Bulletin PD-20563 rev. A 09/01

International
IOR Rectifier

15TQ060
15TQ060S

SCHOTTKY RECTIFIER

15 Amp

Major Ratings and Characteristics

Characteristics		15TQ060	Units
$I_{F(AV)}$	Rectangular waveform	15	A
V_{RRM}		60	V
I_{FSM}	@tp = 5 µs sine	1000	A
V_F	@15Apk, T_J = 125°C	0.56	V
T_J	range	-55 to 150	°C

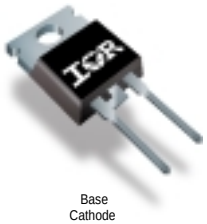
Description/Features

The 15TQ060 Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 150° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 150° C T_J operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

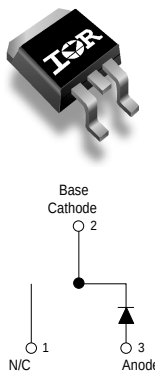
Case Styles

15TQ060



TO-220AC

15TQ060S



D^{2}PAK

Voltage Ratings

	Part number	15TQ060
V_R	Max. DC Reverse Voltage (V)	60
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

	Parameters	15TQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current * See Fig. 5	15	A	50% duty cycle @ T_C = 104°C, rectangular waveform	
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7	1000	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
		260		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy	6	mJ	T_J = 25 °C, I_{AS} = 1.50 Amps, L = 11.5 mH	
I_{AR}	Repetitive Avalanche Current	1.50	A	Current decaying linearly to zero in 1 µsec Frequency limited by T_J max. V_A = 1.5 x V_R typical	

Electrical Specifications

	Parameters	15TQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (1) * See Fig. 1	0.62	V	@ 15A	T_J = 25 °C
		0.82	V	@ 30A	
		0.56	V	@ 15A	T_J = 125 °C
		0.71	V	@ 30A	
I_{RM}	Max. Reverse Leakage Current (1) * See Fig. 2	0.80	mA	T_J = 25 °C	V_R = rated V_R
		45	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance	720	pF	V_R = 5V_{DC}, (test signal range 100Khz to 1Mhz) 25 °C	
L_S	Typical Series Inductance	8.0	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 < 300µs, Duty Cycle < 2%

Thermal-Mechanical Specifications

	Parameters		15TQ	Units	Conditions
T_J	Max. Junction Temperature Range		-55 to 150	°C	
T_{stg}	Max. Storage Temperature Range		-55 to 150	°C	
R_{thJC}	Max. Thermal Resistance Junction to Case		3.25	°C/W	DC operation * See Fig. 4
R_{thCS}	Typical Thermal Resistance, Case to Heatsink		0.50	°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)		
	Case Style		TO-220AC		JEDEC

