

The TAS7 is High Voltage version of the PRX TAS0 high current disc pack SCR. It employs a Single-Bar, amplifying gate structure. This amplifying gate design allows the SCR to be reliably operated at high di/dt and high dv/dt conditions in phase control applications.

#### FEATURES:

- Low On-State Voltage
- High di/dt Capability
- High dv/dt Capability
- Hermetic Ceramic Package
- Excellent Surge and I<sup>2</sup>t Ratings

#### APPLICATIONS:

- DC Power Supplies
- Motor Controls
- AC Soft-Starters

#### ORDERING INFORMATION

Select the complete 12 digit Part Number using the table below.  
EXAMPLE: TAS7441603DH is a 4400V-1650A SCR with 200ma IGT and 12 inch gate and cathode potential leads.

PART	Voltage Rating $V_{DRM}-V_{RRM}$	Voltage Code	Current Rating $I_{TAVG}$	Current Code	Turn-Off $T_q$	Gate $I_{GT}$	Leads
<b>TAS7</b>	4400V	<b>44</b>	1650	<b>16</b>	<b>0</b>	<b>3</b>	<b>DH</b>
	4200V	<b>42</b>					
	4000V	<b>40</b>			550us typ.	200ma	12"
	3600V	<b>36</b>					
	3200V	<b>32</b>					

Revised: 3/26/2010

**Absolute Maximum Ratings**

Characteristic	Symbol	Rating	Units
Repetitive Peak Voltage	$V_{DRM}-V_{RRM}$	4400	Volts
Non-repetitive Transient Peak Reverse Voltage	$V_{RSM}$	$V_{RRM} + 100$	Volts
Average On-State Current, $T_C=70^\circ\text{C}$	$I_{T(Avg.)}$	1650	A
RMS On-State Current, $T_C=70^\circ\text{C}$	$I_{T(RMS)}$	2592	A
Average On-State Current, $T_C=55^\circ\text{C}$	$I_{T(Avg.)}$	1900	A
RMS On-State Current, $T_C=55^\circ\text{C}$	$I_{T(RMS)}$	2985	A
Peak One Cycle Surge Current, 60Hz, $V_R=0V$	$I_{TSM}$	22,000	A
Peak One Cycle Surge Current, 50Hz, $V_R=0V$	$I_{TSM}$	20,742	A
Fuse Coordination $I^2t$ , 60Hz	$I^2t$	2.02E+06	$A^2s$
Fuse Coordination $I^2t$ , 50Hz	$I^2t$	2.15E+06	$A^2s$
Critical Rate-of-Rise of On-State Current	di/dt	100	A/us
Repetitive			
Critical Rate-of-Rise of On-State Current	di/dt	300	A/us
Non-Repetitive			
Peak Gate Power, 100us	$P_{GM}$	16	Watts
Average Gate Power	$P_{G(avg)}$	5	Watts
Operating Temperature	$T_j$	-40 to+125	$^\circ\text{C}$
Storage Temperature	$T_{Stg.}$	-50 to+150	$^\circ\text{C}$
Approximate Weight		2.1	lb
		0.95	Kg
Mounting Force		9000 - 11000	lbs
		40.0 - 48.9	Knewtons

Information presented is based upon limited testing or projected capabilities. 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.

