

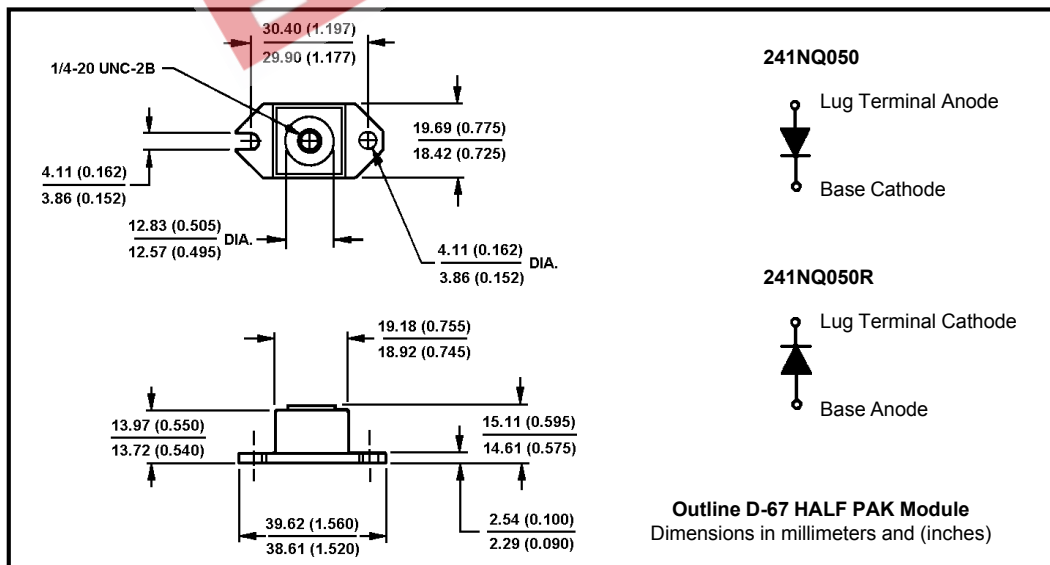
Major Ratings and Characteristics

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

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



241NQ...(R) Series

Bulletin PD-2.261 rev. B 05/02

International
IR Rectifier

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 @ $T_C = 130^\circ\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7	25,000	A	5 μs Sine or 3 μs Rect. pulse
	3450		10ms Sine or 6ms Rect. pulse
E_{AS} Non-Repetitive Avalanche Energy	324	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 48$ Amps, $L = 0.28$ mH
I_{AR} Repetitive Avalanche Current	48	A	Current decaying linearly to zero in 1 μsec Frequency limited by T_{Jmax} . $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	241NQ	Units	Conditions
V_{FM} Max. Forward Voltage Drop (1) * See Fig. 1	0.69	V	@ 240A
	0.82	V	@ 480A
	0.59	V	@ 240A
	0.72	V	@ 480A
I_{RM} Max. Reverse Leakage Current (1) * See Fig. 2	20	mA	$T_J = 25^\circ\text{C}$
	180	mA	$T_J = 125^\circ\text{C}$
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 < 300 μs , Duty Cycle < 2%

Thermal-Mechanical Specifications

Parameters	241NQ	Units	Conditions	
T_J Max. Junction Temperature Range	-55 to 175	$^\circ\text{C}$		
T_{stg} Max. Storage Temperature Range	-55 to 175	$^\circ\text{C}$		
R_{thJC} Max. Thermal Resistance Junction to Case	0.20	$^\circ\text{C}/\text{W}$	DC operation * See Fig. 4	
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.15	$^\circ\text{C}/\text{W}$	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			

