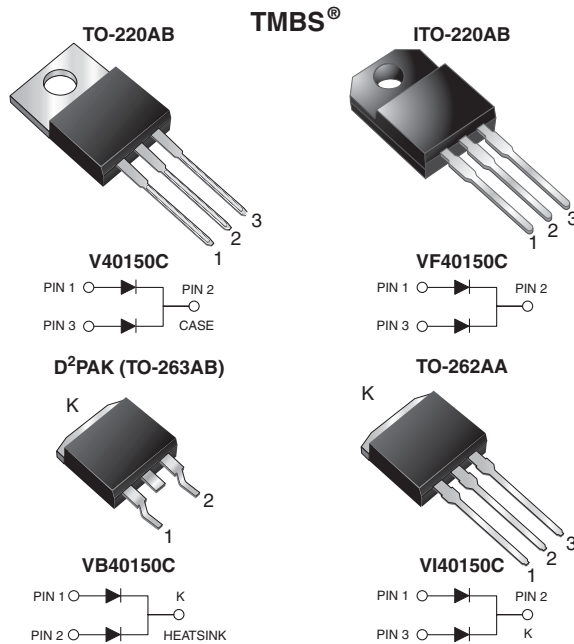


## Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.55 \text{ V}$  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, D<sup>2</sup>PAK (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.

### DESIGN SUPPORT TOOLS

[click logo to get started](#)



| PRIMARY CHARACTERISTICS       |  |
|-------------------------------|--|
| $I_{F(AV)}$                   | 2 x 20 A   |
| $V_{RRM}$                     | 150 V  |
| $I_{FSM}$                     | 160 A  |
| $V_F$ at $I_F = 20 \text{ A}$ | 0.75 V   |
| $T_J$ max.                    | 150 °C   |
| Package                       | TO-220AB, ITO-220AB, D <sup>2</sup> PAK (TO-263AB), TO-262AA |
| Circuit configuration         | Common cathode   |

| MAXIMUM RATINGS ( $T_A = 25 \text{ °C}$ unless otherwise noted)   |                |             |             |          |          |                  |
|---|----------------|-------------|-------------|----------|----------|------------------|
| PARAMETER   | SYMBOL         | V40150C     | VF40150C    | VB40150C | VI40150C | UNIT             |
| Max. repetitive peak reverse voltage  | $V_{RRM}$      |             | 150         |          |          | V                |
| Max. average forward rectified current (fig. 1)   | per device     | $I_{F(AV)}$ | 40          |          |          | A                |
|   | per diode      | $I_{F(AV)}$ | 20          |          |          |                  |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode                                | $I_{FSM}$      |             | 160         |          |          | A                |
| Non-repetitive avalanche energy at $T_J = 25 \text{ °C}$ , $L = 60 \text{ mH}$ per diode                                    | $E_{AS}$       |             | 150         |          |          | 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 $V_F$ )   | $dV/dt$        |             | 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<br>I <sub>F</sub> = 10 A<br>I <sub>F</sub> = 20 A | T <sub>A</sub> = 25 °C  | V <sub>F</sub>  | 0.69       | -    | V    |
|  |  |                         |                 | 0.84       | -    |      |
|  |  |                         |                 | 1.15       | 1.43 |      |
|  | I <sub>F</sub> = 5 A<br>I <sub>F</sub> = 10 A<br>I <sub>F</sub> = 20 A | T <sub>A</sub> = 125 °C |                 | 0.55       | -    |      |
|  |  |                         |                 | 0.64       | -    |      |
|  |  |                         |                 | 0.75       | 0.82 |      |
| Reverse current per diode <sup>(2)</sup>                                   | V <sub>R</sub> = 100 V   | T <sub>A</sub> = 25 °C  | I <sub>R</sub>  | 2          | -    | μA   |
|  |  | T <sub>A</sub> = 125 °C |                 | 2.5        | -    | mA   |
|  |  | T <sub>A</sub> = 25 °C  |                 | -          | 250  | μA   |
|  | V <sub>R</sub> = 150 V   | T <sub>A</sub> = 25 °C  |                 | -          | 25   | mA   |
|  |  | T <sub>A</sub> = 125 °C |                 | -          | 25   | mA   |
|  |  | T <sub>A</sub> = 125 °C |                 | -          | 25   | 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           | V40150C | VF40150C | VB40150C | VI40150C | UNIT |
| Typical thermal resistance per diode                                    | R <sub>θJC</sub> | 1.8     | 4        | 1.8      | 1.8      | °C/W |

| ORDERING INFORMATION (Example) |                |                 |              |               |               |
|--------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE                        | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                       | V40150C-E3/4W  | 1.89            | 4W           | 50/tube       | Tube          |
| ITO-220AB                      | VF40150C-E3/4W | 1.75            | 4W           | 50/tube       | Tube          |
| TO-263AB                       | VB40150C-E3/4W | 1.39            | 4W           | 50/tube       | Tube          |
| TO-263AB                       | VB40150C-E3/8W | 1.39            | 8W           | 800/reel      | Tape and reel |
| TO-262AA                       | VI40150C-E3/4W | 1.46            | 4W           | 50/tube       | Tube          |

