

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 IGT and 12 inch gate and cathode potential leads.

PART	Voltage Rating	Voltage Code	Current Rating	Turn-Off	Gate	Leads
	V _{DRM} -V _{RRM}		I _{tavg}	T _q	I _{GT}	
PRX C770	2000	L	2100	60us	250ma	12"
	1800	PN				
	1600	PM				
	1400	PD				

Absolute Maximum Ratings

Characteristic	Symbol	Rating	Units
Repetitive Peak Voltage	$V_{DRM}-V_{RRM}$	1400 - 2000	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^2s
Fuse Coordination I^2t , 50Hz	I^2t	5.44E+06	A^2s
Critical Rate-of-Rise of On-State Current	di/dt	300	A/us
Repetitive $.67 \cdot V_{DRM}$			
Critical Rate-of-Rise of On-State Current	di/dt	500	A/us
Non-Repetitive $.67 \cdot V_{DRM}$			
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, Tj=25°C unless otherwise specified

Characteristic	Symbol	Test Conditions	Rating			Units
			min	typ	max	
Repetitive Peak Forward Leakage Current	I_{DRM}	Tj=125°C, V_{DRM} =Rated			150	ma
Repetitive Peak Reverse Leakage Current	I_{RRM}	Tj=125°C, V_{RRM} =Rated			150	ma
Peak On-State Voltage	V_{TM}	Tj=125°C, I_{TM} =2000A			1.85	V
V_{TM} Model, Low Level	V_0	Tj=125°C			1.271	V
$V_{TM} = V_0 + r \cdot I_{TM}$	r	15% $I_{TM} - \pi \cdot I_{TM}$			0.255	mΩ
V_{TM} Moc 4-Term	A	Tj=125°C			-1.657	
$V_{TM} = A + B \cdot \ln(I_{TM}) +$	B	15% $I_{TM} - I_{TSM}$			0.527	
$C \cdot (I_{TM}) + D \cdot (I_{TM})^{1/2}$	C				0.000243	
	D				-0.02197	
Turn-On Delay Time	t_d	$V_D = 0.5 \cdot V_{DRM}$ Gate Drive: 40V - 20Ω		2		us
Turn-Off Time	tq	Tj=125°C dv/dt = 400V/us to 80% V_{DRM}		60		us
Reverse Recovery Current	$I_{R(Rec)}$	Tj=125°C 1500A -10A/us				A
Reverse Recovery Charge	Q_{RR}					uCoul
dv/dt _(crit)	dv/dt	Tj=125°C Exp. Waveform $V_D = 80\%$ Rated	1000			V/us
Gate Trigger Current	I_{GT}	Tj=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	$R\theta_{jc}$	Double side cooled		0.009	0.010	°C/Watt
Case to Sink	$R\theta_{cs}$	Double side cooled		0.0015	0.002	°C/Watt

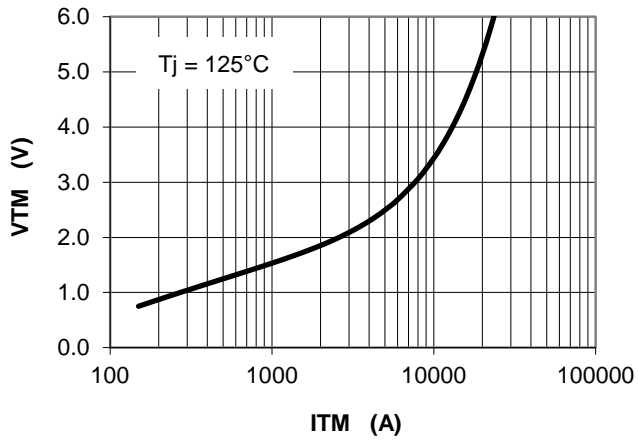
Thermal Impedance Model $Z\theta_{jc}$ Double side cooled

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

where: N = 1 2 3 4

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

Maximum On-State Voltage Drop



MAXIMUM TRANSIENT THERMAL IMPEDANCE

