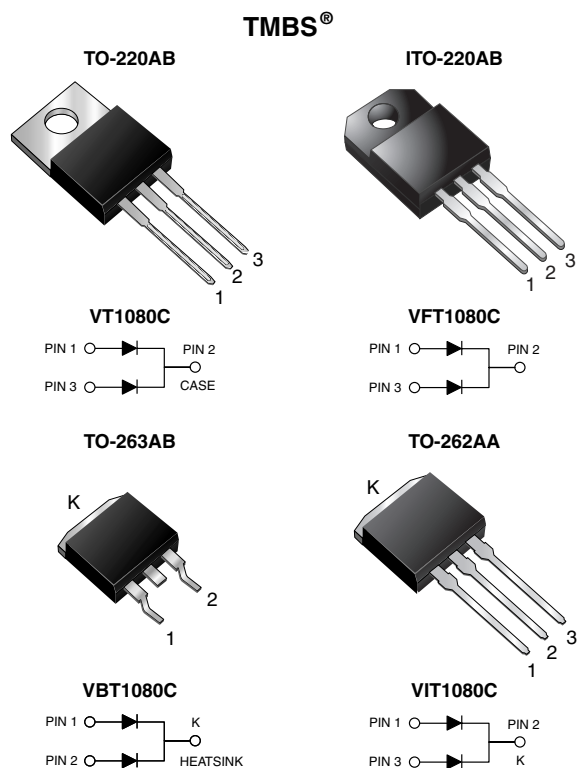




## Dual Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.49\text{ V}$  at  $I_F = 3\text{ A}$ 

## 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)
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

RoHS  
COMPLIANT

## TYPICAL APPLICATIONS

For use in high frequency converters, switching power supplies, freewheeling diodes, OR-ing diode, dc-to-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 5 A |
| $V_{RRM}$                   | 80 V    |
| $I_{FSM}$                   | 80 A    |
| $V_F$ at $I_F = 5\text{ A}$ | 0.57 V  |
| $T_J$ max.                  | 150 °C  |

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

| PARAMETER                                                                                                |            | SYMBOL                            | VT1080C       | VFT1080C | VBT1080C | VIT1080C | UNIT |
|----------------------------------------------------------------------------------------------------------|------------|-----------------------------------|---------------|----------|----------|----------|------|
| Maximum repetitive peak reverse voltage                                                                  |            | V <sub>RRM</sub>                  | 80            |          |          |          | V    |
| Maximum average forward rectified current (fig. 1)                                                       | per device | I <sub>F(AV)</sub>                | 10            |          |          |          | A    |
|                                                                                                          | per diode  |                                   | 5             |          |          |          |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode             |            | I <sub>FSM</sub>                  | 80            |          |          |          | A    |
| Non-repetitive avalanche energy at T <sub>J</sub> = 25 °C, L = 60 mH per diode                           |            | E <sub>AS</sub>                   | 30            |          |          |          | mJ   |
| Peak repetitive reverse current at t <sub>p</sub> = 2 μs, 1 kHz, T <sub>J</sub> = 38 °C ± 2 °C per diode |            | I <sub>RRM</sub>                  | 1.0           |          |          |          | A    |
| Voltage rate of change (rated V <sub>R</sub> )                                                           |            | dV/dt                             | 10 000        |          |          |          | V/μs |
| 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   |

## VT1080C, VFT1080C, VBT1080C, VIT1080C

Vishay General Semiconductor

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  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>               | 80 (minimum) | -    | V    |
| Instantaneous forward voltage per diode | I <sub>F</sub> = 3 A   | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.54         | -    | V    |
|                                         | I <sub>F</sub> = 5 A   |                         |                               | 0.63         | 0.72 |      |
|                                         | I <sub>F</sub> = 3 A   | T <sub>A</sub> = 125 °C |                               | 0.49         | -    |      |
|                                         | I <sub>F</sub> = 5 A   |                         |                               | 0.57         | 0.66 |      |
|                                         |                        |                         |                               |              |      |      |
| Reverse current per diode               | V <sub>R</sub> = 80 V  | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 12           | 400  | μA   |
|                                         |                        | T <sub>A</sub> = 125 °C |                               | 6            | 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          | VT1080C | VFT1080C | VBT1080C | VIT1080C | UNIT                 |
|----------------------------|------------|-----------------|---------|----------|----------|----------|----------------------|
| Typical thermal resistance | per diode  | $R_{\theta JC}$ | 3.5     | 6.5      | 3.5      | 3.5      | $^{\circ}\text{C/W}$ |
|                            | per device |                 | 2.5     | 5.5      | 2.5      | 2.5      |                      |

