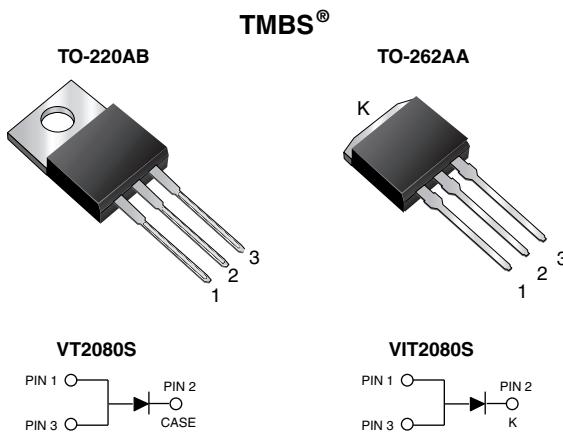


Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.46$ V at $I_F = 5$ A



FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Solder bath temperature 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



TYPICAL APPLICATIONS

For use in high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection.

MECHANICAL DATA

Case: TO-220AB and TO-262AA

Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS

| | |
|-----------------------|--------------------|
| $I_{F(AV)}$ | 20 A |
| V_{RRM} | 80 V |
| I_{FSM} | 150 A |
| V_F at $I_F = 20$ A | 0.70 V |
| T_J max. | 150 °C |
| Package | TO-220AB, TO-262AA |
| Diode variation | Single die |

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)

| PARAMETER | SYMBOL | VT2080S | VIT2080S | UNIT |
|------------------------------------------------------------------------------------|----------------|-------------|----------|------|
| Maximum repetitive peak reverse voltage | V_{RRM} | 80 | | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | 20 | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 150 | | A |
| Voltage rate of change (rated V_R) | dV/dt | 10 000 | | V/μs |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +150 | | °C |

| ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | |
|--------------------------------------------------------------------------------------|----------------------|---------------------------|------|------|---------------|
| PARAMETER | TEST CONDITIONS | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage per diode | $I_F = 5 \text{ A}$ | $T_A = 25^\circ\text{C}$ | 0.52 | - | V |
| | $I_F = 10 \text{ A}$ | | 0.61 | - | |
| | $I_F = 20 \text{ A}$ | | 0.80 | 0.92 | |
| | $I_F = 5 \text{ A}$ | $T_A = 125^\circ\text{C}$ | 0.46 | - | |
| | $I_F = 10 \text{ A}$ | | 0.54 | - | |
| | $I_F = 20 \text{ A}$ | | 0.70 | 0.78 | |
| Reverse current per diode | $V_R = 80 \text{ V}$ | $T_A = 25^\circ\text{C}$ | 30 | 700 | μA |
| | | $T_A = 125^\circ\text{C}$ | 20 | 35 | mA |

Notes

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

(2) Pulse test: Pulse width $\leq 40 \text{ ms}$

| THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | |
|-----------------------------------------------------------------------------------|-----------------------|---------|----------|--------------------|--|
| PARAMETER | SYMBOL | VT2080S | VIT2080S | UNIT | |
| Typical thermal resistance | $R_{\theta\text{JC}}$ | 1.8 | | $^\circ\text{C/W}$ | |

| ORDERING INFORMATION (Example) | | | | | |
|---------------------------------------|--------------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB | VT2080S-M3/4W | 1.88 | 4W | 50/tube | Tube |
| TO-262AA | VIT2080S-M3/4W | 1.45 | 4W | 50/tube | Tube |
| TO-220AB | VT2080SHM3/4W (1) | 1.88 | 4W | 50/tube | Tube |
| TO-262AA | VIT2080SHM3/4W (1) | 1.45 | 4W | 50/tube | Tube |

