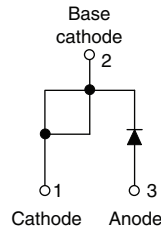


## Schottky Rectifier, 8 A


**TO-220AC**


### 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
- Designed and qualified for industrial level

### DESCRIPTION

The 8TQ...G 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                |
| $I_{FSM}$   | $t_p = 5 \mu s$ sine                      | 850         | A                |
| $V_F$       | 8 Apk, $T_J = 125 \text{ }^\circ\text{C}$ | 0.58        | V                |
| $T_J$       | Range                                     | - 55 to 175 | $^\circ\text{C}$ |

### VOLTAGE RATINGS

| PARAMETER                            | SYMBOL    | 8TQ080G | 8TQ100G | 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<br>See fig. 5                     | $I_{F(AV)}$ | 50 % duty cycle at $T_C = 157 \text{ }^\circ\text{C}$ , rectangular waveform  | 8      | A     |
| Maximum peak one cycle non-repetitive surge current<br>See fig. 7 | $I_{FSM}$   | 5 $\mu s$ sine or 3 $\mu s$ rect. pulse   | 850    | A     |
|   |             | 10 ms sine or 6 ms rect. pulse  | 230    |       |
| Non-repetitive avalanche energy                                   | $E_{AS}$    | $T_J = 25 \text{ }^\circ\text{C}$ , $I_{AS} = 0.50 \text{ A}$ , $L = 60 \text{ mH}$                                 | 7.50   | mJ    |
| Repetitive avalanche current                                      | $I_{AR}$    | Current decaying linearly to zero in 1 $\mu s$<br>Frequency limited by $T_J$ maximum $V_A = 1.5 \times V_R$ typical | 0.50   | A     |

| ELECTRICAL SPECIFICATIONS                     |                |   |                                   |        |                  |
|---|----------------|---|-----------------------------------|--------|------------------|
| PARAMETER                                     | SYMBOL         | TEST CONDITIONS   |                                   | VALUES | UNITS            |
| Maximum forward voltage drop<br>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<br>See fig. 2 | $I_{RM}^{(1)}$ | $T_J = 25\text{ }^\circ\text{C}$  | $V_R = \text{Rated } V_R$         | 0.28   | 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/ $\mu\text{s}$ |

**Note**(1) Pulse width < 300  $\mu\text{s}$ , 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<br>See fig. 4           |  | 2.0         | $^\circ\text{C/W}$     |
| 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<br>(lbf · in) |
|  | maximum        |                                      |  | 12 (10)     |                        |
| Marking device                                 |                | Case style TO-220AC                  |  | 8TQ080G     |                        |
|  |                |                                      |  | 8TQ100G     |                        |