**ORDERING INFORMATION** (Example)

| PACKAGE   | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|-----------|----------------|-----------------|--------------|---------------|---------------|
| TO-220AB  | VT1080C-E3/4W  | 1.88            | 4W           | 50/tube       | Tube          |
| ITO-220AB | VFT1080C-E3/4W | 1.70            | 4W           | 50/tube       | Tube          |
| TO-263AB  | VBT1080C-E3/4W | 1.35            | 4W           | 50/tube       | Tube          |
| TO-263AB  | VBT1080C-E3/8W | 1.35            | 8W           | 800/reel      | Tape and reel |
| TO-262AA  | VIT1080C-E3/4W | 1.43            | 4W           | 50/tube       | Tube          |

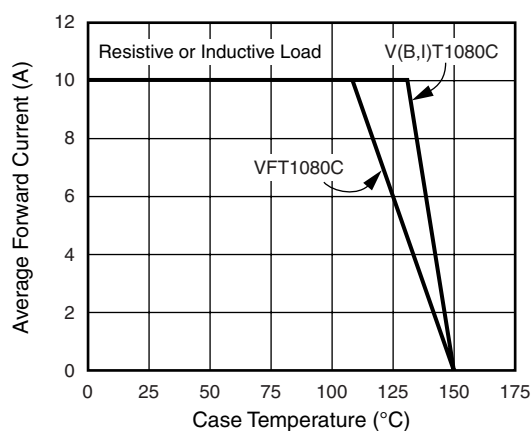
**RATINGS AND CHARACTERISTICS CURVES**( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

