

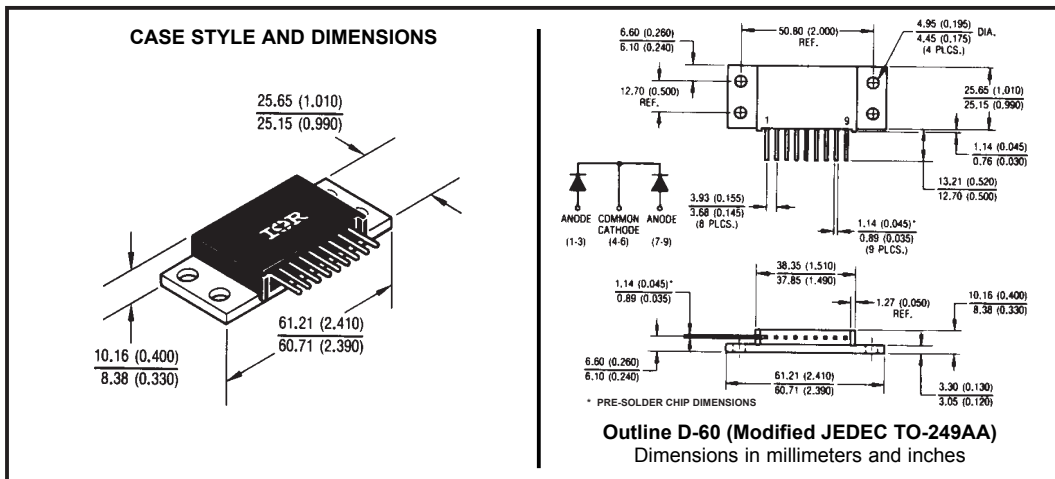
Major Ratings and Characteristics

Characteristics	322CNQ030	Units
$I_{F(AV)}$ Rectangular waveform	300	A
V_{RRM}	30	V
I_{FSM} @tp = 5 μ s sine	10000	A
V_F @150Apk, $T_J = 125^\circ\text{C}$ (per leg)	0.49	V
T_J range	-55 to 150	$^\circ\text{C}$

Description/ Features

The 322CNQ030 center tap Schottky rectifier module series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 150 $^\circ\text{C}$ junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 150 $^\circ\text{C}$ T_J operation
- High Surge Capability
- Center tap module
- 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
- Low profile, high current package



Voltage Ratings

Part number	322CNQ030
V _R Max. DC Reverse Voltage (V)	30
V _{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	322CNQ	Units	Conditions	
I _{F(AV)} Max. Average Forward Current (Per Leg)	300	A	50% duty cycle @ T _C = 87 °C, rectangular wave form	
	150	A		
I _{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg)	10000	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V _{RRM} applied
	1500		10ms Sine or 6ms Rect. pulse	
E _{AS} Non-Repetitive Avalanche Energy (Per Leg)	15	mJ	T _J = 25 °C, I _{AS} = 1 Amps, L = 30 mH	
I _{AR} Repetitive Avalanche Current (Per Leg)	1	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	322CNQ	Units	Conditions	
V _{FM} Max. Forward Voltage Drop (Per Leg)	0.56	V	@ 150A	T _J = 25 °C
	0.70	V	@ 300A	
	0.49	V	@ 150A	T _J = 125 °C
	0.68	V	@ 300A	
I _{RM} Max. Reverse Leakage Current (Per Leg)	10	mA	T _J = 25 °C	V _R = rated V _R
	650	mA	T _J = 125 °C	
C _T Max. Junction Capacitance (Per Leg)	5500	pF	V _R = 5V _{DC} (test signal range 100Khz to 1Mhz) 25°C	
L _S Typical Series Inductance (Per Leg)	8.0	nH	Measured from terminal hole to terminal hole	
dv/dt Max. Voltage Rate of Change (Rated V _R)	10000	V/µs		

