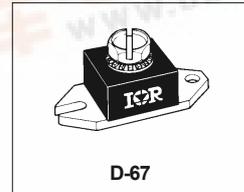


# International IR Rectifier

## 122NQ030 (R)

SCHOTTKY RECTIFIER

120 Amp



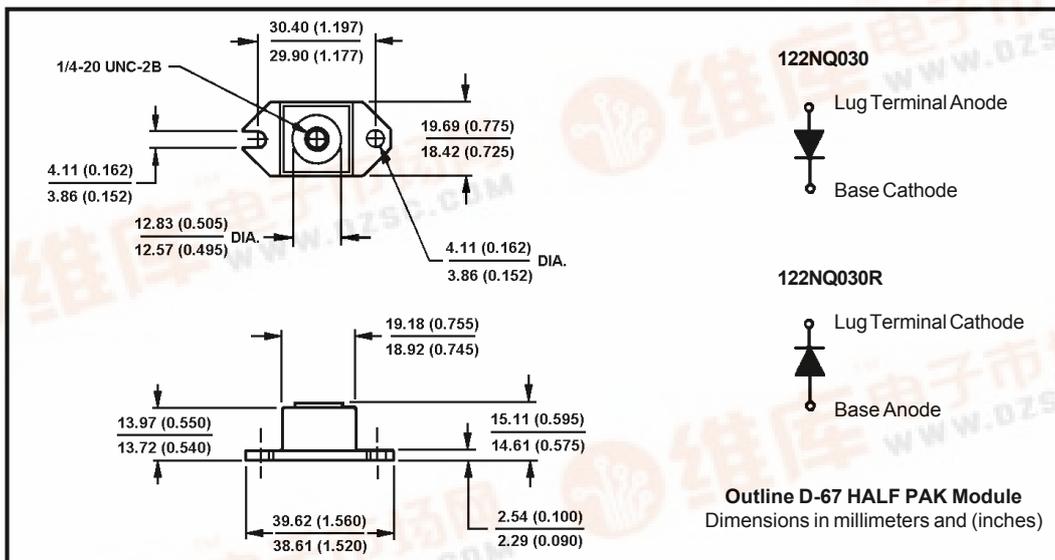
### Major Ratings and Characteristics

Characteristics	122NQ030(R)	Units
$I_{F(AV)}$ Rectangular waveform	120	A
$V_{RRM}$	30	V
$I_{FSM}$ @ $t_p=5\mu s$ sine	22,500	A
$V_F$ @120Apk, $T_j=125^\circ C$	0.41	V
$T_j$ range	-55 to 150	$^\circ C$

### Description/Features

The 122NQ030 (R) high current Schottky rectifier module 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
- Unique high power, Half-Pak module
- Replaces two 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
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability



122NQ030

Bulletin PD-2.274 rev. B 03/01



Voltage Ratings

Part number	122NQ030
V <sub>R</sub> Max. DC Reverse Voltage (V)	30
V <sub>RRM</sub> Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	122NQ	Units	Conditions
I <sub>F(AV)</sub> Max. Average Forward Current * See Fig. 5	120	A	50% duty cycle @ T <sub>C</sub> = 110° C, rectangular wave form
I <sub>FSM</sub> Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7	22,500	A	5µs Sine or 3µs Rect. pulse
	2400		10ms Sine or 6ms Rect. pulse
E <sub>AS</sub> Non-Repetitive Avalanche Energy	54	mJ	T <sub>J</sub> = 25 °C, I <sub>AS</sub> = 12 Amps, L = 0.75 mH
I <sub>AR</sub> Repetitive Avalanche Current	12	A	Current decaying linearly to zero in 1µsec Frequency limited by T <sub>J</sub> max. V <sub>A</sub> = 1.5 x V <sub>R</sub> typical

Electrical Specifications

Parameters	122NQ	Units	Conditions
V <sub>FM</sub> Max. Forward Voltage Drop (1) * See Fig. 1	0.49	V	@ 120A
	0.59	V	@ 240A
	0.41	V	@ 120A
	0.54	V	@ 240A
I <sub>RM</sub> Max. Reverse Leakage Current (1) * See Fig. 2	10	mA	T <sub>J</sub> = 25 °C
	560	mA	T <sub>J</sub> = 125 °C
C <sub>T</sub> Max. Junction Capacitance	7400	pF	V <sub>R</sub> = 5V <sub>DC</sub> , (test signal range 100Khz to 1Mhz) 25 °C
L <sub>S</sub> Typical Series Inductance	7.0	nH	From top of terminal hole to mounting plane
dv/dt Max. Voltage Rate of Change (Rated V <sub>R</sub> )	10,000	V/µs	

