

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

Major Ratings and Characteristics

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

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° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

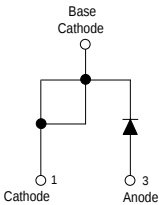
- 175° C T_J operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

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	$T_J = 25^\circ\text{C}$, $I_{AS} = 0.50\text{A}$, $L = 60\text{mH}$
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	$^\circ\text{C/W}$	DC operation * See Fig. 4
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.50	$^\circ\text{C/W}$	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		

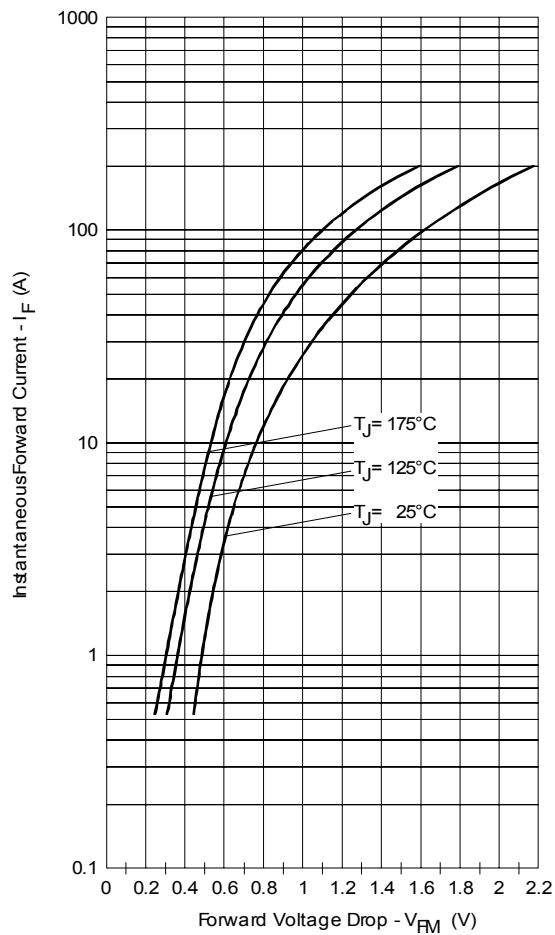