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

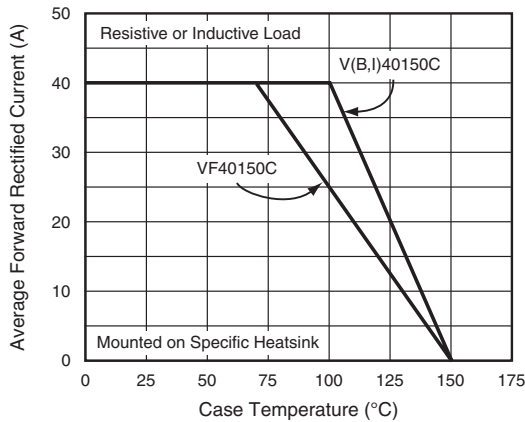


Fig. 1 - Maximum Forward Current Derating Curve

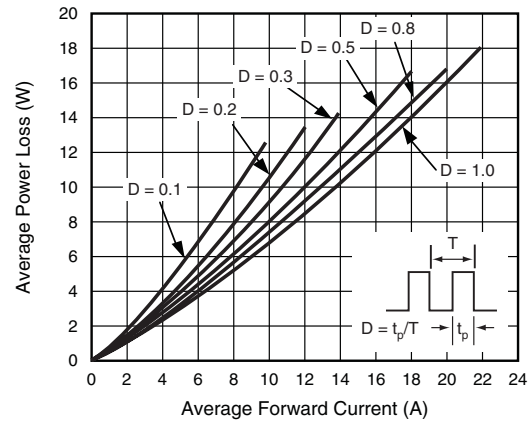


Fig. 2 - Forward Power Loss Characteristics Per Diode

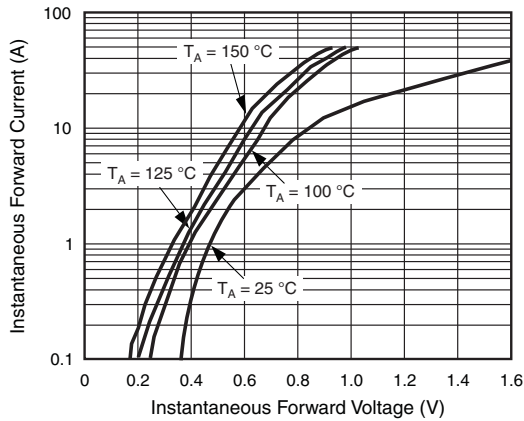


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

