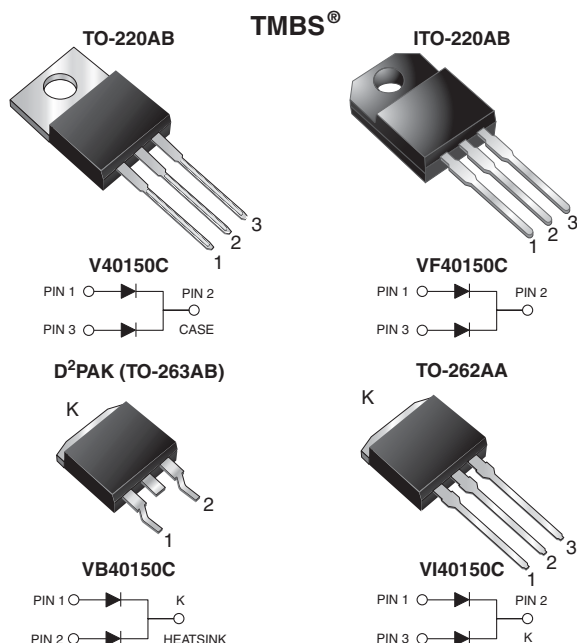




## Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.55 \text{ V}$  at  $I_F = 5 \text{ A}$



### DESIGN SUPPORT TOOLS



[click logo to get started](#)

### 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.

### 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                                                       |
| $T_J \text{ max.}$            | 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 <sub>RRM</sub>                  | 150         |          |          |          | V    |
| Max. average forward rectified current<br>(fig. 1)                                                       | per device<br>I <sub>F(AV)</sub>  | 40          |          |          |          | A    |
|                                                                                                          | per diode<br>I <sub>F(AV)</sub>   | 20          |          |          |          |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode             | I <sub>FSM</sub>                  | 160         |          |          |          | A    |
| Non-repetitive avalanche energy at T <sub>J</sub> = 25 °C, L = 60 mH per diode                           | E <sub>AS</sub>                   | 150         |          |          |          | 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>                  | 0.5         |          |          |          | A    |
| Voltage rate of change (rated V <sub>R</sub> )                                                           | dV/dt                             | 10 000      |          |          |          | V/μs |
| 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** ( $T_A = 25\text{ }^{\circ}\text{C}$  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>  | 0.69       | -    | V    |
|                                                        | I <sub>F</sub> = 10 A   |                         |                 | 0.84       | -    |      |
|                                                        | I <sub>F</sub> = 20 A   |                         |                 | 1.15       | 1.43 |      |
|                                                        | I <sub>F</sub> = 5 A    | T <sub>A</sub> = 125 °C |                 | 0.55       | -    |      |
|                                                        | I <sub>F</sub> = 10 A   |                         |                 | 0.64       | -    |      |
|                                                        | I <sub>F</sub> = 20 A   |                         |                 | 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   |
|                                                        | V <sub>R</sub> = 150 V  | T <sub>A</sub> = 25 °C  |                 | -          | 250  | μA   |
|                                                        |                         | T <sub>A</sub> = 125 °C |                 | 5          | 25   | mA   |

**Notes**<sup>(1)</sup> Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle<sup>(2)</sup> Pulse test: Pulse width  $\leq 40\text{ ms}$ **THERMAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER                            | SYMBOL          | V40150C | VF40150C | VB40150C | VI40150C | UNIT                 |
|--------------------------------------|-----------------|---------|----------|----------|----------|----------------------|
| Typical thermal resistance per diode | $R_{\theta JC}$ | 1.8     | 4        | 1.8      | 1.8      | $^{\circ}\text{C/W}$ |

**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          |

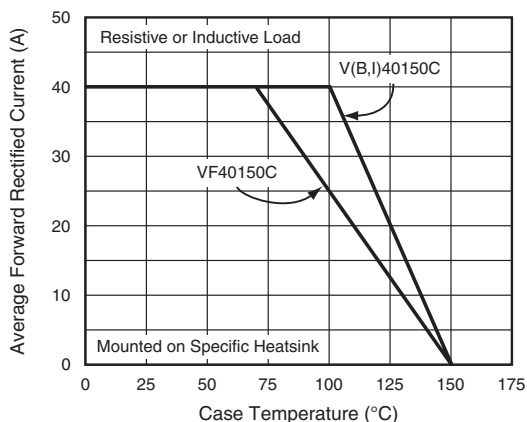
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