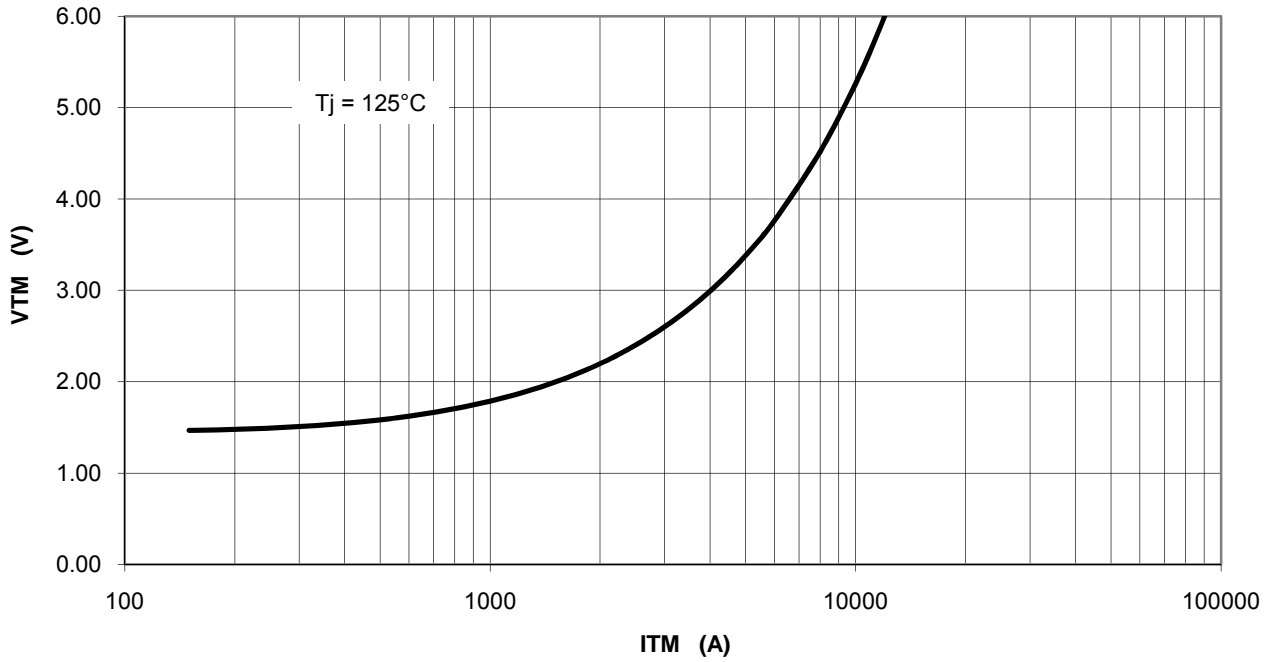
**Electrical Characteristics, T<sub>j</sub>=25°C unless otherwise specified**

Characteristic	Symbol	Test Conditions	Rating			Units
			min	typ	max	
Repetitive Peak Forward Leakage Current	I <sub>DRM</sub>	T <sub>j</sub> =125°C, V <sub>DRM</sub> =Rated			250	ma
Repetitive Peak Reverse Leakage Current	I <sub>RDM</sub>	T <sub>j</sub> =125°C, V <sub>RDM</sub> =Rated			250	ma
Peak On-State Voltage	V <sub>TM</sub>	T <sub>j</sub> =125°C, I <sub>TM</sub> =1500A			2.00	V
V <sub>TM</sub> Model, Low Level	V <sub>0</sub>	T <sub>j</sub> =125°C			1.39	V
V <sub>TM</sub> = V <sub>0</sub> + r•I <sub>TM</sub>	r	15% I <sub>TM</sub> - π•I <sub>TM</sub>			0.401	mΩ
V <sub>TM</sub> Model, High Level	V <sub>0</sub>	T <sub>j</sub> =125°C			1.60	V
V <sub>TM</sub> = V <sub>0</sub> + r•I <sub>TM</sub>	r	π•I <sub>TM</sub> - I <sub>TSM</sub>			0.364	mΩ
V <sub>TM</sub> Model, 4-Term	A	T <sub>j</sub> =125°C			1.779	
V <sub>TM</sub> = A + B•Ln(I <sub>TM</sub> ) +	B	15%I <sub>TM</sub> - I <sub>TSM</sub>			-0.102	
C•(I <sub>TM</sub> ) + D•(I <sub>TM</sub> ) <sup>1/2</sup>	C				3.16E-04	
	D				1.26E-02	
Turn-On Delay Time	t <sub>d</sub>	V <sub>D</sub> = 0.5•V <sub>DRM</sub> Gate Drive: 40V - 20Ω			2.5	us
Turn-Off Time	t <sub>q</sub>	T <sub>j</sub> =125°C dv/dt = 20V/us to 80% V <sub>DRM</sub>			550	us
dv/dt <sub>(crit)</sub>	dv/dt	T <sub>j</sub> =125°C Exp. Waveform V <sub>D</sub> =80% Rated			800	V/us
Gate Trigger Current	I <sub>GT</sub>	T <sub>j</sub> =25°C V <sub>D</sub> = 12V	30	125	200	ma
Gate Trigger Voltage	V <sub>GT</sub>		0.8	2.0	4.5	V
Peak Reverse Gate Voltage	V <sub>GRM</sub>				5	V

