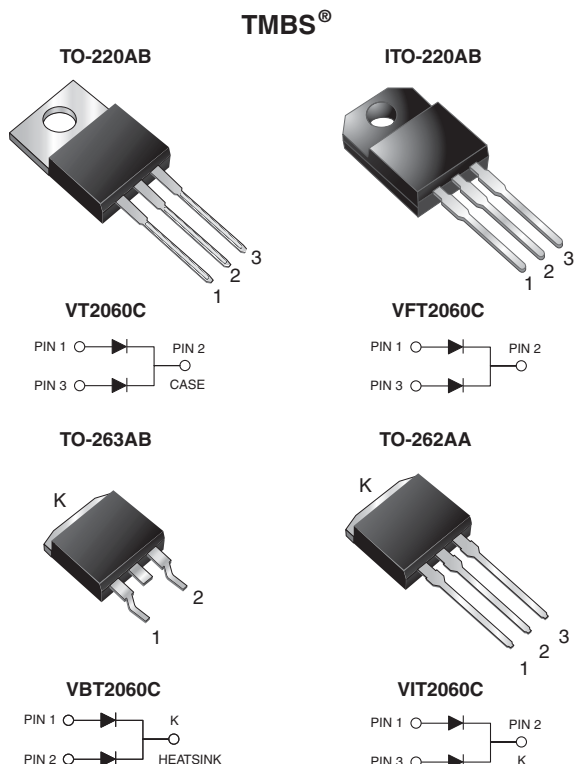




## Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.40\text{ V}$  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)
- 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                                   |
| $V_{RRM}$                    | 60 V                                       |
| $I_{FSM}$                    | 150 A                                      |
| $V_F$ at $I_F = 10\text{ A}$ | 0.52 V                                     |
| $T_J$ max.                   | 150 °C                                     |
| Package                      | TO-220AB, ITO-220AB,<br>TO-263AB, TO-262AA |
| Circuit configuration        | Common cathode                             |

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

| PARAMETER                                                                                      | SYMBOL                            | VT2060C     | VFT2060C | VBT2060C | VIT2060C | UNIT |
|------------------------------------------------------------------------------------------------|-----------------------------------|-------------|----------|----------|----------|------|
| Maximum repetitive peak reverse voltage                                                        | V <sub>RRM</sub>                  | 60          |          |          |          | V    |
| Maximum average forward rectified current (fig. 1)                                             | I <sub>F(AV)</sub>                | 20          |          |          |          | A    |
|                                                                                                |                                   | 10          |          |          |          |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode   | I <sub>FSM</sub>                  | 150         |          |          |          |      |
| Non-repetitive avalanche energy at T <sub>J</sub> = 25 °C, L = 60 mH per diode                 | E <sub>AS</sub>                   | 120         |          |          |          | mJ   |
| Peak repetitive reverse current at t <sub>p</sub> = 2 μs, 1 kHz, T <sub>J</sub> = 38 °C ± 2 °C | I <sub>RRM</sub>                  | 1.0         |          |          |          | A    |
| 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 <sub>A</sub> = 25 °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> | 60 (minimum) | -    | 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>  | 0.49         | -    | V    |
|                                                                            | I <sub>F</sub> = 10 A   |                         |                 | 0.57         | 0.65 |      |
|                                                                            | I <sub>F</sub> = 5 A    | T <sub>A</sub> = 125 °C |                 | 0.40         | -    |      |
|                                                                            | I <sub>F</sub> = 10 A   |                         |                 | 0.52         | 0.59 |      |
| Reverse current per diode <sup>(2)</sup>                                   | V <sub>R</sub> = 60 V   | T <sub>A</sub> = 25 °C  | I <sub>R</sub>  | -            | 850  | μA   |
|                                                                            |                         | T <sub>A</sub> = 125 °C |                 | 14           | 40   | mA   |

**Notes**<sup>(1)</sup> Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle<sup>(2)</sup> Pulse test: Pulse width  $\leq 40\text{ ms}$ 

