

Insulated Gen 2 Schottky Rectifier Module, 100 A



SOT-227


LINKS TO ADDITIONAL RESOURCES



Application Notes

| PRIMARY CHARACTERISTICS | |
|--|---------------------------------------|
| $I_{F(AV)}$ per module at $T_C = 93\text{ }^\circ\text{C}$ | 100 A |
| V_R | 100 V |
| V_{FM} at 50 A, $T_C = 25\text{ }^\circ\text{C}$ | 0.83 V |
| Package | SOT-227 |
| Circuit configuration | Two separate diodes, parallel pin-out |

FEATURES

- Max. $T_J = 150\text{ }^\circ\text{C}$
- Two fully independent diodes
- Fully insulated package
- Trench MOS Barrier Schottky technology
- Ultra low forward voltage drop
- Optimized for power conversion: welding and industrial SMPS applications
- Easy to use and parallel
- Industry standard outline
- Designed and qualified for industrial level
- UL approved file E78996 
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

DESCRIPTION

The VS-QA100FA10 insulated modules integrate two state of the art Trench MOS Schottky technology rectifiers in the compact, industry standard SOT-227 package.

These devices are thus intended for high frequency converters and switching power supplies.

MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL | CHARACTERISTICS | VALUES | UNITS |
|--------|---|-------------|------------------|
| V_F | $I_F = 50\text{ A}$, $T_J = 150\text{ }^\circ\text{C}$ | 0.66 | V |
| T_J | Range | -40 to +150 | $^\circ\text{C}$ |

ABSOLUTE MAXIMUM RATINGS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
|---|-------------------|--|-------------|------------------|
| Cathode to anode voltage | V_R | | 100 | V |
| Average forward current | $I_{F(AV)}$ | $T_C = 93\text{ }^\circ\text{C}$ | 100 | A |
| per diode | | $T_C = 93\text{ }^\circ\text{C}$ | 50 | |
| Continuous forward current | I_F | $T_C = 90\text{ }^\circ\text{C}$ | 134 | |
| per diode | | $T_C = 90\text{ }^\circ\text{C}$ | 67 | |
| Single pulse forward current per diode | I_{FSM} | $T_C = 150\text{ }^\circ\text{C}$, $t = 6\text{ ms}$, square | 450 | |
| Maximum power dissipation per diode | P_D | $T_C = 90\text{ }^\circ\text{C}$ | 67 | W |
| Non-repetitive avalanche energy per diode | E_{AS} | $T_J = 25\text{ }^\circ\text{C}$, $L = 1\text{ mH}$ | 583 | mJ |
| RMS isolation voltage | V_{ISOL} | Any terminal to case, $t = 1\text{ min}$ | 2500 | V |
| Operating junction and storage temperatures | T_J , T_{Stg} | | -40 to +150 | $^\circ\text{C}$ |

ELECTRICAL SPECIFICATIONS PER DIODE ($T_J = 25\text{ }^\circ\text{C}$ unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN. | TYP. | MAX. | UNITS |
|------------------------------------|----------|--|------|------|------|-------|
| Cathode to anode breakdown voltage | V_{BR} | $I_R = 1\text{ mA}$ | 100 | - | - | V |
| Forward voltage | V_{FM} | $I_F = 50\text{ A}$ | - | 0.83 | 1.03 | |
| | | $I_F = 50\text{ A}$, $T_J = 150\text{ }^\circ\text{C}$ | - | 0.66 | - | |
| Reverse leakage current | I_{RM} | $V_R = 100\text{ V}$ | - | 0.03 | 0.8 | mA |
| | | $T_J = 125\text{ }^\circ\text{C}$, $V_R = 100\text{ V}$ | - | 17 | - | |
| Junction capacitance | C_T | $V_R = 100\text{ V}$, $f = 1\text{ MHz}$ | - | 259 | - | pF |

| THERMAL - MECHANICAL SPECIFICATIONS | | | | | | |
|---|------------|-----------------------|---------|------|------------|-------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | MIN. | TYP. | MAX. | UNITS |
| Junction-to-case, single leg conducting | R_{thJC} | | - | - | 0.89 | °C/W |
| Junction-to-case, both leg conducting | | | - | - | 0.45 | |
| Case-to-heatsink | R_{thCS} | Flat, greased surface | - | 0.1 | - | |
| Weight | | | - | 30 | - | g |
| Mounting torque | | Torque to terminal | - | - | 1.1 (9.7) | Nm (lbf.in) |
| | | Torque to heatsink | - | - | 1.8 (15.9) | Nm (lbf.in) |
| Case style | | | SOT-227 | | | |

