YZPST® Yangzhou Positioning Tech. Co., Ltd

PST KP1436

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}		100		mA	Tj = Tjmax , V = V_{RRM}
Repetitive peak off-state current	I_{DRM}		100		mA	Tj = Tjmax ,V = V_{DRM}

Conducting

Parameter	Symbol	Min	Max	Typ	Unit	Conditions
Average value of on-state current	$I_{T(AV)}$		1436		A	50 Hz sine wave,180° conduction, T_s = 55 °C
RMS value of on-state current	$I_{T(RMS)}$		2250		A	50 Hz sine wave,180o conduction, Ts = 55 °C
Surge non repetitive current	I_{TSM}		23		kA	50 Hz sine wave Half cycle
I square t	I^2t		2645		kA^2s	$V_R = 0$ $T_j = T_{jmax}$
Peak on-state voltage	V_{TM}		1.89		V	On-state current 2600 A, Tj= Tjmax
Threshold voltage	$V_{T(TO)}$		1.00		V	$T_j = T_{jmax}$
On-state slope resistance	r_T		0.34		mΩ	$T_j = T_{jmax}$
Holding current	I_H			400	mA	V_D = 24 V; I_T = 2.5 A
Latching current	I_L			800	mA	V_D = 24 V; R_L = 12 Ω

