



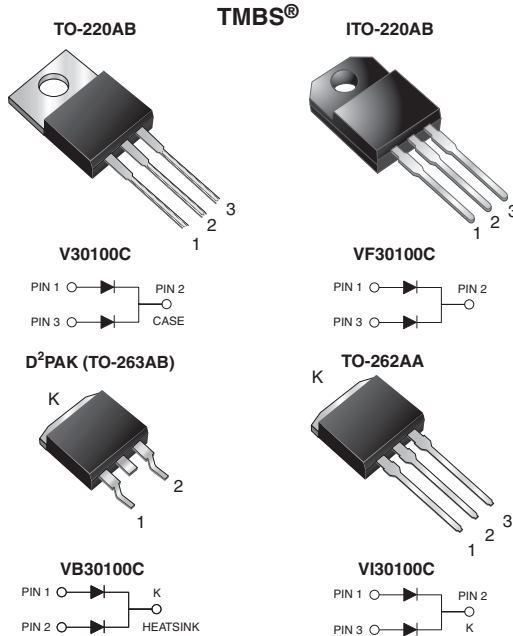
**THE DATASHEET OF  
VF30100C-E3/4W**





## 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, 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 maximum

### DESIGN SUPPORT TOOLS

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| 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   |
| $T_J$ 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         | V30100C     | VF30100C | VB30100C | VI30100C | UNIT             |
| Maximum repetitive peak reverse voltage   | $V_{RRM}$      | 100         |          |          |          | V                |
| Maximum 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                            | $I_{FSM}$      | 160         |          |          |          | A                |
| Non-repetitive avalanche energy at $T_J = 25\text{ °C}$ , $L = 60\text{ mH}$ per diode                                  | $E_{AS}$       | 210         |          |          |          | mJ               |
| Peak repetitive reverse current at $t_p = 2\text{ }\mu\text{s}$ , 1 kHz, $T_J = 38\text{ °C} \pm 2\text{ °C}$ per diode | $I_{RRM}$      | 1.0         |          |          |          | 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  | $T_J, T_{STG}$ | -40 to +150 |          |          |          | °C               |



| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                      |                                   |             |                      |       |               |
|--|----------------------|-----------------------------------|-------------|----------------------|-------|---------------|
| PARAMETER  | TEST CONDITIONS      |                                   | SYMBOL      | TYP.                 | MAX.  | UNIT          |
| Breakdown voltage  | $I_R = 10\text{ mA}$ | $T_A = 25\text{ }^\circ\text{C}$  | $V_{BR}$    | 100 (minimum)        | -     | V             |
| Instantaneous forward voltage per diode  | $I_F = 5\text{ A}$   | $T_A = 25\text{ }^\circ\text{C}$  | $V_F^{(1)}$ | 0.516                | -     | V             |
|  |                      |                                   |             | $I_F = 7.5\text{ A}$ | 0.576 |               |
|  | $I_F = 15\text{ A}$  | $T_A = 25\text{ }^\circ\text{C}$  |             | 0.734                | 0.80  |               |
|  |                      |                                   |             | $I_F = 5\text{ A}$   | 0.455 |               |
|  | $I_F = 7.5\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ |             | 0.522                | -     |               |
|  |                      |                                   |             | $I_F = 15\text{ A}$  | 0.627 |               |
| Reverse current per diode  | $V_R = 70\text{ V}$  | $T_A = 25\text{ }^\circ\text{C}$  | $I_R^{(2)}$ | 7.2                  | -     | $\mu\text{A}$ |
|  |                      | $T_A = 125\text{ }^\circ\text{C}$ |             | 8.0                  | -     | mA            |
|  | $V_R = 100\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$  |             | 65                   | 500   | $\mu\text{A}$ |
|  |                      | $T_A = 125\text{ }^\circ\text{C}$ |             | 20                   | 35    | mA            |

**Notes**

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

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ 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      | $^\circ\text{C/W}$ |

| <b>ORDERING INFORMATION</b> (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)

