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242NQ030

PD-2.281 rev. A 12/97

 International

Voltage Ratings

Part number	242NQ030
V_R Max. DC Reverse Voltage (V)	30
V_{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	242NQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5	240	A	50% duty cycle @ $T_C = 111^\circ\text{C}$, rectangular waveform
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7	27,000	A	5 μs Sine or 3 μs Rect. pulse
	3000		10ms Sine or 6ms Rect. pulse
E_{AS} Non-Repetitive Avalanche Energy	216	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 48$ Amps, $L = 0.19$ mH
I_{AR} Repetitive Avalanche Current	48	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	242NQ	Units	Conditions
V_{FM} Max. Forward Voltage Drop (1) * See Fig. 1	0.51	V	@ 240A
	0.62	V	@ 480A
	0.42	V	@ 240A
	0.54	V	@ 480A
I_{RM} Max. Reverse Leakage Current (1) * See Fig. 2	20	mA	$T_J = 25^\circ\text{C}$
	1120	mA	$T_J = 125^\circ\text{C}$
C_T Max. Junction Capacitance	14,800	pF	$V_R = 5V_{DC}$, (test signal range 100Khz to 1Mhz) 25°C
L_S Typical Series Inductance	5.0	nH	From top of terminal hole to mounting plane
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	242NQ	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	0.20	$^\circ\text{C/W}$	DC operation * See Fig. 4	
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.15	$^\circ\text{C/W}$	Mounting surface, smooth and greased	
wt Approximate Weight	25.6 (0.9)	g (oz.)		
T Mounting Torque	Min.	40 (35)	Non-lubricated threads	
	Max.	58 (50)		
	Terminal Torque	Min.		58 (50)
		Max.		86 (75)
Case Style	HALF PAK Module			

International
IOR Rectifier

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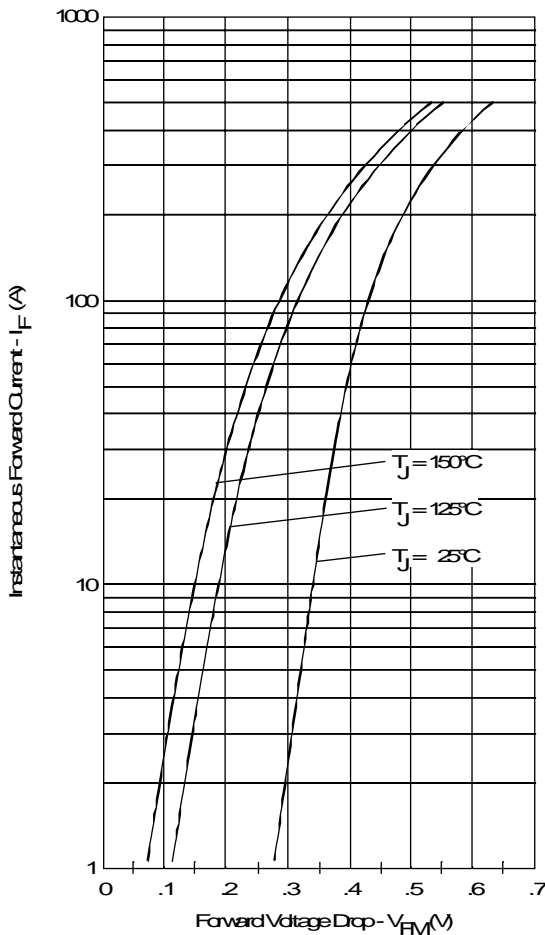