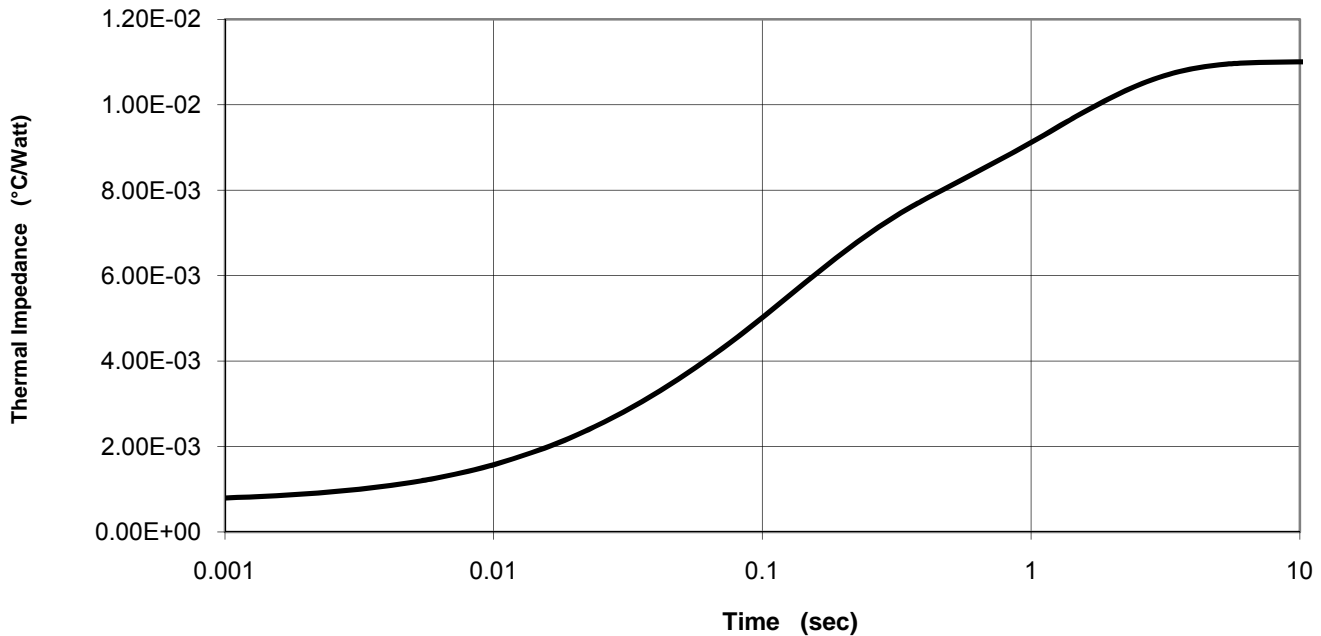
**Thermal Characteristics**

Characteristic	Symbol	Test Conditions	Rating			Units	
			min	typ	max		
Thermal Resistance							
Junction to Case	Rθ <sub>jc</sub>	Double side cooled		0.01	0.011	°C/Watt	
Case to Sink	Rθ <sub>cs</sub>	Double side cooled		0.003	0.005	°C/Watt	
Thermal Impedance Model	Zθ <sub>jc</sub>	Double side cooled					
Zθ <sub>jc</sub> (t) = Σ(A(N)•(1-exp(-t/Tau(N))))		where:	N =	1	2	3	4
			A(N) =	7.00E-04	1.00E-03	5.00E-03	4.30E-03
			Tau(N) =	8.00E-05	1.90E-02	1.10E-01	1.21E+00