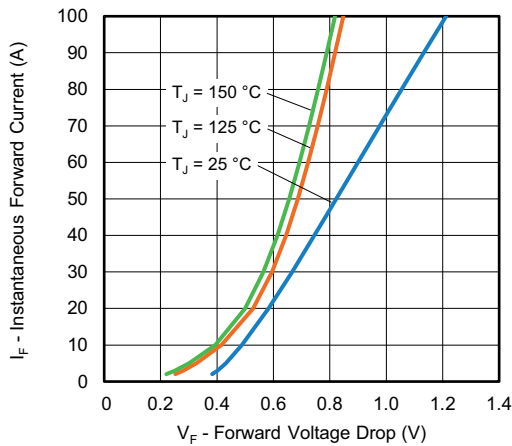


Fig. 1 - Typical Forward Voltage Drop Characteristics

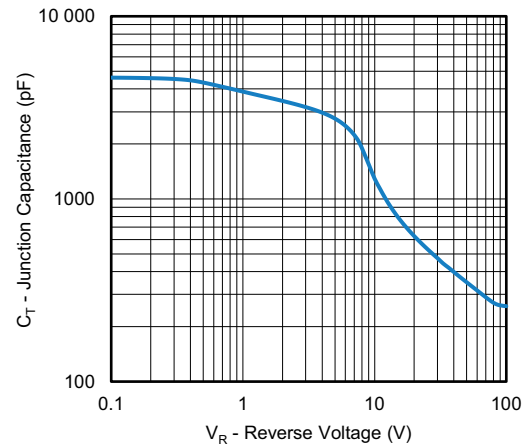


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

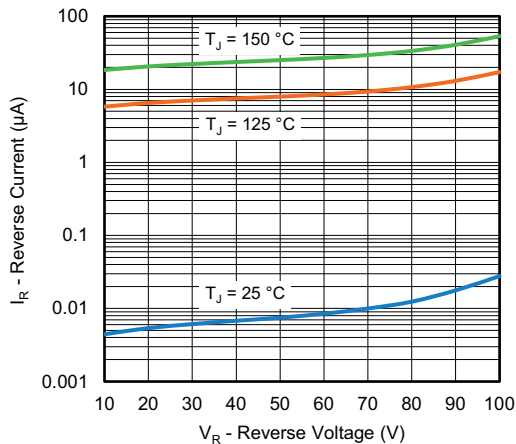


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

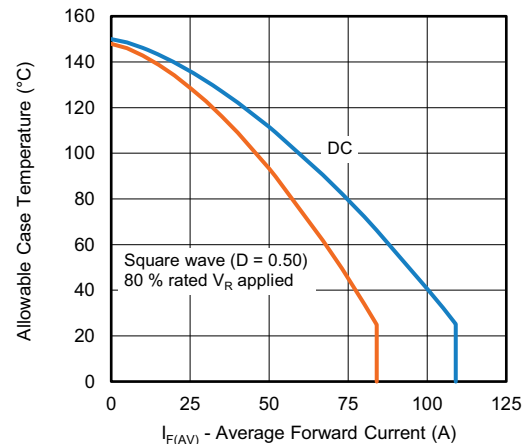


Fig. 4 - Current Rating Characteristics

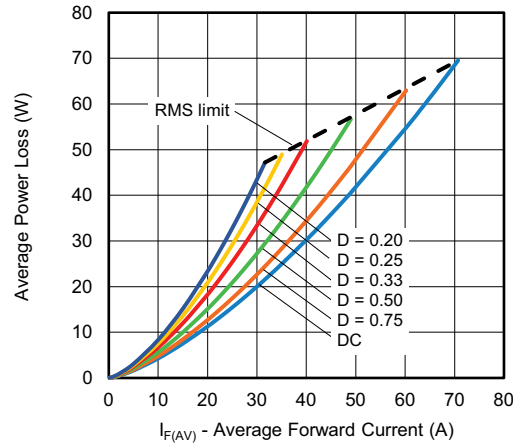


Fig. 5 - Total Power Loss Characteristics

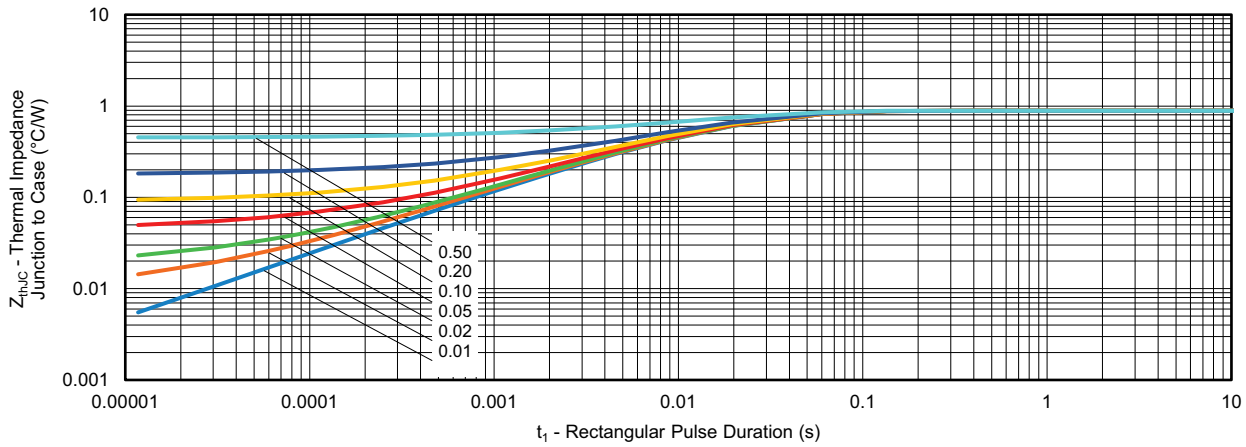


Fig. 6 - Maximum Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

| | | | | | | | |
|-------------|------------|----------|----------|------------|----------|----------|-----------|
| Device code | VS- | Q | A | 100 | F | A | 10 |
| | ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ |

- 1** - Vishay Semiconductors product
- 2** - Schottky technologies
- 3** - Present silicon generation
- 4** - Current rating (100 = 100 A)
- 5** - Circuit configuration (two separate diodes, parallel pin-out)
- 6** - Package indicator (SOT-227 standard insulated base)
- 7** - Voltage rating (10 = 100 V)

Quantity per tube is 10, M4 screw and washer included



| CIRCUIT CONFIGURATION | | |
|---------------------------------------|----------------------------|-----------------|
| CIRCUIT | CIRCUIT CONFIGURATION CODE | CIRCUIT DRAWING |
| Two separate diodes, parallel pin-out | F | |

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|--|
| Dimensions | www.vishay.com/doc?95423 |
| Part marking information | www.vishay.com/doc?95425 |



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