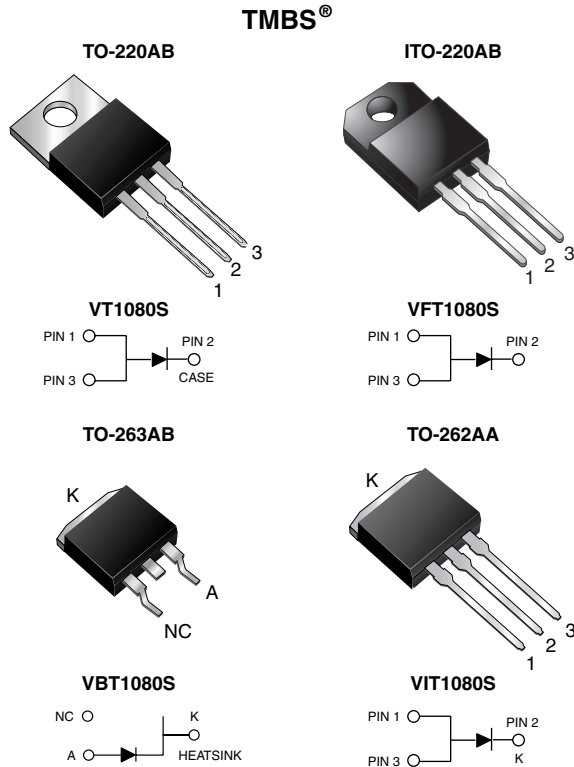


Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.52\text{ V}$ 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)
- 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

| | |
|------------------------------|--------|
| $I_{F(AV)}$ | 10 A |
| V_{RRM} | 80 V |
| I_{FSM} | 100 A |
| V_F at $I_F = 10\text{ A}$ | 0.60 V |
| T_J max. | 150 °C |

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

| PARAMETER | SYMBOL | VT1080S | VFT1080S | VBT1080S | VIT1080S | UNIT |
|---|----------------|---------|---------------|----------|----------|------|
| Maximum repetitive peak reverse voltage | V_{RRM} | | 80 | | | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | | 10 | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | | 100 | | | A |
| Non-repetitive avalanche energy at $T_J = 25\text{ °C}$, $L = 60\text{ mH}$ | E_{AS} | | 110 | | | mJ |
| Peak repetitive reverse current at $t_p = 2\text{ }\mu\text{s}$, 1 kHz, $T_J = 38\text{ °C} \pm 2\text{ °C}$ | I_{RRM} | | 1.0 | | | A |
| 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 °C unless otherwise noted) | | | | | | |
|--|------------------------|-------------------------|--------------------|--------------|------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Breakdown voltage | I _R = 10 mA | T _A = 25 °C | V _{BR} | 80 (minimum) | - | V |
| Instantaneous forward voltage | I _F = 5 A | T _A = 25 °C | V _F (1) | 0.57 | - | V |
| | I _F = 10 A | | | 0.67 | 0.81 | |
| | I _F = 5 A | T _A = 125 °C | | 0.52 | - | |
| | I _F = 10 A | | | 0.60 | 0.70 | |
| Reverse current | V _R = 80 V | T _A = 25 °C | I _R (2) | 20 | 600 | μA |
| | | T _A = 125 °C | | 10 | 20 | mA |

Notes

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | |
|---|------------------|---------|----------|----------|----------|------|
| PARAMETER | SYMBOL | VT1080S | VFT1080S | VBT1080S | VIT1080S | UNIT |
| Typical thermal resistance | R _{θJC} | 2.2 | 5.5 | 2.2 | 2.2 | °C/W |

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB | VT1080S-E3/4W | 1.88 | 4W | 50/tube | Tube |
| ITO-220AB | VFT1080S-E3/4W | 1.73 | 4W | 50/tube | Tube |
| TO-263AB | VBT1080S-E3/4W | 1.36 | 4W | 50/tube | Tube |
| TO-263AB | VBT1080S-E3/8W | 1.36 | 8W | 800/reel | Tape and reel |
| TO-262AA | VIT1080S-E3/4W | 1.43 | 4W | 50/tube | Tube |

