

The PRX C770 is a high voltage, high current disc pack SCR employing a high di/dt, distributed gate structure to optimize turn-on speed. This gate design allows the SCR to be reliably operated at high di/dt and dv/dt conditions in inverter applications to 1KHz operating frequency.

FEATURES:

- Fast Turn-Off Time
- High di/dt Capability
- High dv/dt Capability
- Hermetic Ceramic Package
- Excellent Surge and I²t Ratings

APPLICATIONS:

- DC-AC Inverters
- Pulse Power Switches

ORDERING INFORMATION

Select the complete Part Number using the table below.
EXAMPLE: **PRX C770PN** is a 1800V - 2100A SCR with 250ma I_{GT} and 12 inch gate and cathode potential leads.

PART	Voltage Rating V _{DRM} -V _{RRM}	Voltage Code	Current Rating I _{tavg}	Turn-Off t _q	Gate I _{GT}	Leads
PRX C770	1800	PN	2100	60us	250ma	12"
	1600	PM				
	1400	PD				

Absolute Maximum Ratings

Characteristic	Symbol	Rating	Units
Repetitive Peak Voltage	$V_{DRM}-V_{RRM}$	1400 - 1800	Volts
Average On-State Current, $T_C=70^{\circ}C$	$I_{T(Avg.)}$	2100	A
RMS On-State Current, $T_C=70^{\circ}C$	$I_{T(RMS)}$	3299	A
Average On-State Current, $T_C=50^{\circ}C$	$I_{T(Avg.)}$	2600	A
RMS On-State Current, $T_C=50^{\circ}C$	$I_{T(RMS)}$	4084	A
Peak One Cycle Surge Current, 60Hz, $V_R=0V$	I_{TSM}	35,000	A
Peak One Cycle Surge Current, 50Hz, $V_R=0V$	I_{TSM}	32,998	A
Fuse Coordination I^2t , 60Hz	I^2t	5.10E+06	A ² s
Fuse Coordination I^2t , 50Hz	I^2t	5.44E+06	A ² s
Critical Rate-of-Rise of On-State Current Repetitive $.67 \cdot V_{DRM}$	di/dt	300	A/us
Critical Rate-of-Rise of On-State Current Non-Repetitive $.67 \cdot V_{DRM}$	di/dt	500	A/us
Peak Gate Power, 100us	P_{GM}	44	Watts
Average Gate Power	$P_{G(avg)}$	12	Watts
Operating Temperature	T_j	-40 to+125	$^{\circ}C$
Storage Temperature	$T_{Stg.}$	-50 to+150	$^{\circ}C$
Approximate Weight		3.5	lb
		1.6	Kg
Mounting Force		9000-10000	lbs
		40 - 44.5	KNewtons

Information presented is correct to the knowledge and capabilities of the manufacturer. This information is subject to change without notice. The manufacturer makes no claim as to suitability for use, reliability, capability or future availability of this product.

Electrical Characteristics, T_j=25°C unless otherwise specified

Characteristic	Symbol	Test Conditions	Rating			Units
			min	typ	max	
Repetitive Peak Forward Leakage Current	I _{DRM}	T _j =125°C, V _{DRM} =Rated			150	ma
Repetitive Peak Reverse Leakage Current	I _{RPM}	T _j =125°C, V _{RPM} =Rated			150	ma
Peak On-State Voltage	V _{TM}	T _j =125°C, I _{TM} =2000A			1.85	V
V _{TM} Model, Low Level	V ₀	T _j =125°C			1.271	V
V _{TM} = V ₀ + r•I _{TM}	r	15% I _{TM} - π•I _{TM}			0.255	mΩ
V _{TM} Moc 4-Term	A	T _j =125°C			-1.657	
V _{TM} = A + B•Ln(I _{TM}) +	B	15% I _{TM} - I _{TSM}			0.527	
C•(I _{TM}) + D•(I _{TM}) ^{1/2}	C				0.000243	
	D				-0.02197	
Turn-On Delay Time	t _d	V _D = 0.5•V _{DRM} Gate Drive: 40V - 20Ω		2		us
Turn-Off Time	t _q	T _j =125°C dv/dt = 400V/us to 80% V _{DRM}		60		us
Reverse Recovery Current	I _{R(Rec)}	T _j =125°C 1500A -10A/us				A
Reverse Recovery Charge	Q _{RR}					uCoul
dv/dt _(crit)	dv/dt	T _j =125°C Exp. Waveform V _D =80% Rated	1000			V/us
Gate Trigger Current	I _{GT}	T _j =25°C V _D = 12V	30	150	250	ma
Gate Trigger Voltage	V _{GT}		0.8	2.0	4.0	V
Peak Reverse Gate Voltage	V _{GRM}				10	V

Thermal Characteristics

Characteristic	Symbol	Test Conditions	Rating			Units
			min	typ	max	
Thermal Resistance						
Junction to Case	RΘ _{jc}	Double side cooled		0.009	0.010	°C/Watt
Case to Sink	RΘ _{cs}	Double side cooled		0.0015	0.002	°C/Watt

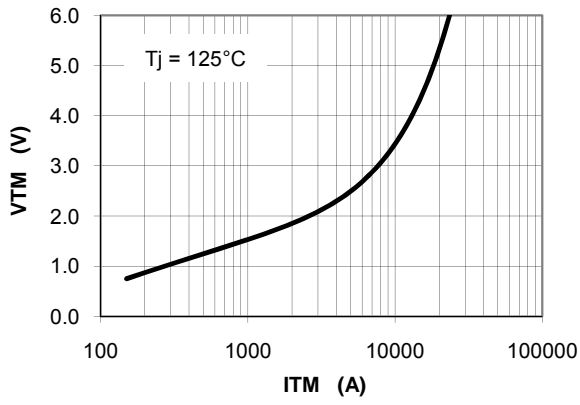
Thermal Impedance Model ZΘ_{jc} Double side cooled

$$\Theta_{jc}(t) = \sum(A(N) \cdot (1 - \exp(-t/\text{Tau}(N))))$$

where: N = 1 2 3 4

A(N) =	1.13E-04	7.51E-04	3.53E-03	5.61E-03
Tau(N) =	6.54E-04	1.48E-02	1.89E-01	1.20E+00

Maximum On-State Voltage Drop



MAXIMUM TRANSIENT THERMAL IMPEDANCE

