

SCHOTTKY RECTIFIER

8 Amp

$$I_{F(AV)} = 8 \text{ Amp}$$

$$V_R = 80 - 100V$$

Major Ratings and Characteristics

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, $T_J = 125^\circ C$	0.58	V
T_J range	-55 to 175	$^\circ C$

Description/ Features

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

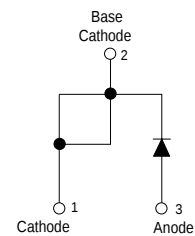
- $175^\circ C$ T_J operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead-Free ("PbF" suffix)

Case Styles

8TQ...PbF



TO-220AC



Voltage Ratings

Part number	8TQ080PbF	8TQ100PbF
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	$T_J = 25^\circ\text{C}$, $I_{AS} = 0.50\text{Amps}$, $L = 60\text{mH}$
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	0.55	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)	
Marking Device	8TQ100		

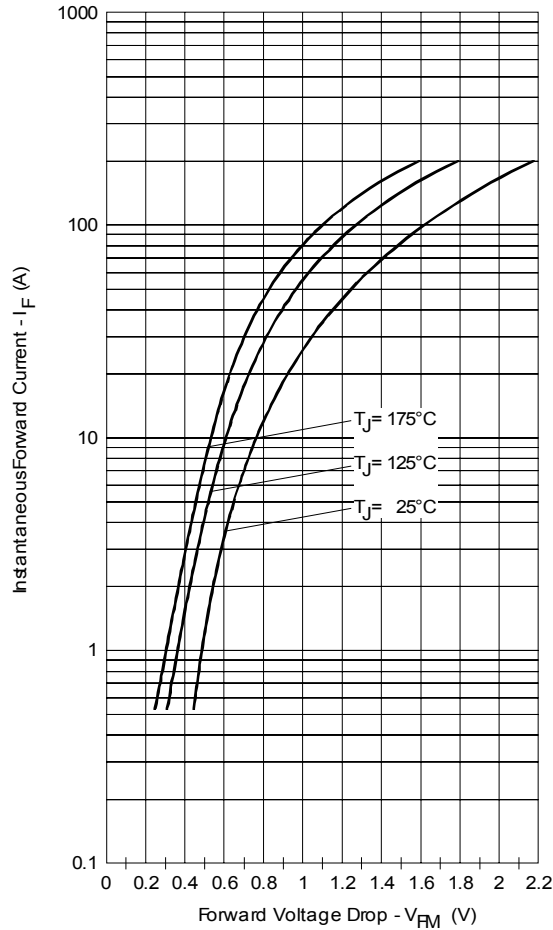


Fig. 1 - Maximum Forward Voltage Drop Characteristics

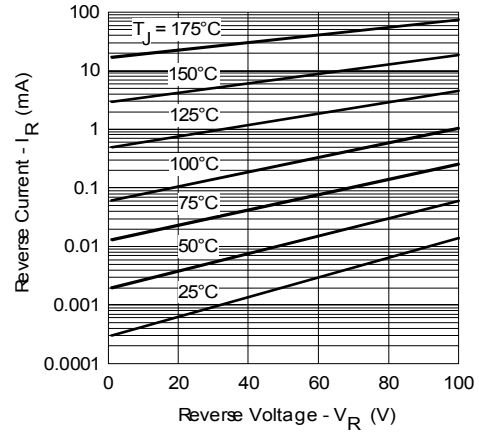


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

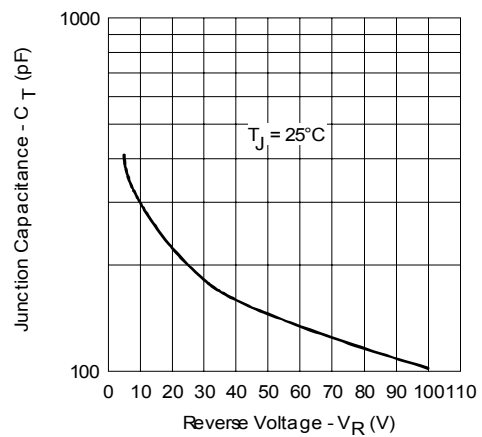


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

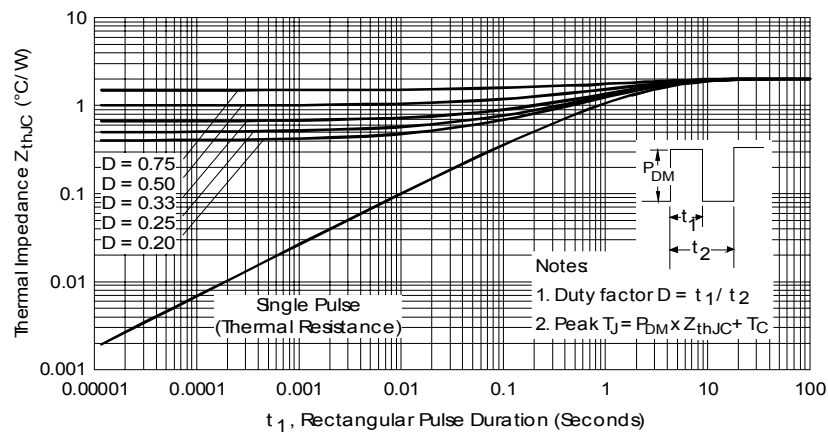


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

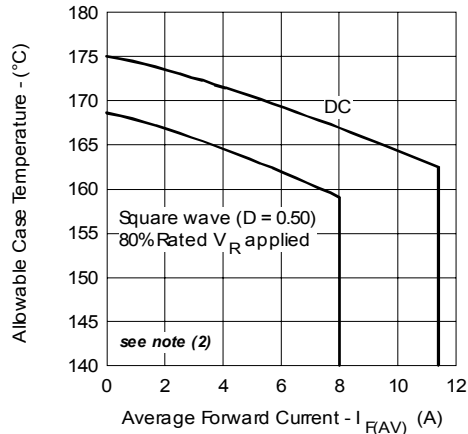


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

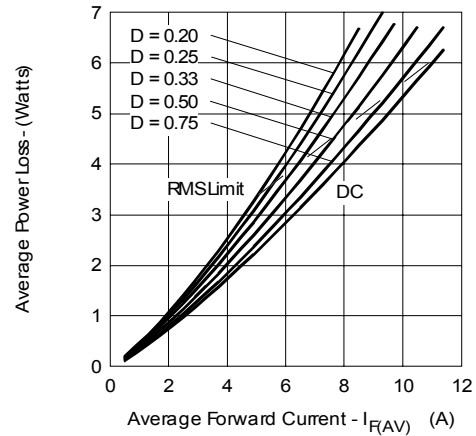


Fig. 6 - Forward Power Loss Characteristics

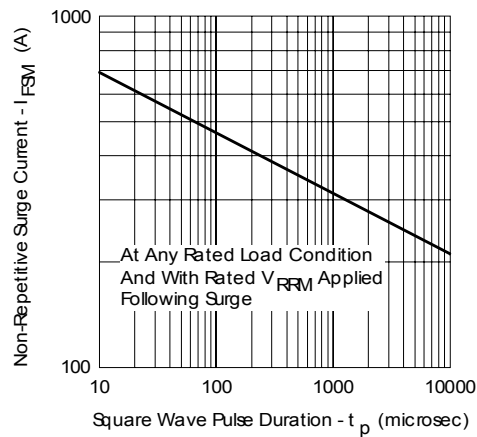


Fig. 7 - Maximum Non-Repetitive Surge Current

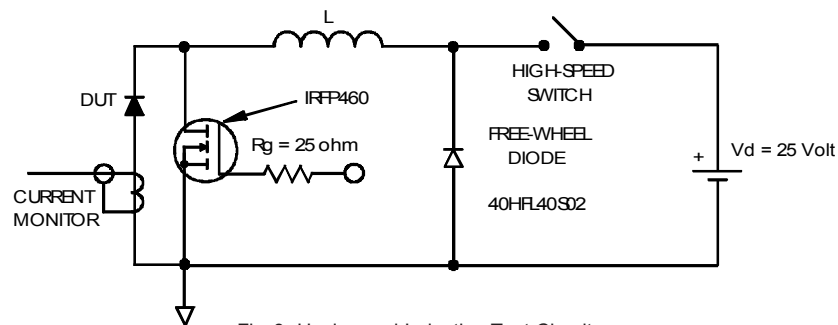


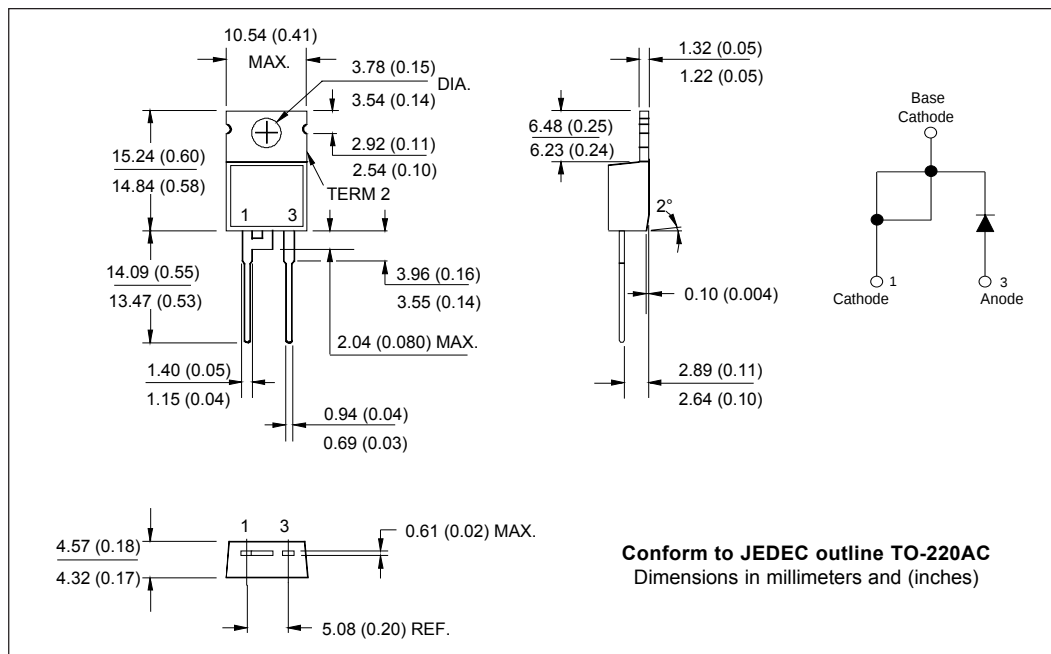
