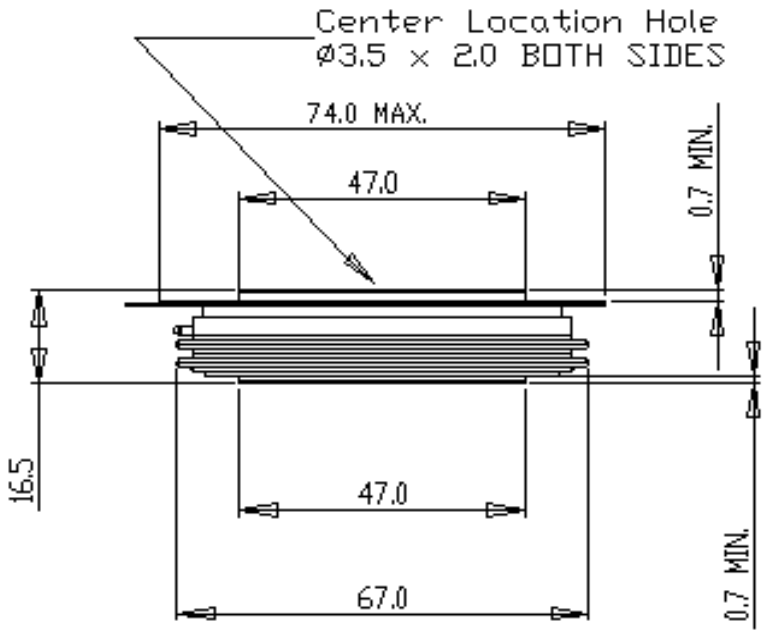
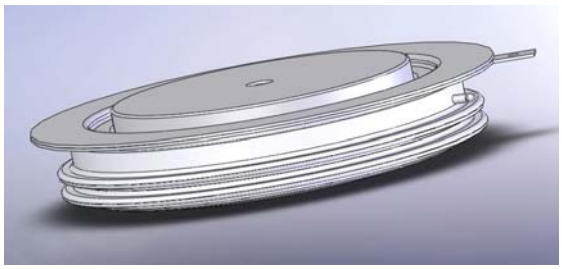
T9S0__2803

Phase Control Thyristor

Powerex, Inc., 173 Pavilion Ln, Youngwood, Pennsylvania 15697-1800 (724)925-7272 www.pwrx.com

2850 Amperes 800 Volts





The T9S0 SCR employs a Center-Fired amplifying gate structure which 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^2t Ratings

APPLICATIONS:

- DC Power Supplies
- Plating Supplies
- Welding Supplies

ORDERING INFORMATION

Select the complete 12 digit Part Number using the table below.
EXAMPLE: **T9S0082803DH** is an 800V-2850A SCR with 200ma IGT and 12 inch gate and cathode potential leads.

PART	Voltage Rating	Voltage Code	Current Rating	Current Code	Turn-Off	Gate	Leads
	V_{DRM}-V_{RRM}		I_{tavg}		Tq	I_{GT}	
T9S0	800V	**08**	2850A	**28**	**0**	**3**	**DH**
	600V	**06**					
	400V	**04**			400us typ.	200ma	12"

Revised: 9/22/2009

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Absolute Maximum Ratings

Characteristic	Symbol	Rating	Units
Repetitive Peak Voltage	V_{DRM}-V_{RRM}	400 - 800	Volts
Average On-State Current, T_C=70°C	$I_{T(Avg.)}$	2850	A
RMS On-State Current, T_C=72°C	$I_{T(RMS)}$	4477	A
Average On-State Current, T_C=55°C	$I_{T(Avg.)}$	3300	A
RMS On-State Current, T_C=55°C	$I_{T(RMS)}$	5184	A
Peak One Cycle Surge Current, 60Hz, V_R=0V	I_{TSM}	37,000	A
Peak One Cycle Surge Current, 50Hz, V_R=0V	I_{TSM}	34,884	A
Fuse Coordination I^2t, 60Hz	I^2t	5.70E+06	A^2s
Fuse Coordination I^2t, 50Hz	I^2t	6.08E+06	A^2s
Critical Rate-of-Rise of On-State Current Repetitive	di/dt	100	A/us
Critical Rate-of-Rise of On-State Current Non-Repetitive	di/dt	200	A/us
Critical Rate-of-Rise of Off-State Voltage Linear to ⅔•VDRM	dv/dt	1000	V/us
Peak Gate Power, 100us	P_{GM}	16	Watts
Average Gate Power	$P_{G(avg)}$	5	Watts
Operating Temperature	Tj	-20 to+125	°C
Storage Temperature	$T_{Stg.}$	-50 to+150	°C
Approximate Weight		0.65	lb
		0.29	Kg
Mounting Force		5500-6000	lbs
		24.5 - 26.7	Knewtons