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

Thermal-Mechanical Specifications

Parameters	122NQ	Units	Conditions
T <sub>J</sub> Max. Junction Temperature Range	-55 to 150	°C	
T <sub>stg</sub> Max. Storage Temperature Range	-55 to 150	°C	
R <sub>thJC</sub> Max. Thermal Resistance Junction to Case	0.40	°C/W	DC operation * See Fig. 4
R <sub>thCS</sub> 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 Terminal Torque	Min.	40(35)	Non-lubricated threads
	Max.	58(50)	
	Min.	58(50)	
	Max.	86(75)	
Case Style	HALF PAK Module		

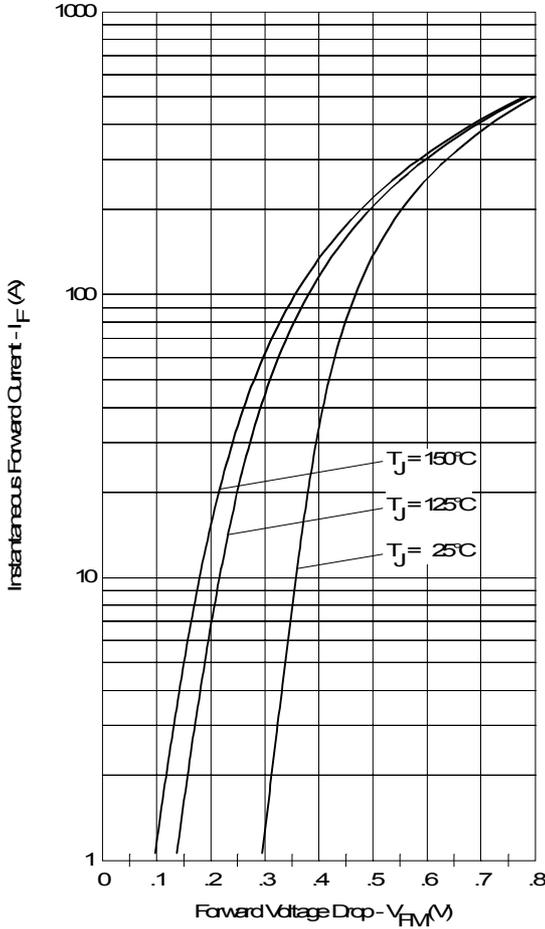


Fig. 1 - Maximum Forward Voltage Drop Characteristics

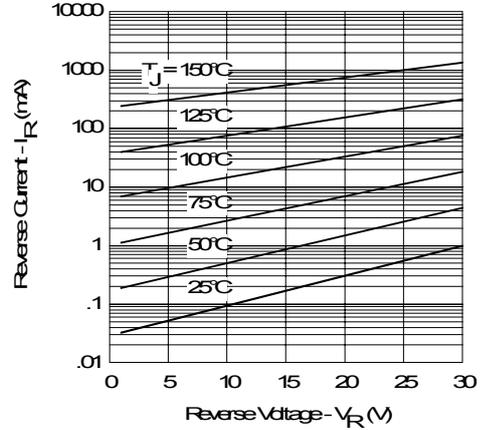