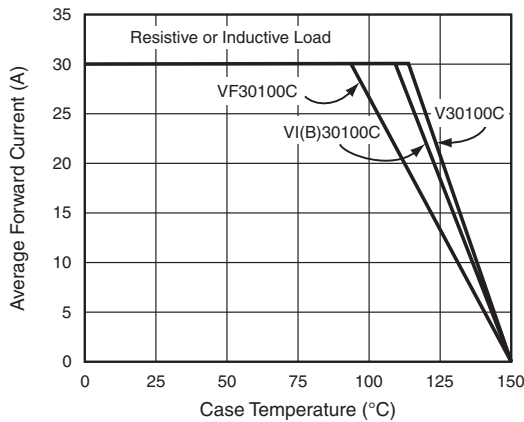


Fig. 1 - Forward Current Derating Curve

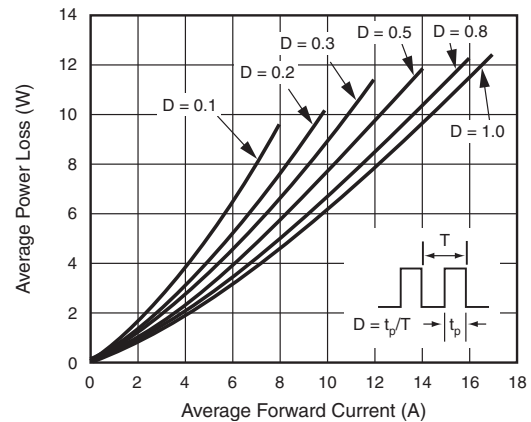


Fig. 2 - Forward Power Loss Characteristics Per Diode

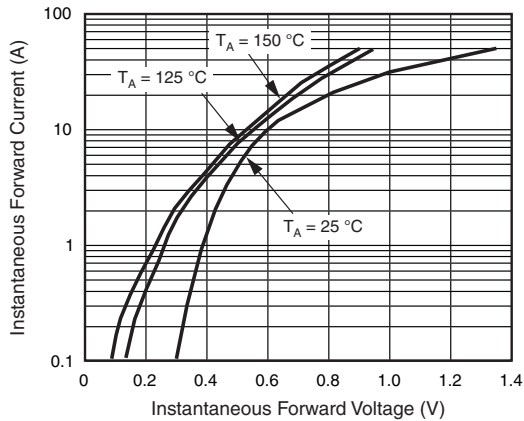


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

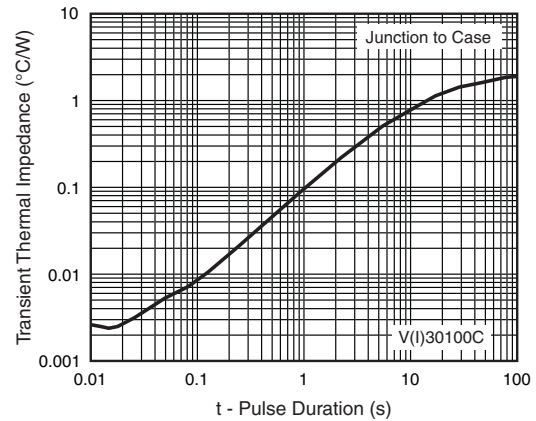


