

SCHOTTKY RECTIFIER

8 Amp

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

Major Ratings and Characteristics


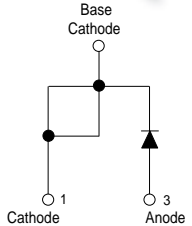

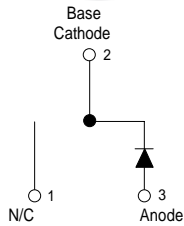
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	8	A
V_{RRM} range	80 - 100	V
I_{FSM} @tp = 5 μ s sine	850	A
V_F @8 Apk, $T_J = 125^\circ\text{C}$	0.58	V
T_J range	-55 to 175	$^\circ\text{C}$

Description/ Features

The 8TQ.. 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...	8TQ... S
  <p>TO-220</p>	  <p>D²PAK</p>

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	Following any rated load condition and with rated V_{RRM} applied
	230		
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)	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)	
Marking Device	8TQ100		Case Style TO-220
	8TQ100S		Case Style D ² Pak

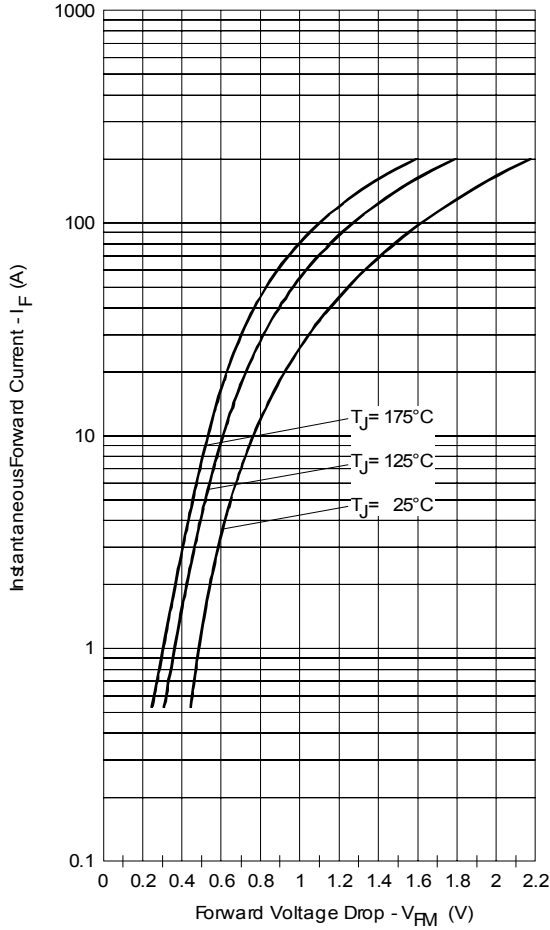


Fig. 1 - Maximum Forward Voltage Drop Characteristics

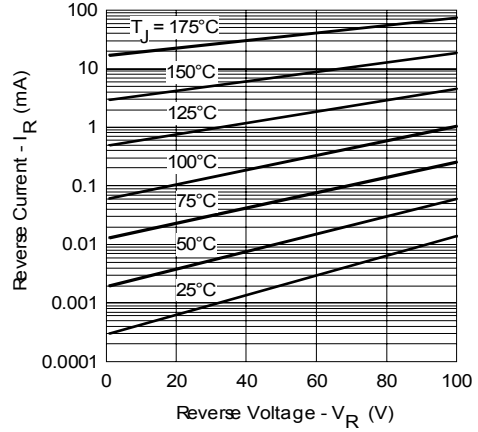


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

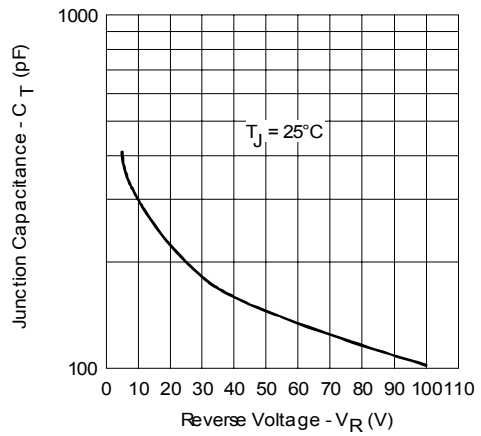


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

