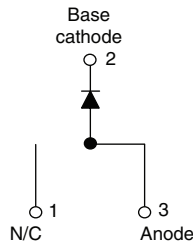




Schottky Rectifier, 8 A



D²PAK



FEATURES

- 175 °C T_J operation
- Low forward voltage drop
- High frequency operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability
- Lead (Pb)-free ("PbF" suffix)
- Designed and qualified for Q101 level



Available

RoHS*
COMPLIANT

DESCRIPTION

The 8TQ... Schottky rectifier series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175 °C junction temperature. Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

PRODUCT SUMMARY

| | |
|--------------------|----------|
| I _{F(AV)} | 8 A |
| V _R | 80/100 V |

MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL | CHARACTERISTICS | VALUES | UNITS |
|--------------------|--------------------------------|-------------|-------|
| I _{F(AV)} | Rectangular waveform | 8 | A |
| V _{RRM} | Range | 80/100 | V |
| I _{FSM} | t _p = 5 μs sine | 850 | A |
| V _F | 8 Apk, T _J = 125 °C | 0.58 | V |
| T _J | Range | - 55 to 175 | °C |

VOLTAGE RATINGS

| PARAMETER | SYMBOL | 8TQ080SPbF | 8TQ100SPbF | UNITS |
|--------------------------------------|------------------|------------|------------|-------|
| Maximum DC reverse voltage | V _R | 80 | 100 | V |
| Maximum working peak reverse voltage | V _{RWM} | | | |

ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
|---|--------------------|--|--------|-------|
| Maximum average forward current See fig. 5 | I _{F(AV)} | 50 % duty cycle at T _C = 157 °C, rectangular waveform | 8 | A |
| Maximum peak one cycle non-repetitive surge current See fig. 7 | I _{FSM} | 5 μs sine or 3 μs rect. pulse | 850 | A |
| | | 10 ms sine or 6 ms rect. pulse | 230 | |
| Non-repetitive avalanche energy | E _{AS} | T _J = 25 °C, I _{AS} = 0.50 A, L = 60 mH | 7.50 | mJ |
| Repetitive avalanche current | I _{AR} | Current decaying linearly to zero in 1 μs Frequency limited by T _J maximum V _A = 1.5 x V _R typical | 0.50 | A |

* Pb containing terminations are not RoHS compliant, exemptions may apply

8TQ...SPbF Series



Vishay High Power Products Schottky Rectifier, 8 A

| ELECTRICAL SPECIFICATIONS | | | | | |
|---|----------------|---|-----------------------------------|--------|------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum forward voltage drop See fig. 1 | $V_{FM}^{(1)}$ | 8 A | $T_J = 25\text{ }^\circ\text{C}$ | 0.72 | V |
| | | 16 A | | 0.88 | |
| | | 8 A | $T_J = 125\text{ }^\circ\text{C}$ | 0.58 | |
| | | 16 A | | 0.69 | |
| Maximum reverse leakage current See fig. 2 | $I_{RM}^{(1)}$ | $T_J = 25\text{ }^\circ\text{C}$ | $V_R = \text{Rated } V_R$ | 0.55 | mA |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 7 | |
| Maximum junction capacitance | C_T | $V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz) $25\text{ }^\circ\text{C}$ | | 500 | pF |
| Typical series inductance | L_S | Measured lead to lead 5 mm from package body | | 8 | nH |
| Maximum voltage rate of change | dV/dt | Rated V_R | | 10 000 | V/ μ s |

Note

(1) Pulse width < 300 μ s, duty cycle < 2 %

| THERMAL - MECHANICAL SPECIFICATIONS | | | | | |
|--|----------------|--------------------------------------|------------|-------------|---------------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum junction and storage temperature range | T_J, T_{Stg} | | | - 55 to 175 | $^\circ\text{C}$ |
| Maximum thermal resistance, junction to case | R_{thJC} | DC operation | See fig. 4 | 2.0 | $^\circ\text{C}/\text{W}$ |
| Typical thermal resistance, case to heatsink | R_{thCS} | Mounting surface, smooth and greased | | 0.50 | |
| Approximate weight | | | | 2 | g |
| | | | | 0.07 | oz. |
| Mounting torque | minimum | | | 6 (5) | kgf · cm (lbf · in) |
| | maximum | | | 12 (10) | |
| Marking device | | Case style D ² PAK | | 8TQ100S | |



