

International
IR Rectifier

PD-2.195 rev. C 12/97

60CNQ... SERIES

SCHOTTKY RECTIFIER

60 Amp

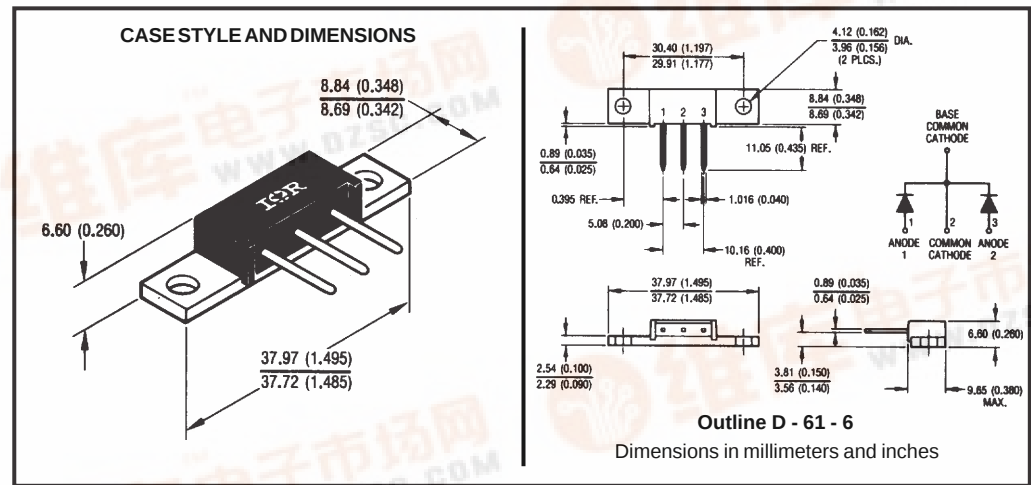
Major Ratings and Characteristics

Characteristics	60CNQ...	Units
$I_{F(AV)}$ Rectangular waveform	60	A
V_{RRM}	35 to 45	V
I_{FSM} @ $t_p = 5 \mu s$ sine	6300	A
V_F @ 30 Apk, $T_J = 125^\circ C$ (per leg)	0.44	V
T_J	-55 to 150	$^\circ C$

Description/Features

The 60CNQ center tap Schottky rectifier module series has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to $150^\circ C$ junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- $150^\circ C$ T_J operation
- Center tap module
- Very low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Low profile, small footprint, high current package



60CNQ... Series

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Voltage Ratings

Part number	60CNQ035	60CNQ040	60CNQ045
V_R Max. DC Reverse Voltage (V)	35	40	45
V_{RWM} Max. Working Peak Reverse Voltage (V)			

Absolute Maximum Ratings

Parameters	60CNQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5	60	A	50% duty cycle @ $T_C = 116^\circ\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	6300	A	5 μs Sine or 3 μs Rect. pulse
	850		10ms Sine or 6ms Rect. pulse
E_{AS} Non-Repetitive Avalanche Energy (Per Leg)	40	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 6$ Amps, $L = 2.2$ mH
I_{AR} Repetitive Avalanche Current (Per Leg)	6	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	60CNQ	Units	Conditions
V_{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.52	V	@ 30A
	0.64	V	@ 60A
	0.44	V	@ 30A
	0.59	V	@ 60A
I_{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	5	mA	$T_J = 25^\circ\text{C}$
	200	mA	$T_J = 125^\circ\text{C}$
C_T Max. Junction Capacitance (Per Leg)	2600	pF	$V_R = 5V_{DC}$, (test signal range 100Khz to 1Mhz) 25°C
L_S Typical Series Inductance (Per Leg)	6.0	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	60CNQ	Units	Conditions
T_J Max. Junction Temperature Range	-55 to 150	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
R_{thJC} Max. Thermal Resistance Junction to Case (Per Leg)	0.85	$^\circ\text{C/W}$	DC operation * See Fig. 4
R_{thJC} Max. Thermal Resistance Junction to Case (Per Package)	0.42	$^\circ\text{C/W}$	DC operation
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.30	$^\circ\text{C/W}$	Mounting surface, smooth and greased
wt Approximate Weight	7.8 (0.28)	g (oz.)	
T Mounting Torque	Min. 40 (35)	Kg-cm (lbf-in)	
	Max. 58 (50)		
Case Style	D-61-6		

