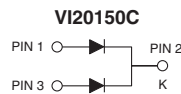
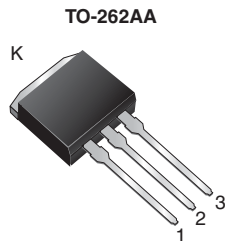
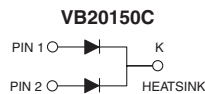
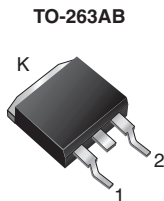
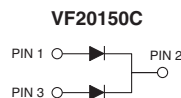
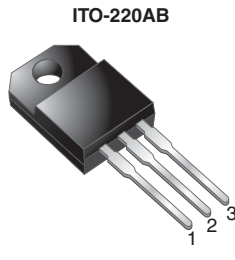
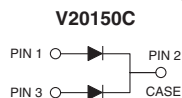
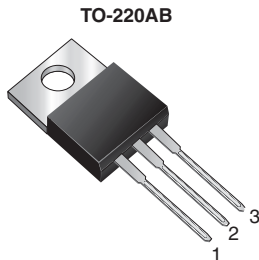


## Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.59 \text{ V}$  at  $I_F = 5 \text{ A}$

TMBS®



### 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, 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 10 A |
| $V_{RRM}$                     | 150 V    |
| $I_{FSM}$                     | 120 A    |
| $V_F$ at $I_F = 10 \text{ A}$ | 0.69 V   |
| $T_J$ max.                    | 150 °C   |

### MAXIMUM RATINGS ( $T_A = 25 \text{ °C}$ unless otherwise noted)

| PARAMETER                                                                                                                   | SYMBOL         | V20150C       | VF20150C | VB20150C | VI20150C | UNIT             |
|-----------------------------------------------------------------------------------------------------------------------------|----------------|---------------|----------|----------|----------|------------------|
| Maximum repetitive peak reverse voltage                                                                                     | $V_{RRM}$      | 150           |          |          |          | V                |
| Maximum average forward rectified current<br>(fig. 1)                                                                       | $I_{F(AV)}$    | 20            |          |          |          | A                |
|                                                                                                                             |                | 10            |          |          |          |                  |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode                                | $I_{FSM}$      | 120           |          |          |          | A                |
| Non-repetitive avalanche energy at $T_J = 25 \text{ °C}$ , $L = 60 \text{ mH}$ per diode                                    | $E_{AS}$       | 70            |          |          |          | 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 $V_R$ )                                                                                       | $dV/dt$        | 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                                                                            | $T_J, T_{STG}$ | - 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                                      | $I_R = 1.0\text{ mA}$ $T_A = 25\text{ }^{\circ}\text{C}$ | $V_{BR}$ | 150 (minimum) | -    | V             |
| Instantaneous forward voltage per diode <sup>(1)</sup> | $I_F = 5\text{ A}$ $T_A = 25\text{ }^{\circ}\text{C}$    | $V_F$    | 0.79          | -    | V             |
|                                                        | $I_F = 10\text{ A}$ $T_A = 25\text{ }^{\circ}\text{C}$   |          | 1.05          | 1.20 |               |
|                                                        | $I_F = 5\text{ A}$ $T_A = 125\text{ }^{\circ}\text{C}$   |          | 0.59          | -    |               |
|                                                        | $I_F = 10\text{ A}$ $T_A = 125\text{ }^{\circ}\text{C}$  |          | 0.69          | 0.75 |               |
| Reverse current per diode <sup>(2)</sup>               | $V_R = 100\text{ V}$ $T_A = 25\text{ }^{\circ}\text{C}$  | $I_R$    | 1.3           | -    | $\mu\text{A}$ |
|                                                        | $V_R = 100\text{ V}$ $T_A = 125\text{ }^{\circ}\text{C}$ |          | 1.2           | -    | mA            |
|                                                        | $V_R = 150\text{ V}$ $T_A = 25\text{ }^{\circ}\text{C}$  |          | -             | 150  | $\mu\text{A}$ |
|                                                        | $V_R = 150\text{ V}$ $T_A = 125\text{ }^{\circ}\text{C}$ |          | 3             | 15   | 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          | V20150C | VF20150C | VB20150C | VI20150C | UNIT                 |
|--------------------------------------|-----------------|---------|----------|----------|----------|----------------------|
| Typical thermal resistance per diode | $R_{\theta JC}$ | 2.8     | 5.0      | 2.8      | 2.8      | $^{\circ}\text{C/W}$ |

**ORDERING INFORMATION** (Example)

| PACKAGE   | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|-----------|----------------|-----------------|--------------|---------------|---------------|
| TO-220AB  | V20150C-E3/4W  | 1.88            | 4W           | 50/tube       | Tube          |
| ITO-220AB | VF20150C-E3/4W | 1.75            | 4W           | 50/tube       | Tube          |
| TO-263AB  | VB20150C-E3/4W | 1.39            | 4W           | 50/tube       | Tube          |
| TO-263AB  | VB20150C-E3/8W | 1.39            | 8W           | 800/reel      | Tape and reel |
| TO-262AA  | VI20150C-E3/4W | 1.45            | 4W           | 50/tube       | Tube          |

