

$I_{F(AV)} = 8 \text{ Amp}$
 $V_R = 80 - 100V$

Major Ratings and Characteristics

| Characteristics | Value | Units |
|---|------------|------------------|
| $I_{F(AV)}$ Rectangular waveform | 8 | A |
| V_{RRM} range | 80 - 100 | V |
| I_{FSM} @tp = 5 μ s sine | 850 | A |
| V_F @8 Apk, $T_J = 125^\circ\text{C}$ | 0.58 | V |
| T_J range | -55 to 175 | $^\circ\text{C}$ |

Description/ Features

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 $^\circ\text{C}$ junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

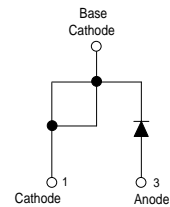
- 175 $^\circ\text{C}$ T_J operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

Case Styles

8TQ...G



TO-220AC



Voltage Ratings

| Part number | 8TQ080G | 8TQ100G |
|---|---------|---------|
| V_R Max. DC Reverse Voltage (V) | 80 | 100 |
| V_{RWM} Max. Working Peak Reverse Voltage (V) | | |

Absolute Maximum Ratings

| Parameters | 8TQ | Units | Conditions |
|---|------|-------|--|
| $I_{F(AV)}$ Max. Average Forward Current * See Fig. 5 | 8 | A | 50% duty cycle @ $T_C = 157^\circ\text{C}$, rectangular wave form |
| I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7 | 850 | A | 5 μs Sine or 3 μs Rect. pulse |
| | 230 | | 10ms Sine or 6ms Rect. pulse |
| E_{AS} Non-Repetitive Avalanche Energy | 7.50 | mJ | $T_J = 25^\circ\text{C}$, $I_{AS} = 0.50$ Amps, $L = 60$ mH |
| I_{AR} Repetitive Avalanche Current | 0.50 | A | Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical |

Electrical Specifications

| Parameters | 8TQ | Units | Conditions |
|---|-------|------------------|---|
| V_{FM} Max. Forward Voltage Drop (1) * See Fig. 1 | 0.72 | V | @ 8A |
| | 0.88 | V | @ 16A |
| | 0.58 | V | @ 8A |
| | 0.69 | V | @ 16A |
| I_{RM} Max. Reverse Leakage Current (1) * See Fig. 2 | 0.28 | mA | $T_J = 25^\circ\text{C}$ |
| | 7 | mA | $T_J = 125^\circ\text{C}$ |
| C_T Max. Junction Capacitance | 500 | pF | $V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) 25°C |
| L_S Typical Series Inductance | 8 | nH | Measured lead to lead 5mm from package body |
| dv/dt Max. Voltage Rate of Change (Rated V_R) | 10000 | V/ μs | |

(1) Pulse Width < 300 μs , Duty Cycle < 2%

Thermal-Mechanical Specifications

| Parameters | 8TQ | Units | Conditions |
|---|------------|---------------------------|--------------------------------------|
| T_J Max. Junction Temperature Range | -55 to 175 | $^\circ\text{C}$ | |
| T_{stg} Max. Storage Temperature Range | -55 to 175 | $^\circ\text{C}$ | |
| R_{thJC} Max. Thermal Resistance Junction to Case | 2.0 | $^\circ\text{C}/\text{W}$ | DC operation * See Fig. 4 |
| R_{thCS} Typical Thermal Resistance, Case to Heatsink | 0.50 | $^\circ\text{C}/\text{W}$ | Mounting surface, smooth and greased |
| wt Approximate Weight | 2 (0.07) | g (oz.) | |
| T Mounting Torque | Min. | 6 (5) | Kg-cm (lbf-in) |
| | Max. | 12 (10) | |
| Device Marking | 8TQ...G | | |