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |            |                 |         |          |          |          |                      |
|---------------------------------------------------------------------------------------------|------------|-----------------|---------|----------|----------|----------|----------------------|
| PARAMETER                                                                                   |            | SYMBOL          | VT2060C | VFT2060C | VBT2060C | VIT2060C | UNIT                 |
| Typical thermal resistance                                                                  | per diode  | $R_{\theta JC}$ | 3.0     | 6.0      | 3.2      | 3.0      | $^{\circ}\text{C/W}$ |
|                                                                                             | per device |                 | 1.8     | 4.8      | 1.9      | 1.8      |                      |

| <b>ORDERING INFORMATION</b> (Example) |                |                 |              |               |               |
|---------------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE                               | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB                              | VT2060C-E3/4W  | 1.88            | 4W           | 50/tube       | Tube          |
| ITO-220AB                             | VFT2060C-E3/4W | 1.76            | 4W           | 50/tube       | Tube          |
| TO-263AB                              | VBT2060C-E3/4W | 1.39            | 4W           | 50/tube       | Tube          |
| TO-263AB                              | VBT2060CE3/8W  | 1.39            | 8W           | 800/reel      | Tape and reel |
| TO-262AA                              | VIT2060C-E3/4W | 1.45            | 4W           | 50/tube       | Tube          |