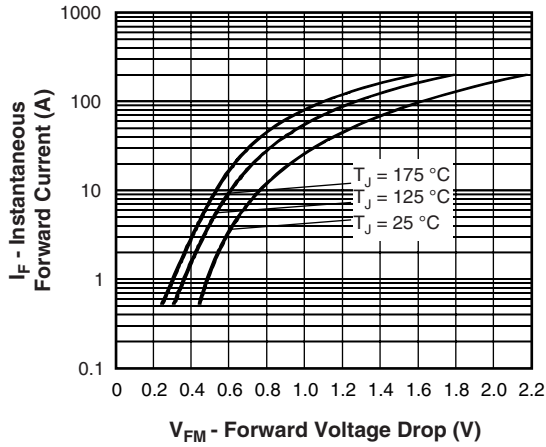


Fig. 1 - Maximum Forward Voltage Drop Characteristics

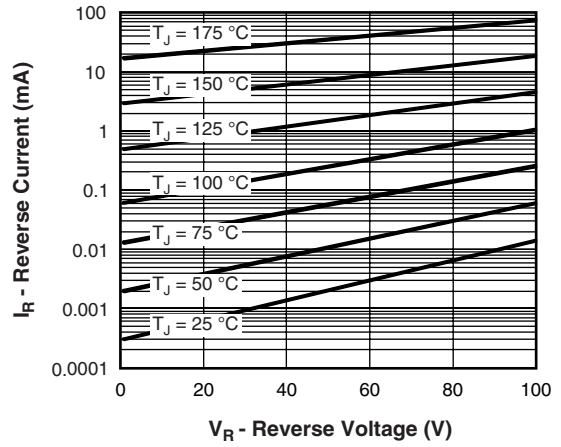


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

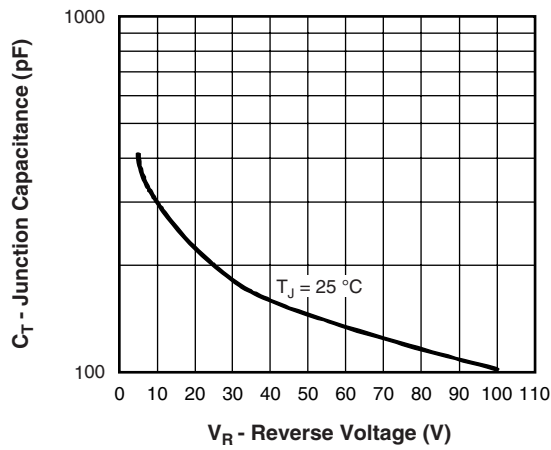
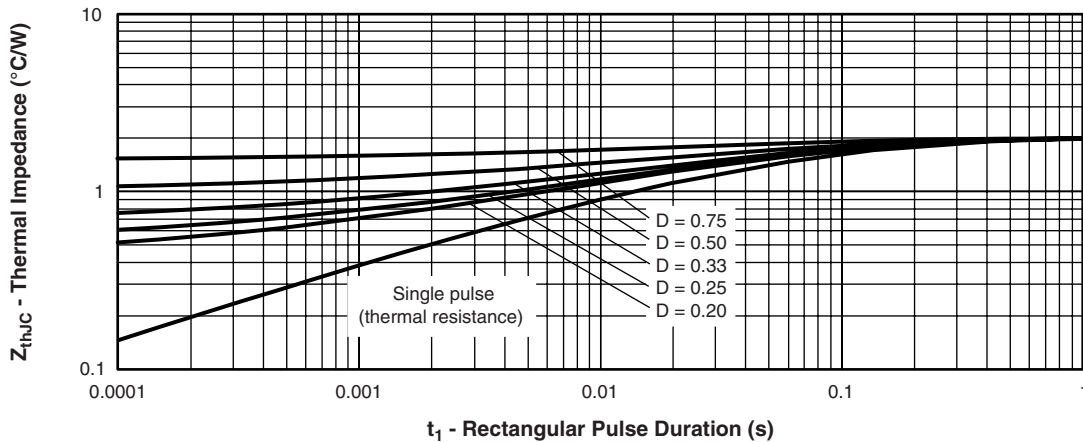


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage


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

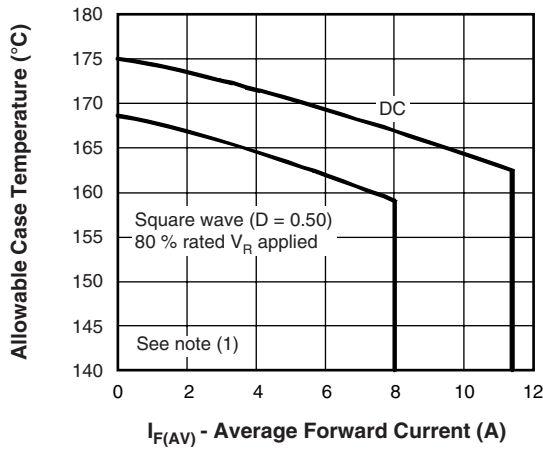


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

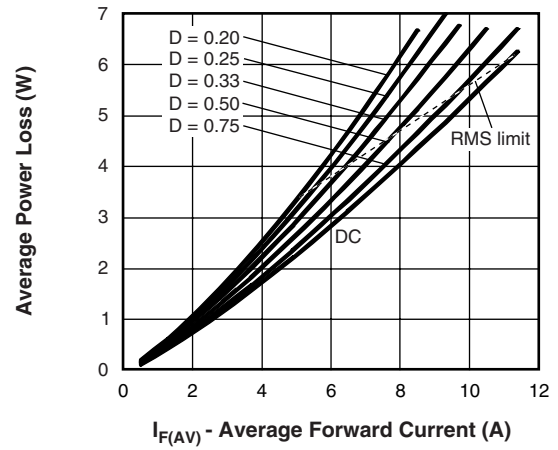


Fig. 6 - Forward Power Loss Characteristics

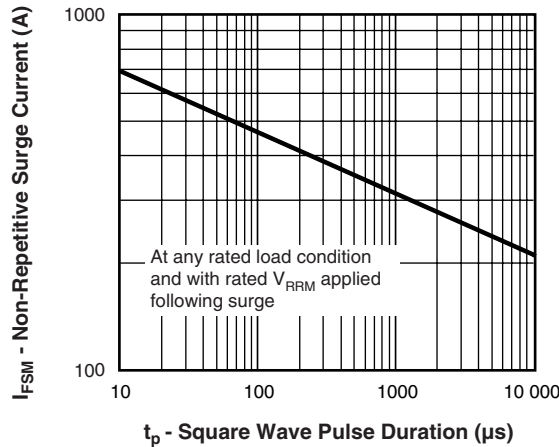


Fig. 7 - Maximum Non-Repetitive Surge Current

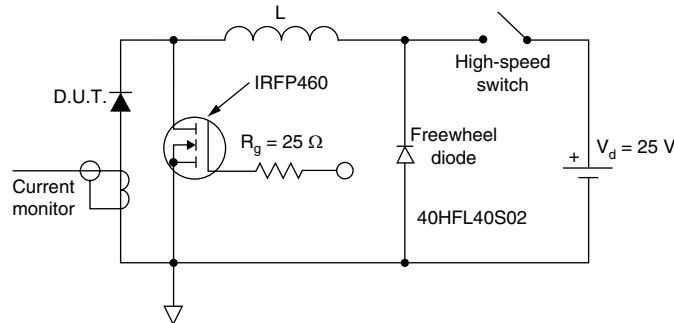


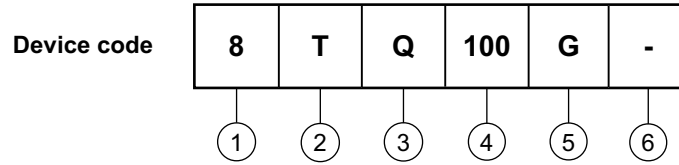
Fig. 8 - Unclamped Inductive Test Circuit

**Note**

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



**ORDERING INFORMATION TABLE**



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

|             |
|-------------|
| 080 = 80 V  |
| 100 = 100 V |
- 5** - G = Schottky generation
- 6** -
  - None = Standard production
  - PbF = Lead (Pb)-free

Tube standard pack quantity: 50 pieces

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



## Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.