PST KP1436

HIGH POWER PHASE CONTROL THYRISTOR

Triggering
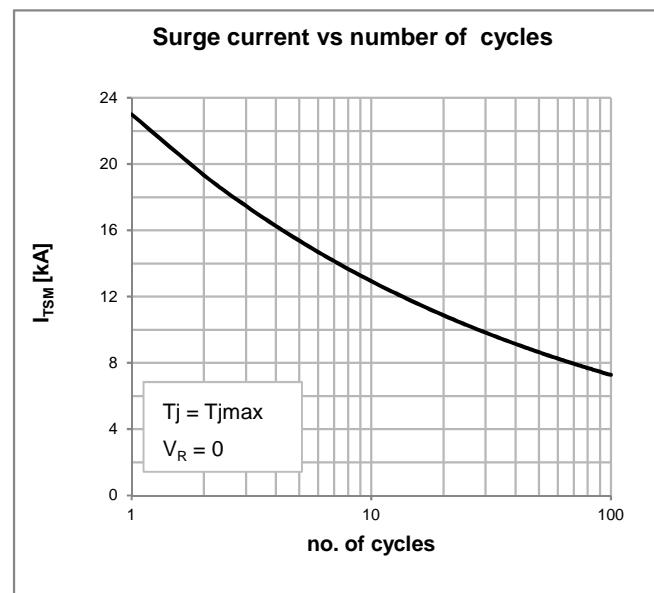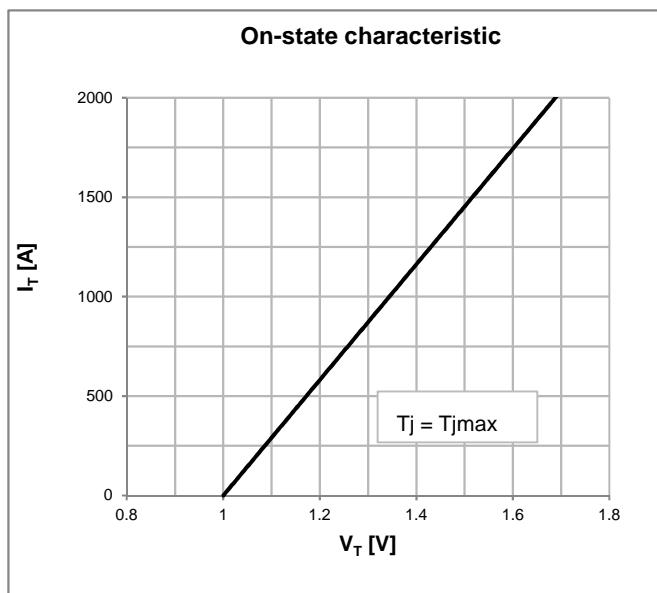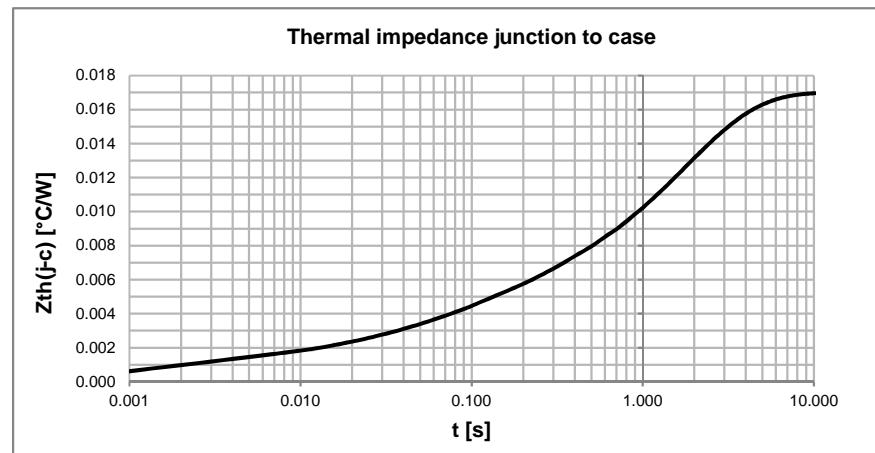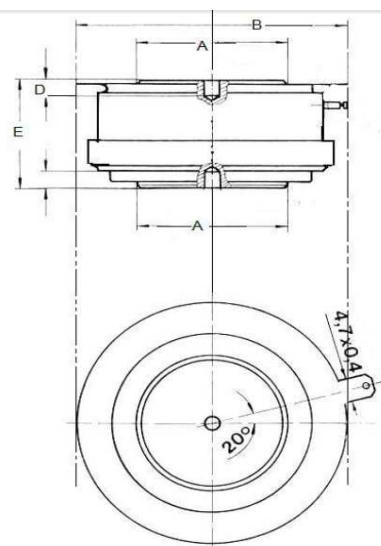
Parameter	Symbol	Min	Max	Typ	Unit	Conditions
Gate current	I_{GT}		300		mA	$V_D = 6$ V; $R_L = 3$ Ω; Tj = - 40 °C
			150		mA	$V_D = 6$ V; $R_L = 3$ Ω; Tj = 25 °C
			125		mA	$V_D = 6$ V; $R_L = 3$ Ω; Tj = 125 °C
Gate voltage	V_{GT}		5		V	$V_D = 6$ V; $R_L = 3$ Ω; Tj = - 40 °C
			3		V	$V_D = 6$ V; $R_L = 3$ Ω; Tj = 0 ÷ 125 °C
		0.3			V	$V_D = V_{DRM}$; $R_L = 10$ kΩ; Tj = 125 °C
Peak gate current	I_{GM}		10		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	di/dt		400		A/µs	$I_G = 5·I_{GT}$, $t_r = 1$µs, $T_j = T_{jmax}$
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		1.5	0.7	µs	$I_{TM} = 50$ A; $V_D = V_{DRM}$; $V_G = 20$ V $R_G = 20$ Ω; $t_r = 0.1$ µs; $t_p = 20$ µs
Turn-off time	t_q			250	µs	$I_{TM} = 1000$ A; di/dt = 25 A/µs; $V_R ≥ 50$ V dV/dt = 20 V/µs linear to 80% V_{DRM} $V_G = 0$ V; $T_j = T_{jmax}$
Reverse recovery charge	Q_{rr}				µC	$I_T = 1000$ A di/dt = 25 A/µs
Reverse recovery current	I_{rr}				A/µs	$V_R ≥ 50$ V $T_j = T_{jmax}$

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	$R_{th(j-c)}$		0.017		°C/W	Double side cooled , 180° SIN
Thermal resistance case to sink	$R_{th(c-s)}$		0.005		°C/W	Double side cooled, mounting surfaces smooth, flat and greased
Mounting force	F	20	26		kN	
Weight	W			475	g	

YZPST® Yangzhou Positioning Tech. Co., Ltd

PST KP1436

HIGH POWER PHASE CONTROL THYRISTOR

Thermal impedance junction to case

Zth(j-c) [°C/W] vs t [s]

On-state characteristic

I_T [A] vs V_T [V]

Tj = Tjmax

Surge current vs number of cycles

I_{TSM} [kA] vs no. of cycles

Tj = Tjmax
$V_R = 0$

OUTLINE AND DIMENSIONS

	A	B	E
mm	47	75 max	26+/-1
inches	1.85	2.95	1.02

- 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