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

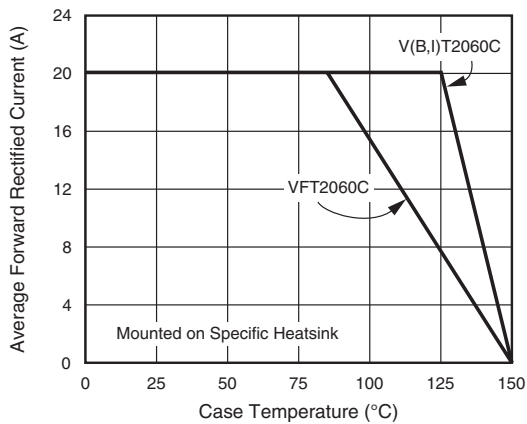


Fig. 1 - Maximum Forward Current Derating Curve

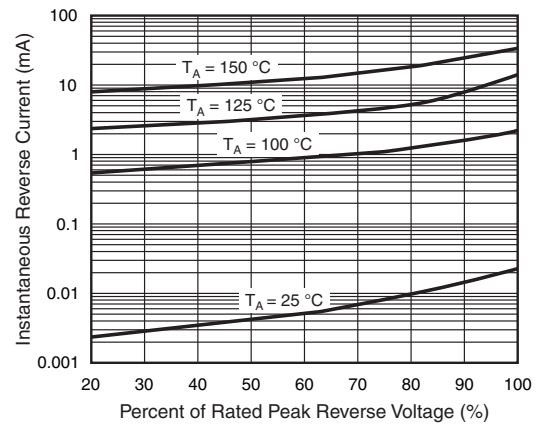


Fig. 4 - Typical Reverse Characteristics Per Diode

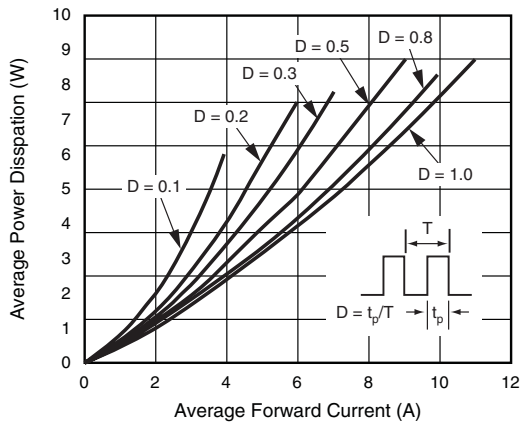


Fig. 2 - Forward Power Dissipation Characteristics Per Diode

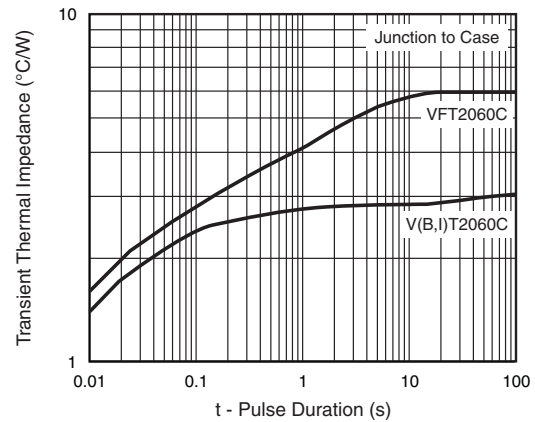


Fig. 5 - Typical Transient Thermal Impedance Per Diode

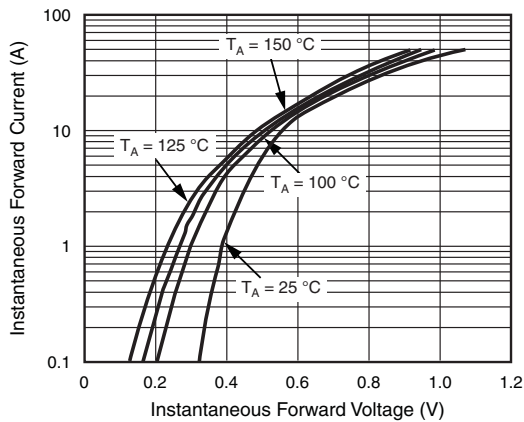


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

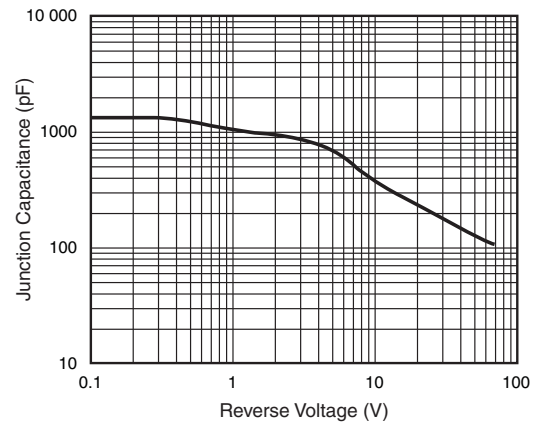
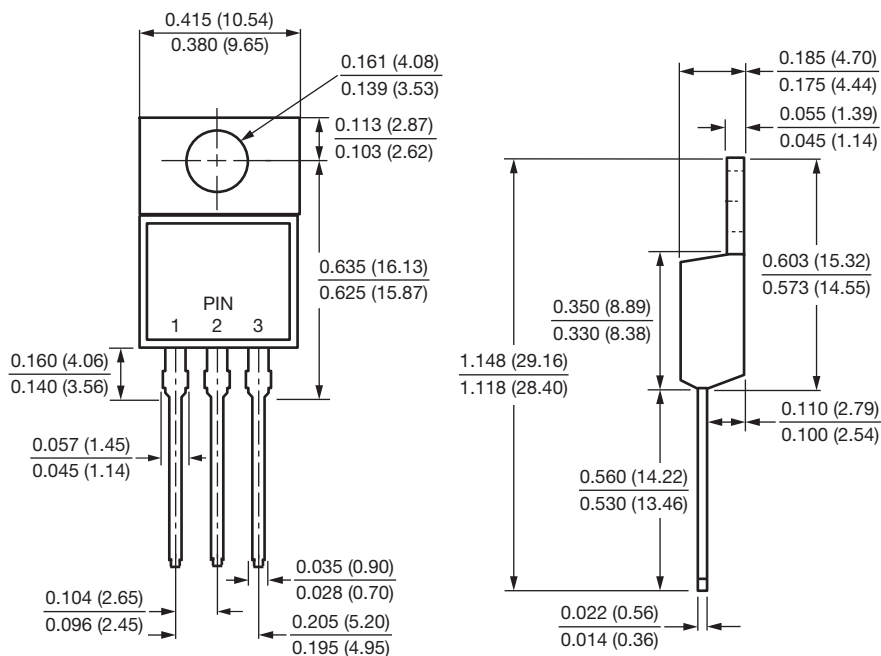


