PST KP393-4000

HIGH POWER PHASE CONTROL THYRISTOR
FOR PHASE CONTROL APPLICATIONS

Features :

- Blocking Capability up to 2800 V
- High dV/dt Capability
- All Diffused Structure
- Amplifying Gate Configuration
- Rugged Ceramic Hermetic Package

ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking

Parameter	Symbol	Min	Max	Typ	Unit	Conditions
Repetitive peak reverse voltage	V_{RRM}		2800		V	Tj = -40 °C to 125 °C
Repetitive peak off-state voltage	V_{DRM}		2800		V	Tj = -40 °C to 125 °C
Non repetitive peak reverse voltage	V_{RSM}		2900		V	Tj = -40 °C to 125 °C
Repetitive peak reverse current	I_{RRM}		300		mA	Tj = Tjmax , V = V_{RRM}
Repetitive peak off-state current	I_{DRM}		300		mA	Tj = Tjmax ,V = V_{DRM}

Conducting

Parameter	Symbol	Min	Max	Typ	Unit	Conditions
Average value of on-state current	$I_{T(AV)}$		4390		A	50 Hz sine wave,180° conduction, T_c = 85 °C
RMS value of on-state current	$I_{T(RMS)}$		6892		A	50 Hz sine wave,180° conduction, T_c = 85 °C
Surge non repetitive current	I_{TSM}		75		kA	50 Hz sine wave Half cycle
I square t	I^2t		28125		kA^2s	V_R = 0 $T_j = T_{jmax}$
Peak on-state voltage	V_{TM}		1.30		V	On-state current 6500 A, Tj= Tjmax
Threshold voltage	$V_{T(TO)}$		0.85		V	$T_j = T_{jmax}$
On-state slope resistance	r_T		0.07		mΩ	$T_j = T_{jmax}$
Holding current	I_H			300	mA	V_D = 12 V; I_T = 2.5 A
Latching current	I_L			1500	mA	V_D = 12 V; R_L = 12 Ω

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Triggering

Parameter	Symbol	Min	Max	Typ	Unit	Conditions
Gate current	I_{GT}		500		mA	V_D = 6 V; R_L = 3 Ω; Tj = - 40 °C
			300		mA	V_D = 6 V; R_L = 3 Ω; Tj = 25 °C
			200		mA	V_D = 6 V; R_L = 3 Ω; Tj = 125 °C
Gate voltage	V_{GT}		5		V	V_D = 6 V; R_L = 3 Ω; Tj = - 40 °C
			3		V	V_D = 6 V; R_L = 3 Ω; Tj = 0 ÷ 125 °C
		0.35			V	V_D = V_{DRM}; R_L = 10 kΩ; Tj = 125 °C
Peak gate current	I_{GM}		12		A	
Peak reverse gate voltage	V_{RGM}		5		V	
Peak gate power dissipation	P_{GM}		200		W	
Average gate power dissipation	$P_{G(AV)}$		5		W	

Switching

Parameter	Symbol	Min	Max	Typ	Unit	Conditions
Critical rate of rise of on-state current - non repetitive -	**di/dt**		1000		A/µs	$I_G = 5 \cdot I_{GT}$, t_r = 1µs, $T_j = T_{jmax}$
Critical rate of rise of on-state voltage	**dv/dt**		1000		V/µs	Linear ramp up to 80% of V_{DRM}
Gate controlled delay time	t_d			3	µs	I_{TM} = 50 A; V_D = 40% of V_{DRM}; V_G = 20 V R_G = 10 Ω; t_r = 0.1 µs; t_p = 50 µs
Turn-off time	t_q			500	µs	I_{TM} = 2000 A; di/dt = 10 A/µs; $V_R \geq$ 100 V dV/dt = 20 V/µs linear to 67% V_{DRM} V_G = 0 V; $T_j = T_{jmax}$
Reverse recovery charge	Q_{rr}				µC	I_T = 500 A di/dt = 20 A/µs $V_R \geq$ 50 V $T_j = T_{jmax}$
Reverse recovery current	I_{rr}				A/µs	

Thermal and mechanical

Parameter	Symbol	Min	Max	Typ	Unit	Conditions
Operating temperature	T_j	-40	125		°C	
Storage temperature	T_{stg}	-40	150		°C	
Thermal resistance junction to case	$R_{th(j-c)}$		0.0057		°C/W	Double side cooled , 180° SIN
Thermal resistance case to sink	$R_{th(c-s)}$		0.0010		°C/W	Double side cooled, mounting surfaces smooth, flat and greased
Mounting force	**F**	70	90		kN	
Weight	**W**			2700	g	