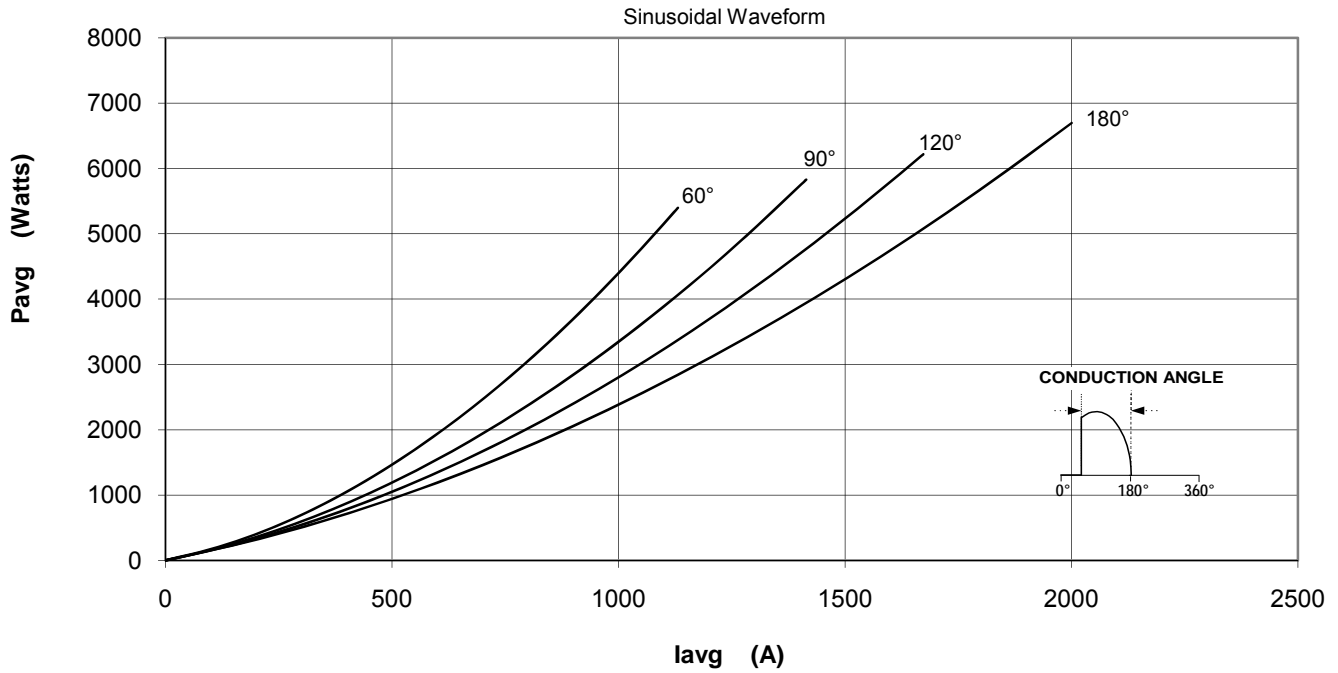
### Maximum On-State Voltage Drop



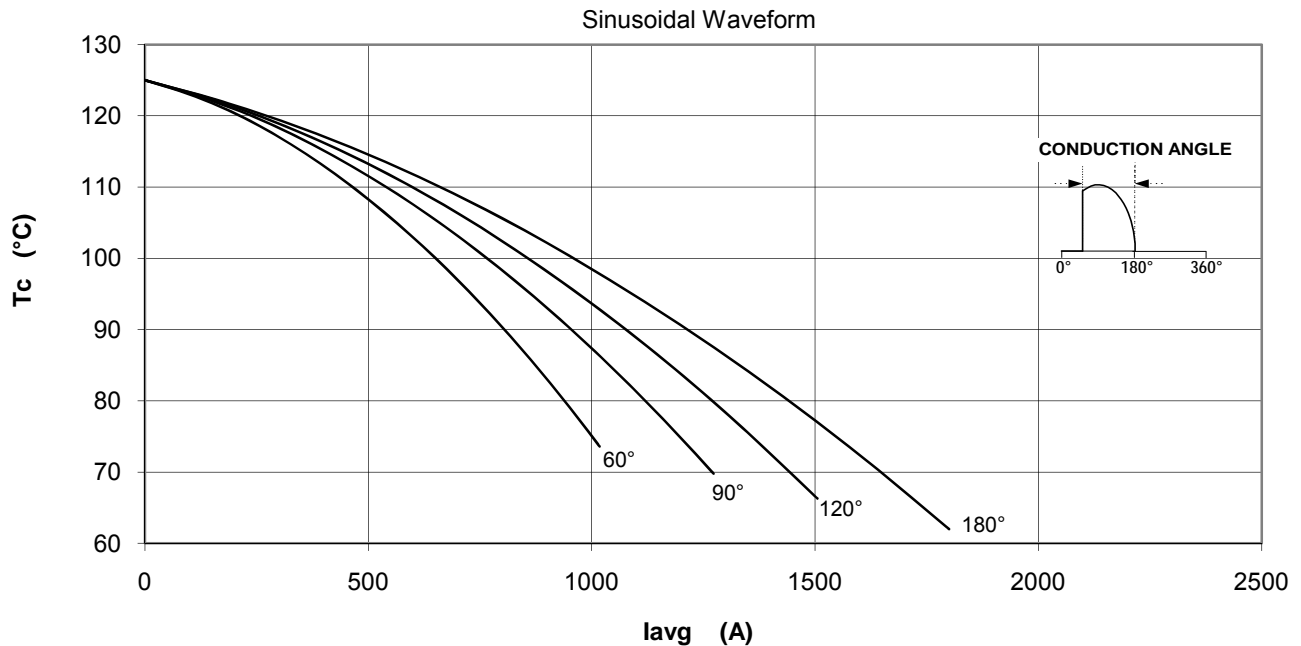
### MAXIMUM TRANSIENT THERMAL IMPEDANCE



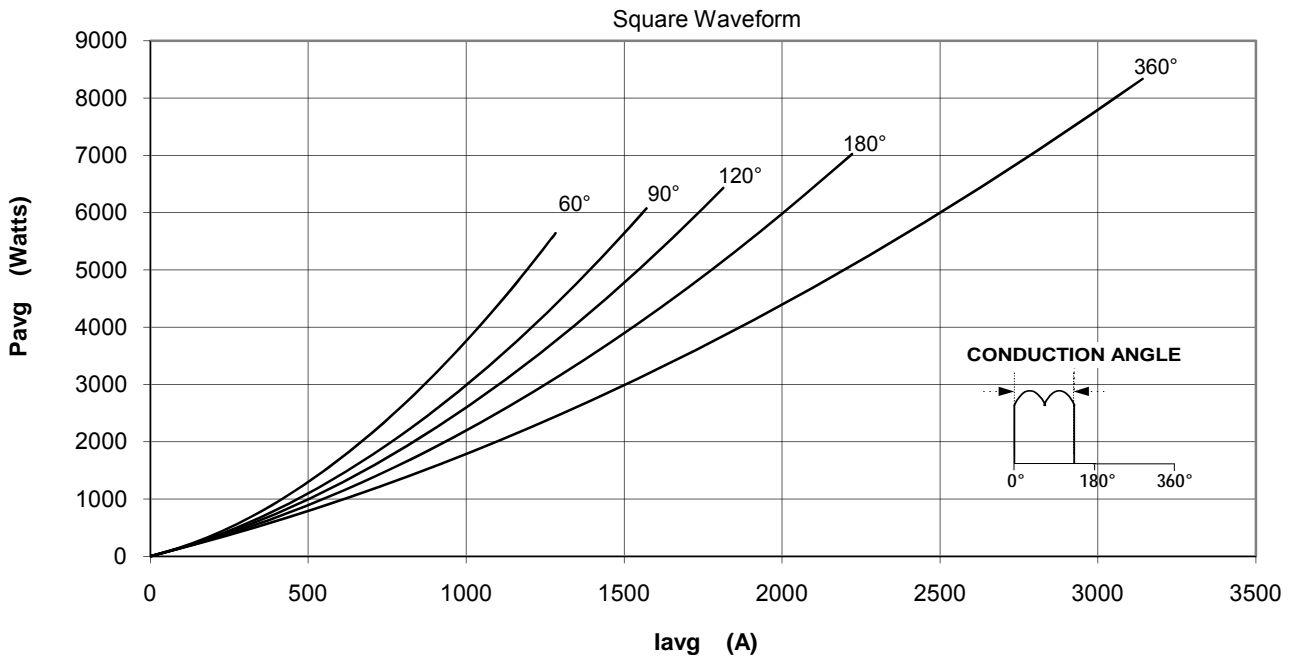
### Maximum On-State Power Dissipation



### Maximum Allowable Case Temperature



### Maximum On-State Power Dissipation



### Maximum Allowable Case Temperature