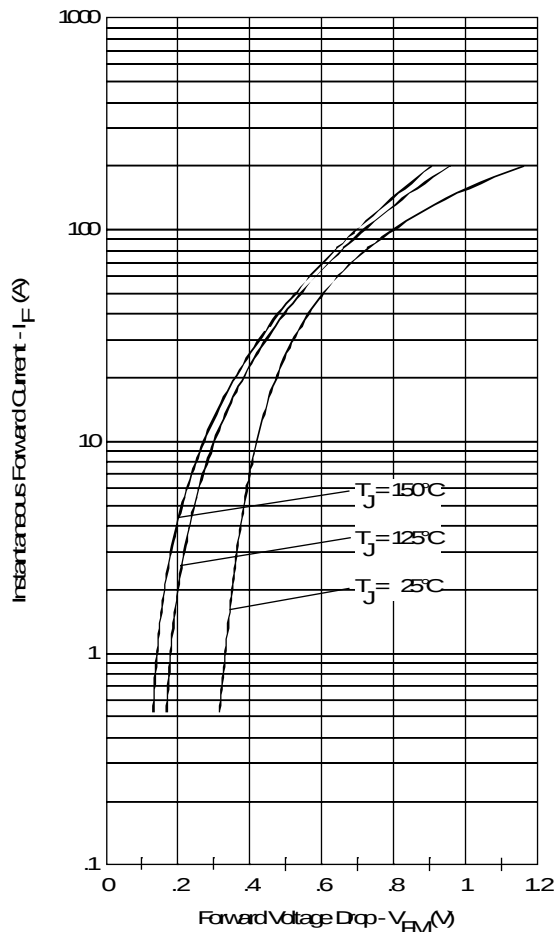


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

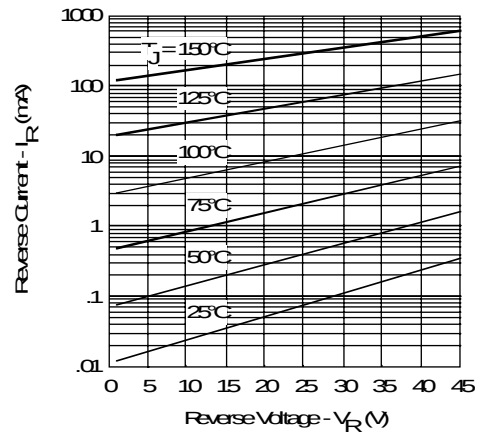


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

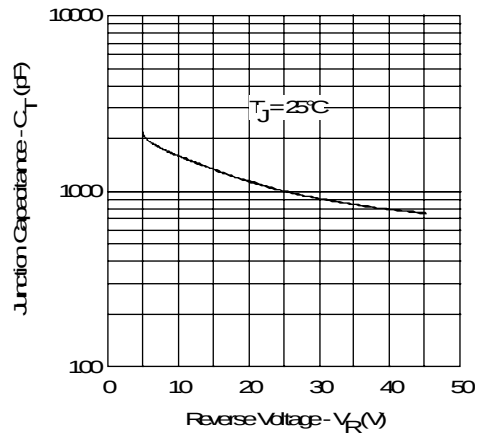


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

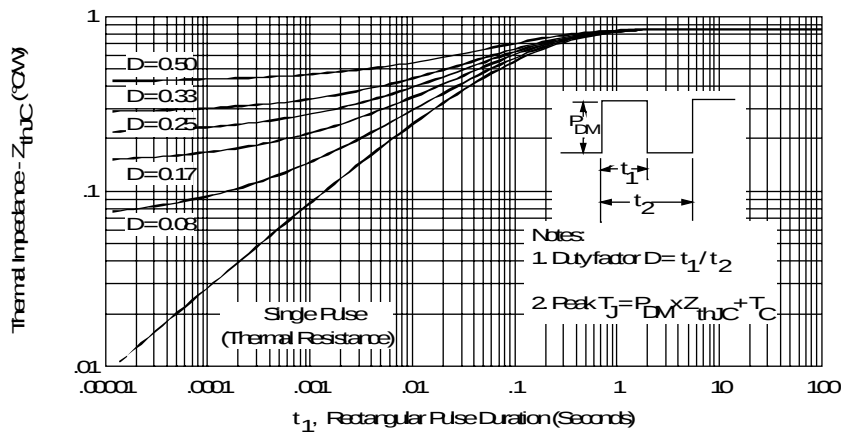


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