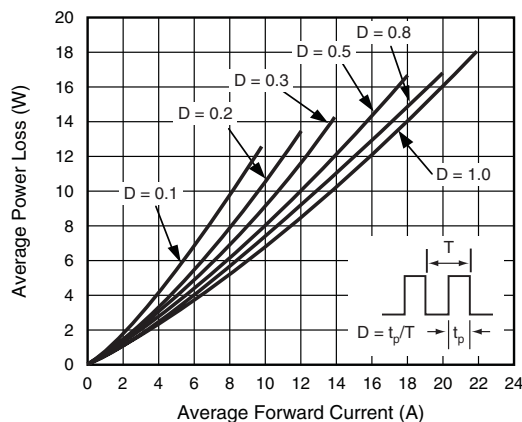


Fig. 2 - Forward Power Loss Characteristics Per Diode

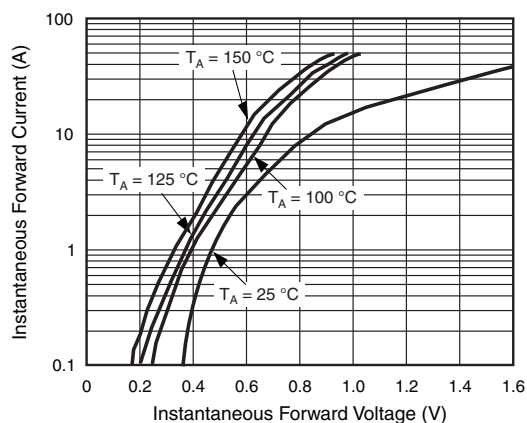


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

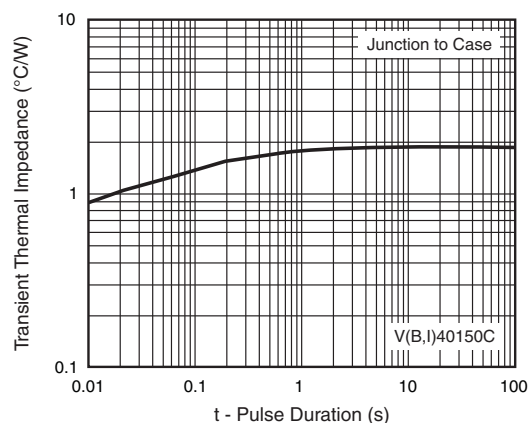


Fig. 6 - Typical Transient Thermal Impedance Per Diode

