PD - 2.535 11/97

International
IOR Rectifier

150CNQ... SERIES

SCHOTTKY RECTIFIER 150 Amp

Major Ratings and Characteristics

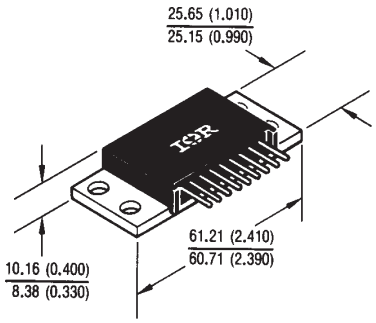
Characteristics		150CNQ...	Units
$I_{F(AV)}$	Rectangular waveform	150	A
V_{RRM}	range	35 to 45	V
I_{FSM}	@ tp = 5 µs sine	6600	A
V_F	@75 Apk, T_J = 125°C (per leg)	0.60	V
T_J	range	-55 to 150	°C

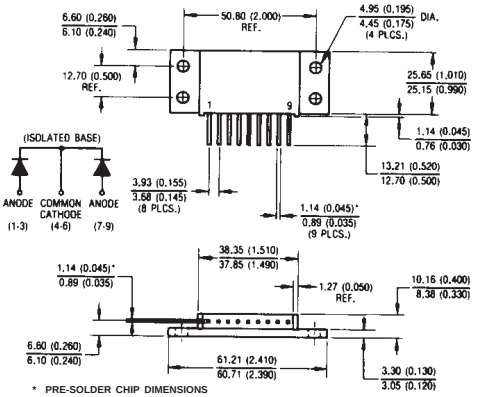
Description/Features

The 150CNQ... non-isolated, 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° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 150° C T_J operation
- Center tap module
- Multiple leads per terminal for high frequency, high current PC board mounting
- 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
- Low profile, high current package

CASE STYLE AND DIMENSIONS





Outline D-60 (Modified JEDEC TO-249AA)
Dimensions in millimeters and inches

Voltage Ratings

Part number	150CNQ035	150CNQ040	150CNQ045
V_R Max. DC Reverse Voltage (V)	35	40	45
V_{RWM} Max. Working Peak Reverse Voltage (V)			

Absolute Maximum Ratings

Parameters	150CNQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5	150	A	50% duty cycle @ T_C = 93 °C, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	6600	A	5µs Sine or 3µs Rect. pulse — Following any rated load condition and with rated V_{RRM} applied
	800		10ms Sine or 6ms Rect. pulse — Following any rated load condition and with rated V_{RRM} applied
E_{AS} Non-Repetitive Avalanche Energy (Per Leg)	101	mJ	T_J = 25 °C, I_{AS} = 15 Amps, L = 0.9 mH
I_{AR} Repetitive Avalanche Current (Per Leg)	15	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	150CNQ	Units	Conditions
V_{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.64	V	@ 75A, T_J = 25 °C
	0.87	V	@ 150A, T_J = 25 °C
	0.60	V	@ 75A, T_J = 125 °C
	0.79	V	@ 150A, T_J = 125 °C
I_{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	5	mA	T_J = 25 °C, V_R = rated V_R
	200	mA	T_J = 125 °C, V_R = rated V_R
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)	9.2	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 < 300µs, Duty Cycle <2%

Thermal-Mechanical Specifications

Parameters		150CNQ	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 (Per Leg)		0.70	°C/W	DC operation * See Fig. 4
R_{thJC} Max. Thermal Resistance Junction to Case (Per Package)		0.35	°C/W	DC operation
R_{thCS} Typical Thermal Resistance, Case to Heatsink		0.10	°C/W	Mounting surface, smooth and greased
wt Approximate Weight		56 (2.0)	g (oz.)	
T Mounting Torque	Min.	40 (35)	Kg-cm (lbf-in)	
	Max.	58 (50)		
Case Style		D-60 (TO-249AA)		Modified JEDEC

