

Features

1630A, 5000V
100kA Pulse Current Capability
12kA/ μ S di/dt Pulse Capability
Low Power Gate Driver

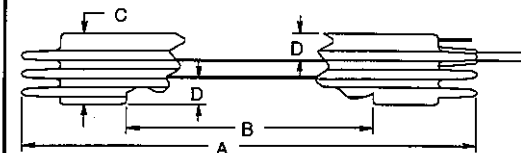
Description

The SPT230A thyristor is optimized for pulse power applications. It features a highly indented cathode / pilot gate combinations which enable extremely high pulse power di/dt driven with low gate power.

The design utilizes a revolutionary "Light Silicon Sandwich" or LSS technology, a new termination technique which eliminates heavy refractory metal as a substrate but still employs the alloyed anode interface necessary for high surge current duty. This light weight plastic package allows the insertion of liquid cooled chillers. Copper inserts can be supplied for adjoining commercially available flat surfaced heat dissipators.

Package

A = 4.437 in, B = 2.50 in, C = 0.797 in, D = 0.306 in
Notes - 1, 2 & 3



MODEL RATING AVAILABILITY

PART NUMBER	V _{DRM}	V _{RRM}
SPT230AHT	5000	5000
SPT230AHS	4900	4900
SPT230AHR	4800	4800
SPT230AHP	4700	4700
SPT230AHM	4600	4600

Limiting Characteristics and Ratings

At T_J = 115°C, Unless Otherwise Specified

	SYMBOL		UNITS
Repetitive Peak Off State Voltage.....	V _{DRM}	5000	V
Repetitive Peak Reverse Voltage.....	V _{RRM}	5000	V
Average On-State Current (T _C =70°C)	I _{T(AV)}	1630	A
Peak Half-Cycle Non-Repetitive Surge Current (8.3ms / 1.5ms).....	I _{TSM}	24.5 / 45	kA
Critical Gate Trigger Voltage (V _D = 12V, T _J = 25°C).....	V _{GT}	5	V
Critical Gate Trigger Current (V _D = 12V, T _J = 25°C)	I _{GT}	150	mA
Non-Trigger Gate Current (V _D = 2000V)	I _{GD}	15	mA
Non-Trigger Gate Voltage (V _D = 2000V)	V _{GD}	0.8	V
Open Circuit Gate Voltage	V _{OC}	100	V
Short Circuit Gate Current	I _{SS}	20	A
Gate Pulse Duration and Rise Time		10 μ s duration / 0.1 μ s rise time	
Turn-Off Time (5A/ μ s, -100V, 20V/ μ s to 2000V)	T _{off}	400	μ s
Turn-On Delay (V _D = 50%V _{DRM} , T _J = 115°C)	t _d	4	μ s
Rate of Change of Voltage (V _D =70% V _{DRM})	dv/dt	1000	V/ μ s
Rate of Change of Current (V _D =50% V _{DRM} , single shot capability)	di/dt	12	kA/ μ s
Operating and Storage Temperature.....	T _J , T _{STG}	0 to +115	°C
Mounting Force.....	F	5600-7200	lbs

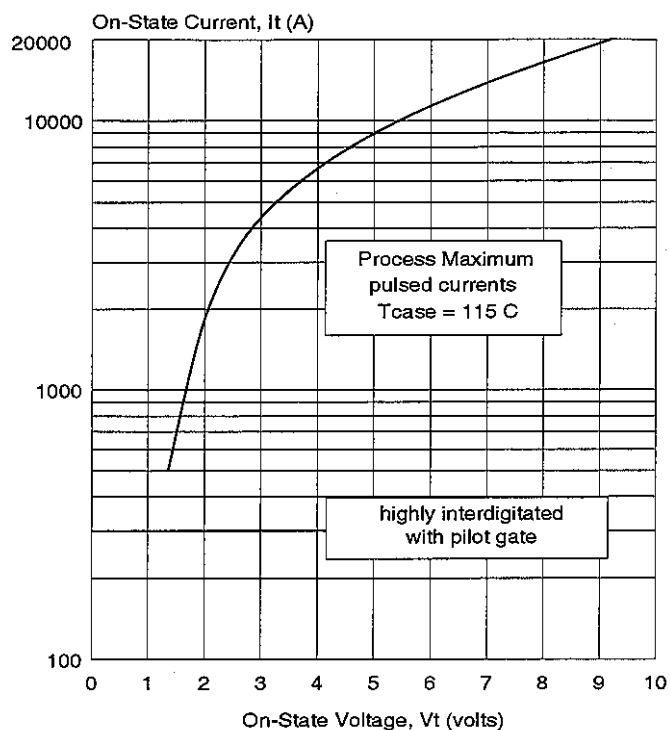
Notes

- Optional external posts dwg. # 0215B8332; Ni plated copper, 0.35" thick each.
- Compressed thickness including external post is 0.88" - 0.89" (22.35mm - 22.61mm).
- Weigh xx oz., xx lbs with posts.

