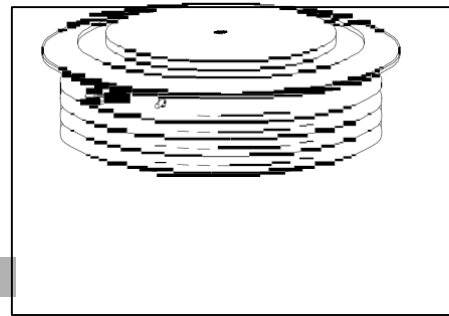


PST 5STP12K6500

HIGH POWER THYRISTOR FOR PHASE CONTROL APPLICATIONS

Features:

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



CASE 5T

ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking - Off State

Device Type	V_{RRM} (1)	V_{DRM} (1)	V_{RSM} (1)
5STP12K6500	6000	6000	6500

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}	30 mA 200mA (3)
Critical rate of voltage rise	dV/dt (4)	1000V/ sec

Conducting - on state

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Average value of on-state current	$I_{T(AV)}$		1200		A	Sinewave, 180° conduction, $T_c=85^\circ\text{C}$
RMS value of on-state current	I_{TRMS}		1800		A	Nominal value
Peak one cycle surge (non repetitive) current	I_{TSM}		19000		A	10.0 msec (50Hz), sinusoidal wave-shape, 180° conduction, $T_j = 125^\circ\text{C}$
I square t	I^2t		12×10^6		A^2s	10.0 msec
Latching current	I_L		3		A	$V_D = 24\text{ V}$; $R_L = 12\text{ ohms}$
Holding current	I_H		350		mA	$V_D = 24\text{ V}$; $I = 2.5\text{ A}$
Peak on-state voltage	V_{TM}		1.99		V	$I_{TM} = 3000\text{ A}$; Duty cycle 0.01%
Critical rate of rise of on-state current (5, 6)	di/dt		800		A/ s	Switching from $V_{DRM} = 3000\text{ V}$, non-repetitive
Critical rate of rise of on-state current (6)	di/dt		200		A/ s	Switching from $V_{DRM} = 3000\text{ V}$

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/60zHz 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 70% 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, Section5-2-2-6. The value defined would be in addition to that obtained from a snubber circuit, comprising a 0.2 F capacitor and 20 ohms resistance in parallel with the thristor under test.

Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P_{GM}		200		W	$t_p = 40 \mu s$
Average gate power dissipation	$P_{G(AV)}$		5		W	
Peak gate current	I_{GM}		20		A	
Gate current required to trigger all units	I_{GT}		300		mA	$V_D = 6 V; R_L = 3 \text{ ohms}; T_j = +25 \text{ }^\circ\text{C}$
Gate voltage required to trigger all units	V_{GT}		3		V	$V_D = 6 V; R_L = 3 \text{ ohms}; T_j = 25^\circ\text{C}$
Peak negative voltage	V_{GRM}		20		V	

Dynamic

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t_d		3.0		s	$I_{TM} = 50 \text{ A}; V_D = 2000 \text{ V}$ Gate pulse: $V_G = 20 \text{ V}; R_G = 20 \text{ ohms}; t_r = 0.1 \text{ s}; t_b = 20 \text{ s}$
Turn-off time (with $V_R = -50 \text{ V}$)	t_q		600	250	s	$I_{TM} > 2000 \text{ A}; di/dt = 10 \text{ A/ s};$ $V_R = -50 \text{ V};$ Re-applied $dV/dt = 500 \text{ V/ s}$ linear to $2000 \text{ V}; V_G = 0;$ $T_j = 125 \text{ }^\circ\text{C};$ Duty cycle 0.01%
Reverse recovery current	I_{rr}		300		A	$I_{TM} > 2000 \text{ A}; di/dt = 10 \text{ A/ s};$ $V_R = -50 \text{ V}$

THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T_j	-40	+125		$^\circ\text{C}$	
Storage temperature	T_{stg}	-40	+150		$^\circ\text{C}$	
Thermal resistance - junction to case	$R_{(j-c)}$		0.006		$^\circ\text{C/W}$	Double sided cooled
Thermal resistance - case to sink	$R_{(c-s)}$		0.002		$^\circ\text{C/W}$	Double sided cooled *
Mounting force	F		108		kN	

* Mounting surfaces smooth, flat and

greased

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



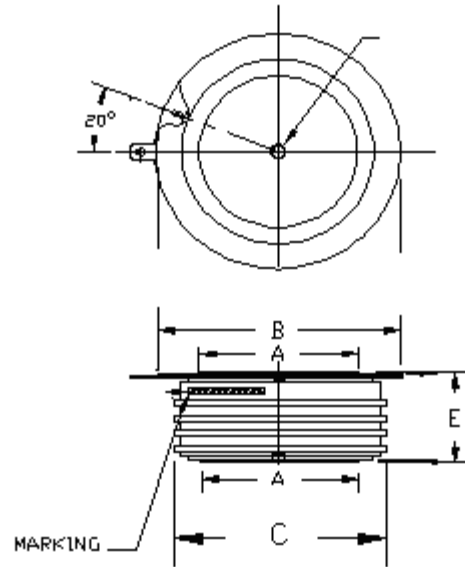
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POWER THYRISTORT PST 5STP12K6500



A : 73 mm
 B : 110 mm
 C : 98 mm
 E : 35 mm