(1) Pulse Width < 300µs, Duty Cycle <2%

Thermal-Mechanical Specifications

Parameters	322CNQ	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)	0.50	°C/W	DC operation	
R _{thJC} Max. Thermal Resistance Junction to Case (Per Package)	0.25	°C/W	DC operation	
R _{thCS} Typical Thermal Resistance, Case to Heatsink	0.10	°C/W	Mounting surface, smooth and greased	
wt Approximate Weight	58 (2.0)	g (oz.)		
T Mounting Torque	Min.	40 (35)	Kg-cm (lbf-in)	
	Max.	58 (50)		
Case Style	TO-249AA	JEDEC		

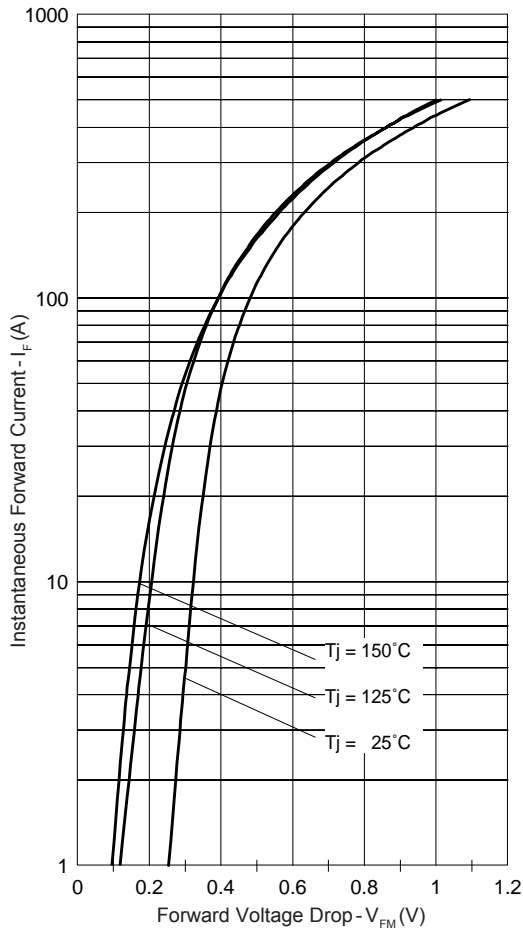


Fig. 1 - Max. Forward Voltage Drop Characteristics

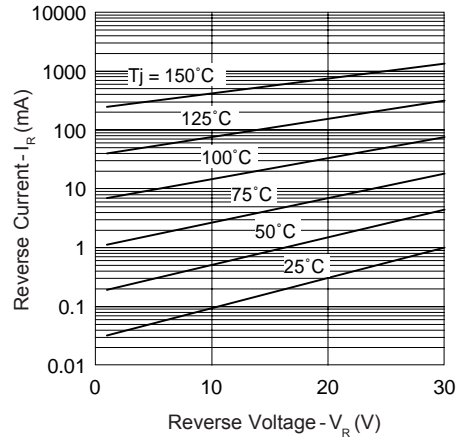


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage

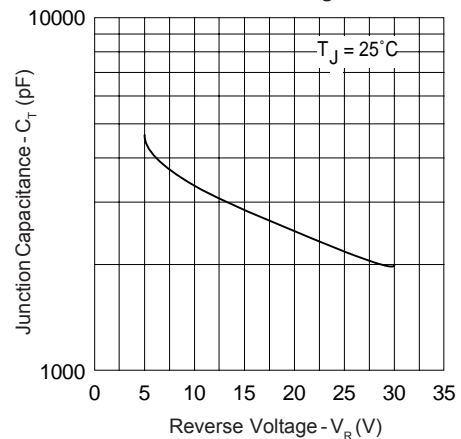


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

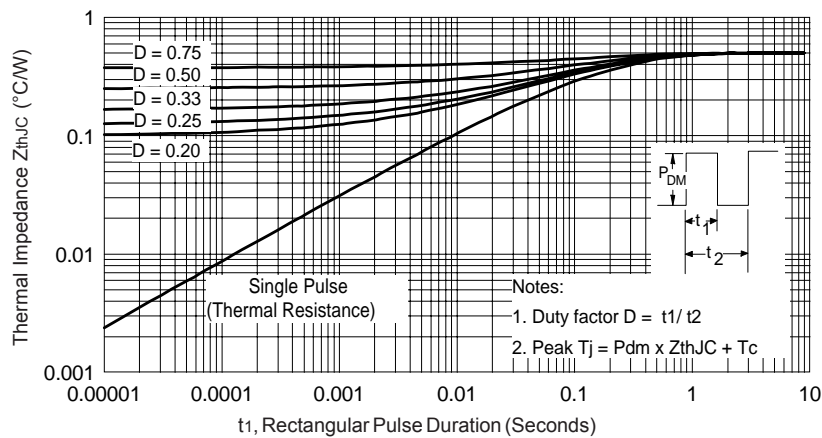


