

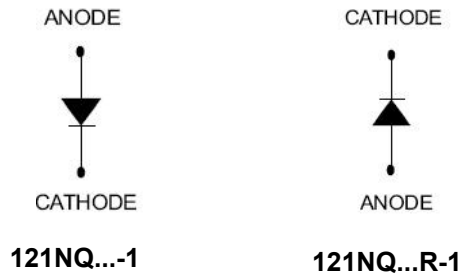
## 121NQ035/R-1 121NQ040/R-1 121NQ045/R-1 SCHOTTKY RECTIFIER



### Features

- 175°C T<sub>J</sub> operation
- Unique high power, Half-Pak module
- Replaces three 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
- Base plate: Nickel plated; Terminals: Nickel plated
- This is a Pb – Free Device
- All SMC parts are traceable to the wafer lot
- Additional testing can be offered upon request

### Circuit Diagram



### Applications

- Switching power supply
- Converters
- Free-Wheeling diodes
- Reverse battery protection

The top side is terminal, the bottom side is base plate.

### Maximum Ratings (limiting values, at 25 °C unless otherwise specified)

Characteristics	Symbol	Condition	Max.	Units	
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>	-	35	121NQ035(R)-1	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		40	121NQ040(R)-1	
DC Blocking Voltage	V <sub>R</sub>		45	121NQ045(R)-1	
Average Forward Current	I <sub>F(AV)</sub>	50% duty cycle @T <sub>C</sub> =133°C, rectangular wave form	120		A
Peak One Cycle Non-Repetitive Surge Current	I <sub>FSM</sub>	8.3 ms, half Sine pulse	2640		A
Non-Repetitive Avalanche Energy	E <sub>AS</sub>	T <sub>J</sub> =25°C, I <sub>AS</sub> =12A, L=1.12mH	81		mJ
Repetitive Avalanche Current	I <sub>AR</sub>	Current decaying linearly to zero in 1 µsec Frequency limited by T <sub>J</sub> max. V <sub>A</sub> =1.5×V <sub>R</sub> typical	12		A

**Electrical Characteristics:**

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	$V_{F1}$	@ 120A, Pulse, $T_J = 25\text{ }^\circ\text{C}$	0.65	0.70	V
		@ 240A, Pulse, $T_J = 25\text{ }^\circ\text{C}$	0.81	0.83	
	$V_{F2}$	@ 120A, Pulse, $T_J = 125\text{ }^\circ\text{C}$	0.60	0.65	V
		@ 240A, Pulse, $T_J = 125\text{ }^\circ\text{C}$	0.71	0.75	
Reverse Current*	$I_{R1}$	@ $V_R = \text{rated VR}$ $T_J = 25\text{ }^\circ\text{C}$	0.04	10	mA
	$I_{R2}$	@ $V_R = \text{rated VR}$ $T_J = 125\text{ }^\circ\text{C}$	10	90	mA
Threshold Voltage	$V_{F(TO)}$	$T_J = T_{J\text{max}}$	-	0.32	V
Forward Slope Resistance	$r_f$		-	1.37	m $\Omega$
Junction Capacitance	$C_T$	@ $V_R = 5\text{V}$ , $T_C = 25\text{ }^\circ\text{C}$ $f_{SIG} = 1\text{MHz}$	4310	5200	pF
Max. Voltage Rate of Change	dv/dt	-	-	10,000	V/ $\mu\text{s}$

\* Pulse width < 300  $\mu\text{s}$ , duty cycle < 2%

**Thermal-Mechanical Specifications:**

Characteristics	Symbol	Condition	Specification	Units	
Junction Temperature	$T_J$	-	-55 to +175	$^\circ\text{C}$	
Storage Temperature	$T_{stg}$	-	-55 to +175	$^\circ\text{C}$	
Typical Thermal Resistance Junction to Case	$R_{\theta JC}$	DC operation	0.25	$^\circ\text{C/W}$	
Typical Thermal Resistance, case to Heat Sink	$R_{\theta cs}$	Mounting surface, smooth and greased	0.07	$^\circ\text{C/W}$	
Mounting Torque	$T_M$	Non-lubricated threads	Mounting Torque	23(min) 29(max)	Kg-cm
			Terminal Torque	35(min) 46(max)	
Approximate Weight	wt	-	36	g	
Case Style	PRM1-1				

