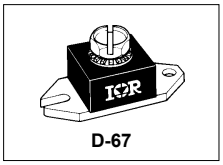
Bulletin PD-2.261 rev. B 05/02

International
IOR Rectifier

241NQ...(R) SERIES

SCHOTTKY RECTIFIER 240 Amp



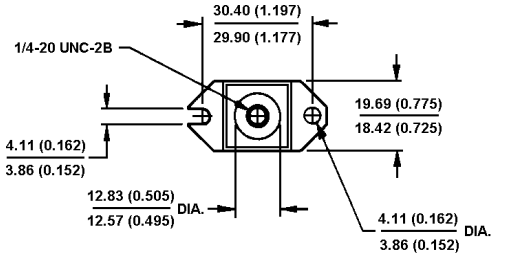
Major Ratings and Characteristics

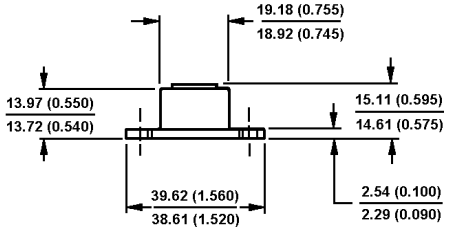
Characteristics	241NQ...	Units
$I_{F(AV)}$ Rectangular waveform	240	A
V_{RRM} range	35 to 50	V
I_{FSM} @tp = 5 µs sine	25,000	A
V_F @240Apk, T_J=125°C	0.59	V
T_J range	-55 to 175	°C

Description/ Features

The 241NQ high current Schottky rectifier module series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 175° C T_J operation
- Unique high power, Half-Pak module
- Replaces four parallel DO-5's
- Easier to mount and lower profile than DO-5's
- 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





241NQ050

Lug Terminal Anode

Base Cathode

241NQ050R

Lug Terminal Cathode

Base Anode

Outline D-67 HALF PAK Module
Dimensions in millimeters and (inches)

Voltage Ratings

	Part number	241NQ035	241NQ040	241NQ045	241NQ050
V_R	Max. DC Reverse Voltage (V)	35	40	45	50
V_{RWM}	Max. Working Peak Reverse Voltage (V)				

Absolute Maximum Ratings

	Parameters	241NQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current * See Fig. 5	240	A	50% duty cycle @ T_C = 130° C, rectangular wave form	
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7	25,000	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
		3450		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy	324	mJ	T_J = 25 °C, I_{AS} = 48 Amps, L = 0.28 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 x V_R typical	

Electrical Specifications

	Parameters	241NQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (1) * See Fig. 1	0.69	V	@ 240A	T_J = 25 °C
		0.82	V	@ 480A	
		0.59	V	@ 240A	T_J = 125 °C
		0.72	V	@ 480A	
I_{RM}	Max. Reverse Leakage Current (1) * See Fig. 2	20	mA	T_J = 25 °C	V_R = rated V_R
		180	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance	10,300	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)	10000	V/ µs		

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

Thermal-Mechanical Specifications

	Parameters		241NQ	Units	Conditions
T_J	Max. Junction Temperature Range		-55 to 175	°C	
T_{stg}	Max. Storage Temperature Range		-55 to 175	°C	
R_{thJC}	Max. Thermal Resistance Junction to Case		0.20	°C/W	DC operation * See Fig. 4
R_{thCS}	Typical Thermal Resistance, Case to Heatsink		0.15	°C/W	Mounting surface , smooth and greased
wt	Approximate Weight		25.6 (0.9)	g (oz.)	
T	Mounting Torque	Min.	40 (35)	Kg-cm (lbf-in)	Non-lubricated threads
		Max.	58 (50)		
	Terminal Torque	Min.	58 (50)		
		Max.	86 (75)		
	Case Style		HALF PAK Module		