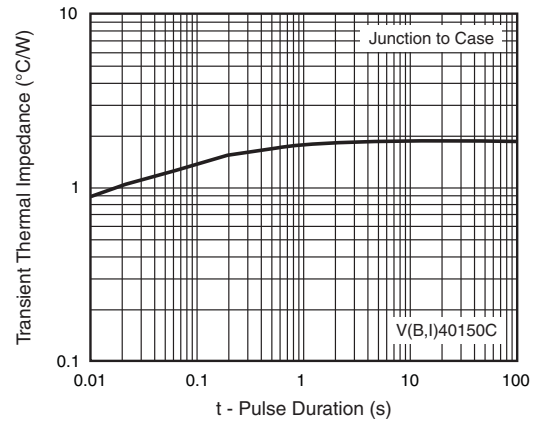


Fig. 6 - Typical Transient Thermal Impedance Per Diode

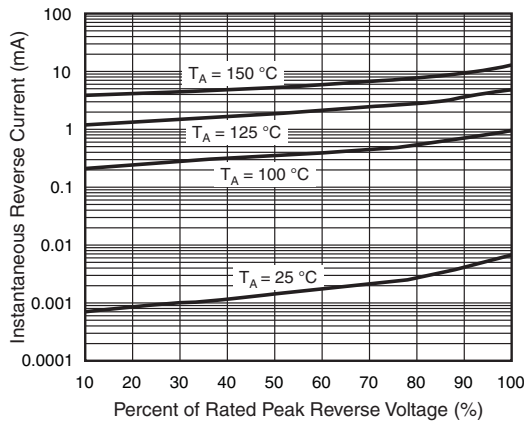


Fig. 4 - Typical Reverse Characteristics Per Diode

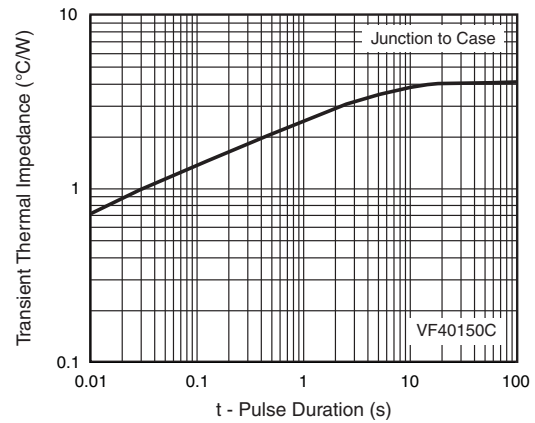


Fig. 7 - Typical Transient Thermal Impedance Per Diode

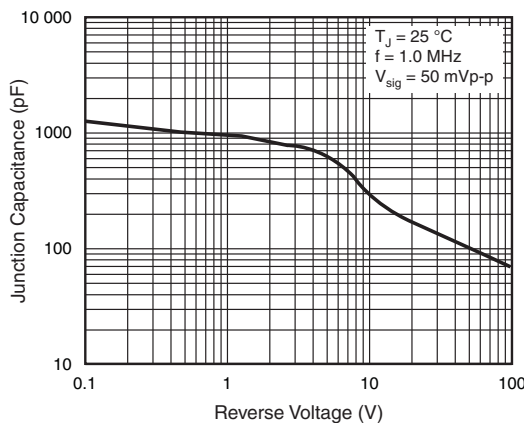
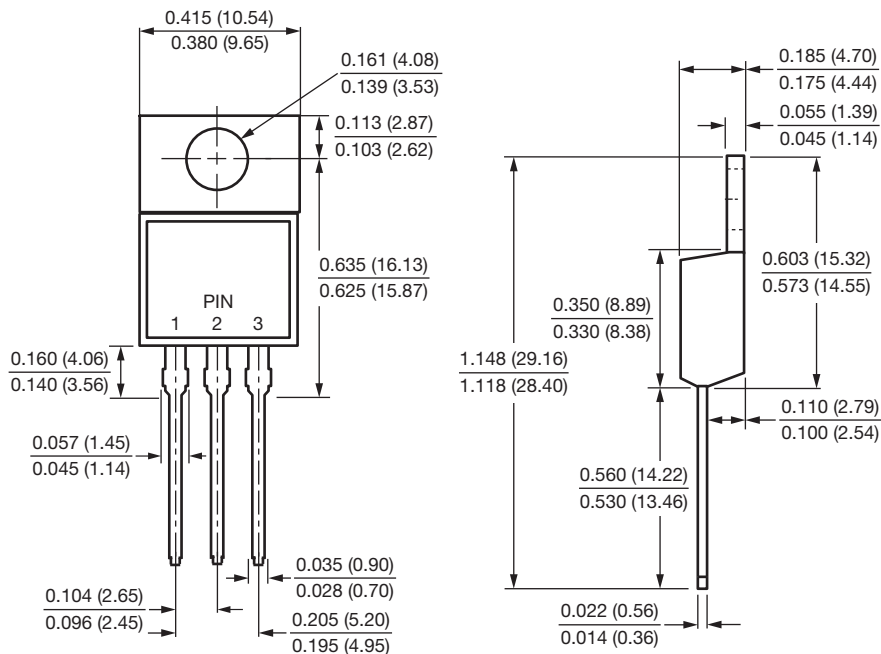