**Ratings and Characteristics Curves**

Figure 1  
Typical Forward Characteristics

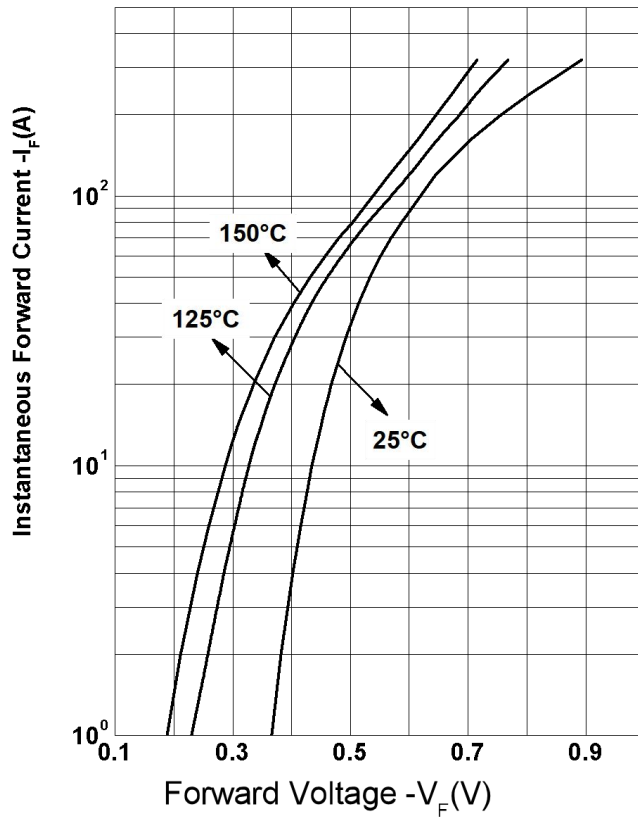


Figure 2  
Typical Reverse Characteristics

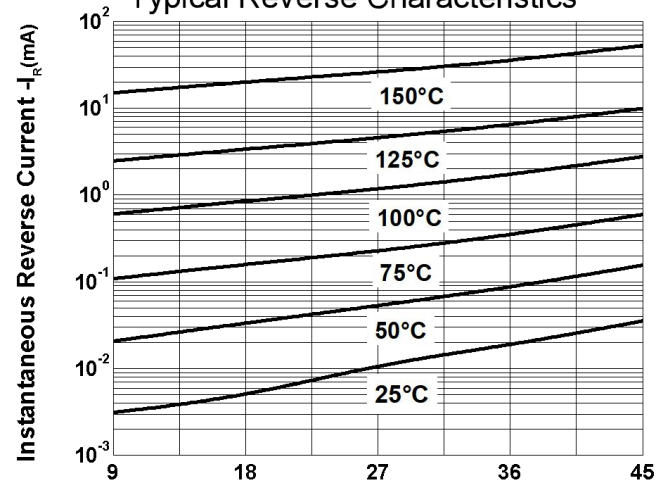
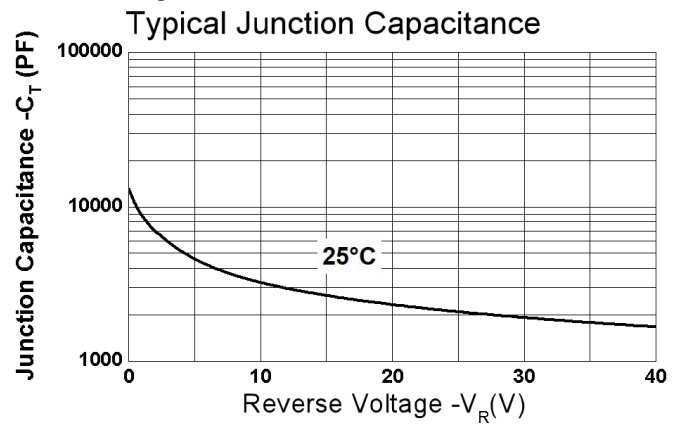


Figure 3  
Reverse Voltage -  $V_R$  (V)



**Ordering Information**

Device	Package	Shipping
121NQ SERIES	PRM1-1(Pb-Free)	27pcs/ box

**Marking Diagram**

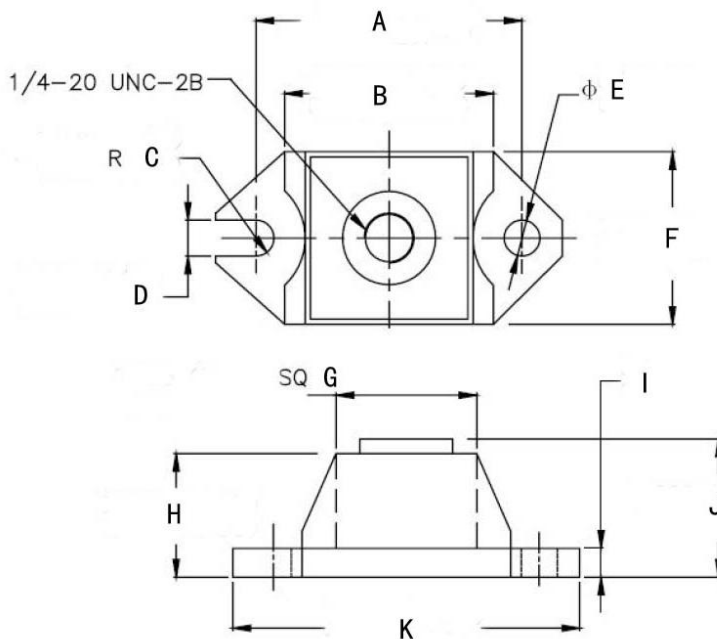


Where XXXX is YYWW

1st row SS YYWW  
2nd row 121NQ035-1  
SS = SS  
YY = Year  
WW = Week

**Cautions:** Molding resin  
Epoxy resin UL:94V-0

**Mechanical Dimensions PRM1-1 (Inches/Millimeters)**



SYMBOL	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	29.35	30.95	1.155	1.219
B	24.77	26.04	0.975	1.026
C	1.79	2.19	0.070	0.087
D	3.73	4.24	0.146	0.167
E	3.73	4.24	0.146	0.167
F	18.42	19.69	0.725	0.775
G	18.55	19.55	0.730	0.770
H	13.59	14.47	0.535	0.570
I	3.05	3.90	0.120	0.154
J	14.87	15.87	0.585	0.625
K	38.61	39.62	1.520	1.560



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