Electrical Characteristics, Tj=25°C unless otherwise specified

			Rating			
Characteristic	**Symbol**	**Test Conditions**	**min**	**typ**	**max**	**Units**
Repetitive Peak Leakage Current	I_{DRM}/I_{RRM}	Tj=125°C, V_{DRM}=Rated			150	ma
Peak On-State Voltage	V_{TM}	Tj=25°C, I_{TM}=1500A			1.15	V
V_{TM} Model, Low Level	V_0	Tj=125°C			0.722	V
$VTM = V_O + r \bullet I_{TM}$	r	15% I_{TM} - π•I_{TM}			8.83E-02	mΩ
V_{TM} Model, High Level	V_0	Tj=125°C			0.784	V
$VTM = V_O + r \bullet I_{TM}$	r	π•I_{TM} - I_{TSM}			7.11E-02	mΩ
V_{TM} Model, Hi 4-Term	A	Tj=125°C			-0.342	
$V_{TM} = A + B \bullet Ln(I_{TM}) +$	B	15%I_{TM} - I_{TSM}			0.199	
$C \bullet (I_{TM}) + D \bullet (I_{TM})^{½}$	C				9.66E-05	
	D				-0.00962	
Turn-On Delay Time	t_d	V_D = 0.5•V_{DRM} Gate Drive: 40V - 20Ω		1.5		us
Turn-Off Time	tq	Tj=125°C dv/dt = 20V/us to 80% V_{DRM}		400		us
Gate Trigger Current	I_{GT}	Tj=25°C V_D = 12V	30	90	200	ma
Gate Trigger Voltage	V_{GT}		0.6	1.6	3.0	V
Peak Reverse Gate Voltage	V_{GRM}				5	V