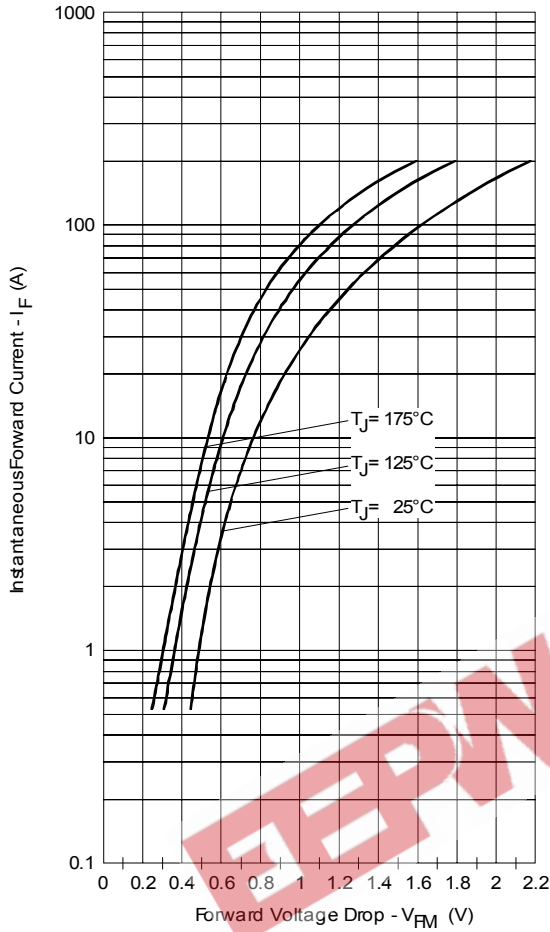


Fig. 1 - Maximum Forward Voltage Drop Characteristics

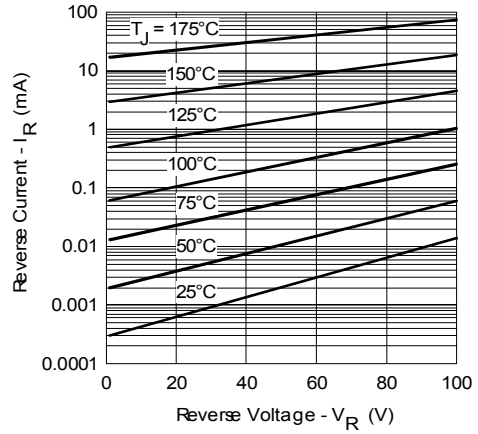


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

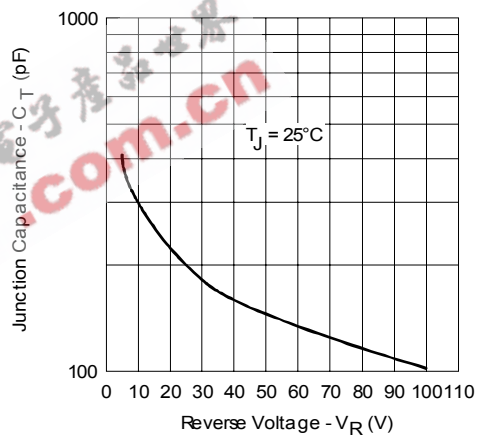


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

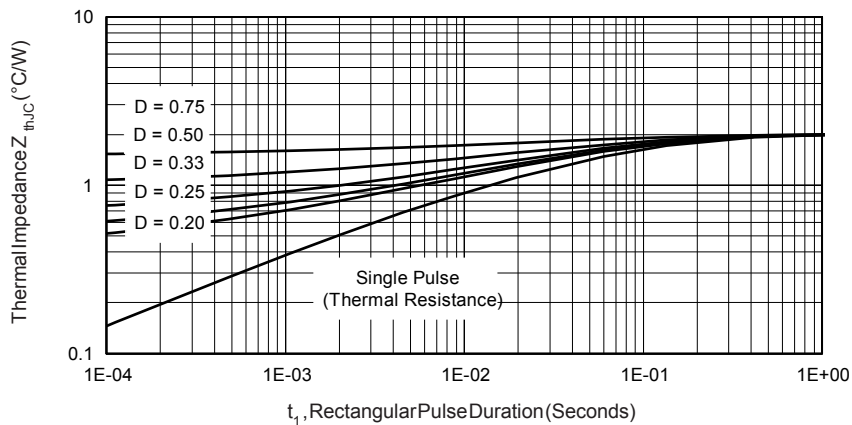


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