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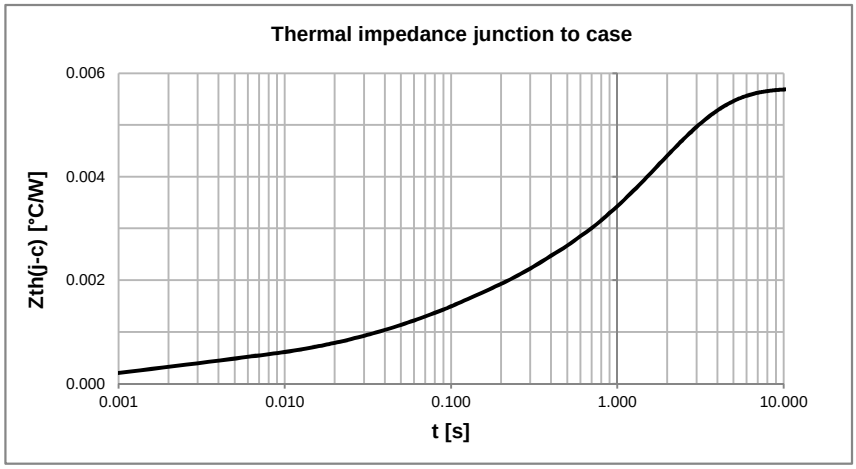
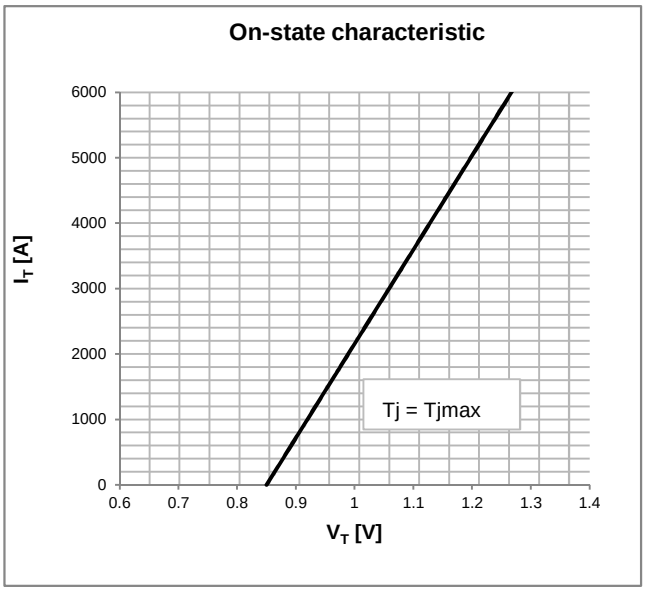
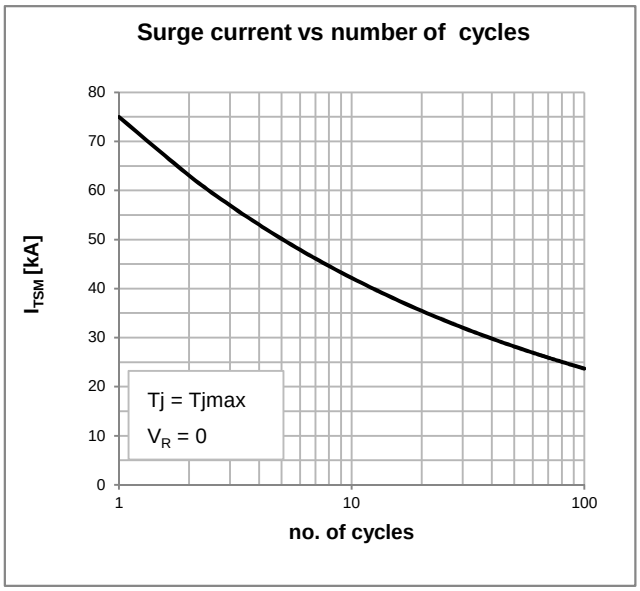
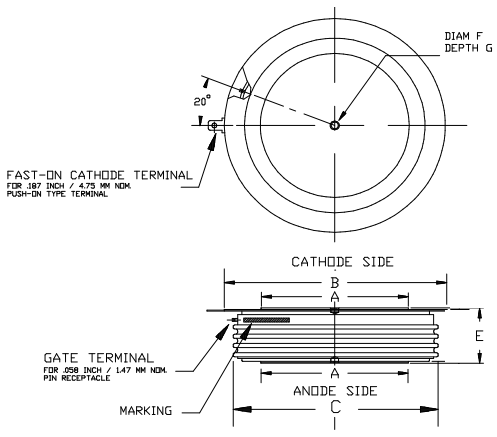






OUTLINE AND DIMENSIONS



	A	B	C	E
mm	100	150	131	35+/-1
inches	3.93	5.90	5.15	1.37

- All the characteristics given in this data sheet are guaranteed only with uniform clamping force, cleaned and lubricated heatsink surfaces with flatness < 0.03 mm and roughness < 2µm