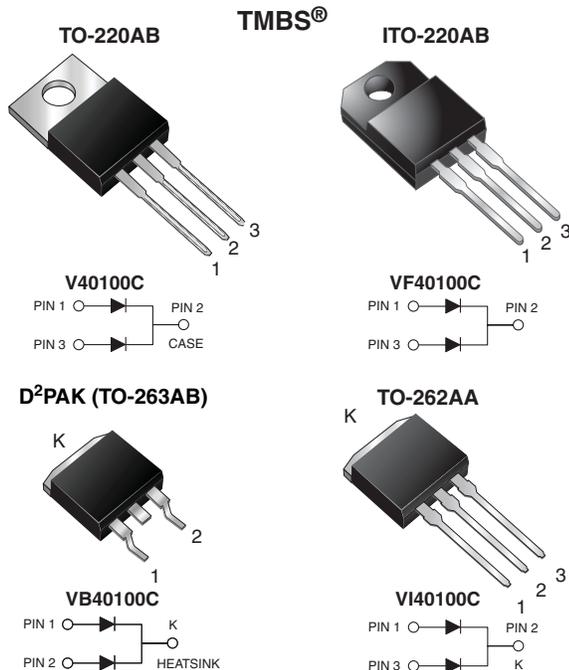


## Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.38\text{ V}$  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 TO-263AB package)
- Low thermal resistance
- 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

E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** as marked

**Mounting Torque:** 10 in-lbs maximum

### PRIMARY CHARACTERISTICS

|                              |  |
|------------------------------|--|
| $I_{F(AV)}$                  | 2 x 20 A   |
| $V_{RRM}$                    | 100 V  |
| $I_{FSM}$                    | 250 A  |
| $V_F$ at $I_F = 20\text{ A}$ | 0.61 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    | V40100C    | VF40100C    | VB40100C | VI40100C | UNIT             |
|---|-----------|------------|-------------|----------|----------|------------------|
| Maximum repetitive peak reverse voltage   | $V_{RRM}$ |            |             | 100      |          | V                |
| Maximum average forward rectified current (fig. 1)  |           | per device |             | 40       |          | A                |
|   |           | per diode  |             | 20       |          |                  |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode                            | $I_{FSM}$ |            | 250         |          |          | A                |
| Non-repetitive avalanche energy at $T_J = 25\text{ °C}$ , $L = 90\text{ mH}$ per diode                                  | $E_{AS}$  |            | 230         |          |          | 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 | $I_{RRM}$ |            | 1.0         |          |          | A                |
| Voltage rate of change (rated $V_R$ )   | $dV/dt$   |            | 10 000      |          |          | V/ $\mu\text{s}$ |
| Operating junction temperature range  | $T_J$     |            | -40 to +150 |          |          | °C               |
| Storage temperature range   | $T_{stg}$ |            | -55 to +150 |          |          | °C               |



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                         |                         |                 |               |      |      |
|--|-------------------------|-------------------------|-----------------|---------------|------|------|
| PARAMETER  | TEST CONDITIONS         |                         | SYMBOL          | TYP.          | MAX. | UNIT |
| Breakdown voltage <sup>(2)</sup>   | I <sub>R</sub> = 1.0 mA | T <sub>A</sub> = 25 °C  | V <sub>BR</sub> | 100 (minimum) | -    | V    |
|  | I <sub>R</sub> = 10 mA  |                         |                 | 105 (minimum) | -    |      |
| Instantaneous forward voltage per diode <sup>(1)</sup>                     | I <sub>F</sub> = 5 A    | T <sub>A</sub> = 25 °C  | V <sub>F</sub>  | 0.47          | -    | V    |
|  | I <sub>F</sub> = 10 A   |                         |                 | 0.54          | -    |      |
|  | I <sub>F</sub> = 20 A   |                         |                 | 0.67          | 0.73 |      |
|  | I <sub>F</sub> = 5 A    | T <sub>A</sub> = 125 °C |                 | 0.38          | -    |      |
|  | I <sub>F</sub> = 10 A   |                         |                 | 0.45          | -    |      |
|  | I <sub>F</sub> = 20 A   |                         |                 | 0.61          | 0.67 |      |
| Reverse current at rated V <sub>R</sub> per diode <sup>(2)</sup>           | V <sub>R</sub> = 70 V   | T <sub>A</sub> = 25 °C  | I <sub>R</sub>  | 9             | -    | μA   |
|  |                         | T <sub>A</sub> = 125 °C |                 | 10            | -    | mA   |
|  | V <sub>R</sub> = 100 V  | T <sub>A</sub> = 25 °C  |                 | -             | 1000 | μA   |
|  |                         | T <sub>A</sub> = 125 °C |                 | 21            | 45   | 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           | V40100C | VF40100C | VB40100C | VI40100C | UNIT |
| Typical thermal resistance per diode                                    | R <sub>θJC</sub> | 2.0     | 4.0      | 2.0      | 2.0      | °C/W |