Fig. 1 - Maximum Forward Voltage Drop Characteristics

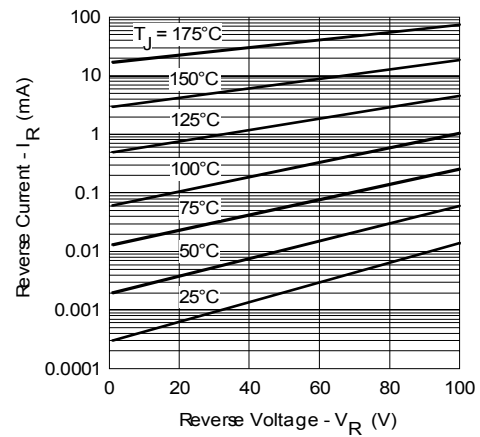


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

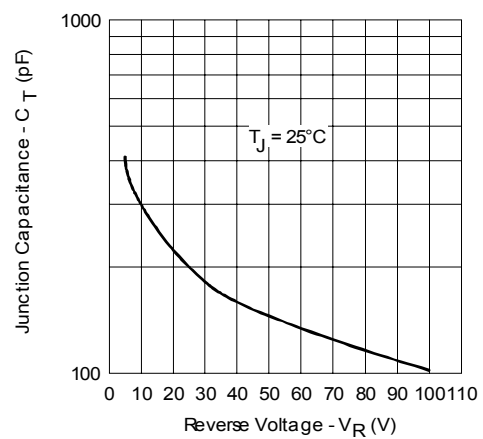


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

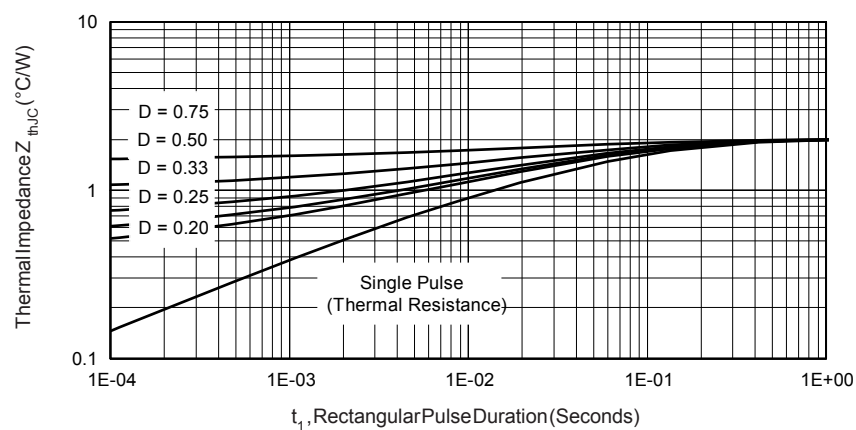


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

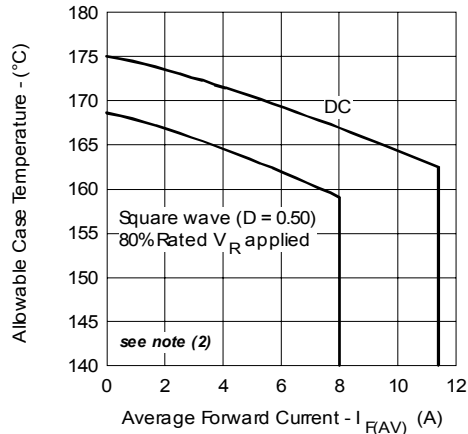


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

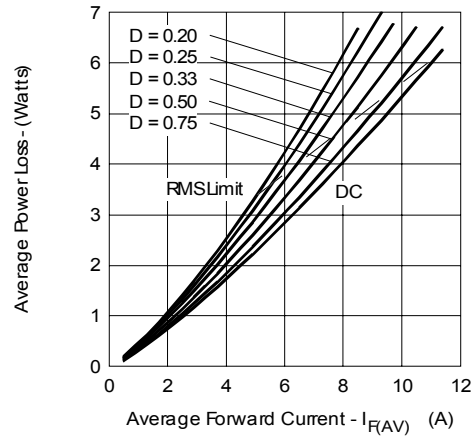


Fig. 6 - Forward Power Loss Characteristics

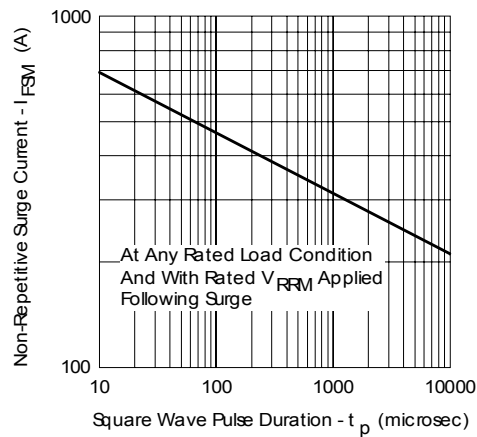


Fig. 7 - Maximum Non-Repetitive Surge Current

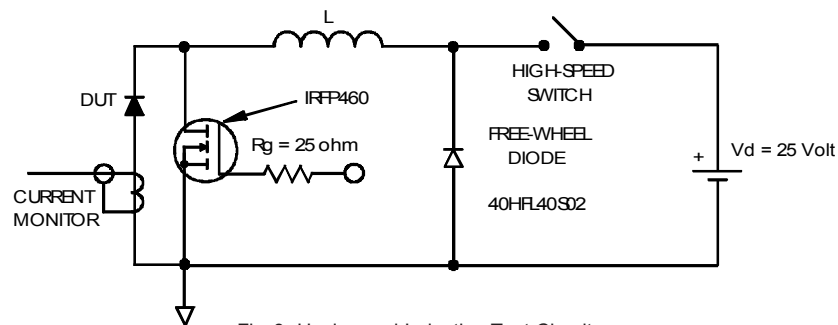


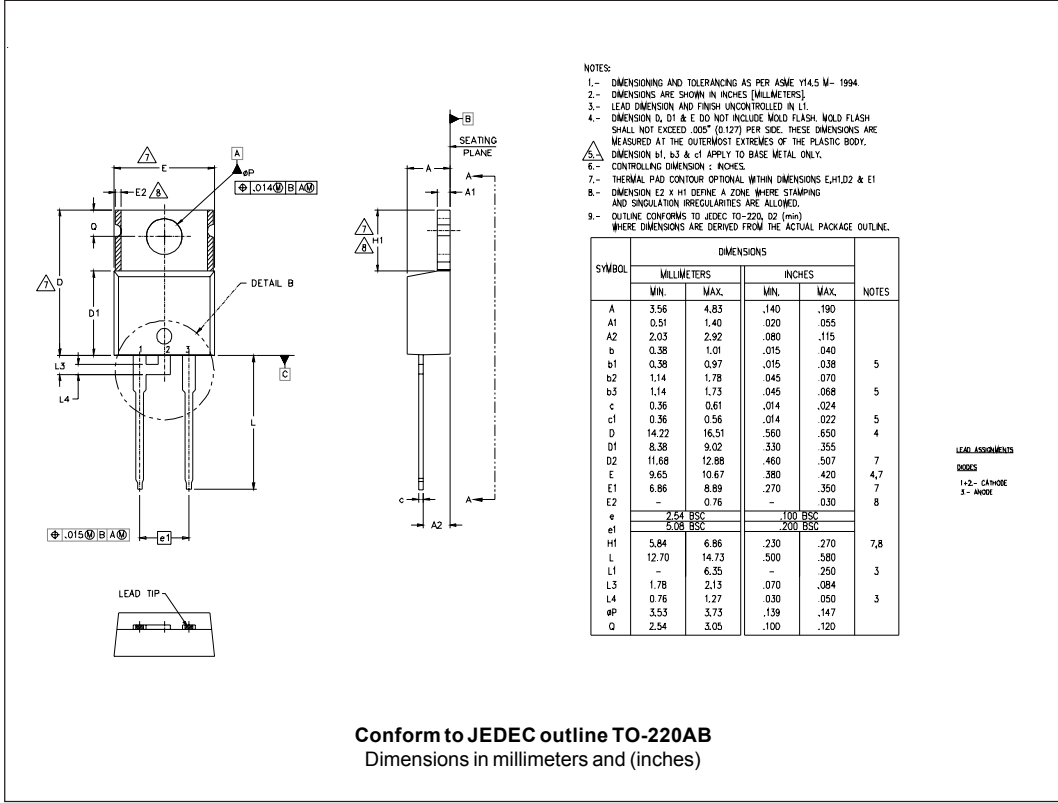
Fig. 8 - Unclamped Inductive Test Circuit

(2) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;

