube       | Tube          |
| ITO-220AB                      | VF30150C-E3/4W | 1.75            | 4W           | 50/tube       | Tube          |
| TO-263AB                       | VB30150C-E3/4W | 1.39            | 4W           | 50/tube       | Tube          |
| TO-263AB                       | VB30150C-E3/8W | 1.39            | 8W           | 800/reel      | Tape and reel |
| TO-262AA                       | VI30150C-E3/4W | 1.46            | 4W           | 50/tube       | Tube          |

**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)**

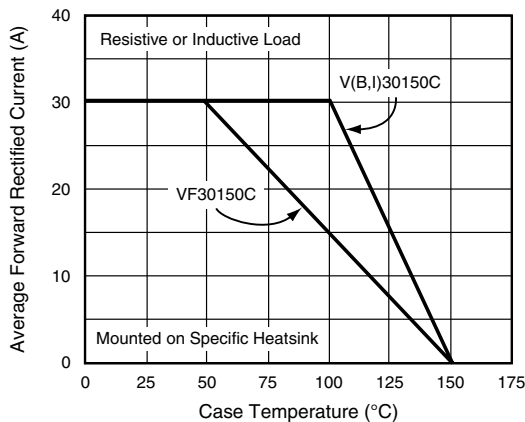


Fig. 1 - Maximum Forward Current Derating Curve

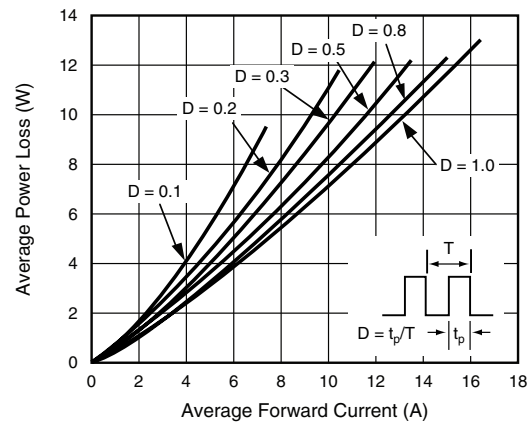


Fig. 2 - Forward Power Loss Characteristics Per Diode

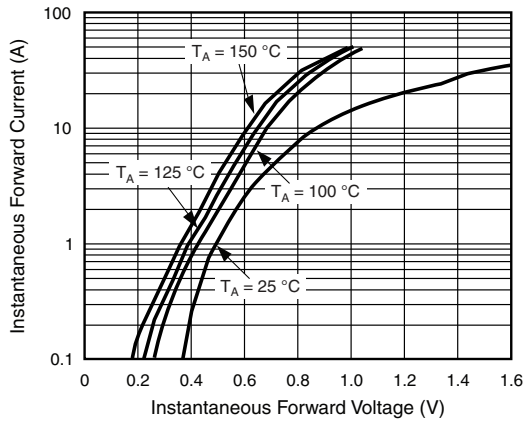


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