| ORDERING INFORMATION (Example) |                |                 |              |               |               |
|--------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE                        | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                       | V40100C-E3/4W  | 1.85            | 4W           | 50/tube       | Tube          |
| ITO-220AB                      | VF40100C-E3/4W | 1.75            | 4W           | 50/tube       | Tube          |
| TO-263AB                       | VB40100C-E3/4W | 1.39            | 4W           | 50/tube       | Tube          |
| TO-263AB                       | VB40100C-E3/8W | 1.39            | 8W           | 800/tube      | Tape and reel |
| TO-262AA                       | VI40100C-E3/4W | 1.46            | 4W           | 50/tube       | Tube          |

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

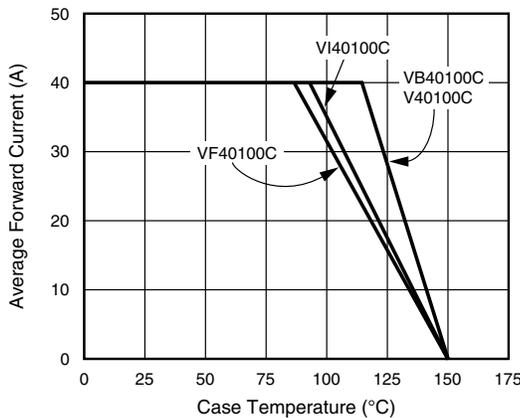


Fig. 1 - Forward Current Derating Curve

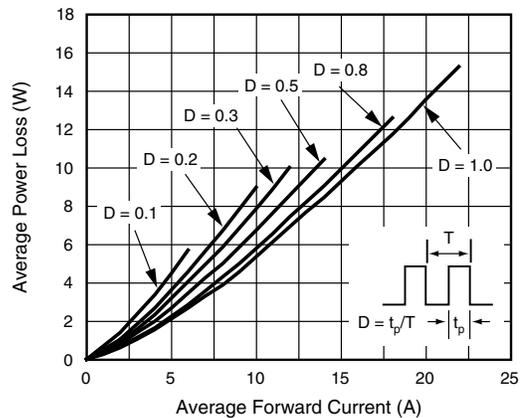


Fig. 2 - Forward Power Loss Characteristics Per Diode

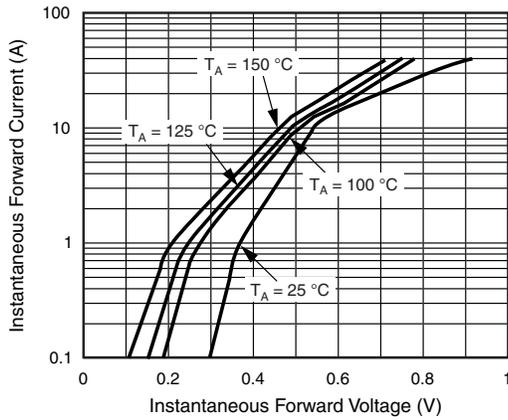


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

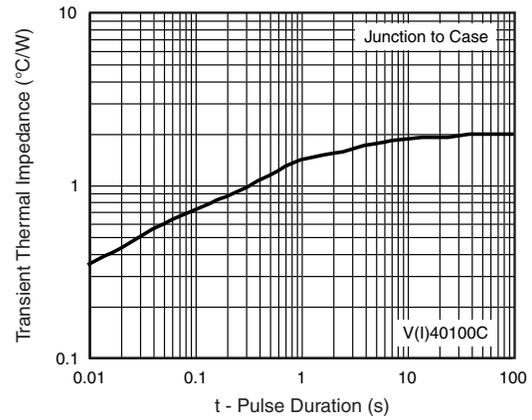


Fig. 6 - Typical Transient Thermal Impedance Per Diode

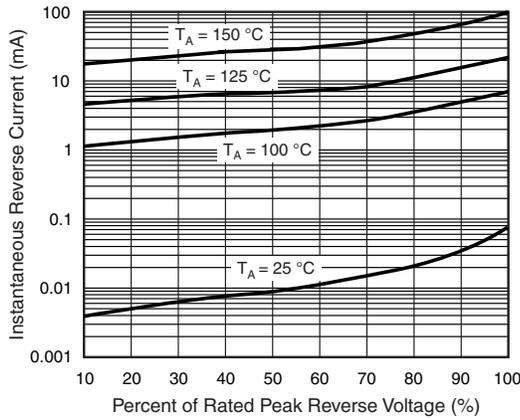


Fig. 4 - Typical Reverse Characteristics Per Diode

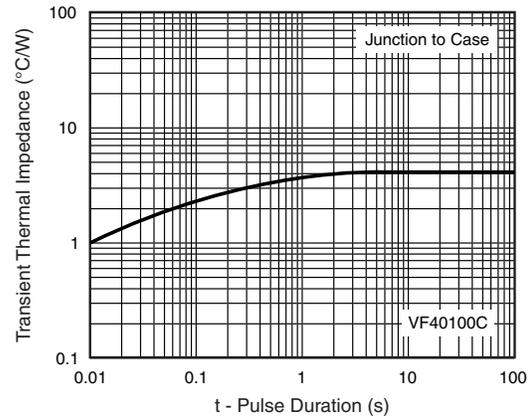


Fig. 7 - Typical Transient Thermal Impedance Per Diode

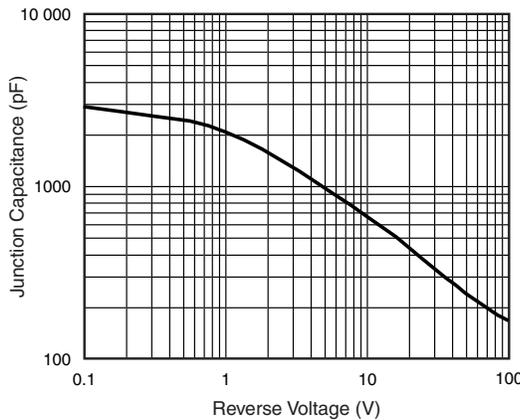
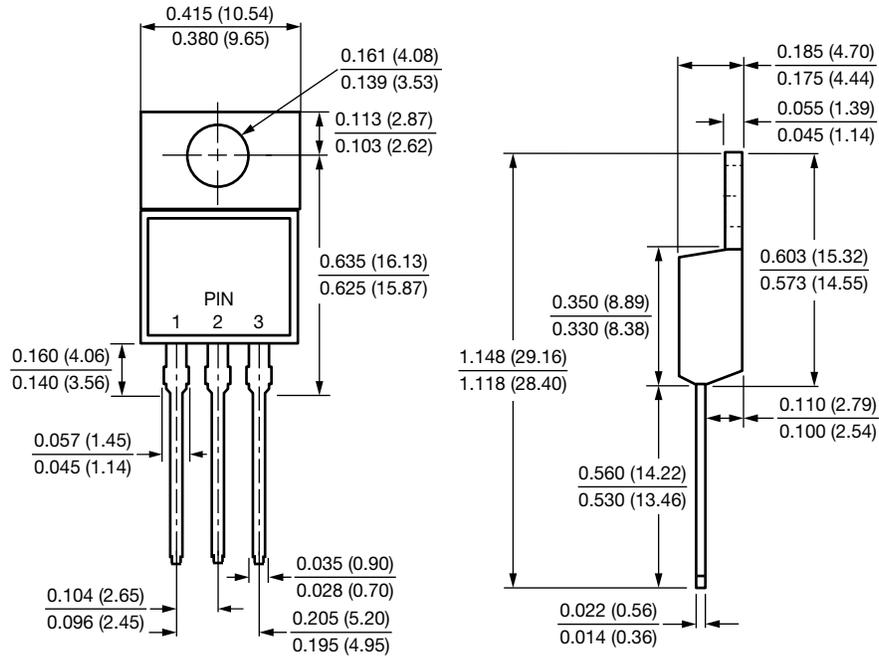