Fig. 6 - Typical Junction Capacitance Per Diode

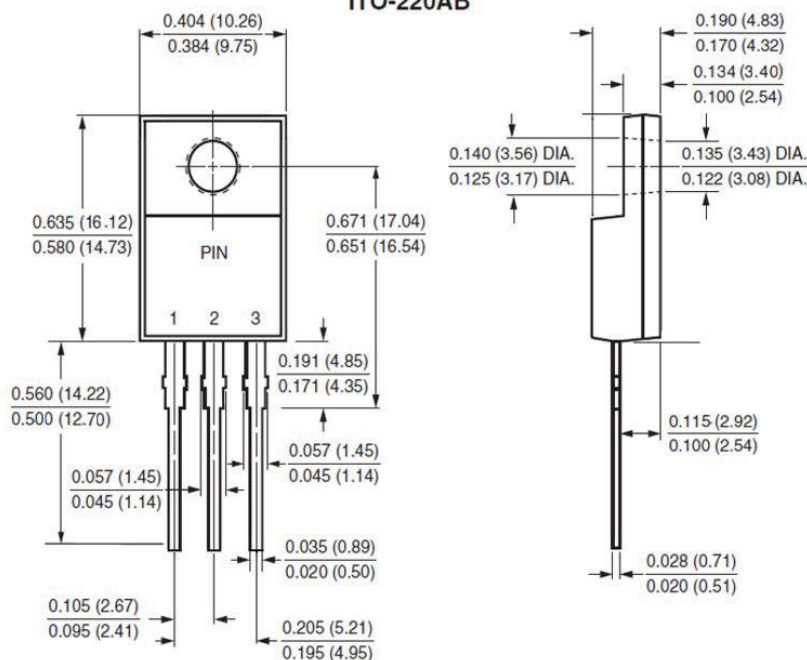


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AB

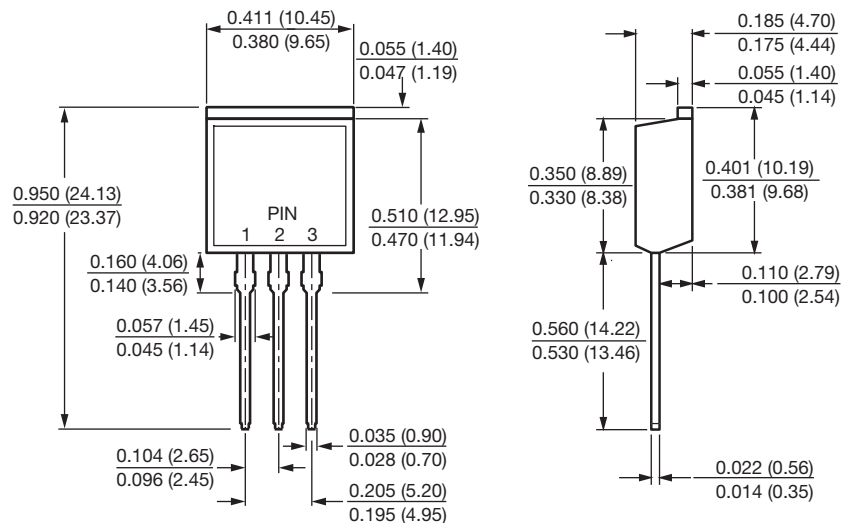


### ITO-220AB

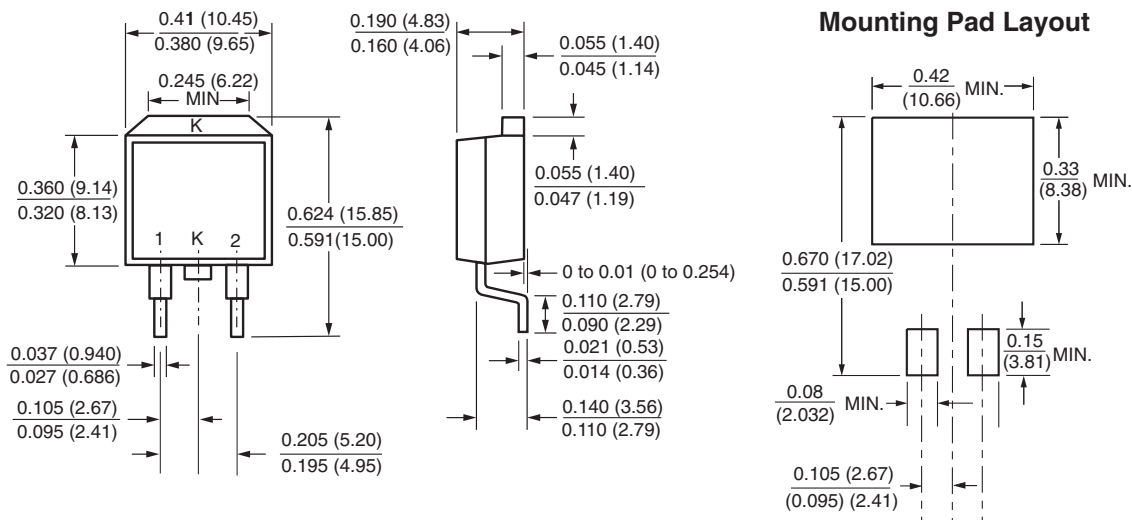




## TO-262AA



## TO-263AB





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