Fig. 6 - Typical Transient Thermal Impedance Per Diode

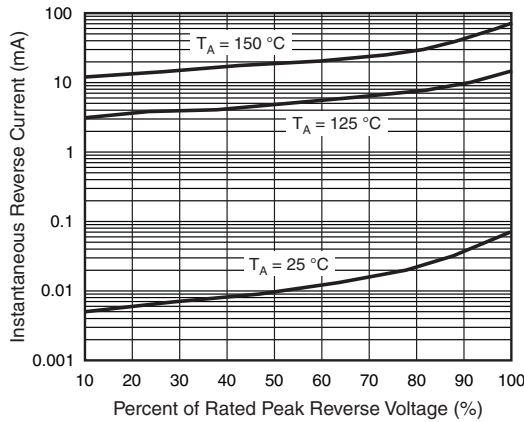


Fig. 4 - Typical Reverse Characteristics Per Diode

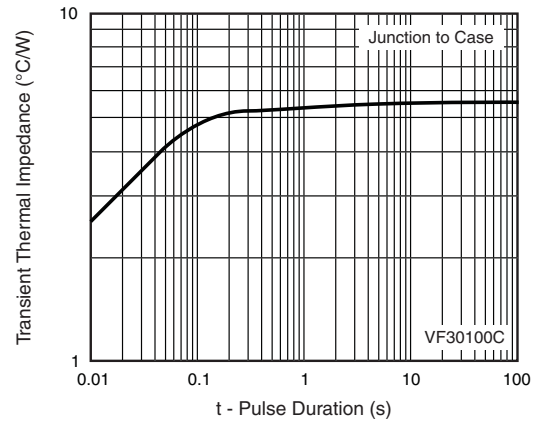


Fig. 7 - Typical Transient Thermal Impedance Per Diode

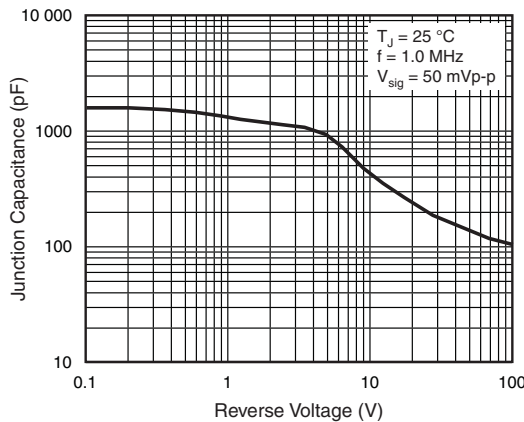
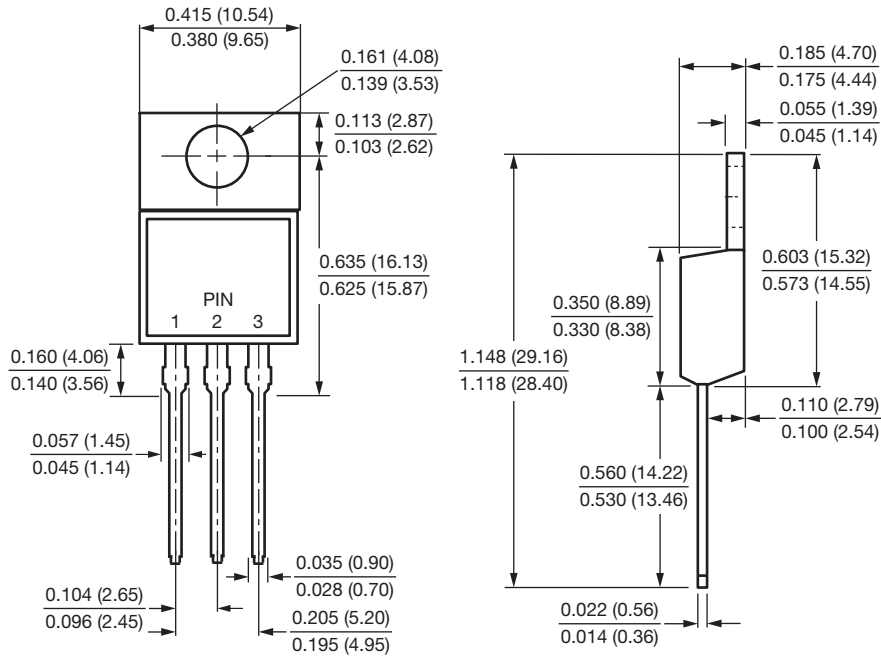