Fig. 5 - Typical Junction Capacitance Per Diode

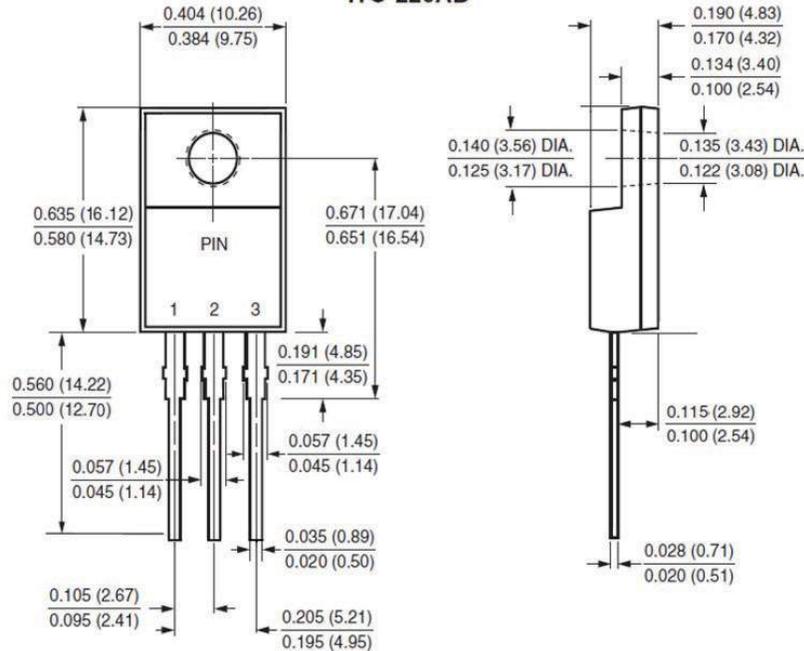


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

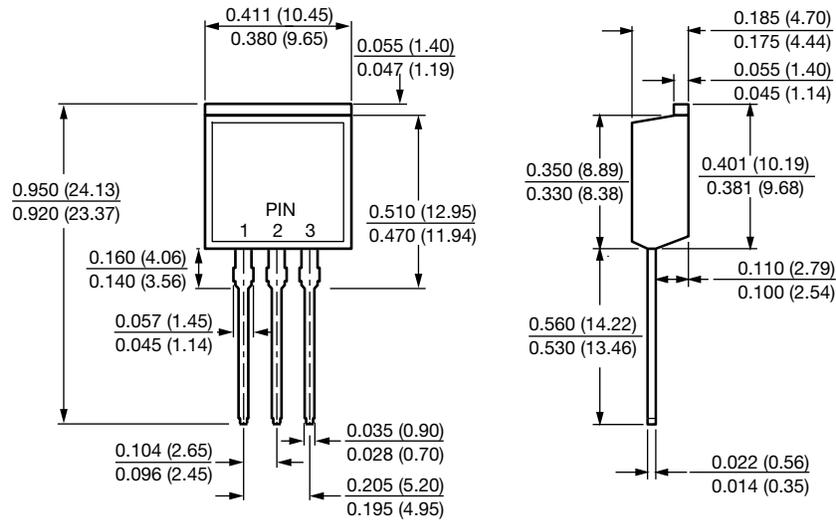
### TO-220AB



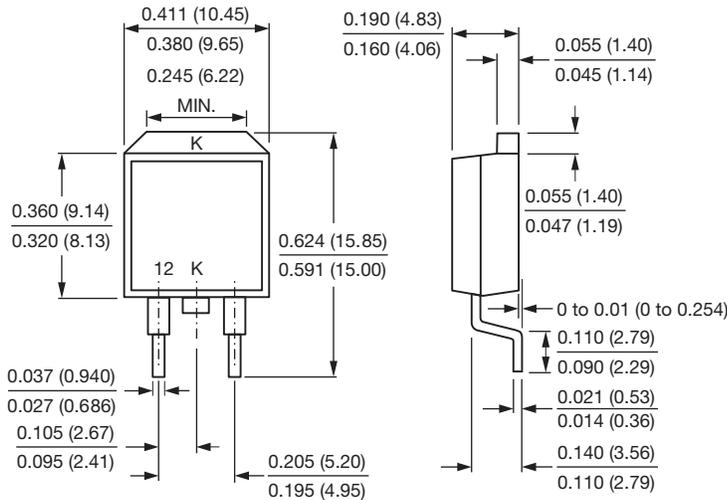
### ITO-220AB



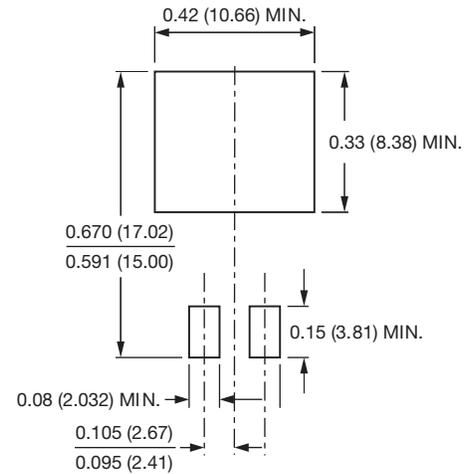
## TO-262AA



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



## Mounting Pad Layout





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