Fig. 5 - Typical Junction Capacitance

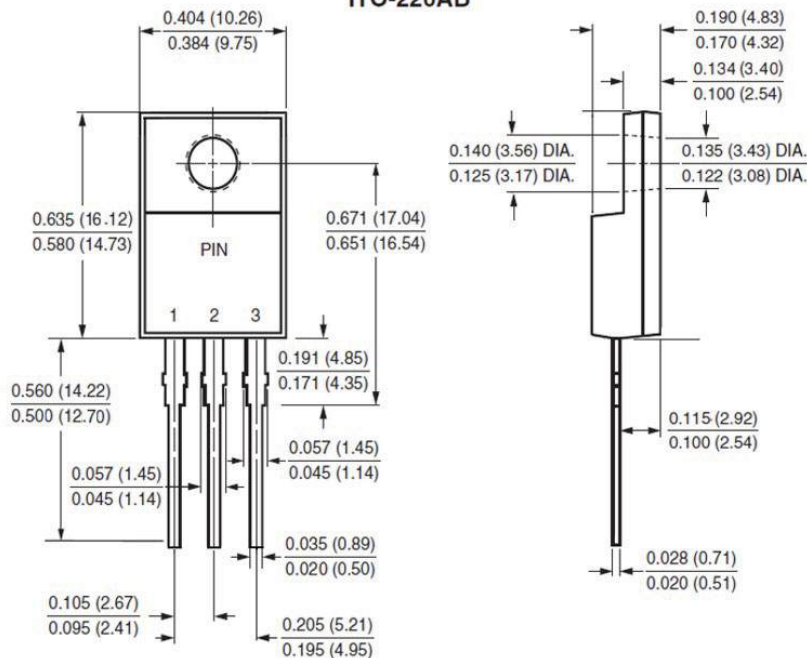


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB

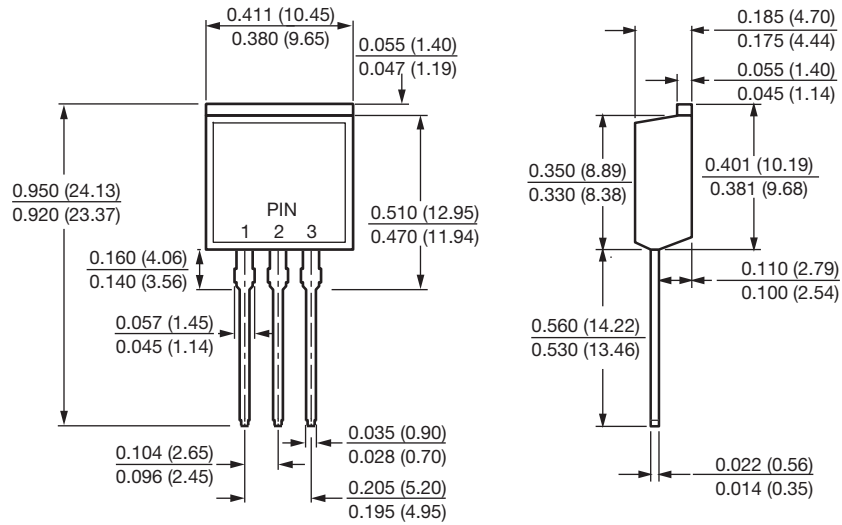


ITO-220AB

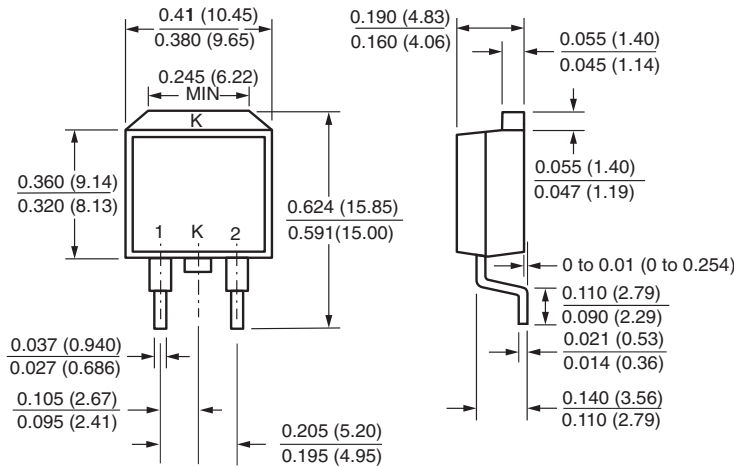




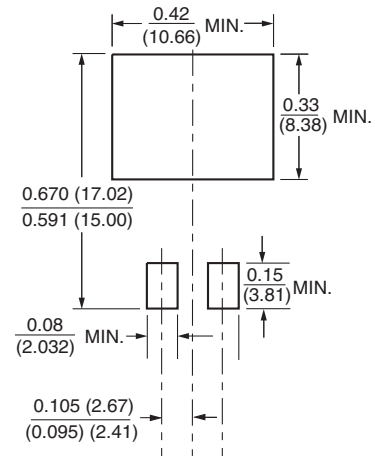
TO-262AA



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



Mounting Pad Layout





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