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

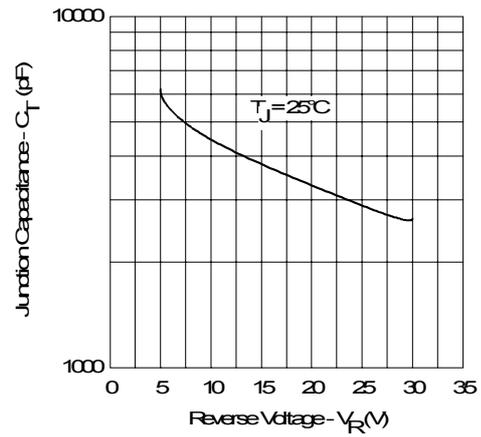


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

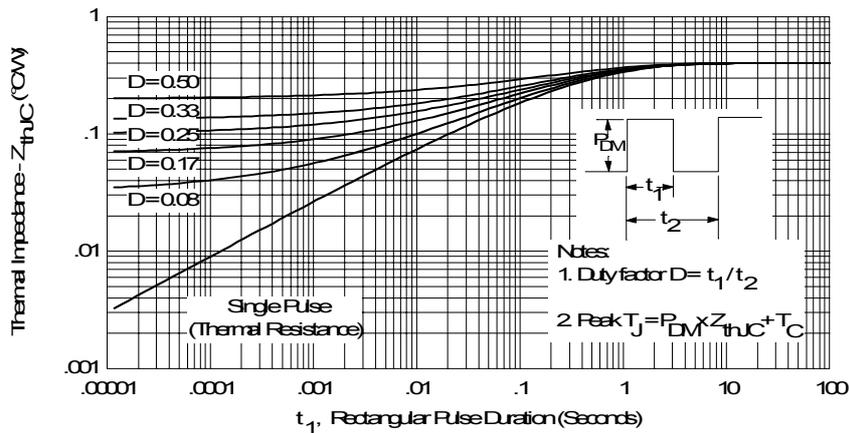


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

122NQ030

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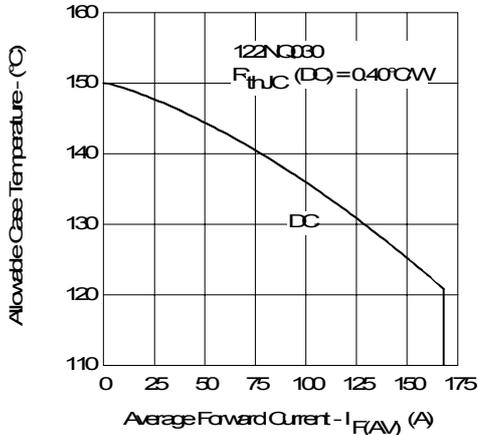


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

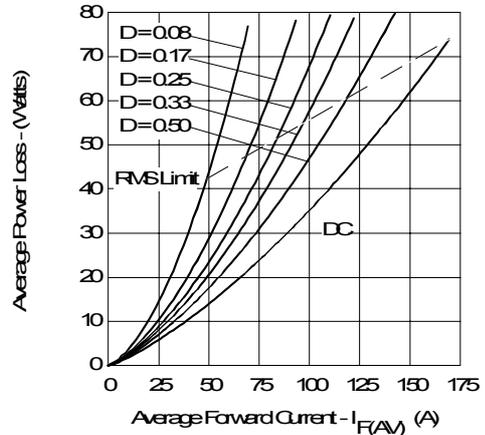


Fig. 6 - Forward Power Loss Characteristics

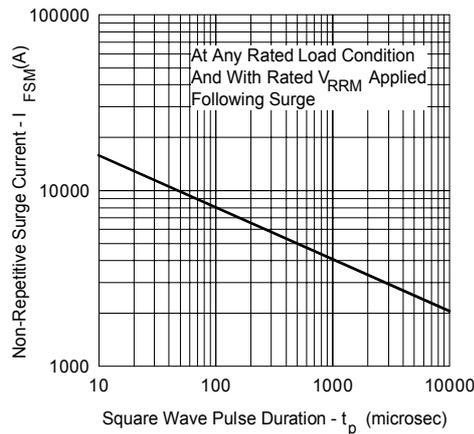


Fig. 7 - Maximum Non-Repitative Surge Current

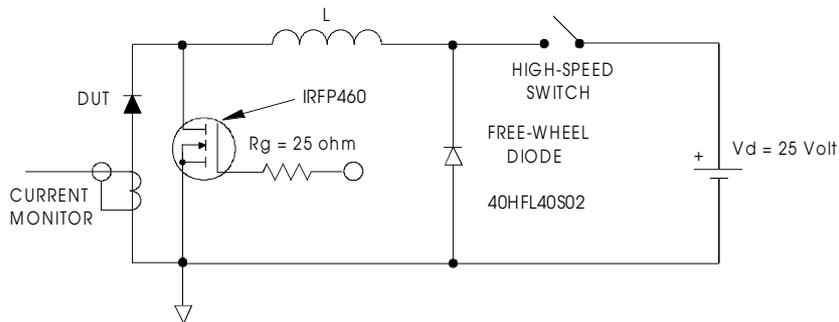


Fig. 8 - Unclamped Inductive Test Circuit