

## Phase Control Thyristors

### Features

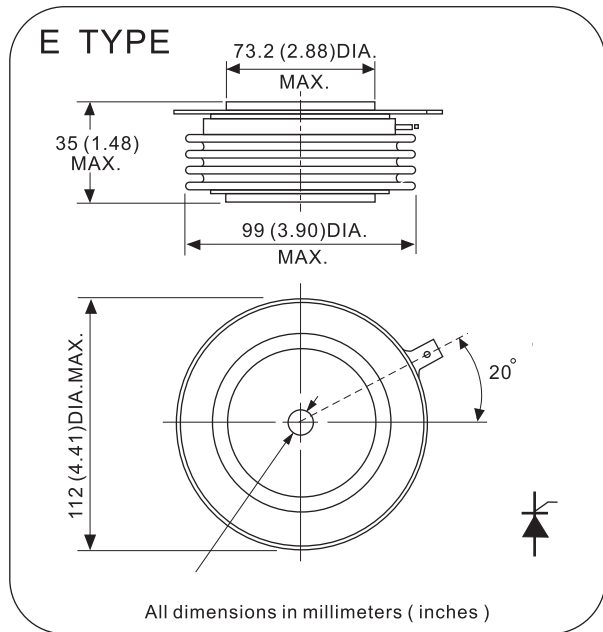
1. 2500 PT series Thyristors are designed for various power controls
2. Voltage rating up to 1600 V.
3. Typical application
  - DC motor control
  - Controlled DC power supplies
  - AC controllers

Ordering code

<b>2500</b>	<b>PT</b>	<b>XX</b>	<b>E</b>	<b>0</b>
(1)	(2)	(3)	(4)	(5)

- (1) Maximum average on-state current , A
- (2) For Phase Control Thyristor
- (3) Voltage code , code x 100 =  $V_{RRM} / V_{DRM}$
- (4) package style : A , B , C , D , E for Disc Type
- (5) Terminal types  
0 - for eyelet

### Electrical Characteristics



Symbol	Parameter	Condition	Value			Unit
			Min.	Type	Max.	
$I_T(AV)$	Mean on-state current	180° half sine wave , 50Hz Double side cooled , $T_c = 85^\circ C$			2500	A
$I_T(RMS)$	Max. RMS on-state current	Double side cooled , $T_{hs} = 55^\circ C$			4420	A
$V_{RRM}$ $V_{DRM}$	Repetitive peak off-state voltage Repetitive peak reverse voltage	$V_{DRM} \& V_{RRM} \ t_p = 10ms$ $V_{DsM} \& V_{RsM} = V_{DRM} \& V_{RRM} + 100V$	1200		1600	V
$I_{TSM}$	Surge on-state current	10 ms half sine wave			22	KA
$I_t^2$	For fusing coordination	$V_R = 0.6V_{RRM}$			$13 \times 10^6$	$A^2s$
$V_{T(TO)}$	Threshold voltage				0.9	V
$r_t$	On-state slope resistance				0.19	mΩ
$V_{TM}$	Max. Forward voltage drop	$I_{TM} = 5000A , F = 35KN$			1.4	V
$I_H$	Holding current	$V_A = 12V , I_A = 1A$			1000	mA
$d_i/dt$	Critical rate of rise of turned-on current	Gate drive 20V , 20Ω , $t_r \leq 0.5 \mu s$			250	A/μs
$t_q$	Maximum turn-off time				400	μs
$I_{RRM}$ $I_{DRM}$	Repetitive peak reverse current	$V_R = V_{RRM}$ $V_D = V_{DRM}$			200	mA
$d_v/dt$	Critical rate of rise of off-state voltage	$V_{DM} = 0.67 V_{DRM}$			1000	V/μs
$P_G$	Max. average gate power	Square wavepulse width 100 μs			5	W
$P_{GM}$	Max. peak gate power square				30	W
$I_{GT}$	Gate trigger current	$V_A = 12V , I_A = 1A$			300	mA
$V_{GT}$	Gate trigger voltage				3.0	V
$V_{GD}$	DC voltage not to trigger	At 67% $V_{DRM} , T_j = T_j \text{ max.}$			0.25	V
$I_{FGM}$	Max. peak positive gate current	$T_j = T_j \text{ max.} , t_p \leq 3s$			5	mA
$V_{FGM}$	Max. peak positive gate voltage				30	V
$V_{RGM}$	Max. peak negative gate voltage				0.25	V
$T_j$	Max. operating temperature range				125	°C
$T_{stg}$	Storage temperature		- 40		150	°C
$R_{th(j-h)}$	Thermal resistance(junction to heatsink)	Double side cooled , clamping force 35 KN			0.011	°C/W
$F_m$	Mounting force		27		47	KN
$W_t$	Approximate weight				1100	g