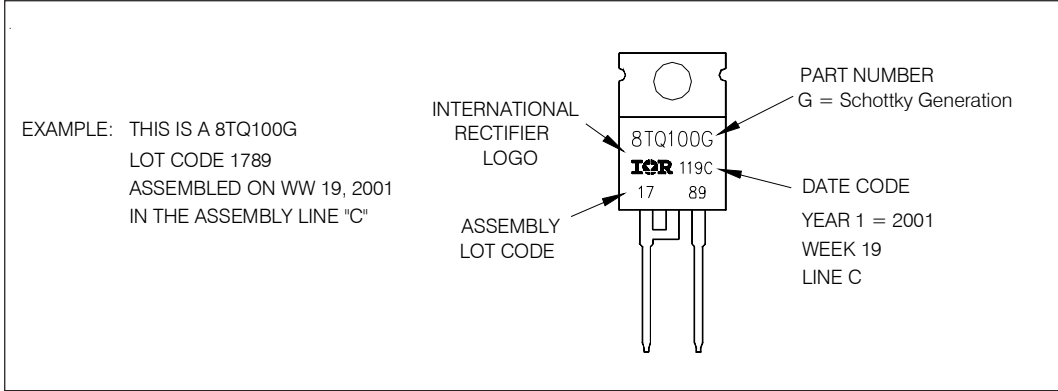
P_d = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

$P_{d_{REV}}$ = 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
1	- Current Rating (8 = 8A)				
2	- T = TO-220				
3	- Q = Schottky Q Series				
4	- Voltage Ratings				
5	- G = Schottky Generation				
6	• none = Standard Production • PbF = Lead-Free				

080 = 80V
 100 = 100V

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 paralalled 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

R THERM1      5      4      2.49E+00
R THERM2      4      3      5.20E-04
R THERM1      3      2      5.43E-01
R THERM1      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
IOR Rectifier

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