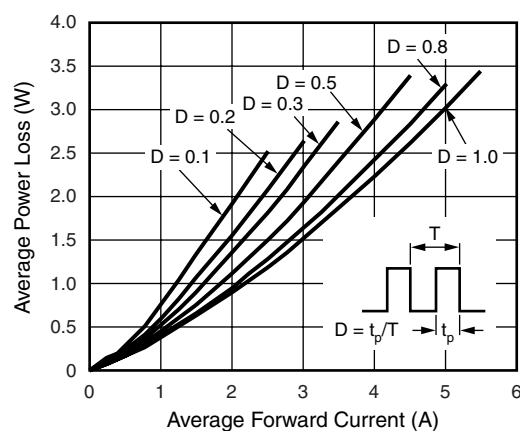


Fig. 2 - Forward Power Loss Characteristics Per Diode

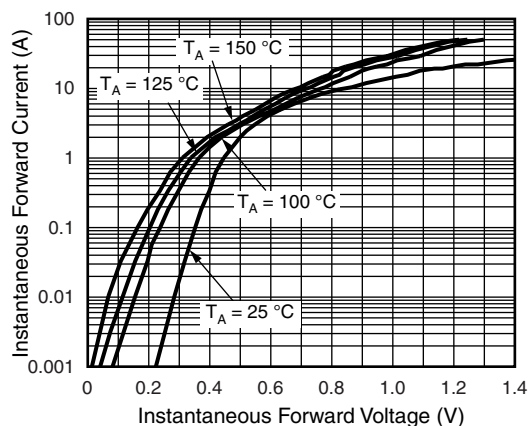


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

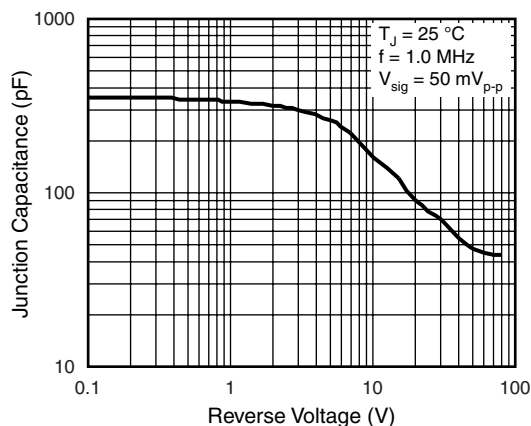


Fig. 5 - Typical Junction Capacitance Per Diode

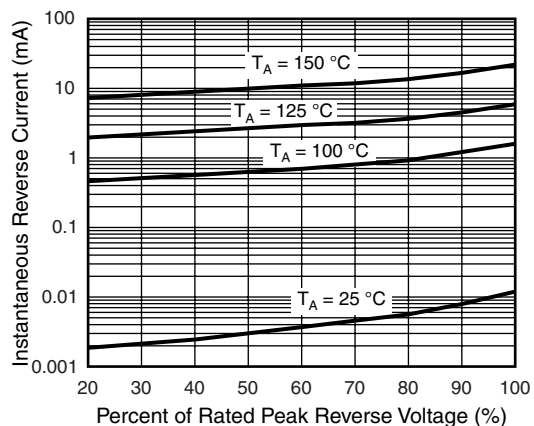


Fig. 4 - Typical Reverse Characteristics Per Diode

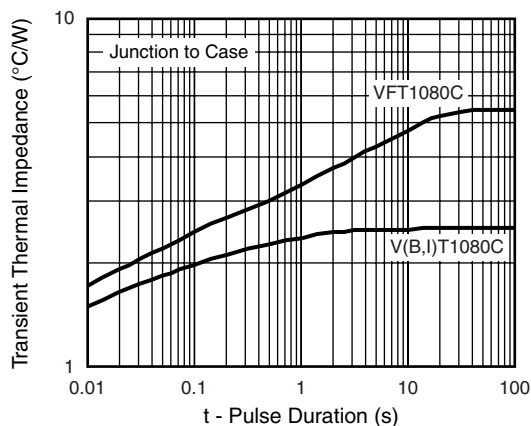
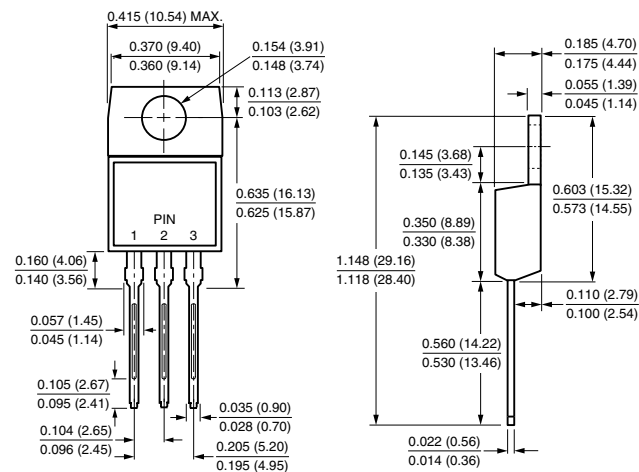


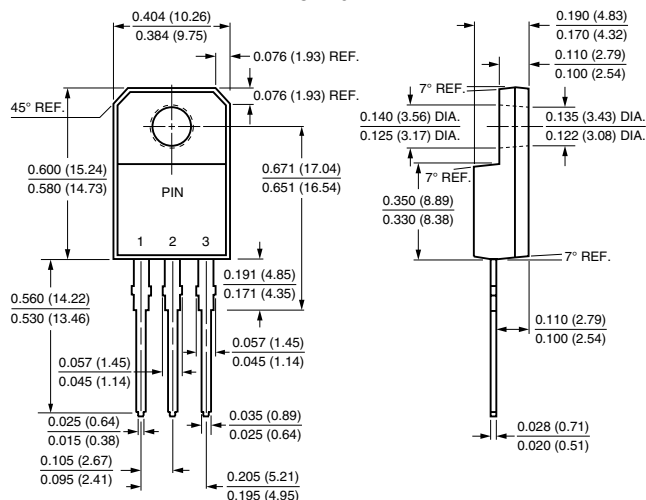
Fig. 6 - Typical Transient Thermal Impedance Per Diode

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

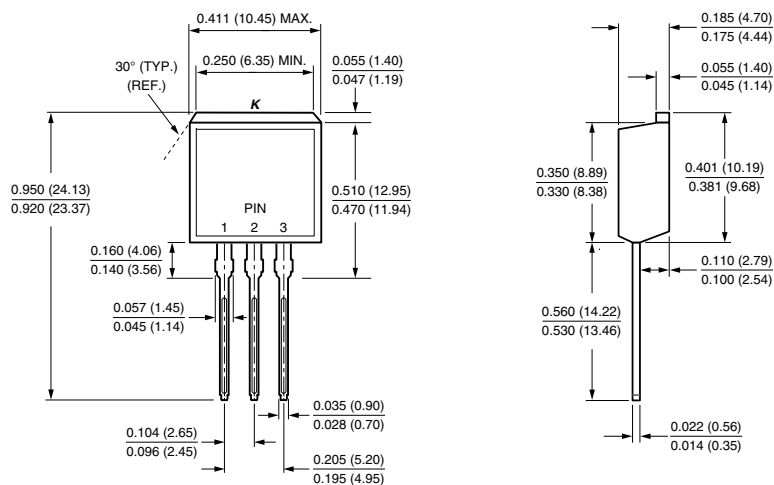
**TO-220AB**



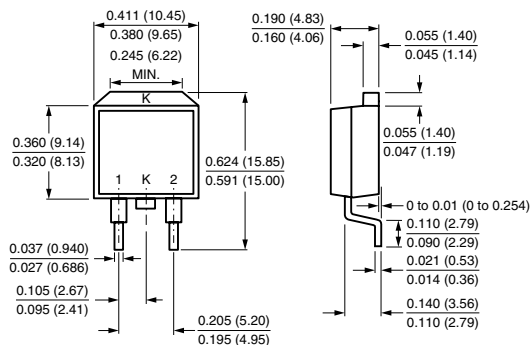
**ITO-220AB**



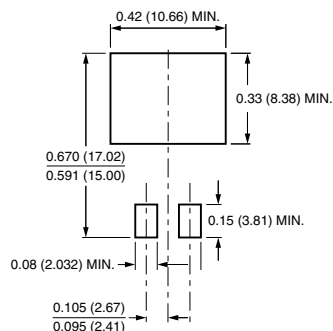
**TO-262AA**



**TO-263AB**



### Mounting Pad Layout





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