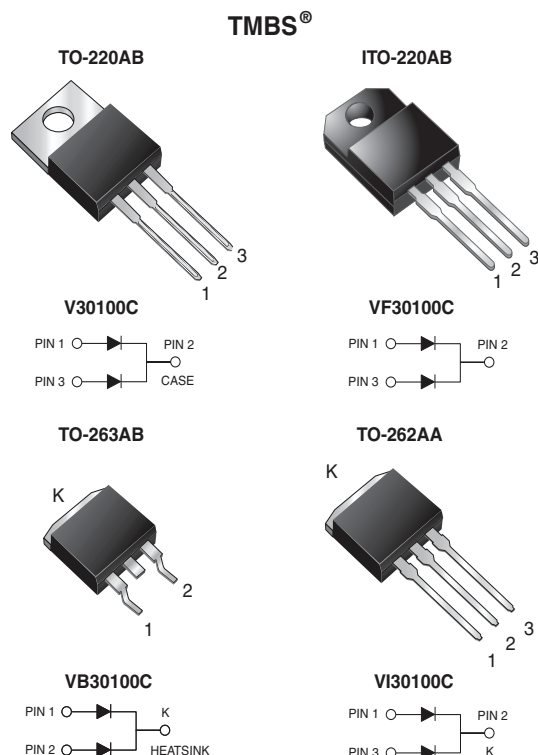




## Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.455 \text{ V}$  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)
- 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, 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

|                               |                                         |
|-------------------------------|-----------------------------------------|
| $I_{F(AV)}$                   | 2 x 15 A                                |
| $V_{RRM}$                     | 100 V                                   |
| $I_{FSM}$                     | 160 A                                   |
| $V_F$ at $I_F = 15 \text{ A}$ | 0.63 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         | V30100C     | VF30100C | VB30100C | VI30100C | UNIT               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------|----------|----------|----------|--------------------|
| Maximum repetitive peak reverse voltage                                                                                                             | $V_{RRM}$      | 100         |          |          |          | V                  |
| Maximum average forward rectified current (fig. 1)                                                                                                  | $I_{F(AV)}$    | 30          |          |          |          | A                  |
|                                                                                                                                                     |                | 15          |          |          |          |                    |
| 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 $T_J = 25\text{ }^{\circ}\text{C}$ , $L = 60\text{ mH}$ per diode                                                | $E_{AS}$       | 210         |          |          |          | mJ                 |
| Peak repetitive reverse current at $t_p = 2\text{ }\mu\text{s}$ , 1 kHz, $T_J = 38\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ per diode | $I_{RRM}$      | 1.0         |          |          |          | 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                                                                                                    | $T_J, T_{STG}$ | -40 to +150 |          |          |          | $^{\circ}\text{C}$ |



| 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>               | 100 (minimum)          | -                             | V    |
| Instantaneous forward voltage per diode                                    | I <sub>F</sub> = 5 A      | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.516                  | -                             | V    |
|                                                                            | I <sub>F</sub> = 7.5 A    |                         |                               | 0.576                  | -                             |      |
|                                                                            | I <sub>F</sub> = 15 A     |                         |                               | 0.734                  | 0.80                          |      |
|                                                                            | I <sub>F</sub> = 5 A      | T <sub>A</sub> = 125 °C |                               | 0.455                  | -                             |      |
|                                                                            | I <sub>F</sub> = 7.5 A    |                         |                               | 0.522                  | -                             |      |
|                                                                            | I <sub>F</sub> = 15 A     |                         |                               | 0.627                  | 0.68                          |      |
|                                                                            | Reverse current per diode | V <sub>R</sub> = 70 V   |                               | T <sub>A</sub> = 25 °C | I <sub>R</sub> <sup>(2)</sup> |      |
| T <sub>A</sub> = 125 °C                                                    |                           |                         | 8.0                           | -                      |                               | mA   |
| V <sub>R</sub> = 100 V                                                     |                           | T <sub>A</sub> = 25 °C  | 65                            | 500                    |                               | μA   |
|                                                                            |                           | T <sub>A</sub> = 125 °C | 20                            | 35                     |                               | mA   |