Fig.1 Peak On-state Voltage Vs. Peak On-state Current

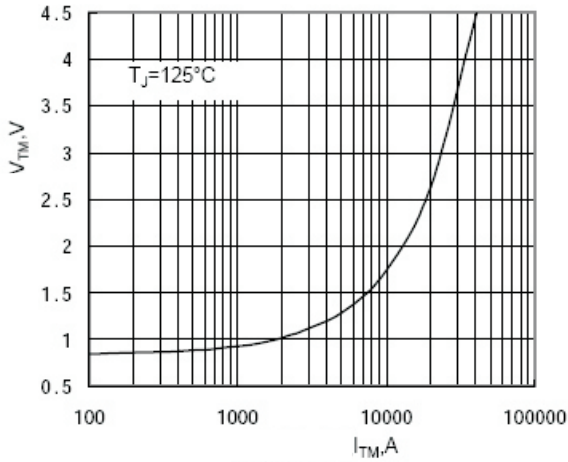


Fig.2 Max. junction To heatsink Thermal Impedance Vs. Time

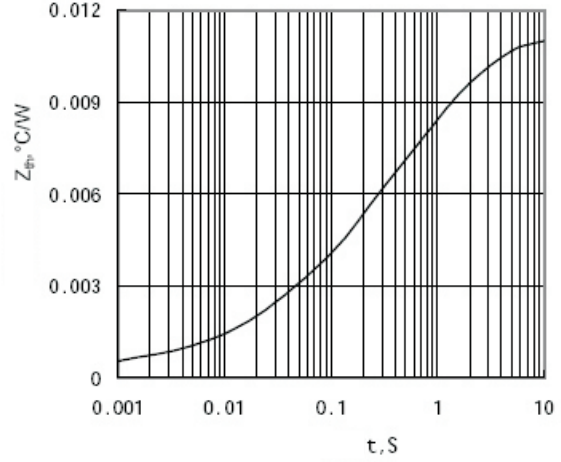


Fig.3 Max. Power Dissipation Vs. Mean On-state Current

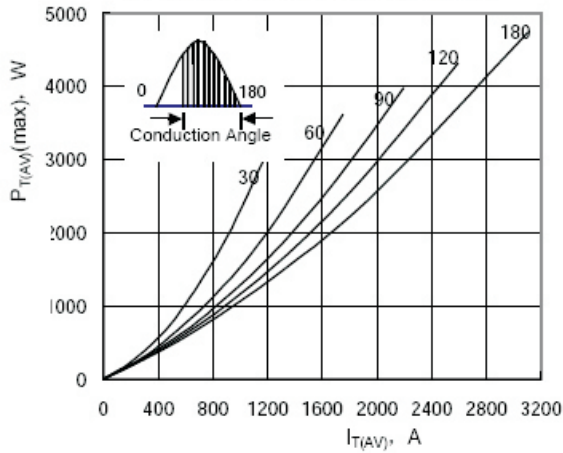


Fig.4 Max. heatsink Temperature Vs. Mean On-state Current

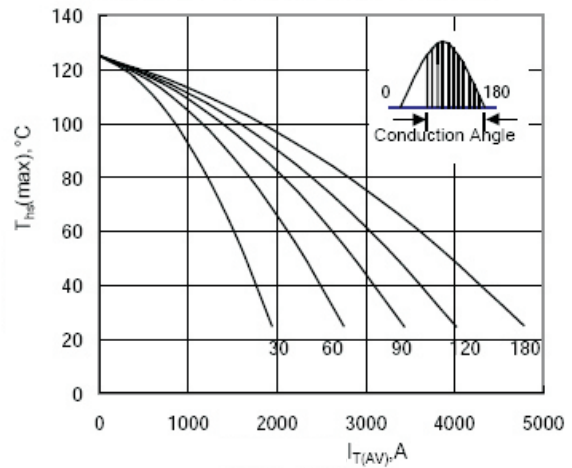


Fig.5 Max. Power Dissipation Vs. Mean On-state Current