8TQ...SPbF Series

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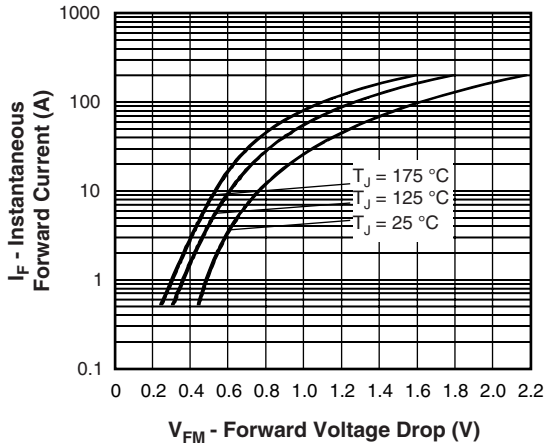


Fig. 1 - Maximum Forward Voltage Drop Characteristics

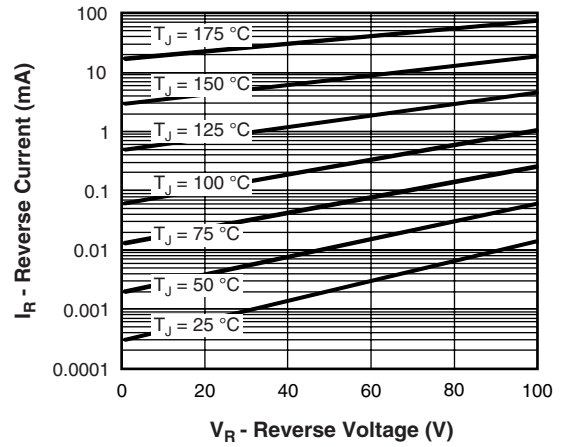


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

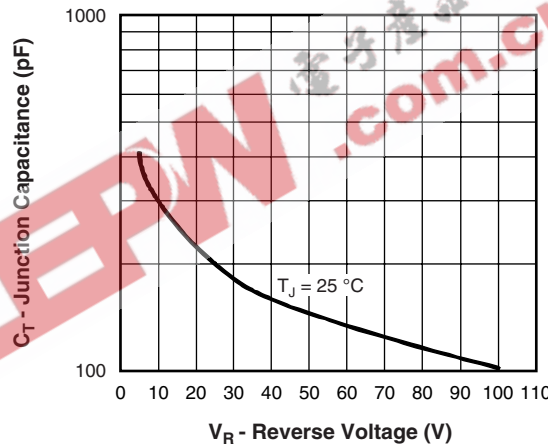


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

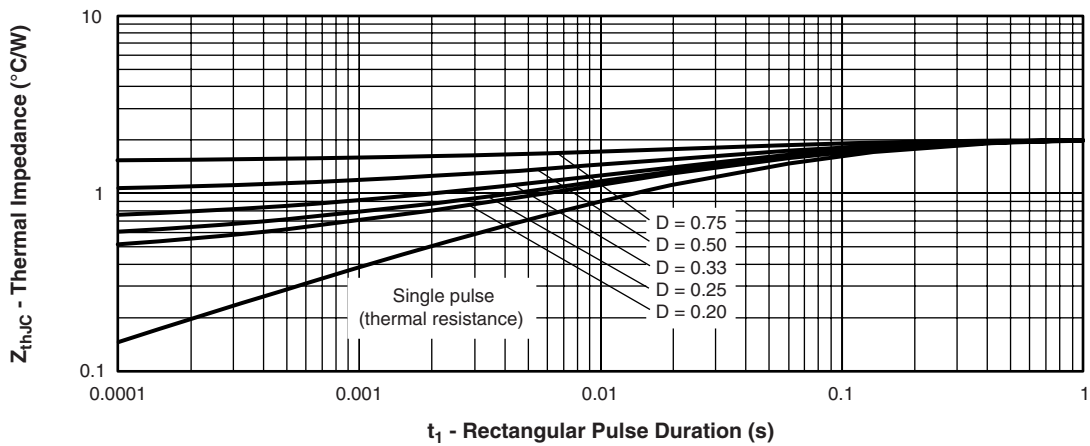


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

8TQ...SPbF Series



Vishay High Power Products Schottky Rectifier, 8 A

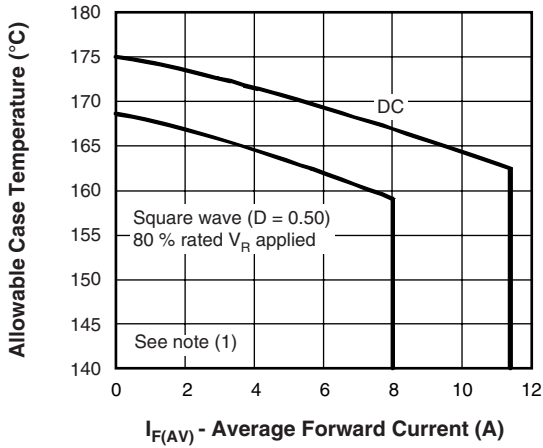


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

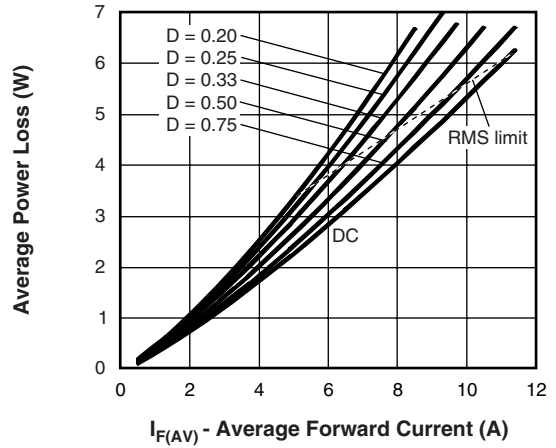


Fig. 6 - Forward Power Loss Characteristics

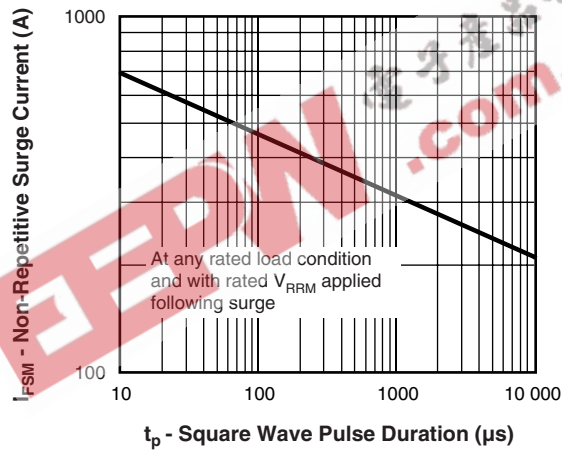


Fig. 7 - Maximum Non-Repetitive Surge Current

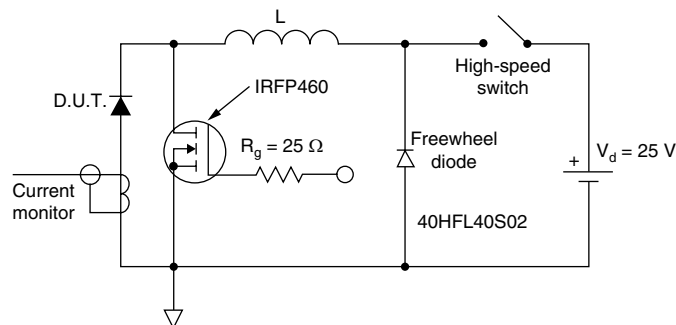


Fig. 8 - Unclamped Inductive Test Circuit

Note

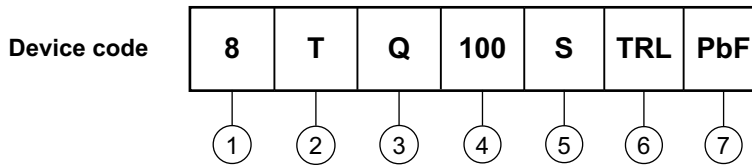
- (1) Formula used: $T_C = T_J - (P_d + P_{dREV}) \times R_{thJC}$;
 P_d = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6);
 P_{dREV} = Inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at $V_{R1} = 80\%$ rated V_R



8TQ...SPbF Series

Schottky Rectifier, 8 A Vishay High Power Products

ORDERING INFORMATION TABLE



- 1** - Current rating (8 A)
- 2** - Circuit configuration:
T = TO-220
- 3** - Schottky "Q" series
- 4** - Voltage ratings ————

| |
|-------------|
| 080 = 80 V |
| 100 = 100 V |
- 5** -
 - S = D²PAK
- 6** -
 - None = Tube (50 pieces)
 - TRL = Tape and reel (left oriented)
 - TRR = Tape and reel (right oriented)
- 7** -
 - None = Standard production
 - PbF = Lead (Pb)-free

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|---|
| Dimensions | http://www.vishay.com/doc?95046 |
| Part marking information | http://www.vishay.com/doc?95054 |
| Packaging information | http://www.vishay.com/doc?95032 |
| SPIICE models | http://www.vishay.com/doc?95291 |



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