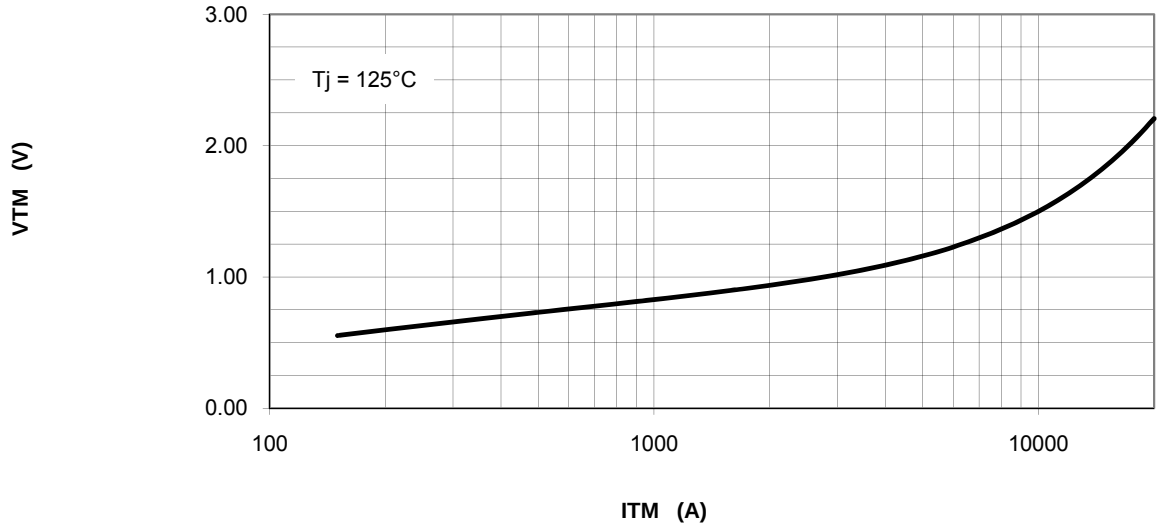
Thermal Characteristics

			Rating	
Characteristic	**Symbol**	**Test Conditions**	**max**	**Units**
Thermal Resistance				
Junction to Case	$R\Theta_{jc}$	Double side cooled	0.015	°C/Watt
Case to Sink	$R\Theta_{cs}$	Double side cooled	0.0025	°C/Watt
Thermal Impedance Model	$Z\Theta_{jc}$	Double side cooled		

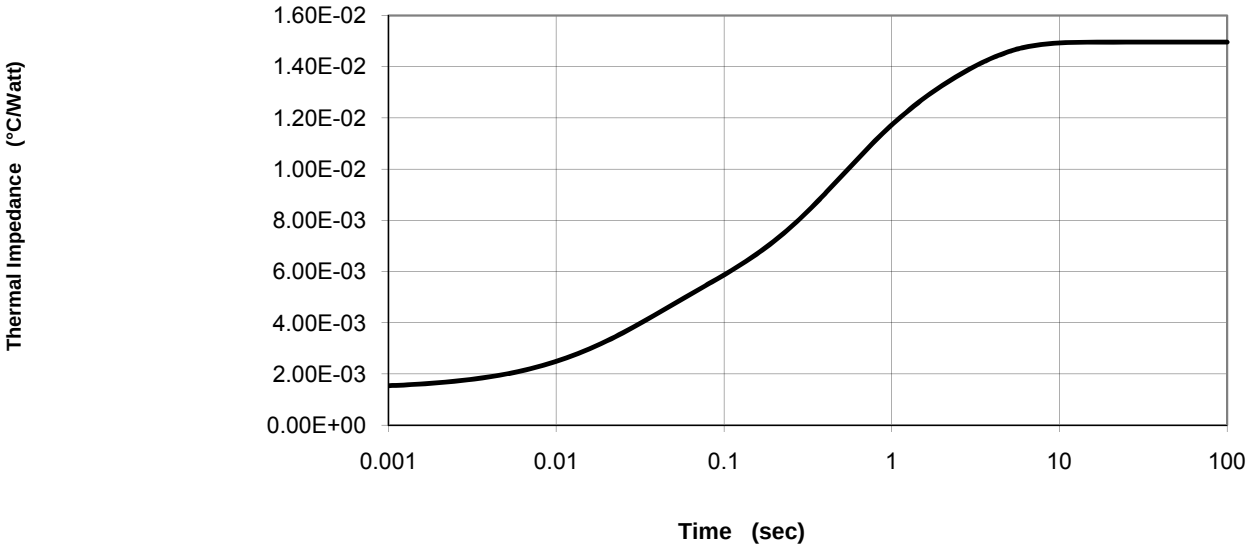
$$Z\Theta_{jc}(t) = \Sigma(A(N) \bullet (1-\exp(-t/Tau(N))))$$ where:

N =	1	2	3	4
A(N) =	1.42E-03	2.97E-03	6.07E-03	4.50E-03
Tau(N) =	5.95E-05	2.76E-02	4.01E-01	2.00E+00

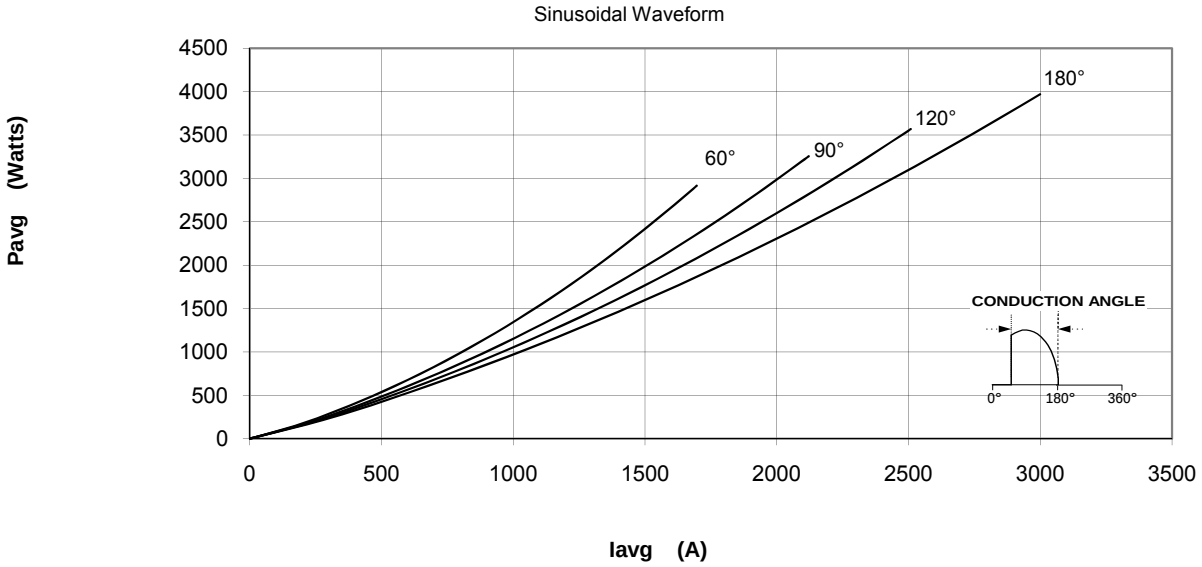
Maximum On-State Voltage Drop



MAXIMUM TRANSIENT THERMAL IMPEDANCE

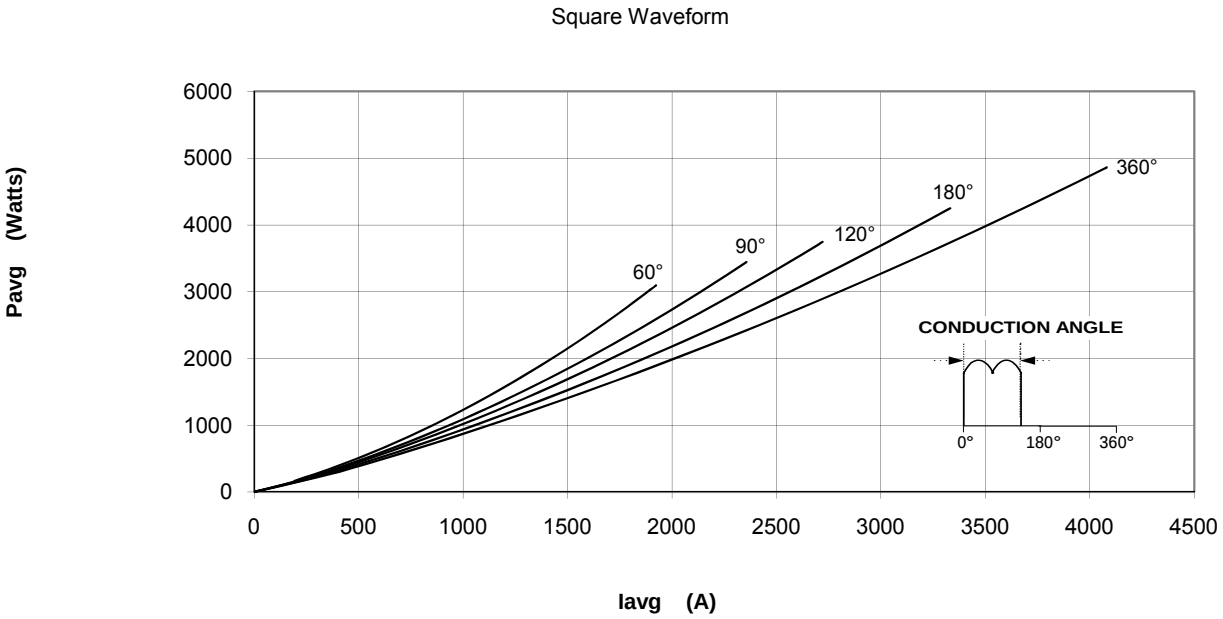


Maximum On-State Power Dissipation



Maximum Allowable Case Temperature

Maximum On-State Power Dissipation



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