

Bulletin PD-20561 rev. C 01/01

International
IR Rectifier

8TQ...
8TQ...S

SCHOTTKY RECTIFIER

8 Amp

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

Major Ratings and Characteristics

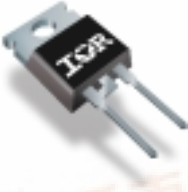
Characteristics	8TQ	Units
$I_{F(AV)}$ Rectangular waveform	8	A
V_{RRM} range	80 - 100	V
I_{FSM} @ $t_p = 5 \mu s$ sine	850	A
V_F @ 8 Apk, $T_J = 125^\circ C$	0.58	V
T_J range	-55 to 175	$^\circ C$

Description/Features

The 8TQ 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

Case Styles

8TQ...	8TQ... S
 TO-220	 D ² PAK



8TQ... Series

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Voltage Ratings

Part number	8TQ080	8TQ100
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 $T_J = 25^\circ\text{C}$
	0.88	V	@ 16A
	0.58	V	@ 8A $T_J = 125^\circ\text{C}$
	0.69	V	@ 16A
I_{RM} Max. Reverse Leakage Current (1) * See Fig. 2	0.55	mA	$T_J = 25^\circ\text{C}$ $V_R = \text{rated } V_R$
	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)	10,000	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)	