Note

(1) AEC-Q101 qualified

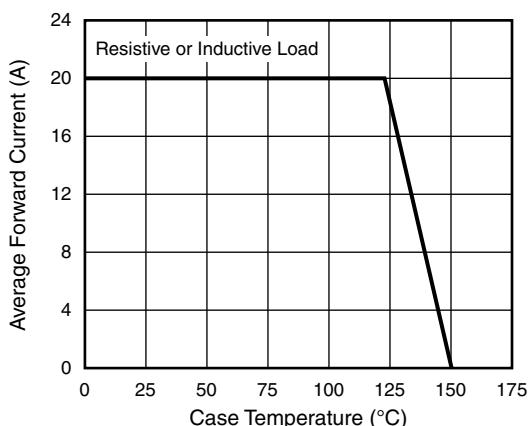
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

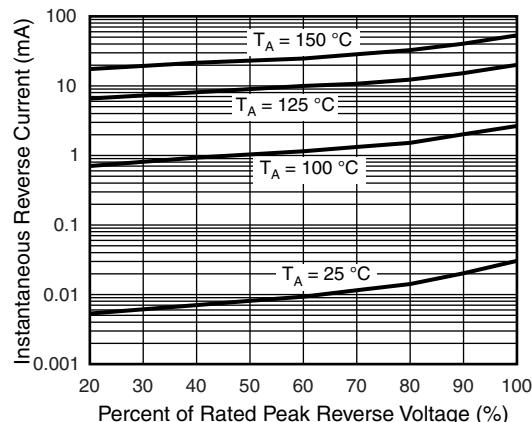


Fig. 4 - Typical Reverse Characteristics

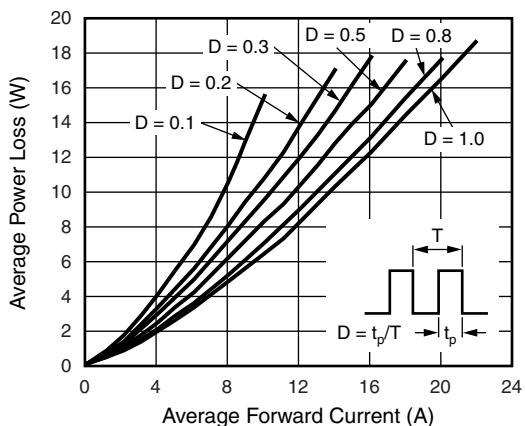


Fig. 2 - Forward Power Dissipation Characteristics

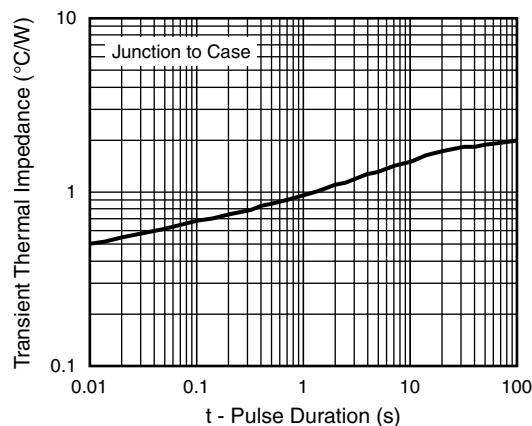


Fig. 5 - Typical Transient Thermal Impedance