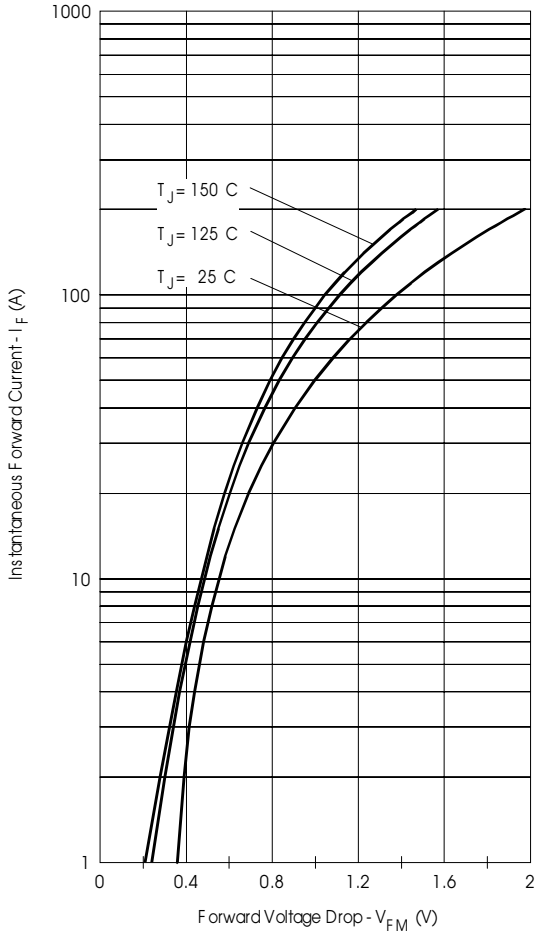


Fig. 1 - Maximum Forward Voltage Drop Characteristics

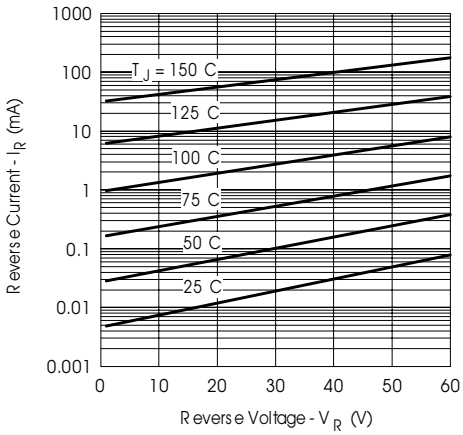


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

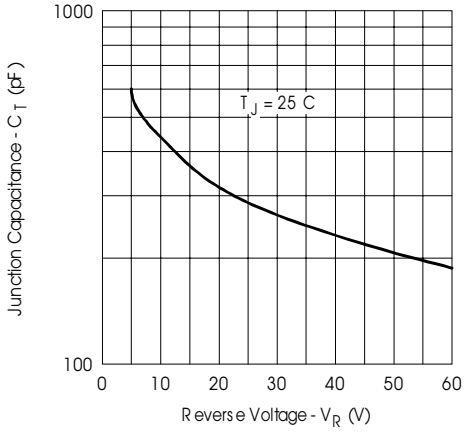


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

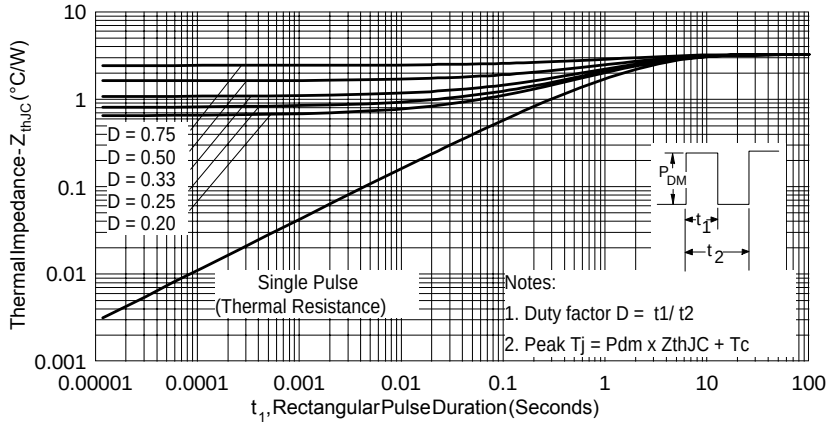


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

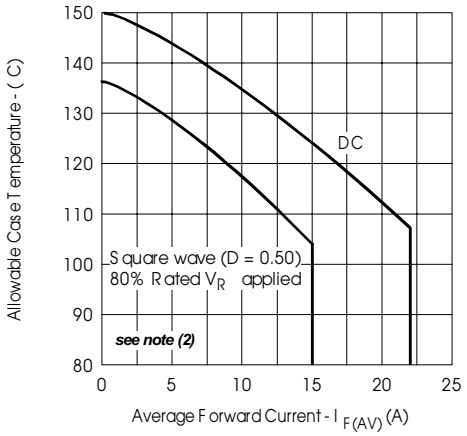


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

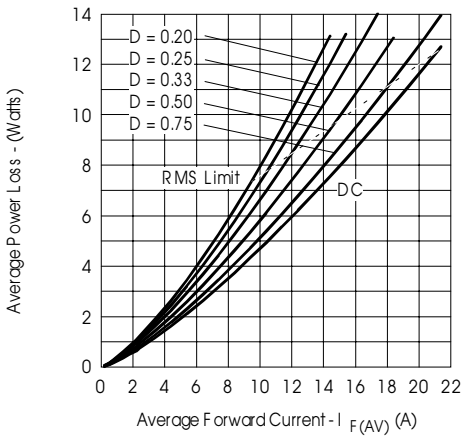


Fig. 6 - Forward Power Loss Characteristics