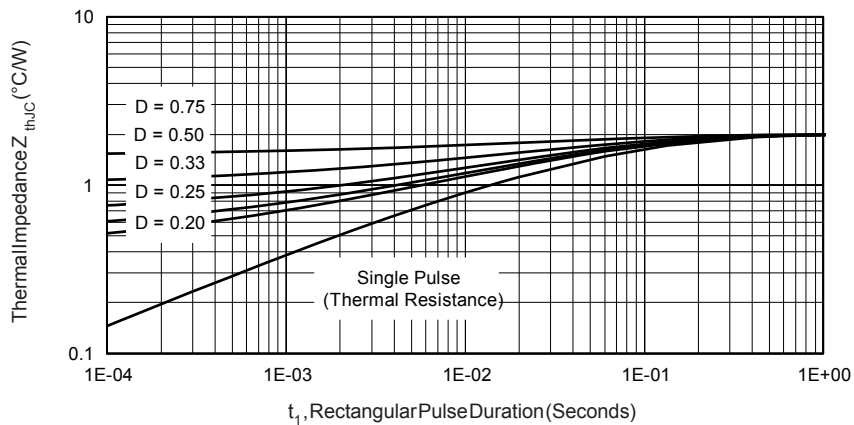


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

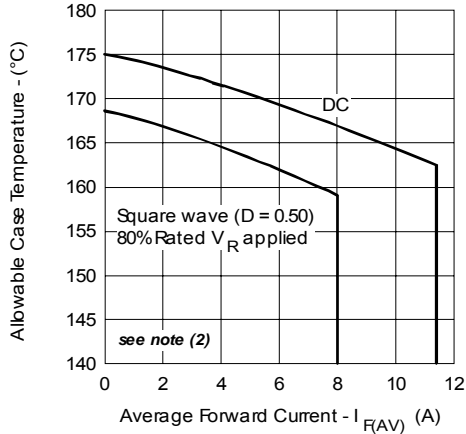


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

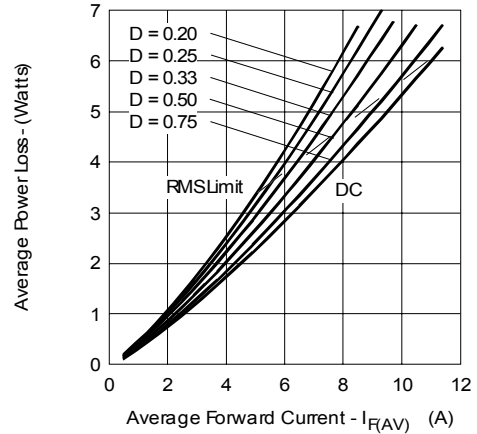


Fig. 6 - Forward Power Loss Characteristics

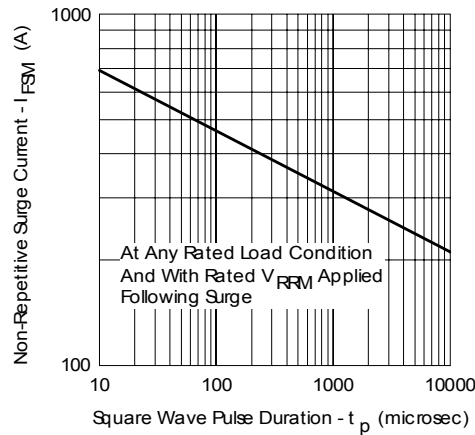


Fig. 7 - Maximum Non-Repetitive Surge Current

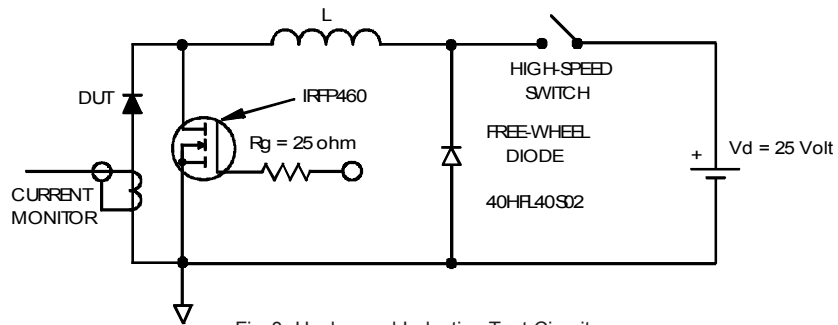


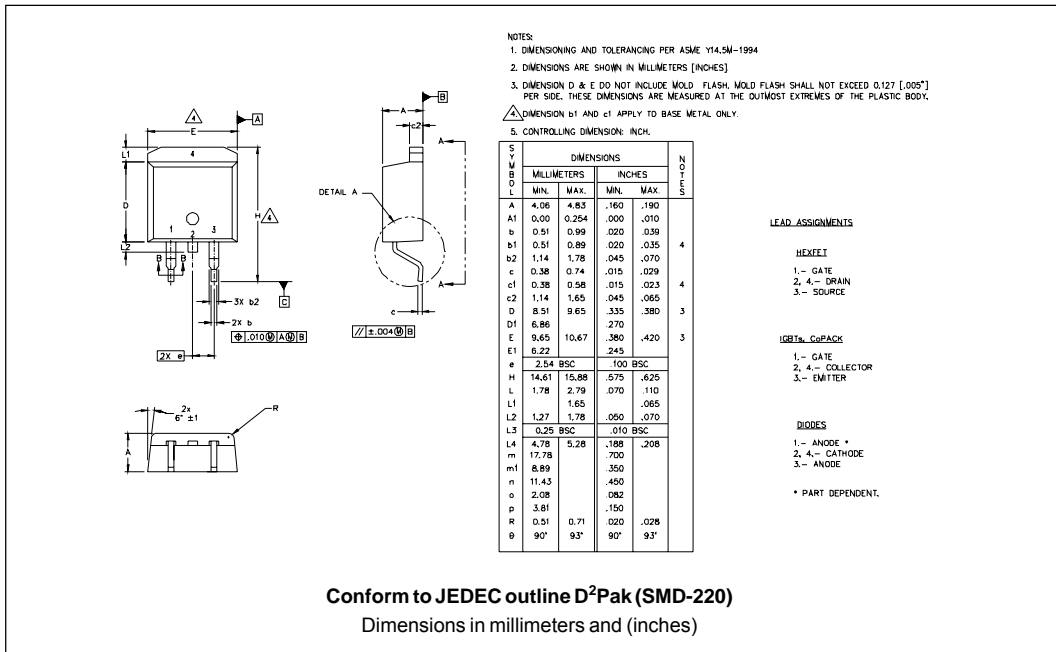
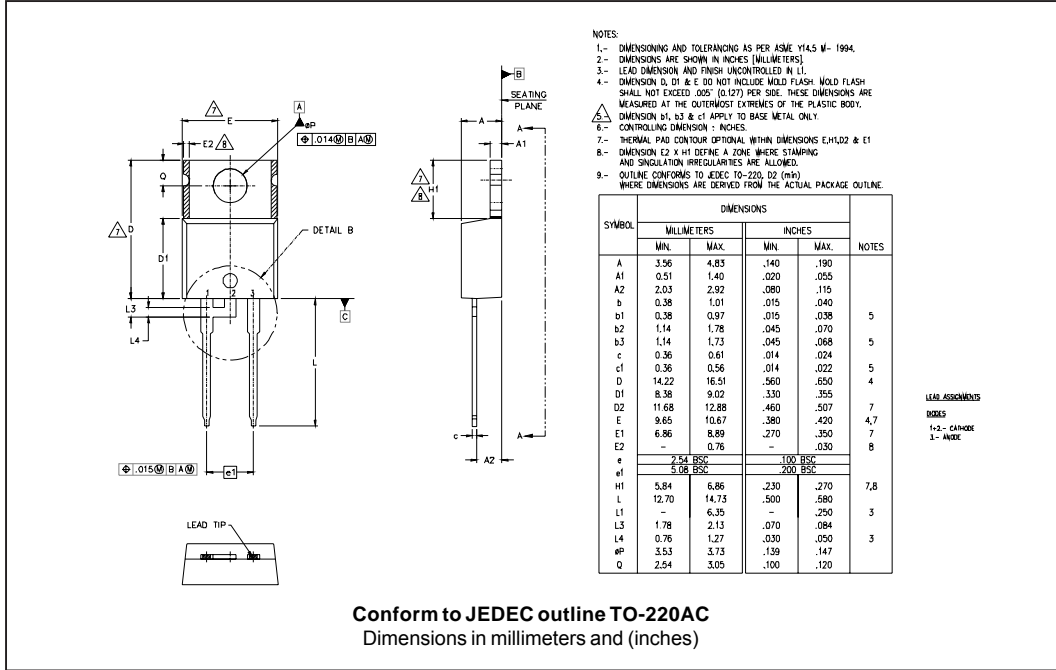
Fig. 8 - Unclamped Inductive Test Circuit