Electrical Specifications

At T_J = 115°C, Unless Otherwise Specified

PARAMETERS	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Peak Off State Blocking	I _{DRM}	V _D = 80%V _{DRM}			200	mA
Forward & Reverse Current	I _{RRM}				200	mA
On State Voltage	V _{TM}	I _T = 2000A T _C = +115°C			2.05	V
		I _T = 10,000A T _C = +115°C			5.14	V
Max. Peak Recovery Current	I _{RM}	di/dt = 2A/ μ s Snap. S = .5-.33			83	A
		di/dt = 2000A/ μ s Snap. S = .5-.33			9030	A
Thermal Resistance	R _{θJC}	Double Side Cooling			0.01	°C/W



01B.T230

Figure 1. On-State Current vs. On-State Voltage

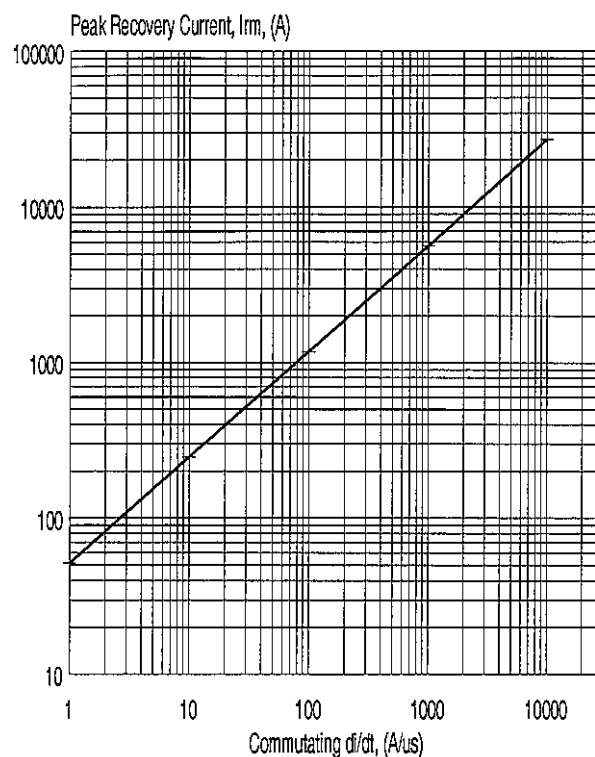
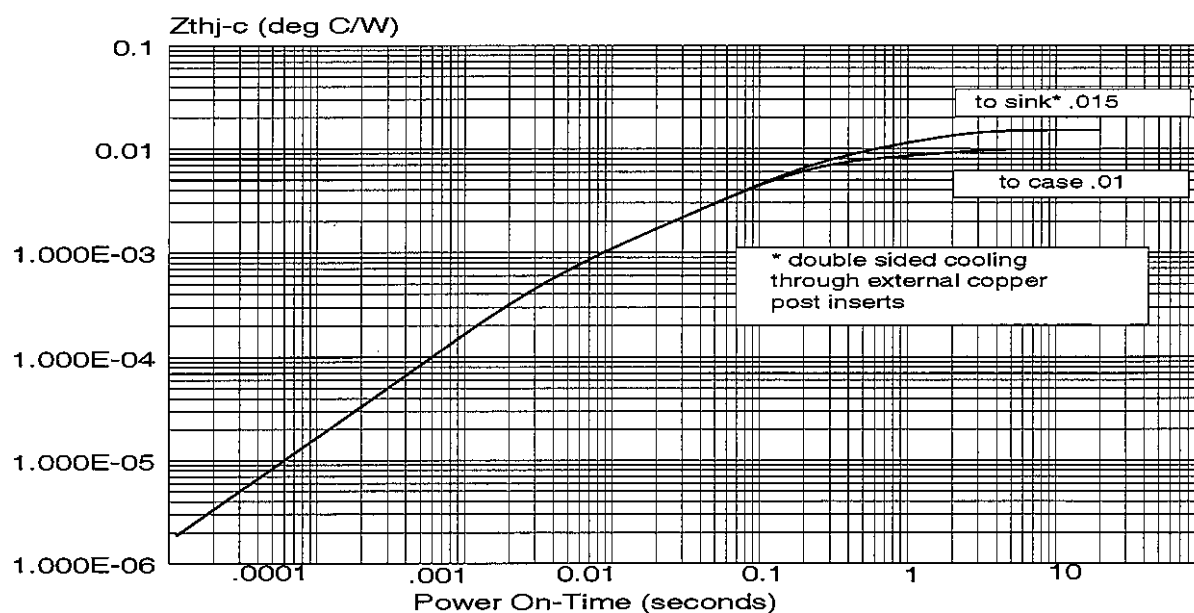


Figure 2. Recovery Current vs. Commutating di/dt



01B

Figure 3. Thermal Impedance vs. On-Time