

Vishay General Semiconductor

High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.39 \text{ V}$ at $I_F = 5 \text{ A}$



| PRIMARY CHARACTERISTICS | | | | |
|---|-----------|--|--|--|
| I _{F(AV)} | 30 A | | | |
| V _{RRM} | 100 V | | | |
| I _{FSM} | 250 A | | | |
| V _F at I _F = 30 A | 0.69 V | | | |
| T _J max. | 150 °C | | | |
| Package | ITO-220AB | | | |
| Circuit configuration | Single | | | |

FEATURES

- Trench MOS Schottky technology
- · Low forward voltage drop, low power losses

• High efficiency operation

RoHS COMPLIANT HALOGEN

- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see www.vishav.com/doc?99912

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: ITO-220AB

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

commercial grade

Terminals: matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 1A whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs maximum

| MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted) | | | | |
|--|-----------------------------------|-------------|------|--|
| PARAMETER | SYMBOL | VF30100S | UNIT | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 100 | V | |
| Maximum average forward rectified current (fig. 1) | I _{F(AV)} | 30 | Α | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I _{FSM} | 250 | А | |
| Isolation voltage from terminal to heat sink t = 1 min | V_{AC} | 1500 | V | |
| Operating junction and storage temperature range | T _J , T _{STG} | -40 to +150 | °C | |

| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | |
|---|------------------------|-------------------------|---------------------------------|------|------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage | I _F = 5 A | T _A = 25 °C | - V _F ⁽¹⁾ | 0.47 | = | V |
| | I _F = 10 A | | | 0.55 | - | |
| | I _F = 30 A | | | 0.80 | 0.91 | |
| | I _F = 5 A | T _A = 125 °C | | 0.39 | - | |
| | I _F = 10 A | | | 0.49 | - | |
| | I _F = 30 A | | | 0.69 | 0.78 | |
| Reverse current | V _R = 70 V | T _A = 25 °C | I _R ⁽²⁾ | 27 | - | μA |
| | | T _A = 125 °C | | 11 | - | mA |
| | V _R = 100 V | T _A = 25 °C | | 70 | 1000 | μA |
| | | T _A = 125 °C | | 23 | 45 | mA |

Notes

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

(2) Pulse test: Pulse width ≤ 40 ms



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| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | |
|---|----------------|----------|------|--|
| PARAMETER | SYMBOL | VF30100S | UNIT | |
| Typical thermal resistance | $R_{	heta JC}$ | 4.0 | °C/W | |

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| ITO-220AB | VF30100S-M3/4W | 1.805 | 4W | 50/tube | Tube |

RATINGS AND CHARACTERISTICS CURVES ($T_A = 25$ °C unless otherwise noted)

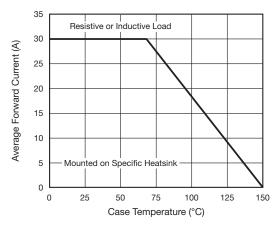


Fig. 1 - Forward Current Derating Curve

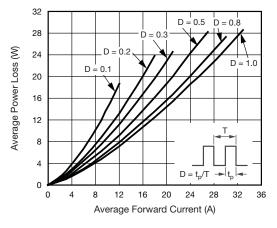


Fig. 2 - Forward Power Loss Characteristics

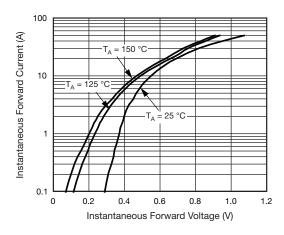


Fig. 3 - Typical Instantaneous Forward Characteristics

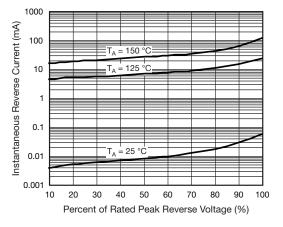


Fig. 4 - Typical Reverse Characteristics



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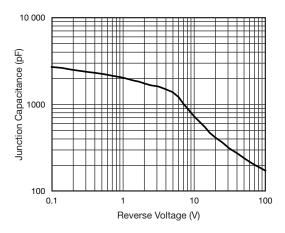


Fig. 5 - Typical Junction Capacitance

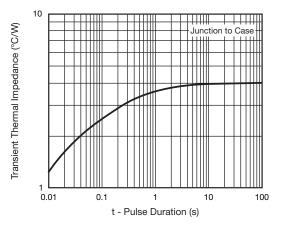
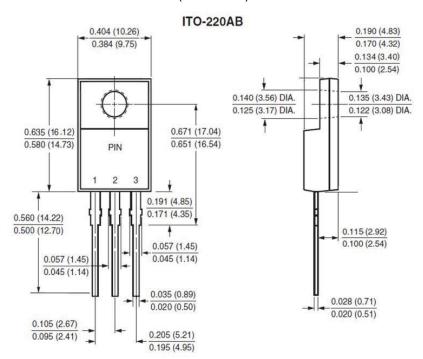


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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