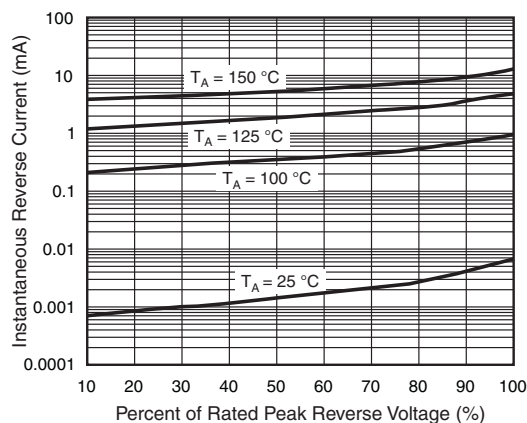


Fig. 4 - Typical Reverse Characteristics Per Diode

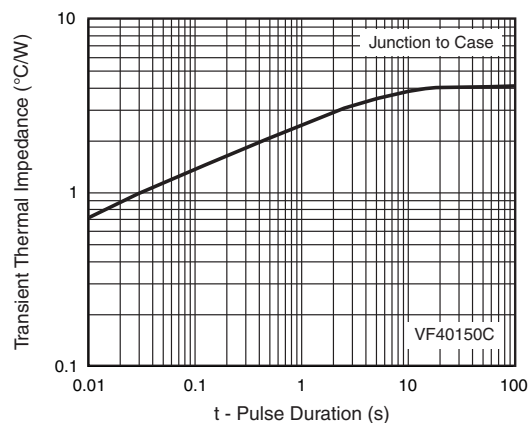


Fig. 7 - Typical Transient Thermal Impedance Per Diode

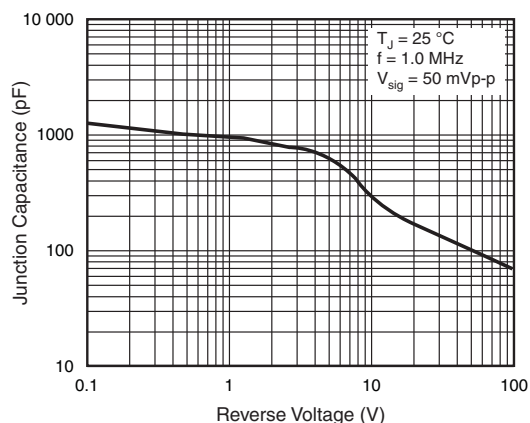
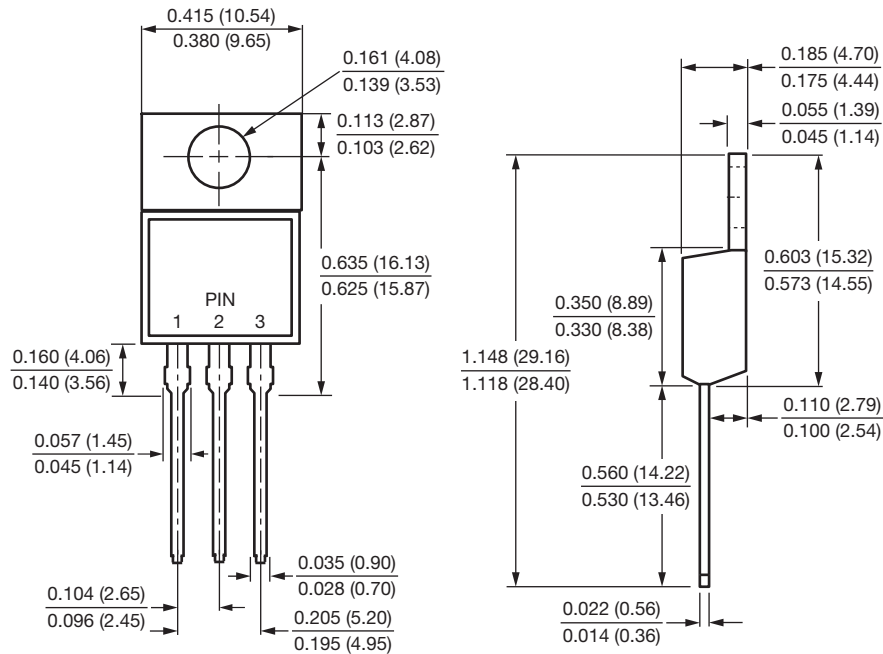