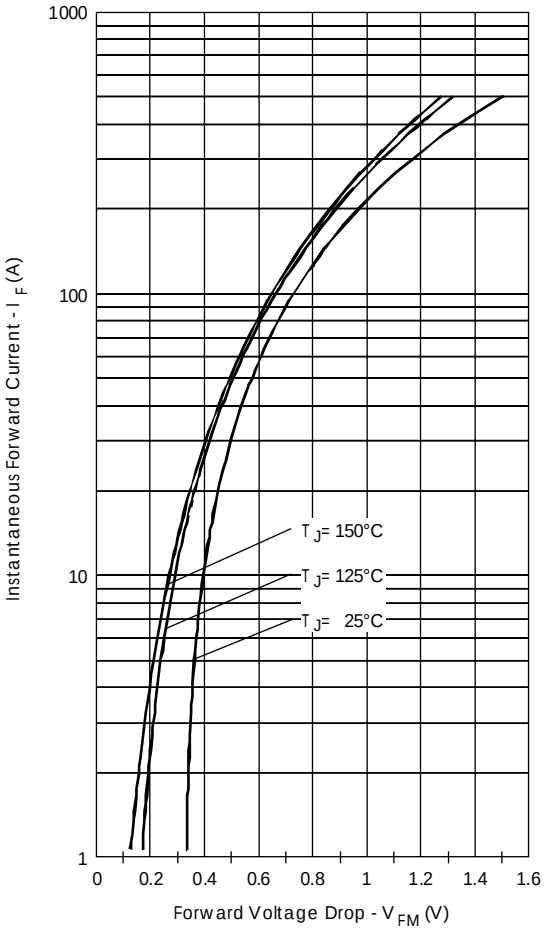


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

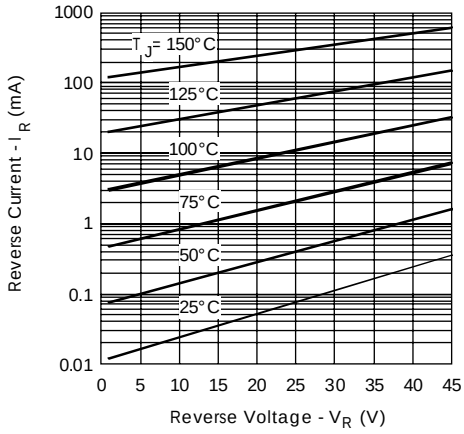


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

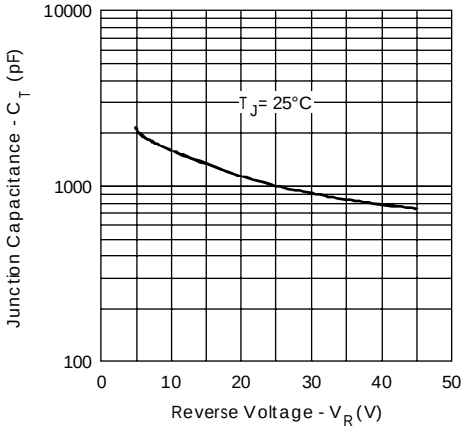


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

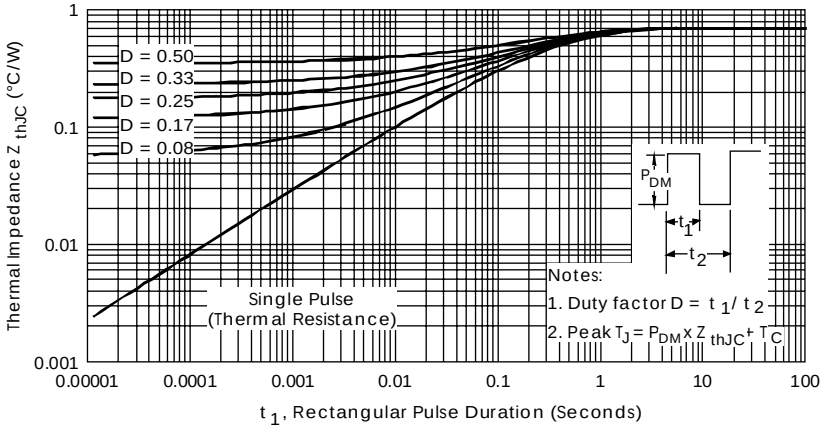


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

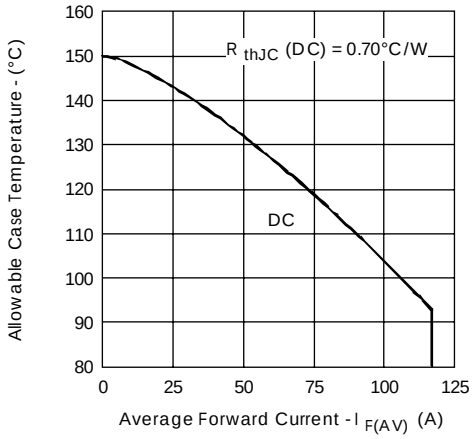


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

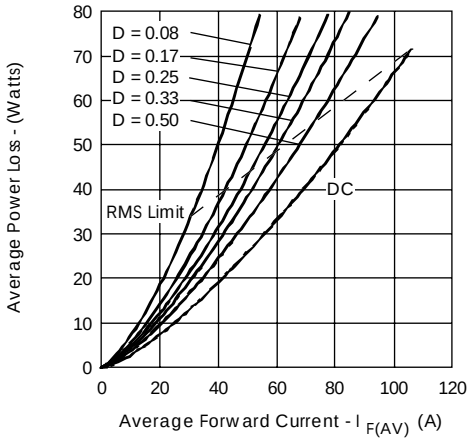


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

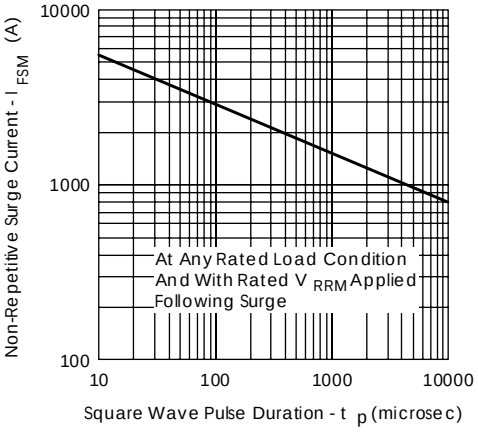


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

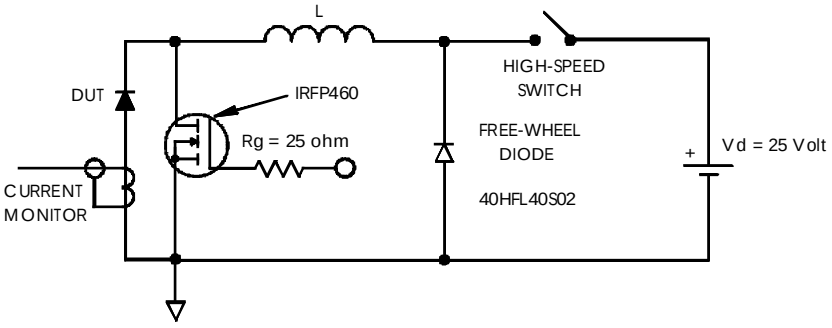


Fig. 8 - Unclamped Inductive Test Circuit