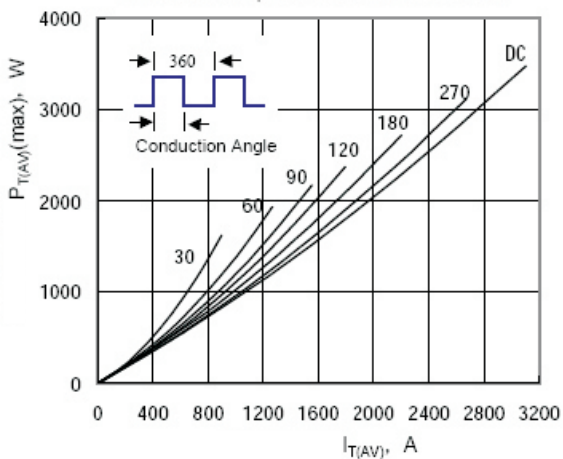


Fig.6 Max. heatsink Temperature Vs. Mean On-state Current

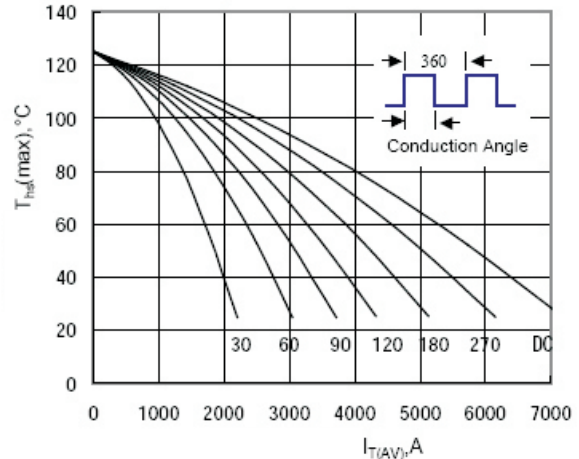


Fig.7 Surge Current Vs.Cycles

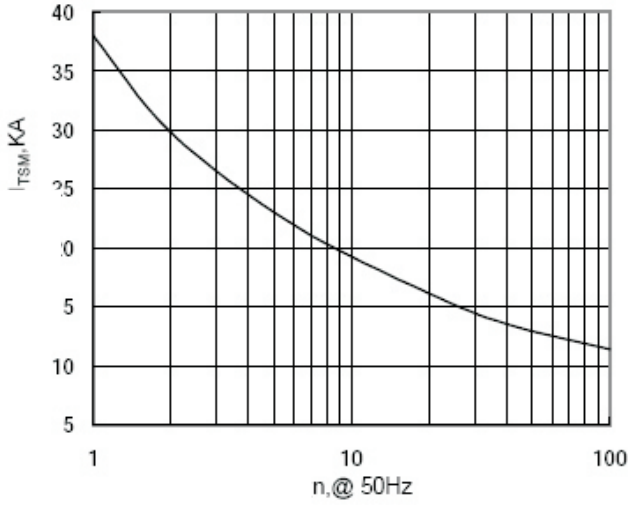


Fig.8  $I^2t$  Vs.Time

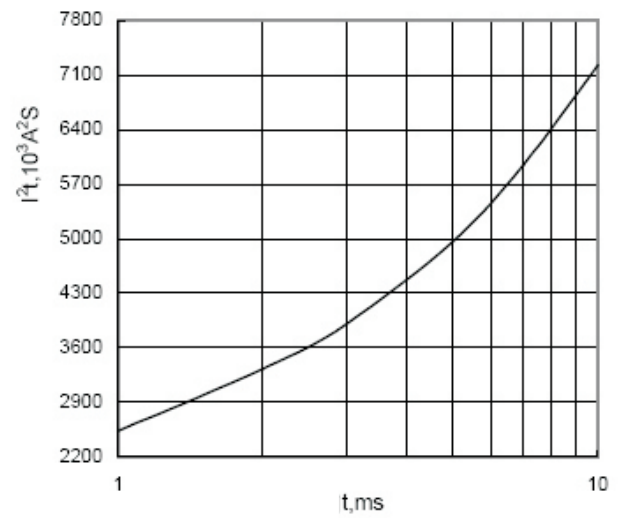


Fig.9 Gate characteristic at 25°C junction temperature

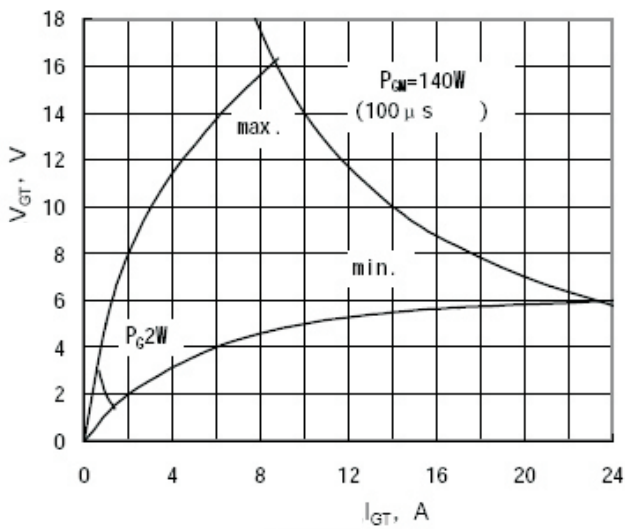


Fig.10 Gate Trigger Zone at varies temperature