Fig. 5 - Typical Junction Capacitance

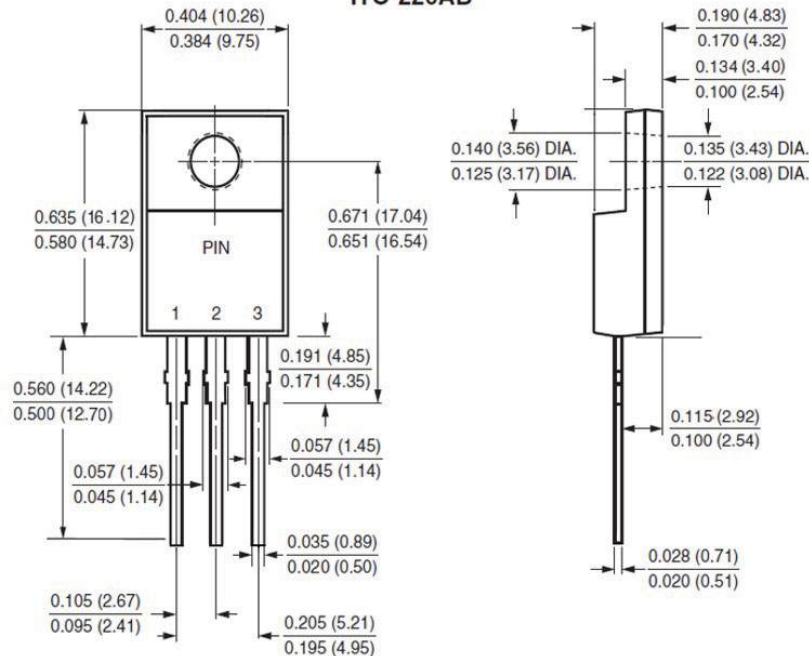


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AB

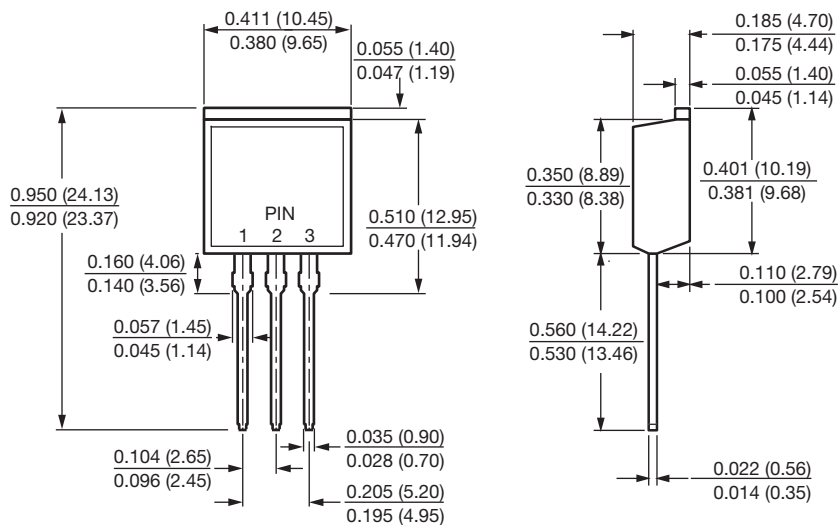


### ITO-220AB

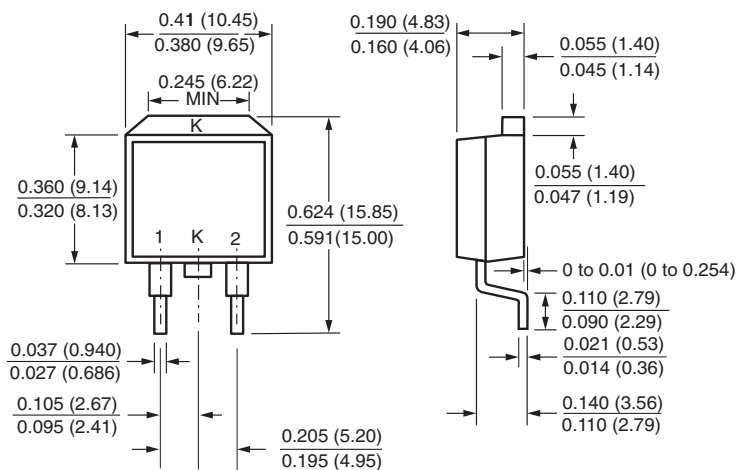




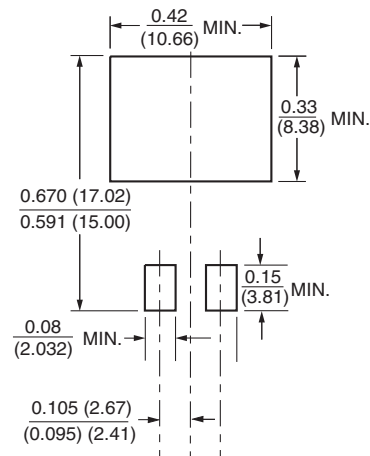
## TO-262AA



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



## Mounting Pad Layout





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