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics

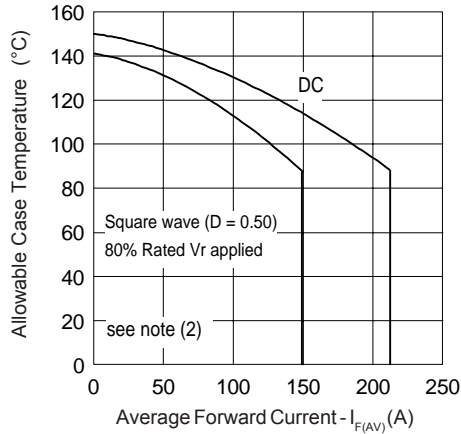


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current

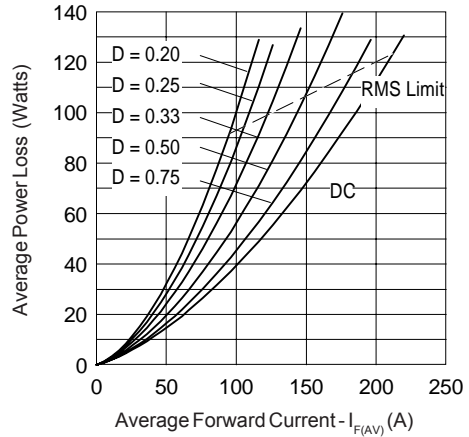


Fig. 6 - Forward Power Loss Characteristics

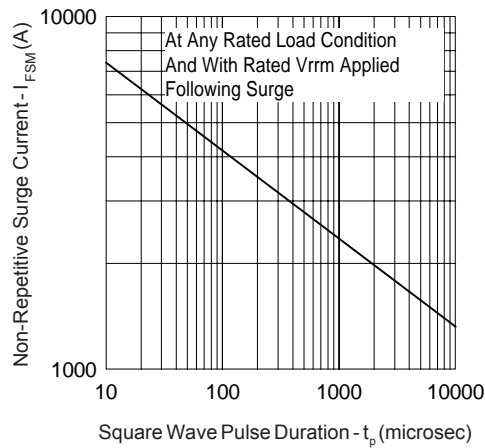


Fig. 7 - Max. Non-Repetitive Surge Current

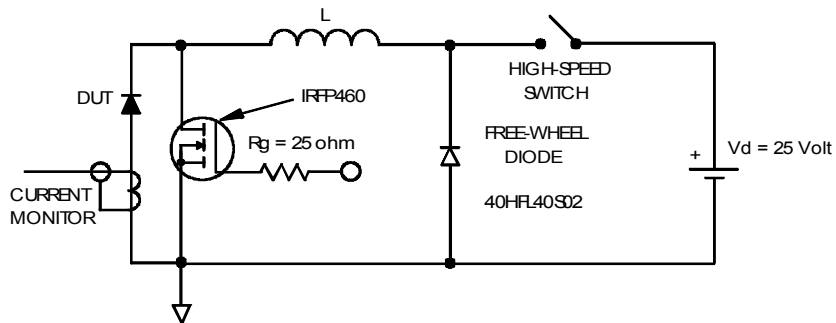


Fig. 8 - Unclamped Inductive Test Circuit

- (2) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;
 $P_d = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);
 $P_{d_{REV}} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 80\% \text{ rated } V_R$

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

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 08/03

This datasheet has been download from:

www.datasheetcatalog.com

Datasheets for electronics components.