Fig. 8 - Unclamped Inductive Test Circuit

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

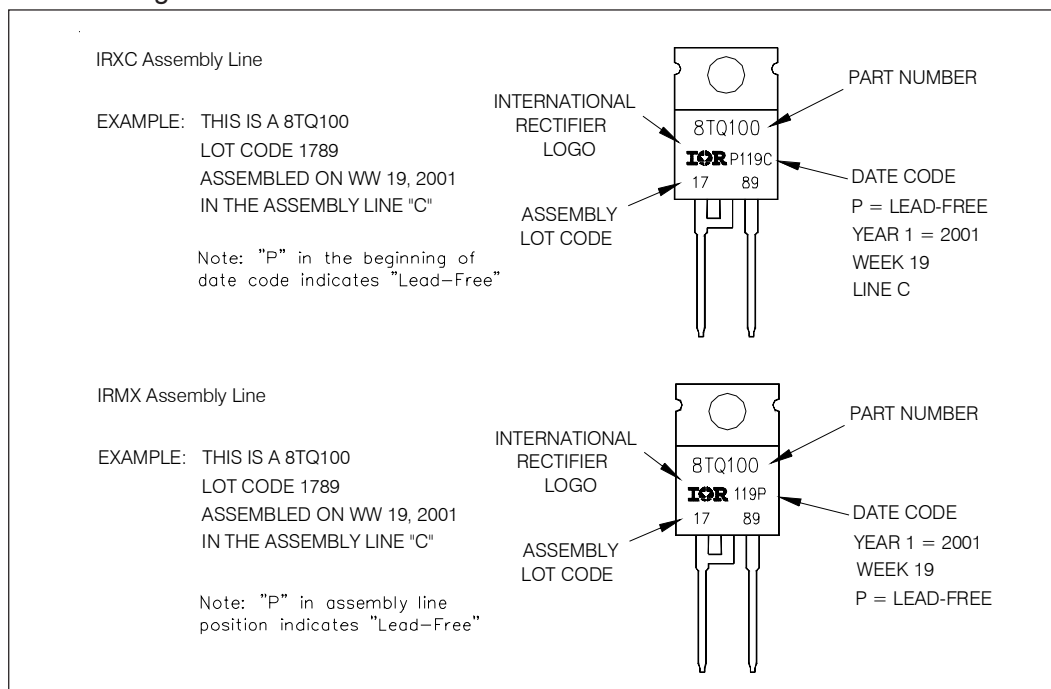
P_d = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

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

Outline Table



Part Marking Information



Ordering Information Table

Device Code				
8	T	Q	100	PbF
①	②	③	④	⑤
1	-	Current Rating (8 = 8A)		
2	-	Package T = TO-220		
3	-	Schottky "Q" Series		
4	-	Voltage Ratings		
5	-	• none = Standard Production • PbF = Lead-Free		
			080 = 80V 100 = 100V	
Tube Standard Pack Quantity : 50 pieces				

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

International
IR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
 TAC Fax: (310) 252-7309
 Visit us at www.irf.com for sales contact information. 10/04