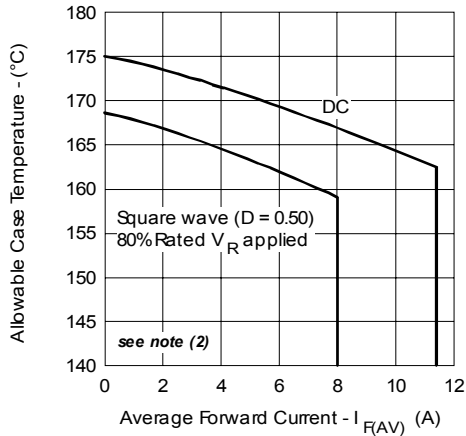


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

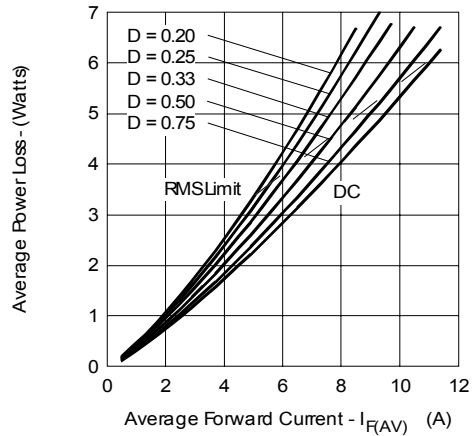


Fig. 6 - Forward Power Loss Characteristics

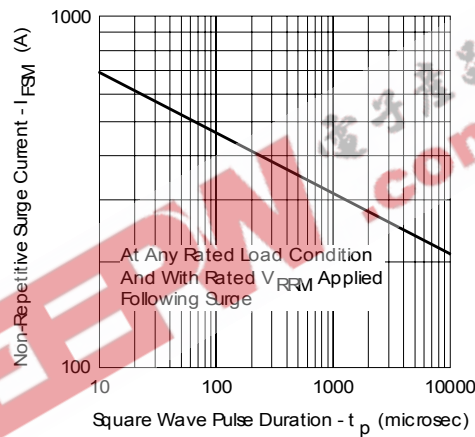


Fig. 7 - Maximum Non-Repetitive Surge Current

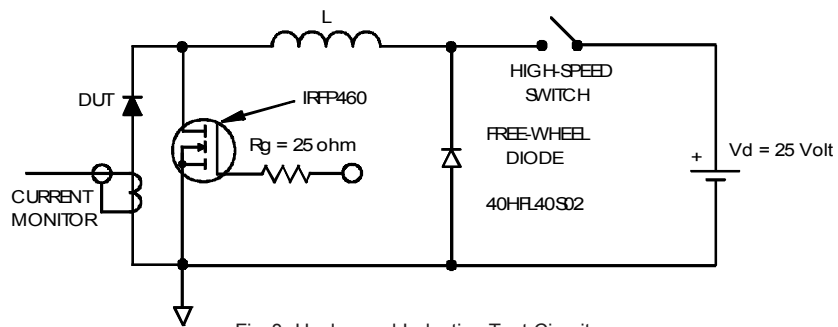


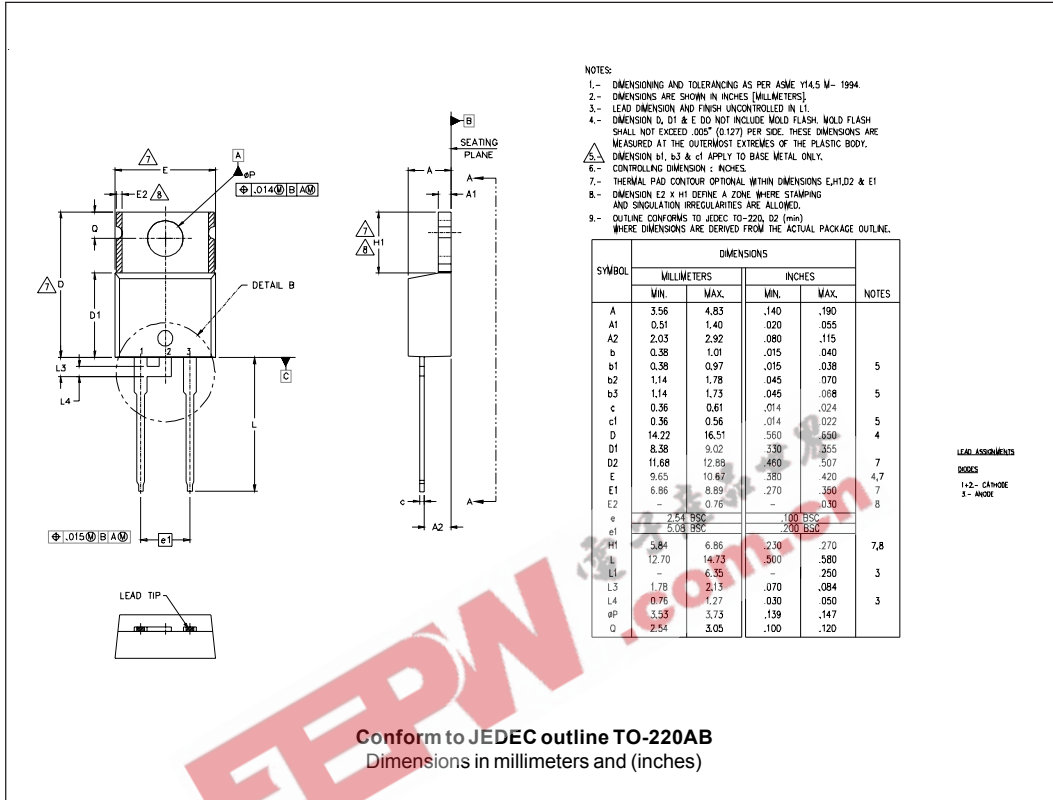
Fig. 8 - Unclamped Inductive Test Circuit