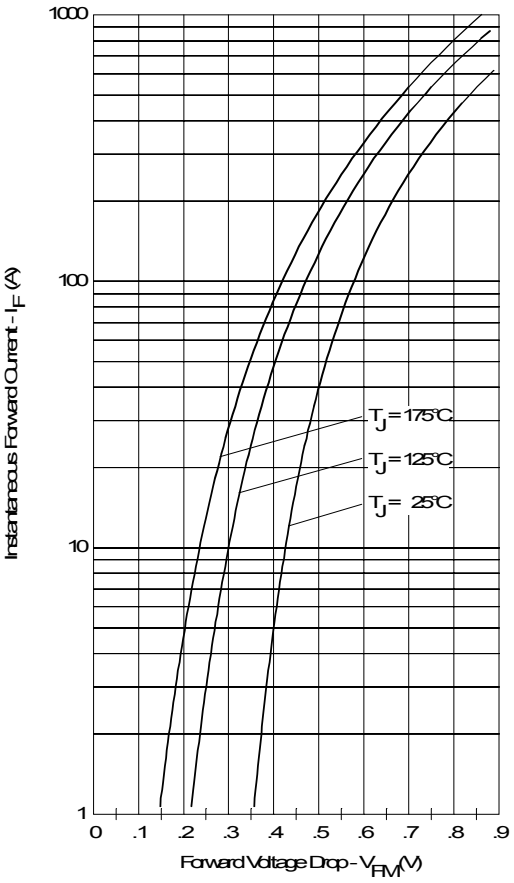


Fig. 1 - Maximum Forward Voltage Drop Characteristics

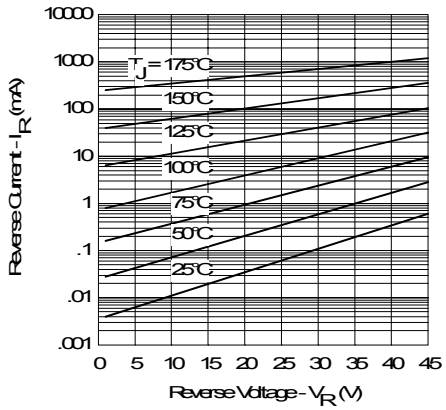


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

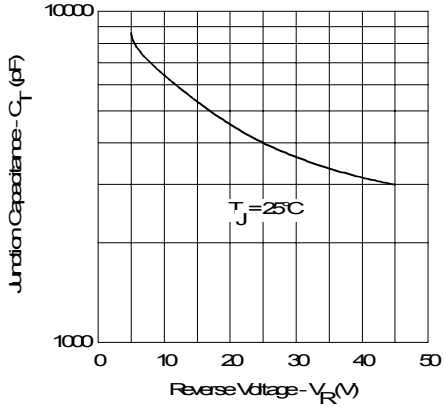


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

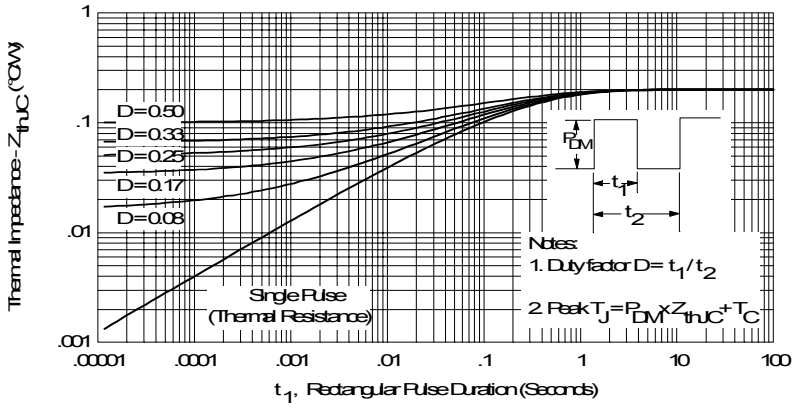


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

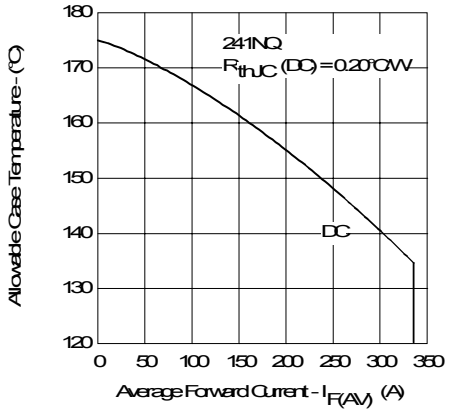


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

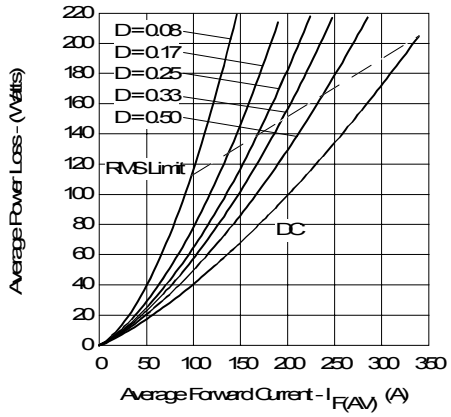


Fig. 6 - Forward Power Loss Characteristics

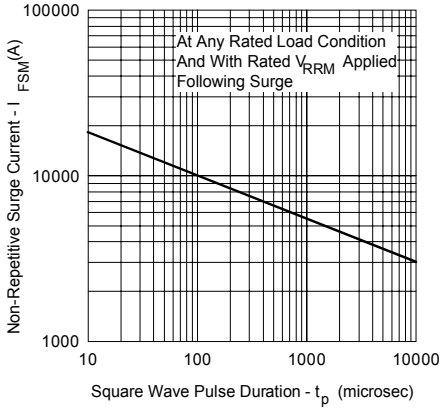


Fig. 7 - Maximum Non-Repetitive Surge Current

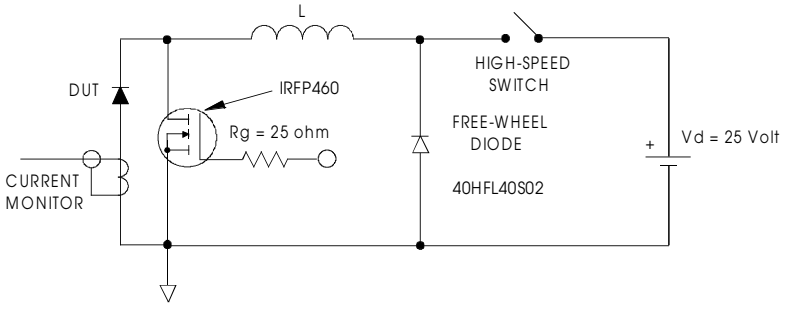


Fig. 8 - Unclamped Inductive Test Circuit

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.

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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. 05/02