(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

TO-220AC

EXAMPLE: THIS IS A 8TQ100
LOT CODE 1789
ASSEMBLED ON WW 19, 2001
IN THE ASSEMBLY LINE "C"

PART NUMBER

INTERNATIONAL RECTIFIER LOGO

ASSEMBLY LOT CODE

DATE CODE
YEAR 1 = 2001
WEEK 19
LINE C

D²Pak

EXAMPLE: THIS IS A 8TQ100S
LOT CODE 8024
ASSEMBLED ON WW 02, 2000

PART NUMBER

INTERNATIONAL RECTIFIER LOGO

ASSEMBLY LOT CODE

DATE CODE
YEAR 0 = 2000
WEEK 02
LINE C

Tape & Reel Information

SECTION Y-Y

Ao	10.50	+/-	0.1
B0	15.80	+/-	0.1
B2	10.25	+/-	0.1
Ko	4.90	+/-	0.1
F	11.50	+/-	0.1
P1	16.00	+/-	0.1
W	24.00	+/-	0.3

NOTES:

- 1.0 10 SPROCKET HOLE PITH CUMULATIVE TOLERANCE ±.02
- 2.0 CAMBER NOT TO EXCEED 1mm in 100mm
- 3.0 MATERIAL: CONDUCTIVE BLACK STYRENIC ALLOY
- 4.0 K₀ MEASURED FROM A PLANE ON THE INSIDE BOTTOM OF THE POCKET TO THE TOP SURFACE OF THE CARRIER
- 5.0 MEASURED FROM CENTRELINE OF SPROCKET HOLE TO CENTRELINE OF POCKET
- 6.0 VENDOR: (OPTIONAL)
- 7.0 MUST ALSO MEET REQUIREMENTS OF EIA STANDAR #EIA-481A TAPING OF SURFACE MOUNT COMPONENTS FOR AUTOMATIC PLACEMENT
- 8.0 SURFACE RESISTIVITY OF MOLDED MATL. MUST MEASURE LESS OR EQUAL TO 10⁶ OHMS PER SQUARE. MEASURED IN ACCORDANCE TO PROCEDURE GIVEN IN ASTM D-257 & ASTM D-991
- 9.0 TOTAL LENGTH PER REEL MUST BE 45 METERS
- 10.0 © CRITICAL

Dimensions in millimeters and (inches)

Ordering Information Table

Device Code													
	<table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;">8</td> <td style="padding: 5px;">T</td> <td style="padding: 5px;">Q</td> <td style="padding: 5px;">100</td> <td style="padding: 5px;">S</td> <td style="padding: 5px;">-</td> </tr> <tr> <td style="text-align: center;">(1)</td> <td style="text-align: center;">(2)</td> <td style="text-align: center;">(3)</td> <td style="text-align: center;">(4)</td> <td style="text-align: center;">(5)</td> <td style="text-align: center;">(6)</td> </tr> </table>	8	T	Q	100	S	-	(1)	(2)	(3)	(4)	(5)	(6)
8	T	Q	100	S	-								
(1)	(2)	(3)	(4)	(5)	(6)								
1	- Current Rating (8 = 8A)												
2	- Package T = TO-220												
3	- Schottky "Q" Series												
4	- Voltage Ratings												
5	- <ul style="list-style-type: none"> • none = TO-220 • S = D²Pak 												
6	- <ul style="list-style-type: none"> • none = Standard Production • PbF = Lead-Free 												
	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px 5px;">080 = 80V</td> </tr> <tr> <td style="padding: 2px 5px;">100 = 100V</td> </tr> </table>	080 = 80V	100 = 100V										
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.