Fig. 1 - Maximum Forward Voltage Drop Characteristics

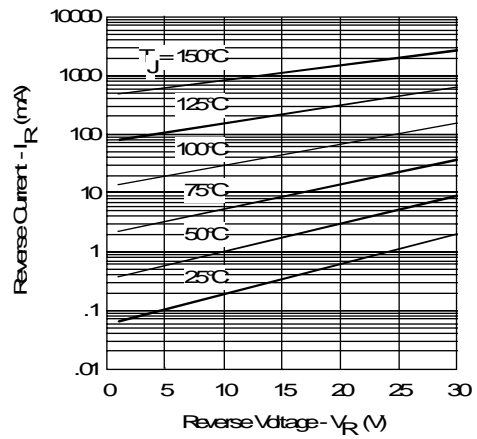


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

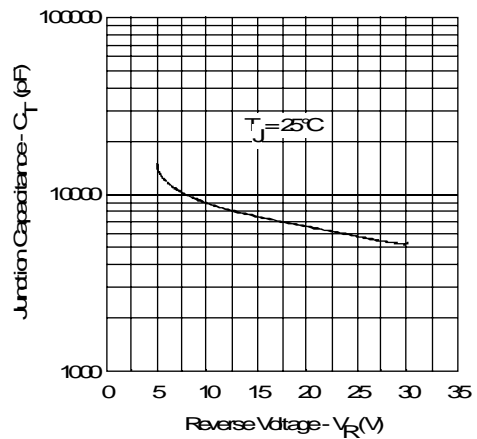


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

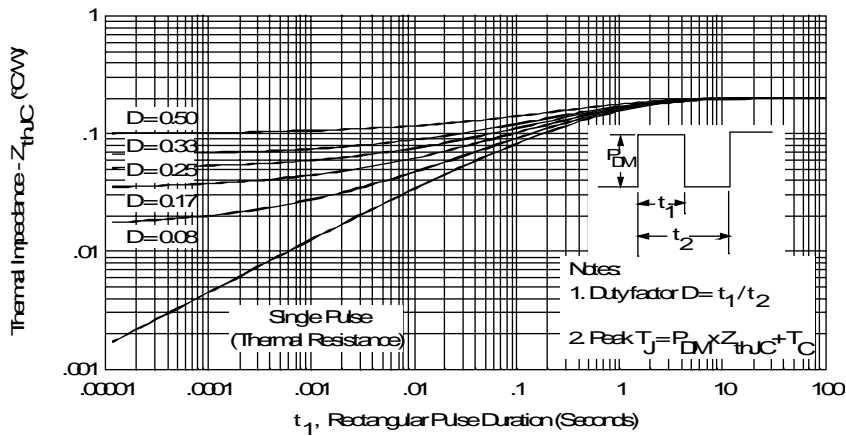


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

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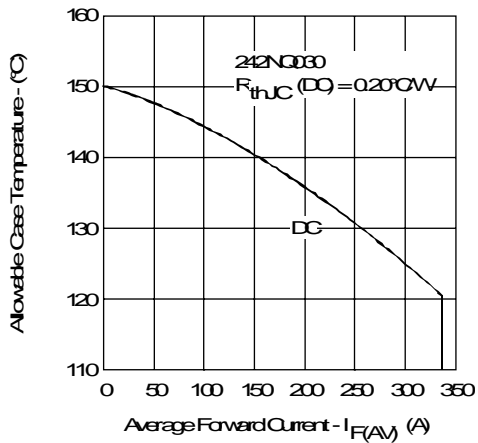


Fig. 5- Maximum Allowable Case Temperature Vs. Average Forward Current

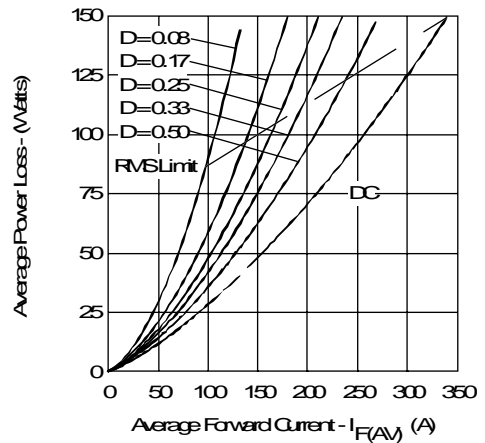


Fig. 6- Forward Power Loss Characteristics

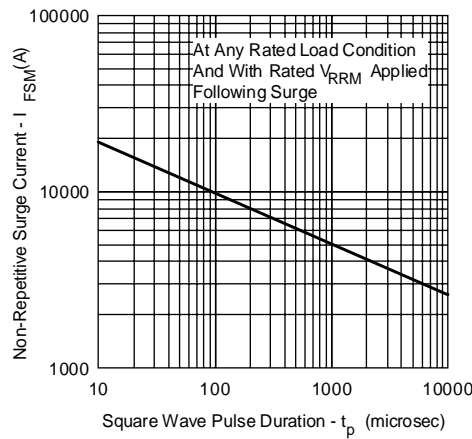


Fig. 7- Maximum Non-Repetitive Surge Current

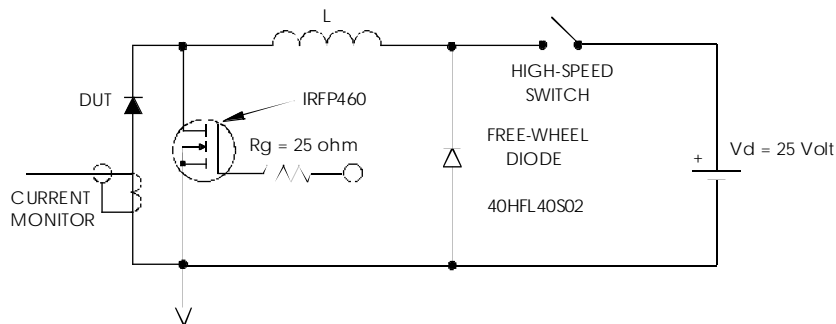


Fig. 8- Unclamped Inductive Test Circuit