## Notes

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle  
(2) Pulse test: Pulse width  $\leq 40\text{ ms}$

| THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                 |         |          |          |          |                      |
|--------------------------------------------------------------------------------------|-----------------|---------|----------|----------|----------|----------------------|
| PARAMETER                                                                            | SYMBOL          | V30100C | VF30100C | VB30100C | VI30100C | UNIT                 |
| Typical thermal resistance per diode                                                 | $R_{\theta JC}$ | 2.5     | 5.5      | 2.5      | 2.5      | $^{\circ}\text{C/W}$ |

| ORDERING INFORMATION (Example) |                |                 |              |               |               |
|--------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE                        | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                       | V30100C-E3/4W  | 1.88            | 4W           | 50/tube       | Tube          |
| ITO-220AB                      | VF30100C-E3/4W | 1.75            | 4W           | 50/tube       | Tube          |
| TO-263AB                       | VB30100C-E3/4W | 1.39            | 4W           | 50/tube       | Tube          |
| TO-263AB                       | VB30100C-E3/8W | 1.39            | 8W           | 800/tube      | Tape and reel |
| TO-262AA                       | VI30100C-E3/4W | 1.46            | 4W           | 50/tube       | Tube          |

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

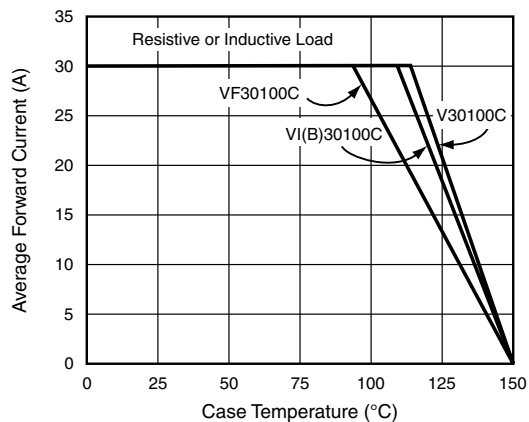


Fig. 1 - Forward Current Derating Curve

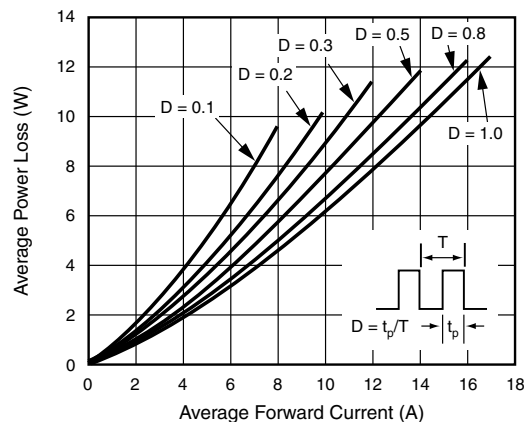


Fig. 2 - Forward Power Loss Characteristics Per Diode

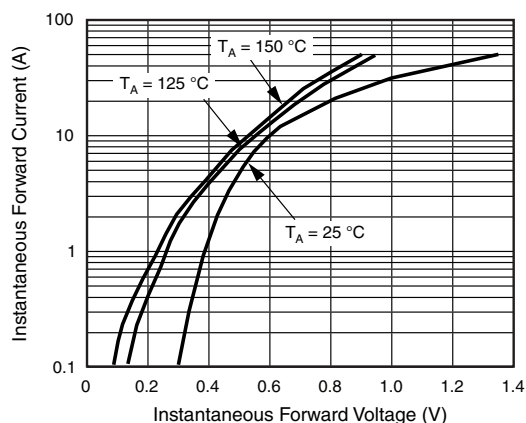


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

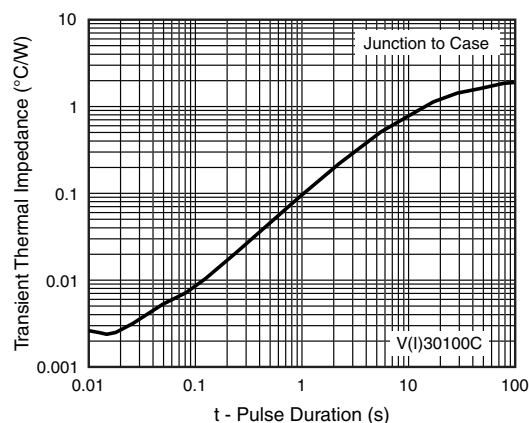


Fig. 6 - Typical Transient Thermal Impedance Per Diode

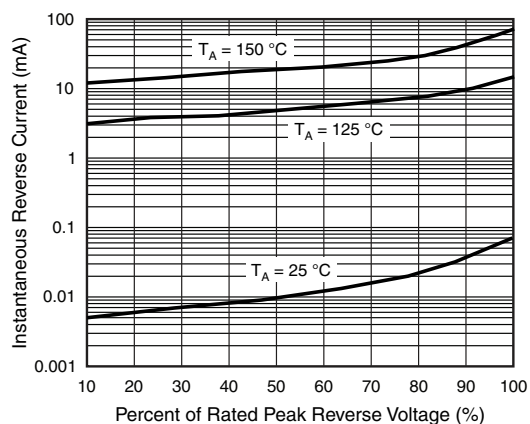


Fig. 4 - Typical Reverse Characteristics Per Diode

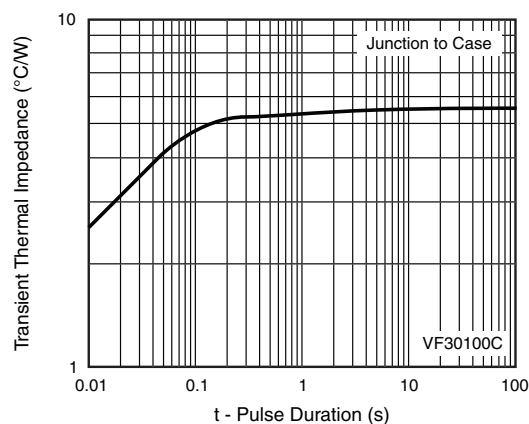


Fig. 7 - Typical Transient Thermal Impedance Per Diode

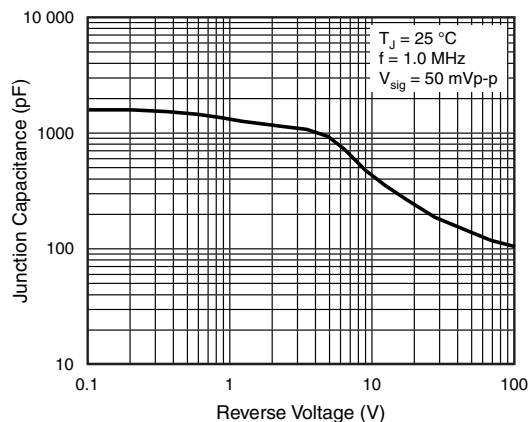
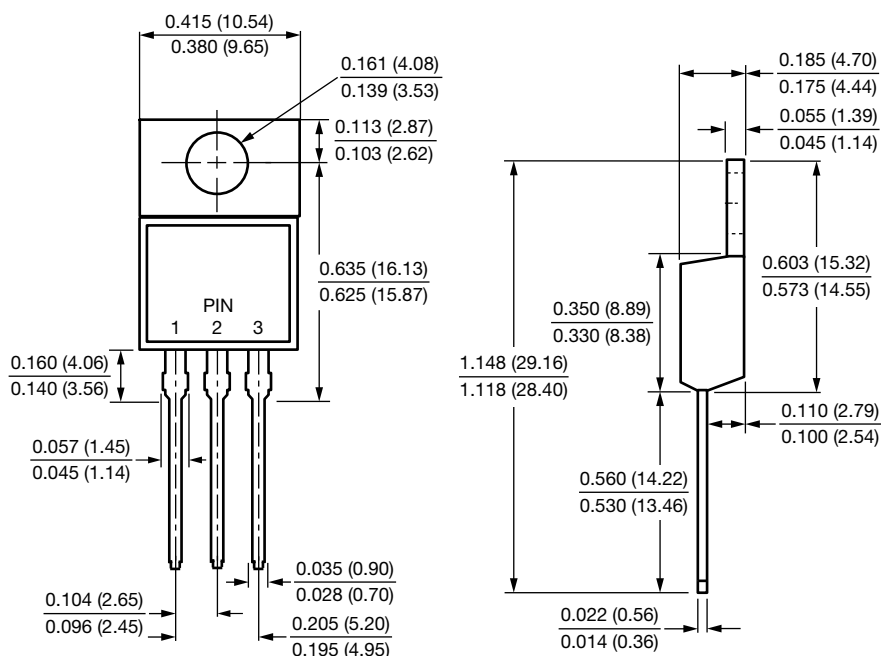