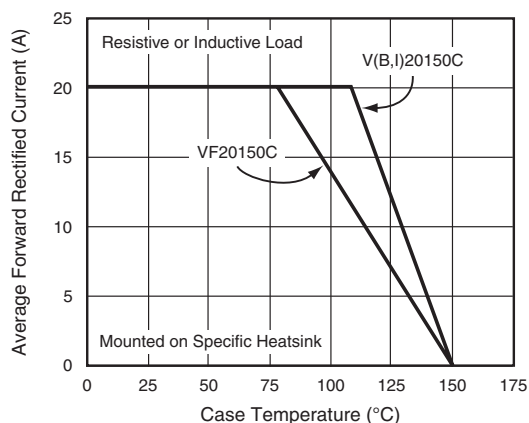
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

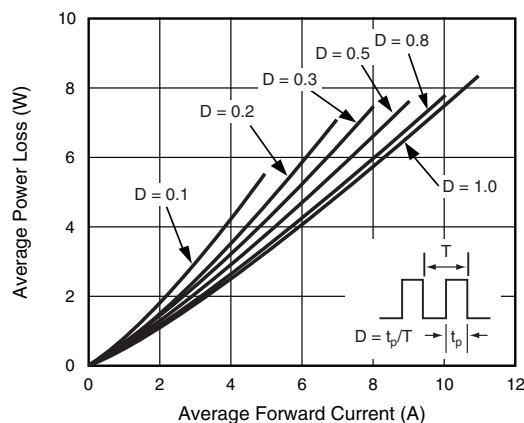


Fig. 2 - Forward Power Loss Characteristics Per Diode

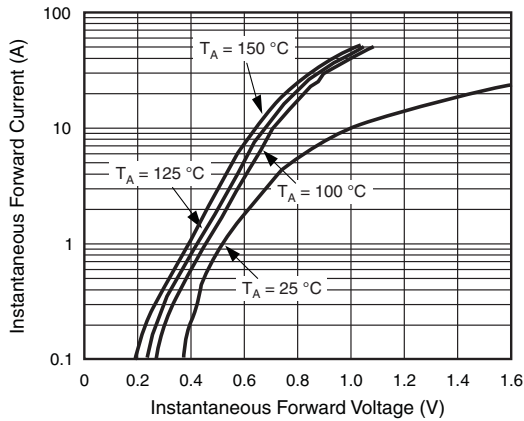


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

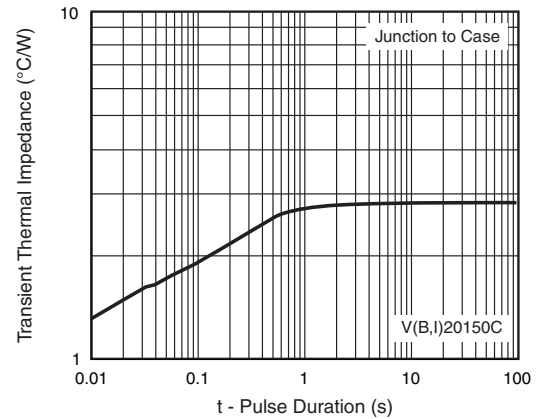


Fig. 6 - Typical Transient Thermal Impedance Per Diode

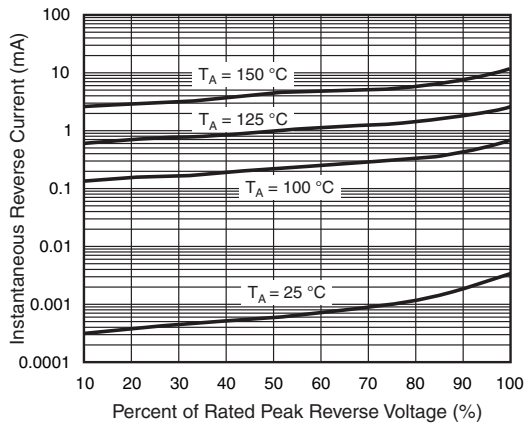


Fig. 4 - Typical Reverse Characteristics Per Diode

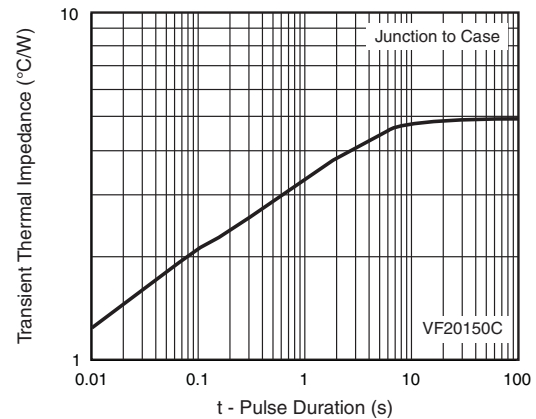