Fig. 5 - Typical Junction Capacitance

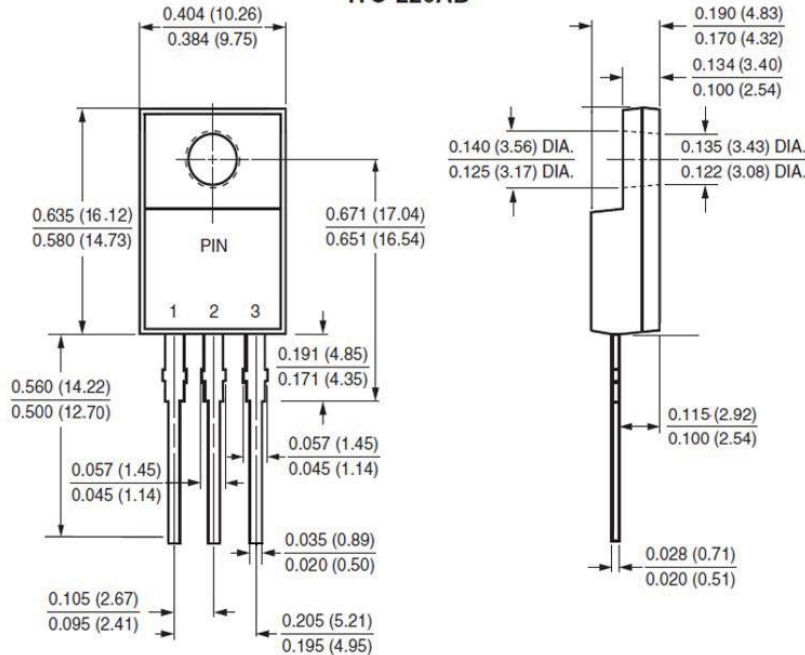


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

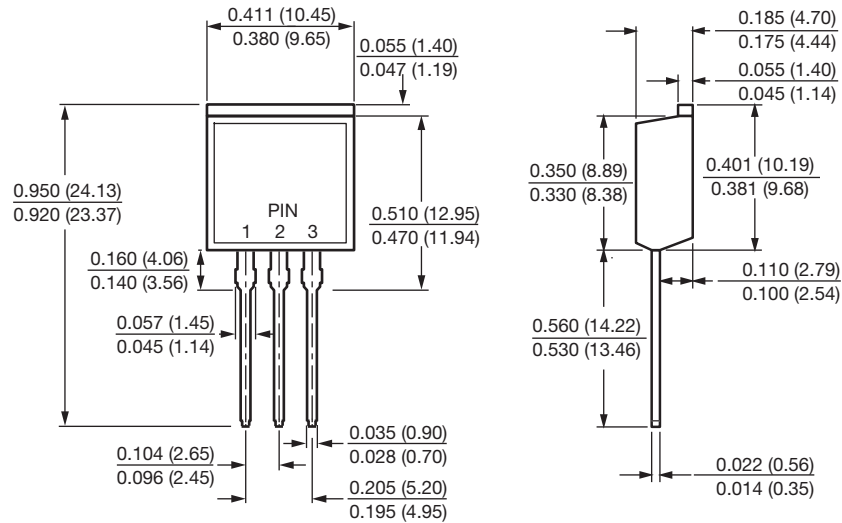
### TO-220AB



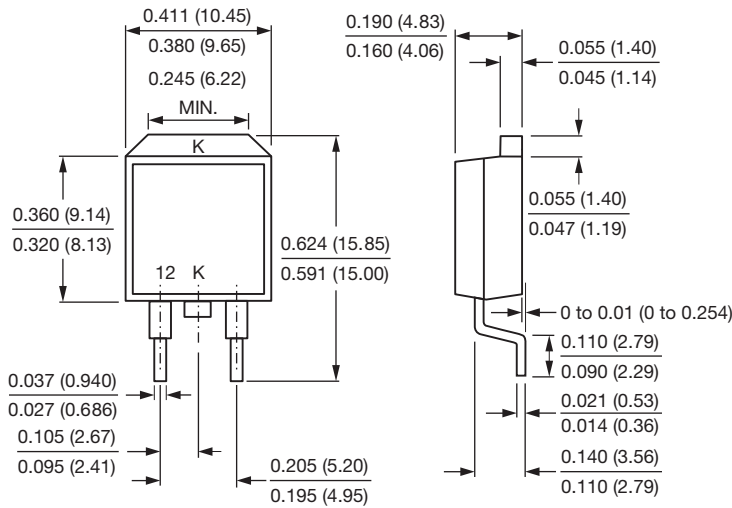
### ITO-220AB



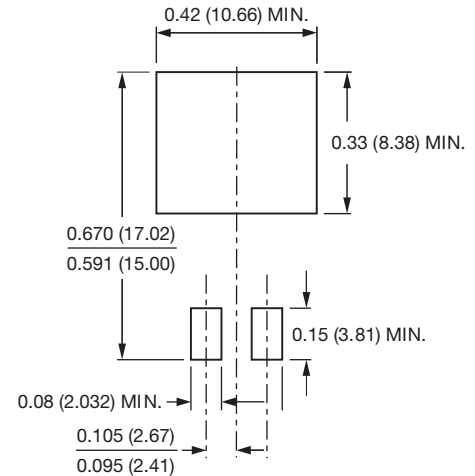
## TO-262AA



## TO-263AB



## Mounting Pad Layout





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