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

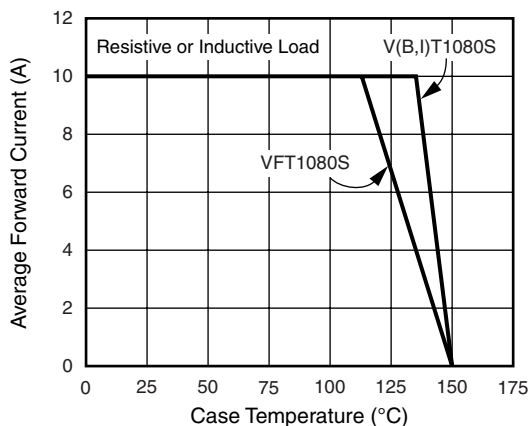


Fig. 1 - Maximum Forward Current Derating Curve

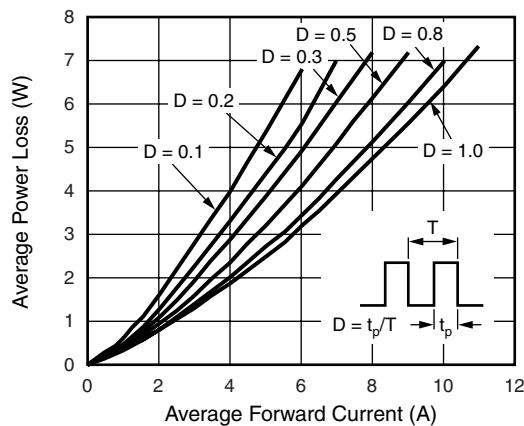


Fig. 2 - Forward Power Loss Characteristics

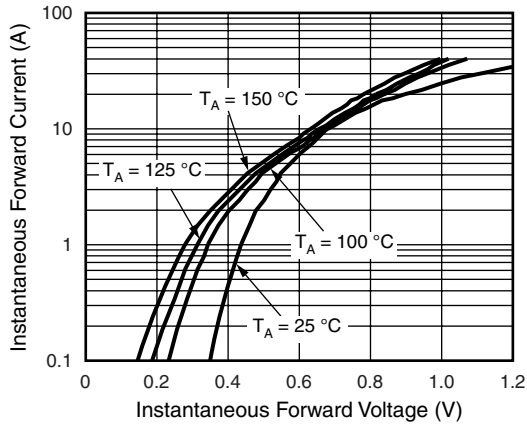


Fig. 3 - Typical Instantaneous Forward Characteristics

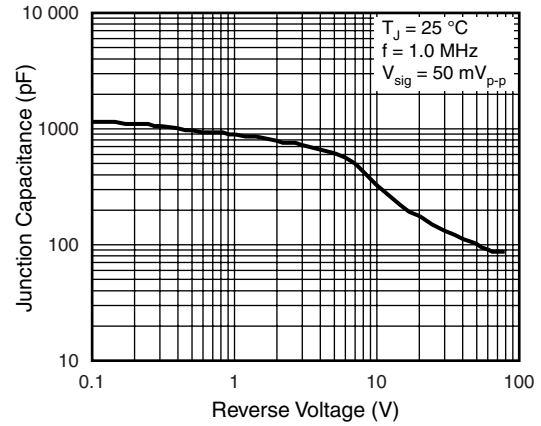


Fig. 5 - Typical Junction Capacitance