Fig. 5 - Typical Junction Capacitance

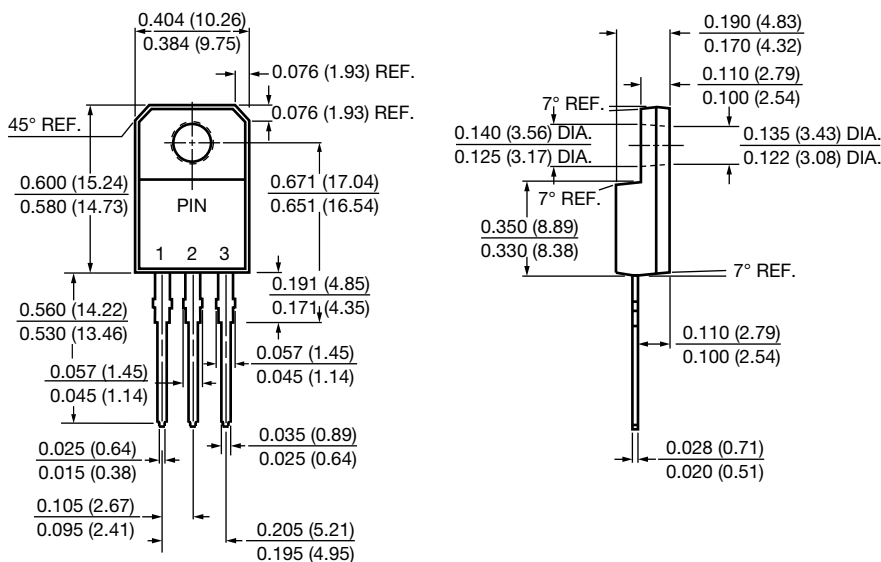


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AB

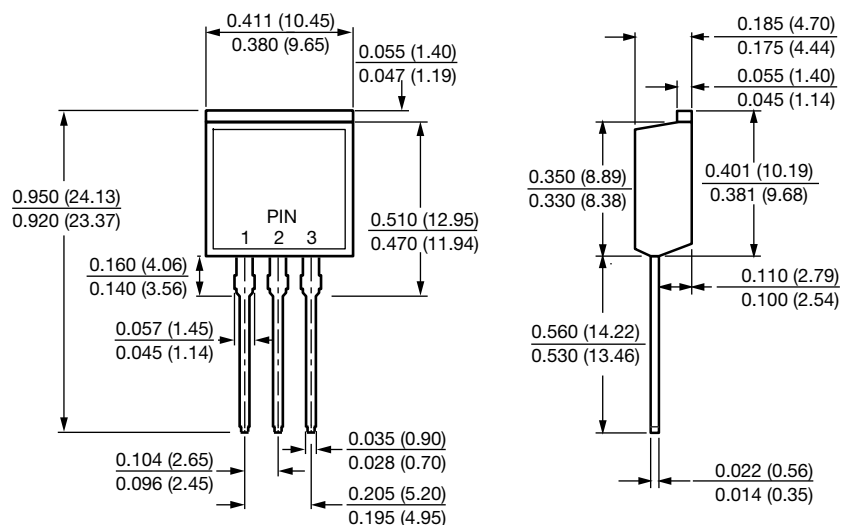


### ITO-220AB

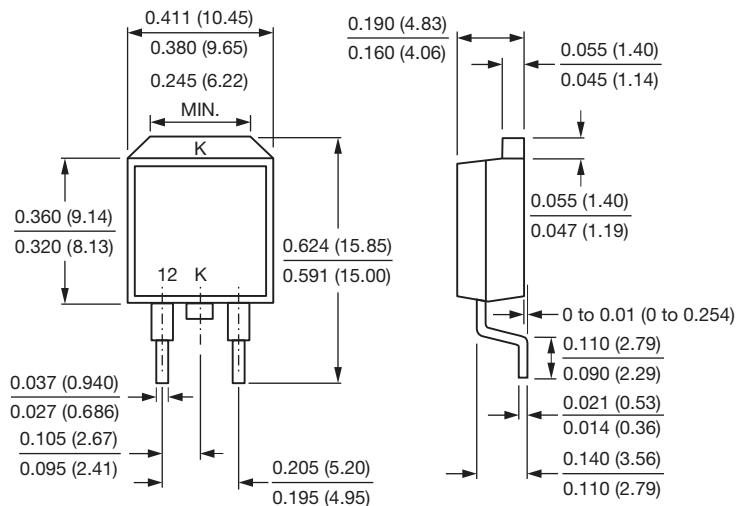




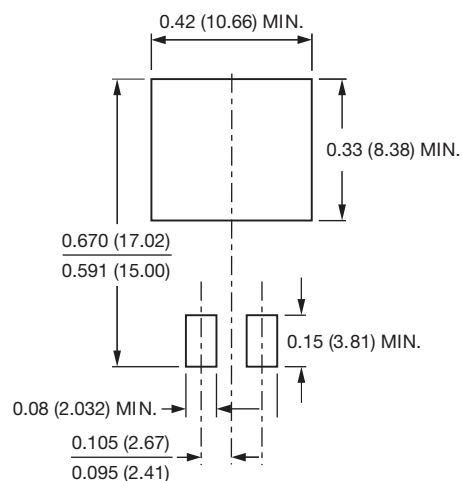
## TO-262AA



## TO-263AB



## Mounting Pad Layout





## Disclaimer

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