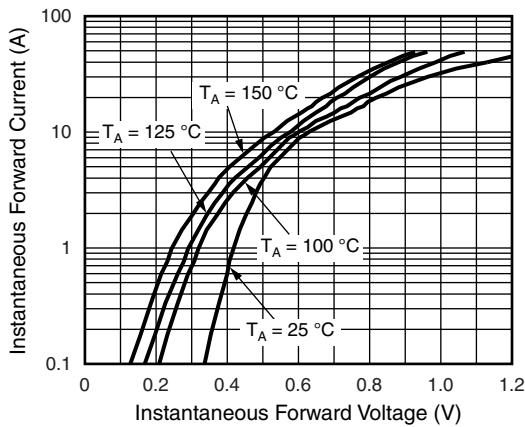


Fig. 3 - Typical Instantaneous Forward Characteristics

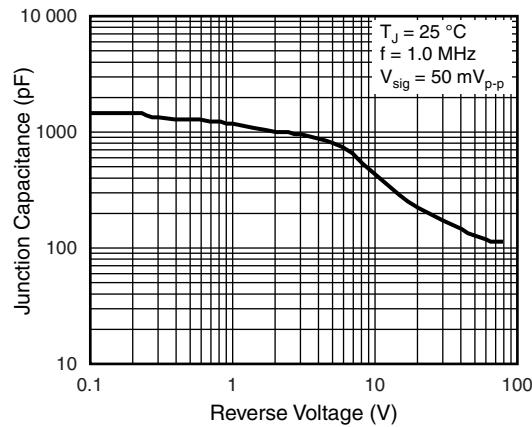
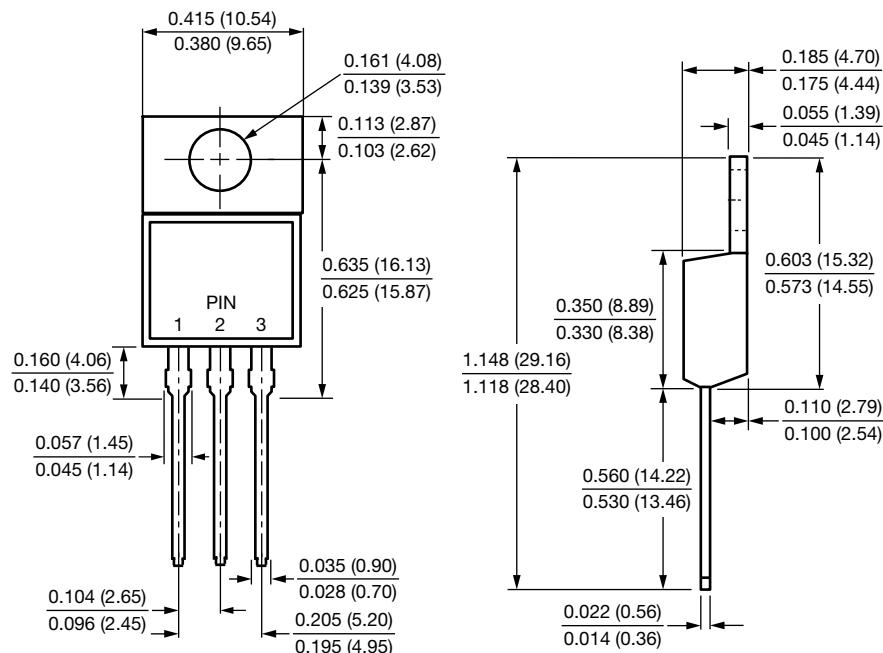
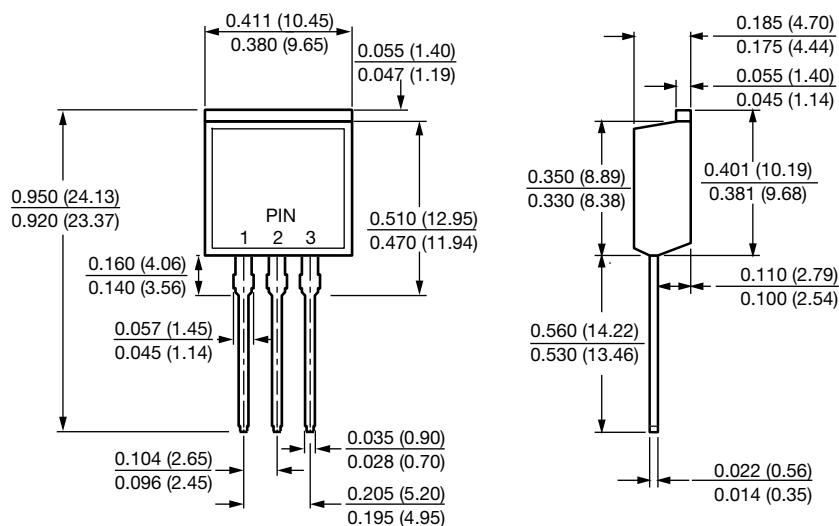


Fig. 6 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB

TO-262AA


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