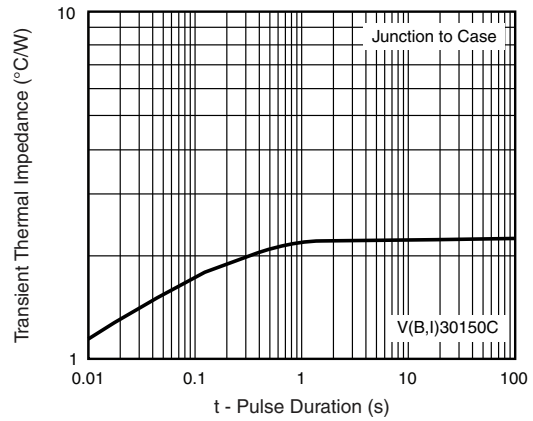


Fig. 6 - Typical Transient Thermal Impedance Per Diode

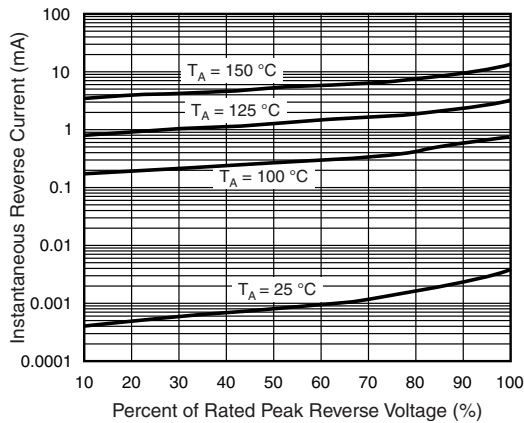


Fig. 4 - Typical Reverse Characteristics Per Diode

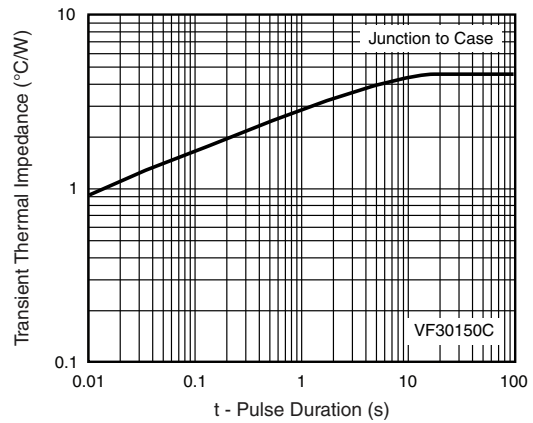


Fig. 7 - Typical Transient Thermal Impedance Per Diode

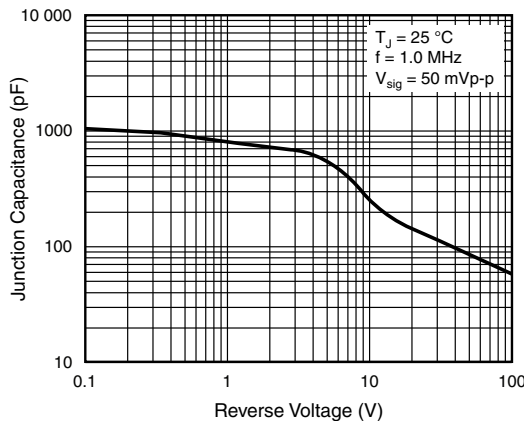
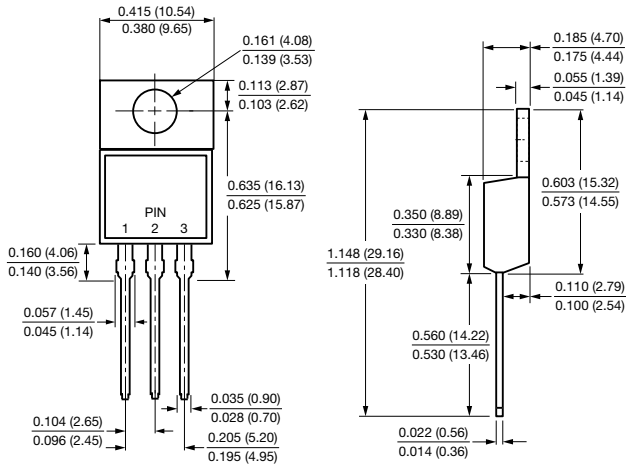


Fig. 5 - Typical Junction Capacitance

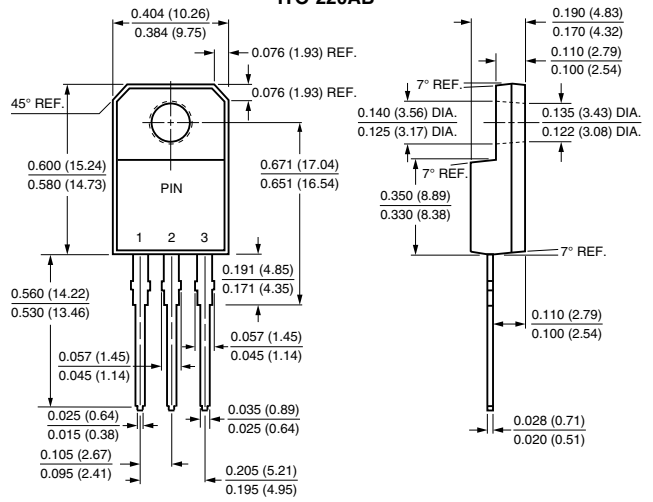


### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

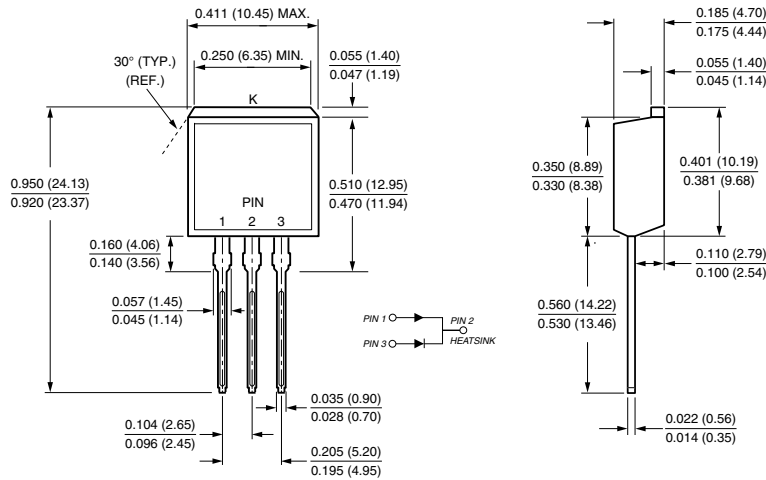
#### TO-220AB



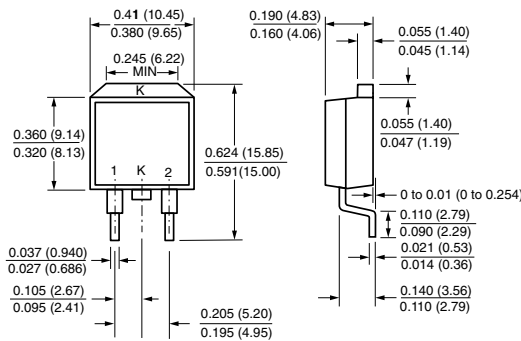
#### ITO-220AB



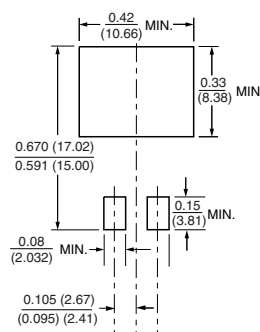
#### TO-262AA



#### TO-263AB



#### Mounting Pad Layout





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