(2) Formula used: $T_c = T_j - (Pd + Pd_{REV}) \times R_{thJC}$;

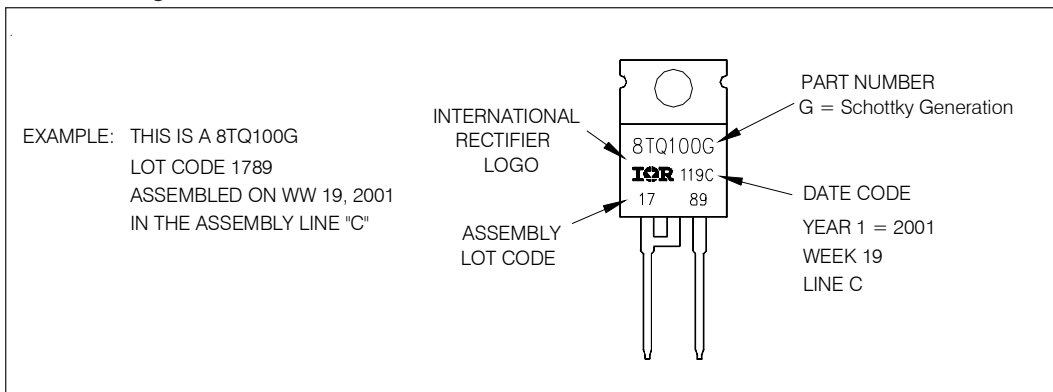
Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_{R1} (1 - D)$; $I_{R1} @ V_{R1} = 80\%$ rated V_R

Outline Table



Part Marking Information



Ordering Information Table

| Device Code | | | | | |
|-------------|---|---|-----|---|---|
| 8 | T | Q | 100 | G | - |
| ① | ② | ③ | ④ | ⑤ | ⑥ |

| | |
|--|---|
| <p>1 - Current Rating (8 = 8A)</p> <p>2 - T = TO-220</p> <p>3 - Q = Schottky Q Series</p> <p>4 - Voltage Ratings</p> <p>5 - G = Schottky Generation</p> <p>6 -</p> <ul style="list-style-type: none"> • none = Standard Production • PbF = Lead-Free | <div style="border: 1px solid black; padding: 5px; display: inline-block;"> 080 = 80V 100 = 100V </div> |
|--|---|

Tube Standard Pack Quantity : 50 pieces

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8TQ100
*****
* This model has been developed by *
* Wizard SPICE MODEL GENERATOR (1999) *
* (International Rectifier Corporation) *
* Contain Proprietary Information *
*****
* SPICE Model Diode is composed by a *
* simple diode plus paralled VCG2T *
*****
.SUBCKT 8TQ100 ANO CAT
D1 ANO 1 DMOD (0.07089)
*Define diode model
.MODEL DMOD D(IS=1.15938021883115E-03A,N=1.95244918720315,BV=120V,
+ IBV=5.37891460505463A,RS= 0.00127602,CJO=9.9895753025115E-09,
+ VJ=2.30070034831946,XTI=2, EG=0.758916909331649)
*****
*Implementation of VCG2T
VX 1 2 DC 0V
R1 2 CAT TRES 1E-6
.MODEL TRES RES(R=1,TC1=-90.2420977904848)
GP1 ANO CAT VALUE={-ABS(I(VX))*(EXP(((1.635248E-02/-90.2421)*(V(2,CAT)*1E6)/(I(VX)+1E-6)-1))+1)*4.011038E-03*ABS(V(ANO,CAT))-1}}
*****
.ENDS 8TQ100

Thermal Model Subcircuit
.SUBCKT 8TQ100 5 1

CTHERM1 5 4 1.45E+00
CTHERM2 4 3 4.54E+00
CTHERM3 3 2 1.09E+01
CTHERM4 2 1 1.01E+02

RTHERM1 5 4 2.49E+00
RTHERM2 4 3 5.20E-04
RTHERM1 3 2 5.43E-01
RTHERM1 2 1 3.05E-02

.ENDS 8TQ100
    
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Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level.
Qualification Standards can be found on IR's Web site.

International
IR Rectifier

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