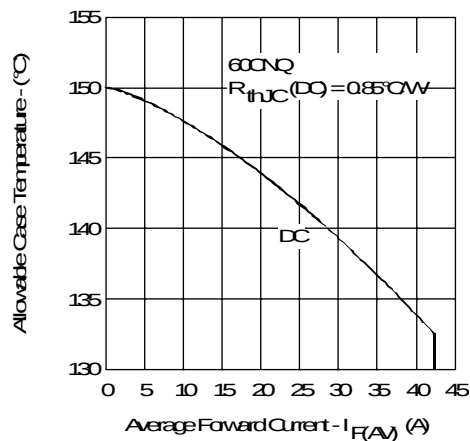


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

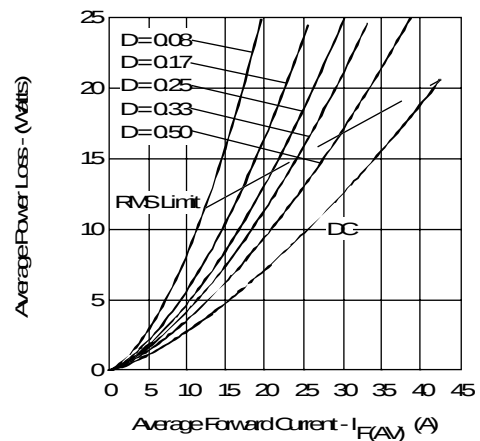


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

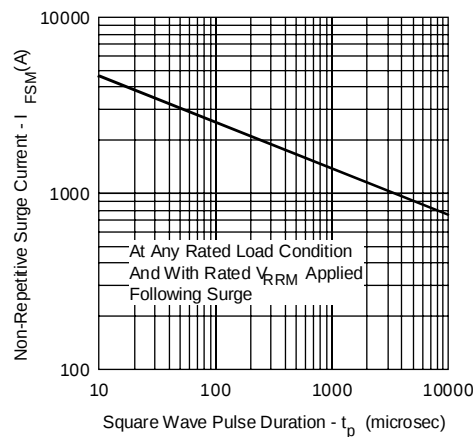


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

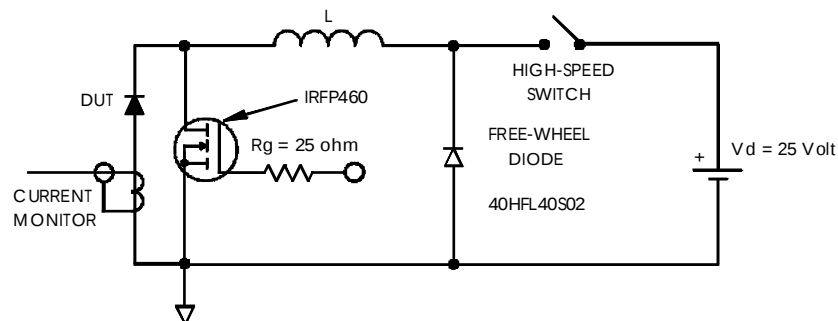


Fig. 8 - Unclamped Inductive Test Circuit