

PST-R220CH12FJO

## HIGH POWER THYRISTOR FOR PHASE CONTROL APPLICATIONS

### Features:

- . All Diffused Structure
- . Interdigitated Amplifying Gate Configuration
- . Guaranteed Maximum Turn-Off Time
- . High dV/dt Capability
- . Pressure Assembled Device

## ELECTRICAL CHARACTERISTICS AND RATINGS

### Blocking - Off State

$V_{RRM}$ (1)	$V_{DRM}$ (1)	$V_{RSM}$ (1)
1200	1200	1300

- $V_{RRM}$  = Repetitive peak reverse voltage  
 $V_{DRM}$  = Repetitive peak off state voltage  
 $V_{RSM}$  = Non repetitive peak reverse voltage (2)

Repetitive peak reverse leakage and off state leakage	$I_{RRM} / I_{DRM}$	15 mA 70 mA (3)
Critical rate of voltage rise	dV/dt (4)	200 V/ $\mu$ sec

### Notes:

All ratings are specified for  $T_j=25^\circ\text{C}$  unless otherwise stated.

- (1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range  $-40$  to  $+125^\circ\text{C}$ .
- (2) 10 msec. max. pulse width
- (3) Maximum value for  $T_j = 125^\circ\text{C}$ .
- (4) Minimum value for linear and exponential waveshape to 80% rated  $V_{DRM}$ . Gate open.  $T_j = 125^\circ\text{C}$ .
- (5) Non-repetitive value.
- (6) The value of di/dt is established in accordance with EIA/NIMA Standard RS-397, Section 5-2-6. The value defined would be in addition to that obtained from aubber circuit, comprising a 0.2  $\mu\text{F}$  capacitor and 20 ohms resistance in parallel with the thristor under test.

### Conducting - on state

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Max. average value of on-state current	$I_{T(AV)M}$		964		A	Sinewave, $180^\circ$ conduction, $T_c=55^\circ\text{C}$
RMS value of on-state current	$I_{T(RMS)m}$		1971		A	Nominal value
Peak one cPSTCle surge (non repetitive) current	$I_{TSM}$		-		kA	8.3 msec (60Hz), sinusoidal wave-shape, $180^\circ$ conduction, $T_j = 125^\circ\text{C}$
			9.4		kA	10.0 msec (50Hz), sinusoidal wave-shape, $180^\circ$ conduction, $T_j = 125^\circ\text{C}$
I square t	$I^2t$		$442 \times 10^3$		$\text{A}^2\text{s}$	8.3 msec
Latching current	$I_L$		-		mA	$V_D = 24\text{ V}$ ; $R_L = 12\text{ ohms}$
Holding current	$I_H$		1000		mA	$V_D = 24\text{ V}$ ; $I = 2.5\text{ A}$
Peak on-state voltage	$V_{TM}$		1.96		V	$I_{TM} = 1400\text{ A}$
Critical rate of rise of on-state current (5, 6)	di/dt		1500		A/ $\mu\text{s}$	Switching from $V_{DRM} \leq 1000\text{ V}$ , non-repetitive
Critical rate of rise of on-state current (6)	di/dt		1000		A/ $\mu\text{s}$	Switching from $V_{DRM} \leq 1000\text{ V}$



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**Gating**

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	$P_{GM}$		30		W	
Average gate power dissipation	$P_{G(AV)}$		2		W	
Peak gate current	$I_{GM}$		-		A	
Gate current required to trigger all units	$I_{GT}$		300		mA	$V_D = 10 V; I_T = 3A; T_j = +25^\circ C$
Gate voltage required to trigger all units	$V_{GT}$		3.0		V	$V_D = 10 V; I_T = 3A; T_j = +25^\circ C$
Peak negative voltage	$V_{RGM}$		5		V	

**Dynamic**

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	$t_{gd}$		1.0	-	$\mu s$	$V_D = 67\% V_{DRM}, I_T = 2000A, di/dt = 60A/\mu s, I_{FG} = 2A, t_r = 0.5\mu s, T_j = 25C$
Turn-on time	$t_{gt}$		2.0	-		
Turn-off time (with $V_R = -5 V$ )	$t_q$	-	-	25	$\mu s$	$I_{TM} = 1000A, t_p = 1000\mu s, di/dt = 60A/\mu s, V_r = 50V, V_{dr} = 80\% V_{DRM}, dV_{dr}/dt = 20V/\mu s$
Reverse recovery current	$I_{rm}$		-		A	$I_{TM} = 4000A, t_p = 2000\mu s, di/dt = 60A/\mu s$

**THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS**

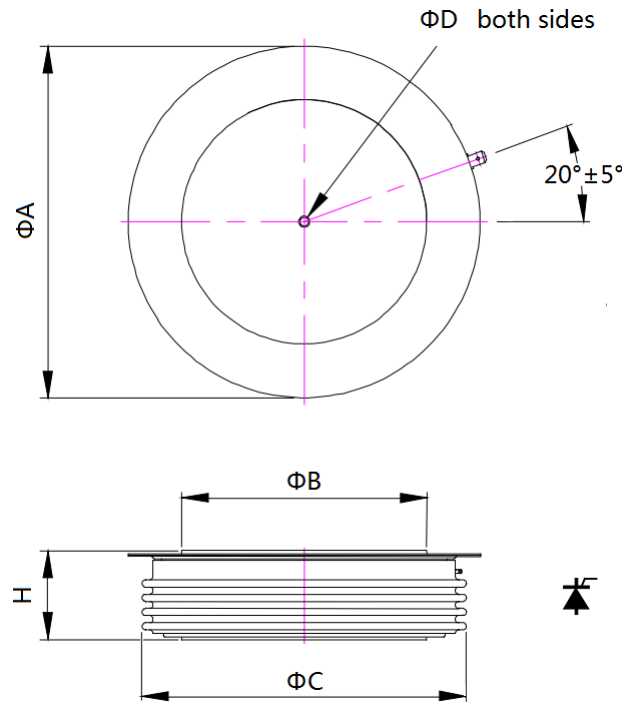
Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	$T_j$	-40	+125		$^\circ C$	
Storage temperature	$T_{stg}$	-40	+150		$^\circ C$	
Thermal resistance - junction to case	$R_{\theta(j-c)}$		-		K/kW	Double sided cooled Single sided cooled
Thermal resistance - case to sink	$R_{\theta(c-s)}$		-		K/kW	Double sided cooled * Single sided cooled *
Thermal resistance - junction to case	$R_{\theta(j-s)}$		32 64		K/kW	Double sided cooled Single sided cooled
Mounting force	F	10	20	-	kN	
Weight	W			-	Kg	about

\* Mounting surfaces smooth, flat and greased

Note : for case outline and dimensions, see case outline drawing in page 3 of this Technical Data



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Sym	A	B	C	D	H
mm	59	34	53	3.5x3	26±1