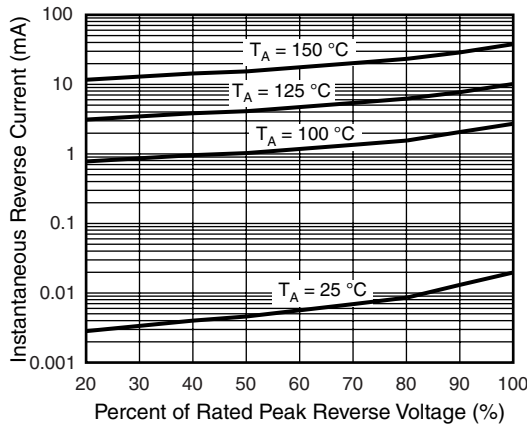


Fig. 4 - Typical Reverse Characteristics

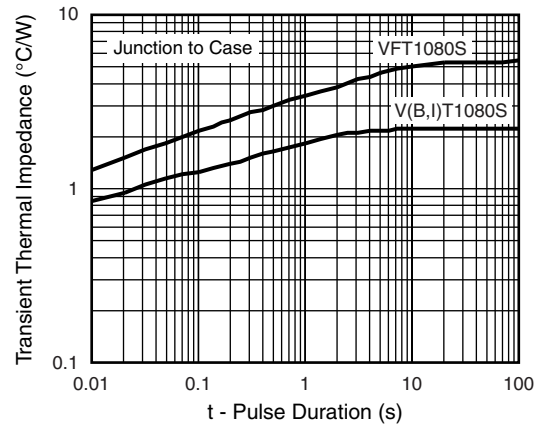


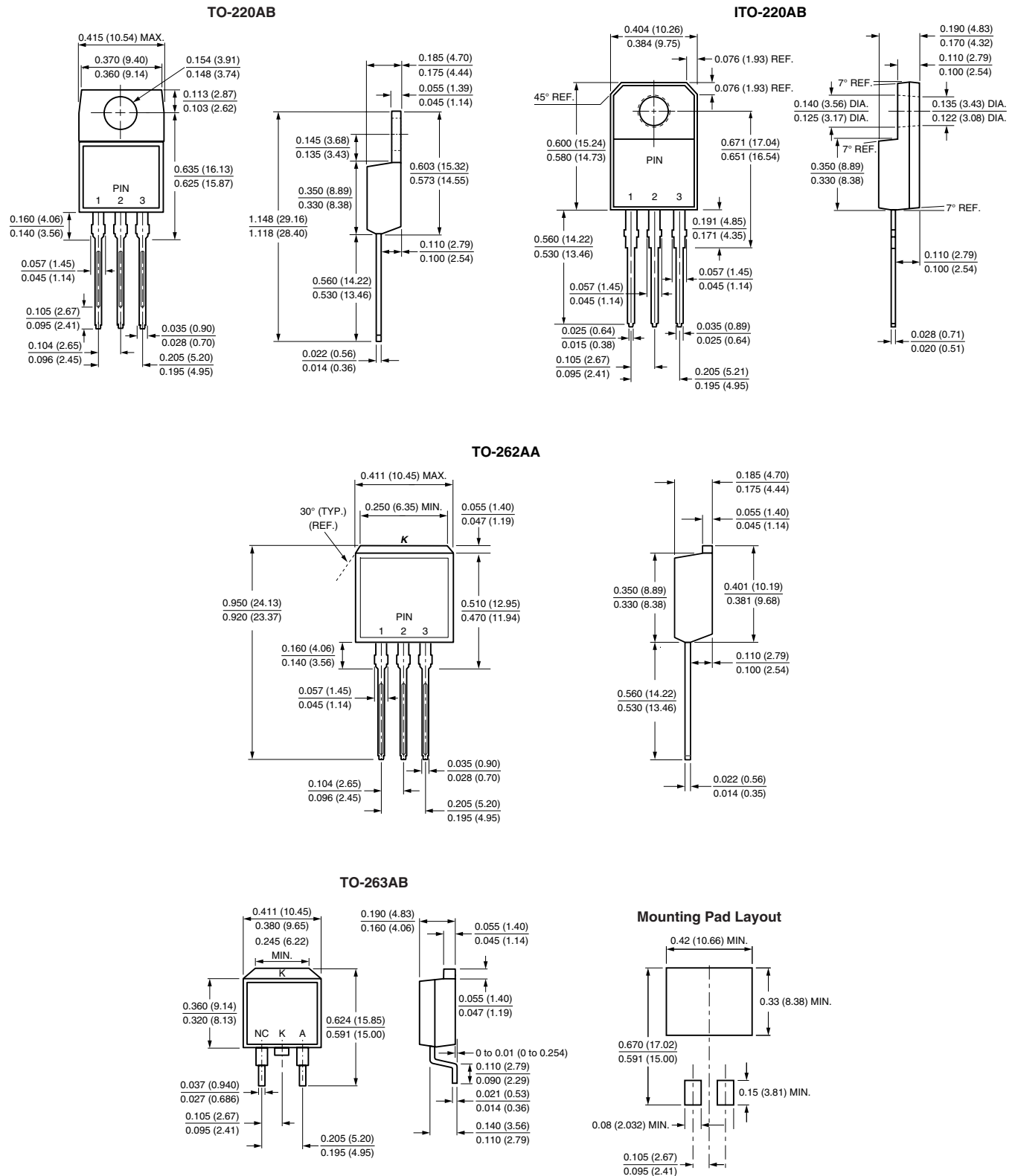
Fig. 6 - Typical Transient Thermal Impedance

VT1080S, VFT1080S, VBT1080S, VIT1080S

Vishay General Semiconductor



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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