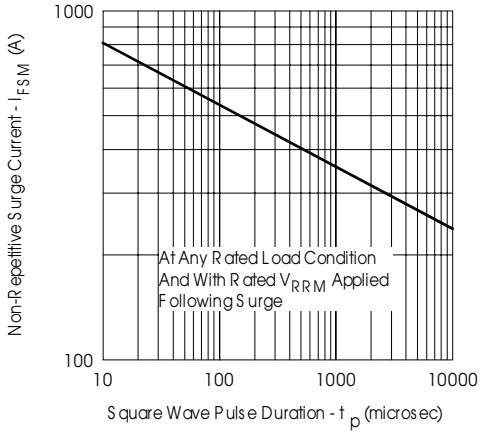


Fig. 7 - Maximum Non-Repetitive Surge Current

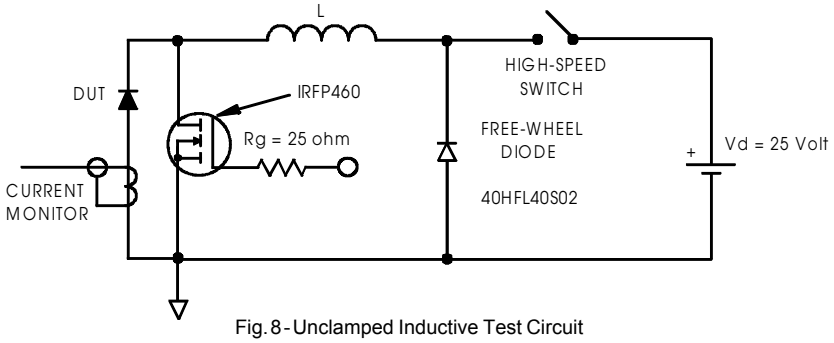
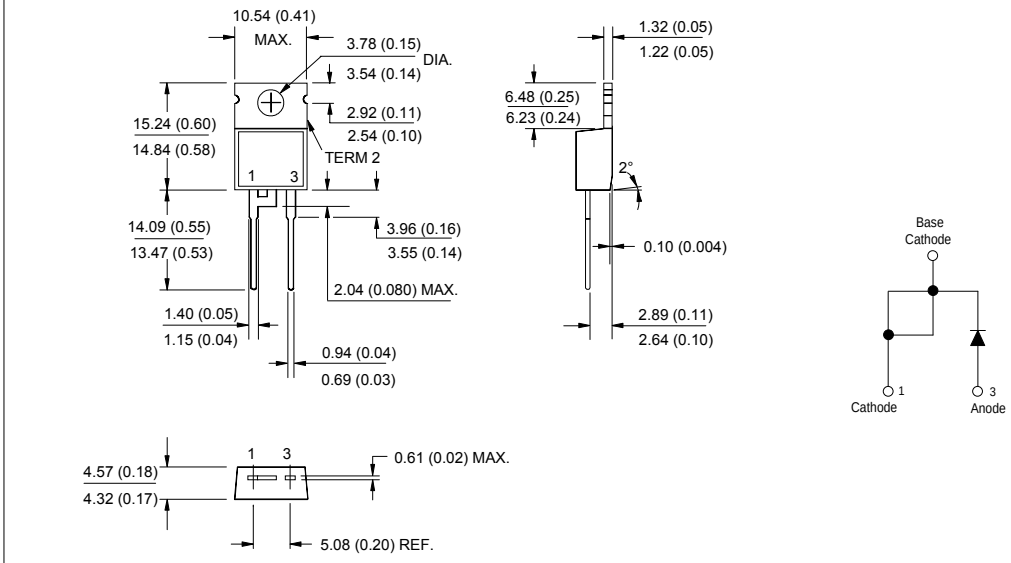


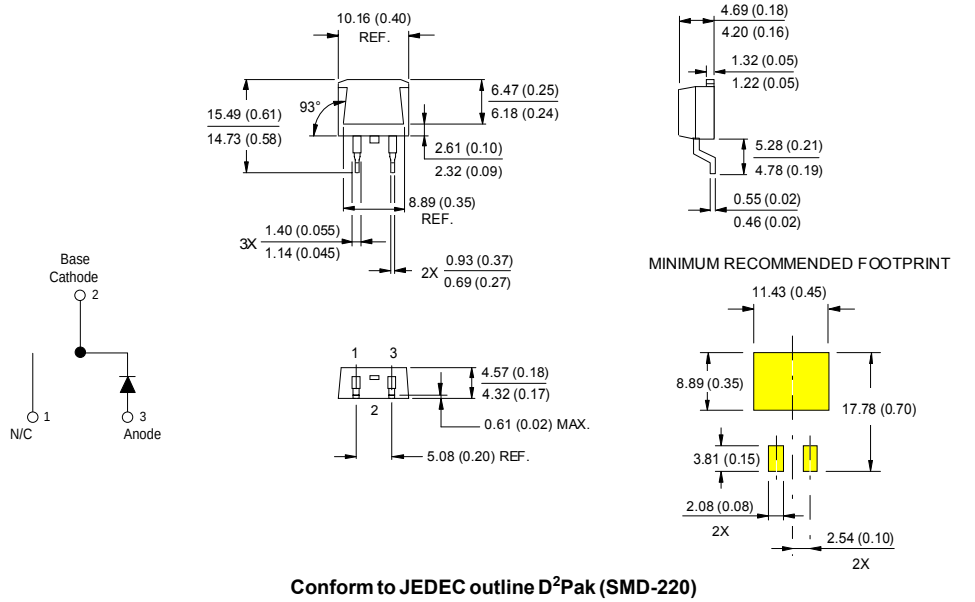
Fig. 8 - Unclamped Inductive Test Circuit

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

Outline Table



Conform to JEDEC outline TO-220AC
Dimensions in millimeters and (inches)



Conform to JEDEC outline D^2Pak (SMD-220)
Dimensions in millimeters and (inches)

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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