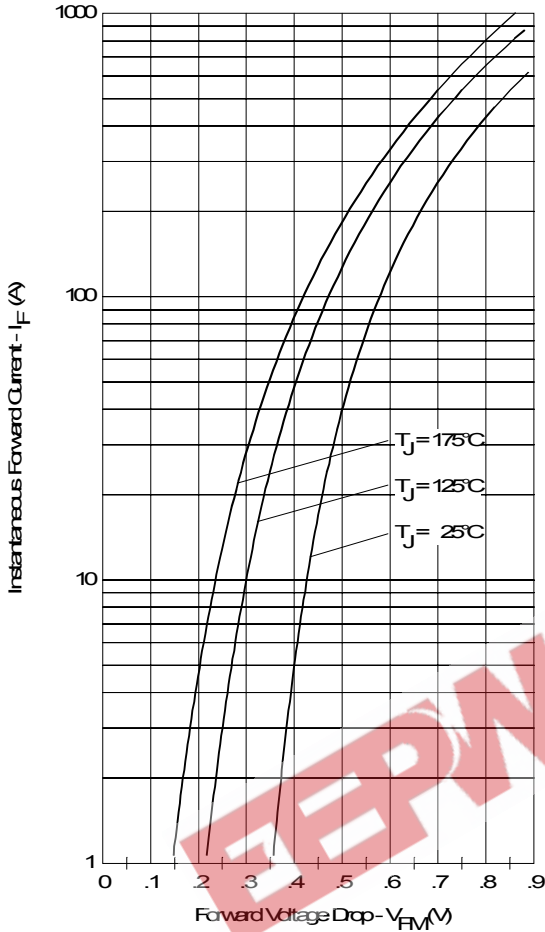


Fig. 1 - Maximum Forward Voltage Drop Characteristics

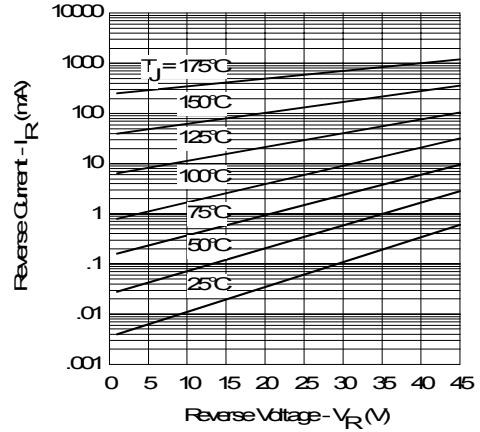


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

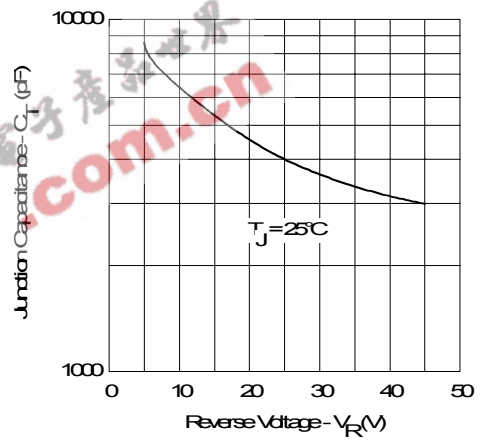


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

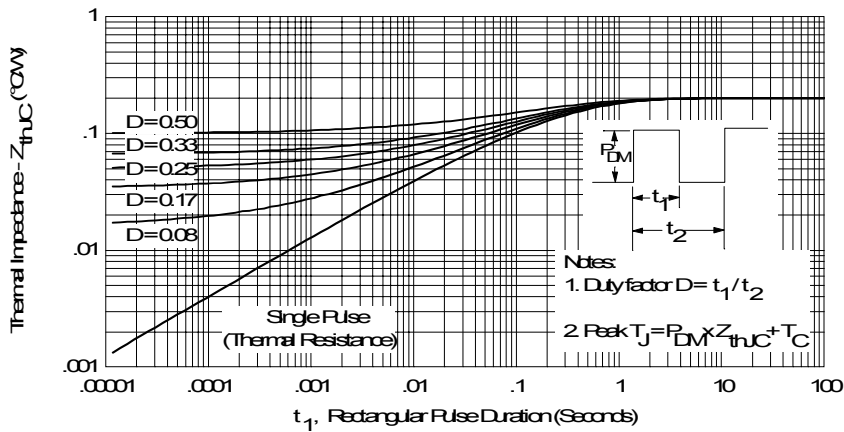


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

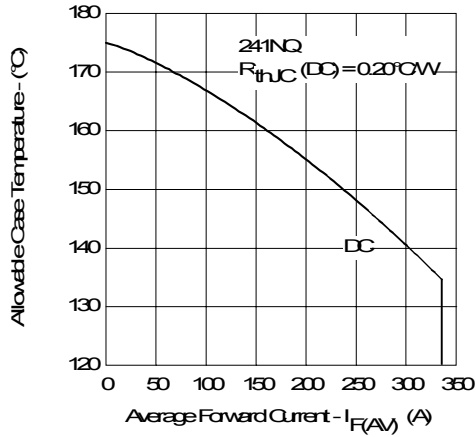


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

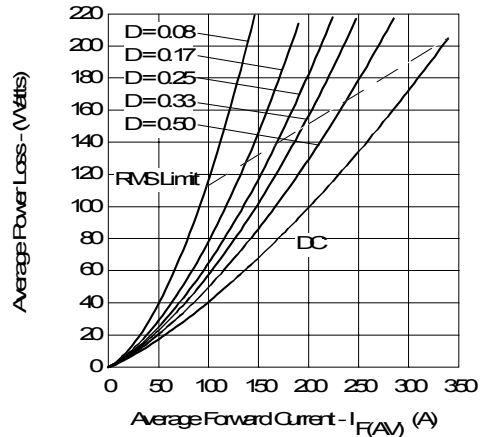


Fig. 6 - Forward Power Loss Characteristics

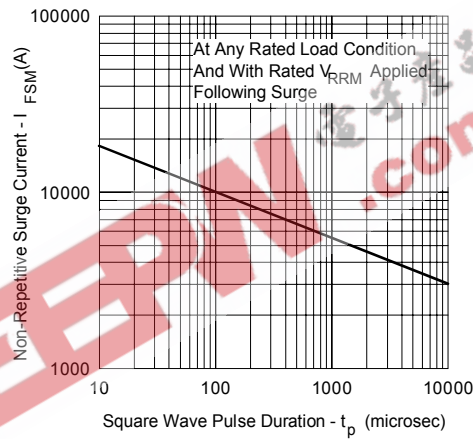


Fig. 7 - Maximum Non-Repetitive Surge Current

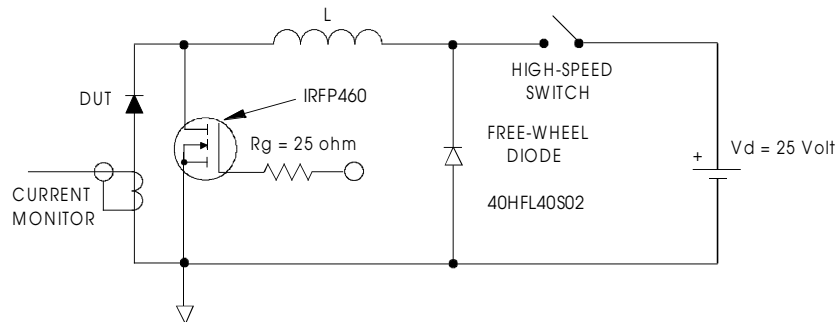


Fig. 8 - Unclamped Inductive Test Circuit

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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
IR Rectifier

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