Fig. 7 - Typical Transient Thermal Impedance Per Diode

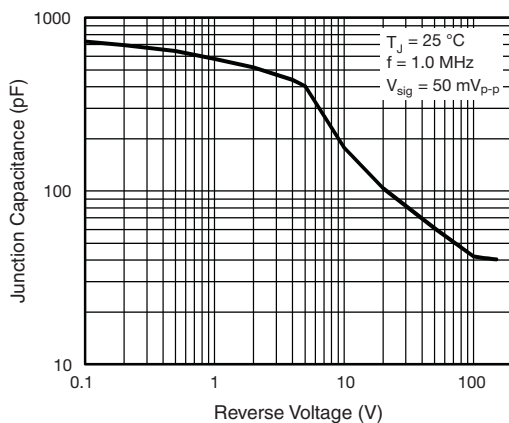
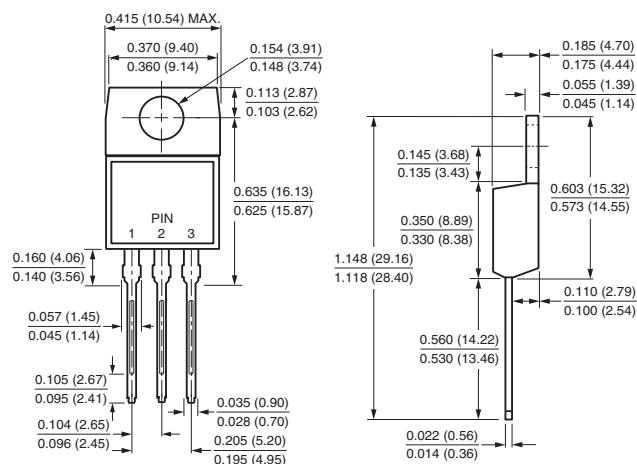


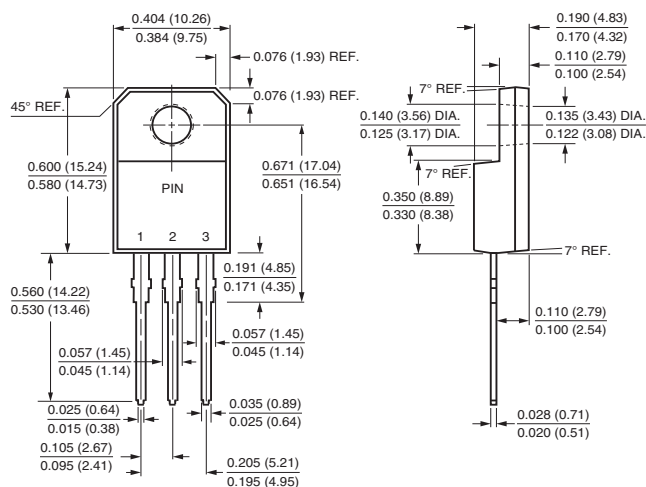
Fig. 5 - Typical Junction Capacitance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

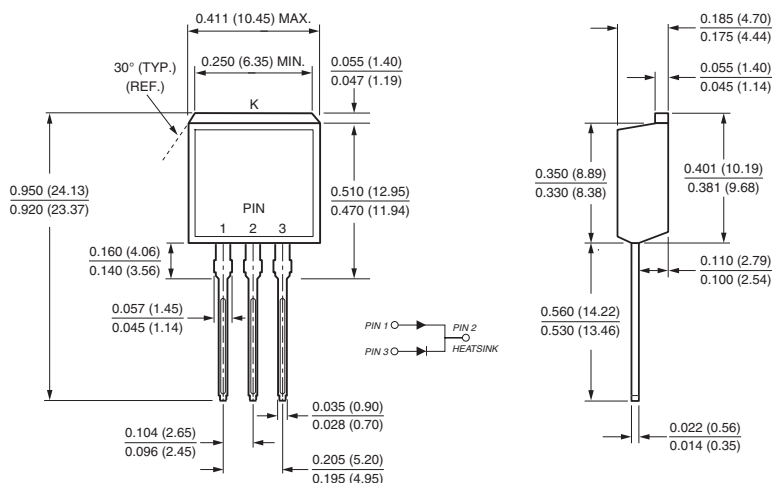
TO-220AB



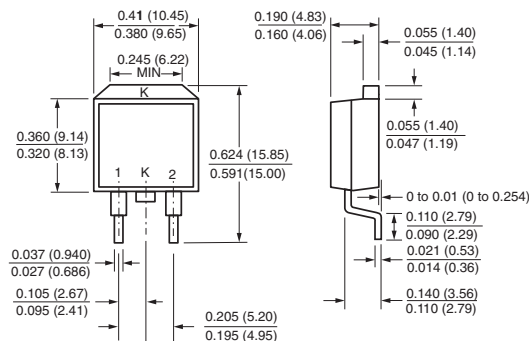
**ITO-220AB**



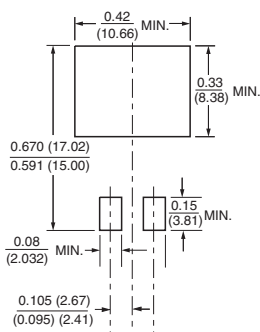
TO-262AA



TO-263AB



### Mounting Pad Layout





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