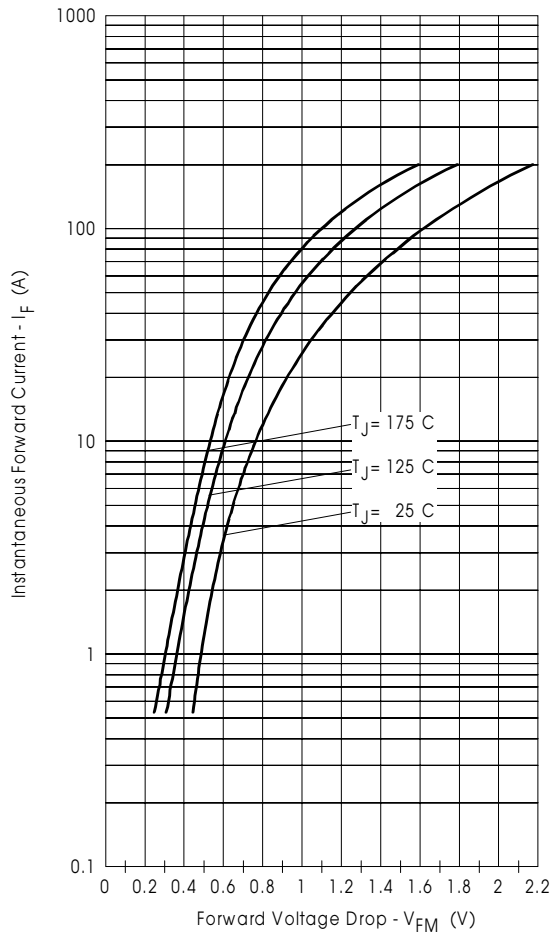


Fig. 1 - Maximum Forward Voltage Drop Characteristics

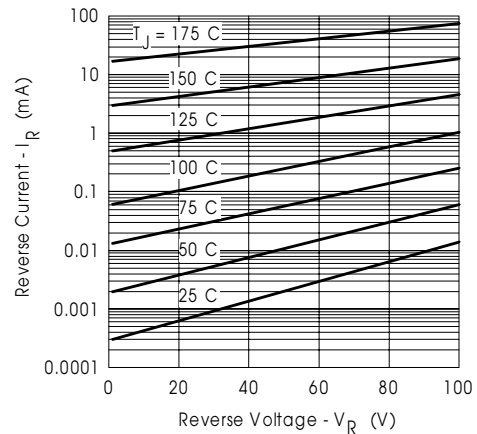


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

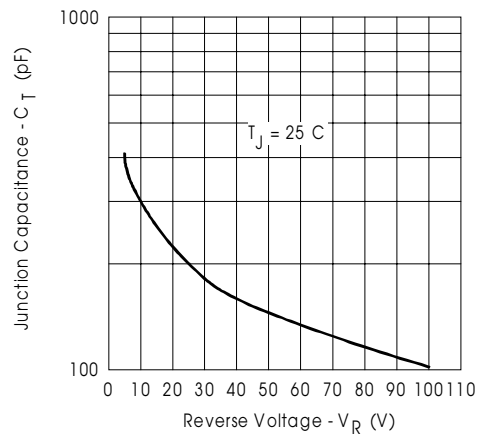


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

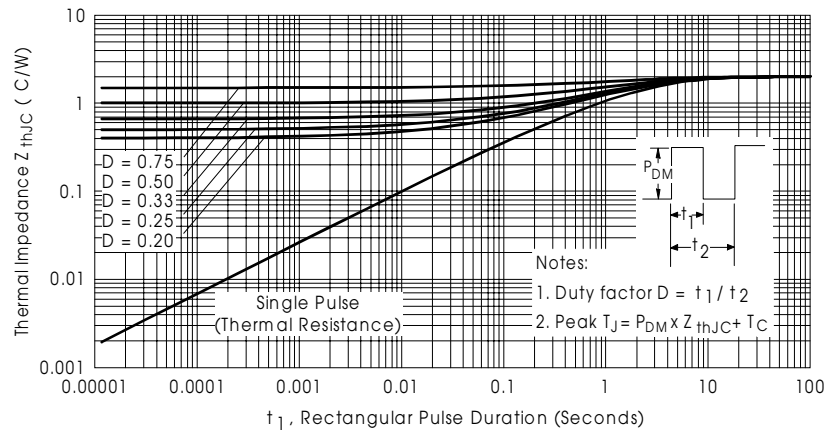


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

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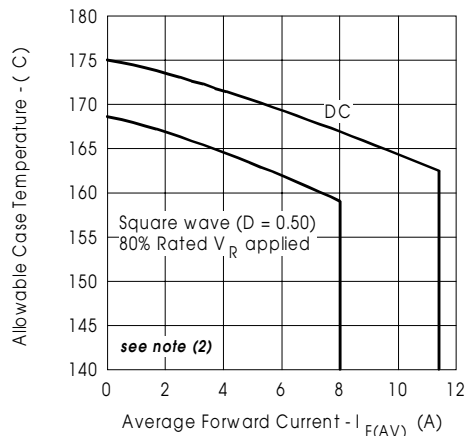


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

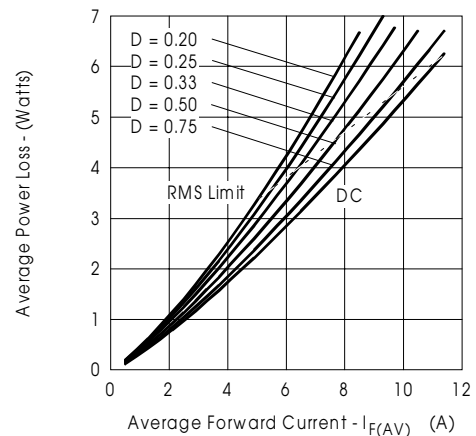


Fig. 6 - Forward Power Loss Characteristics

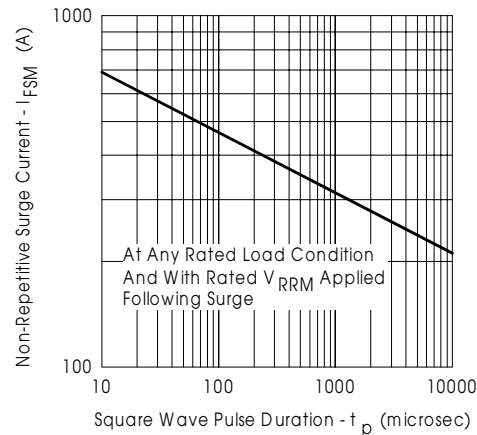


Fig. 7 - Maximum Non-Repetitive Surge Current

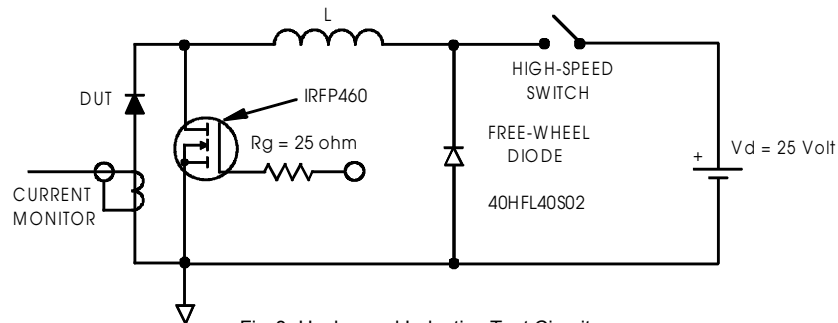


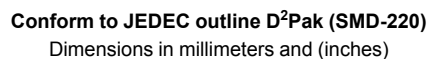
Fig. 8 - Unclamped Inductive Test Circuit

(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 = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 80\%$ rated V_R

Outline Table



8TQ... Series

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Ordering Information Table

Device Code				
8	T	Q	100	S
1	2	3	4	5
1	-	Essential Part Number		
2	-	T = TO-220		
3	-	Q = Schottky Q Series		
4	-	Voltage Rating		
5	-	S = D ² Pak		

080 = 80V
100 = 100V

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