Phase Control Thyristors

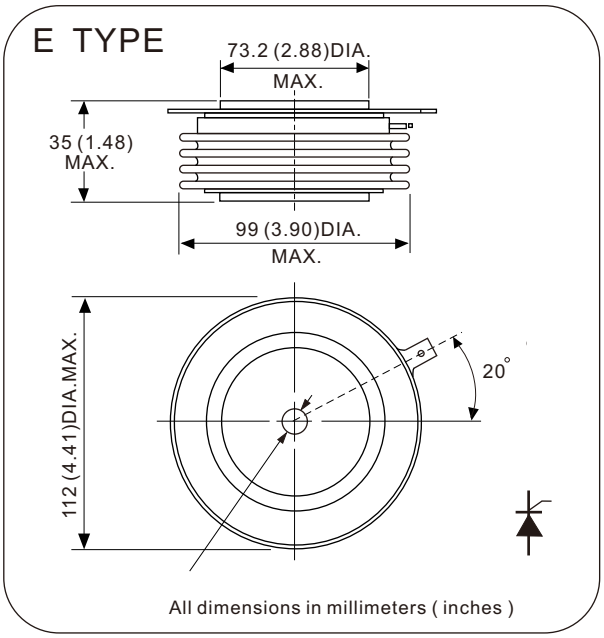
Features

1. Center amplifying gate.
2. Metal Case With Ceramic insulator.
3. Typical application
   - DC motor control
   - Controlled DC power supplies
   - AC controllers

Ordering code

3000	PT	xx	E	0
(1)	(2)	(3)	(4)	(5)

(1) Mean 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 ,EX 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 =75°C			3000	A
$I_{T(RMS)}$	Max. R_{MS} on-state current	Double side cooled , T_{hs}=55°C			3790	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	400		2000	V
I_{TSM}	Surge on-state current	10 ms half sine wave V_R = 0.6V_{RRM}			49.9	KA
I^2t	For fusing coordination				12428	KA^2s
$V_{T(TO)}$	Threshold voltage				0.84	V
r_t	On-state slope resistance				0.08	mΩ
V_{TM}	Max. Forward voltage drop	I_{TM}=5000A , F=35KN			2.2	V
I_H	Holding current	V_A=12V , I_A=1A	20		300	mA
$d_{i/dt}$	Cirtical rate of rise of turned-on current	Gate drive 20V , 20Ω , t_r ≤ 0.5 μs			400	A/μs
I_{RRM} I_{DRM}	Repetitive peak reverse current	V_R = V_{RRM} V_D = V_{DRM}			200	mA
$d_{v/dt}$	Cirtical rate of rise of off-state voltage	V_{DM}=0.67 V_{DRM}	200		500	V/μs
P_G	Max. average gate power	Square wavepulse width 100 μs			10	W
P_{GM}	Max. peak gate power square				150	W
I_{GT}	Gate trigger current	V_A=12V , I_A=1A	40		300	mA
V_{GT}	Gate trigger voltage		0.8		3.0	V
V_{GD}	DC voltage not to trigger	At 67% V_{DRM} , T_j=T_j max.			0.3	V
I_{FGM}	Max. peak positive gate current	T_j=T_j max , t_p ≤ 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 temperaturerange				125	°C
T_{stg}	Storage temperature		- 40		140	°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		35		47	KN
W_t	Approximate weight			1100		g
t_q	Typical turn-off time	I_{TM}=800A ,$d_{v/dt}$=30V/μs $d_{iRR/dt}$=-10 A/μs		300	500	μs

Fig. 1
Peak on-state voltage Vs. Peak on-state Current

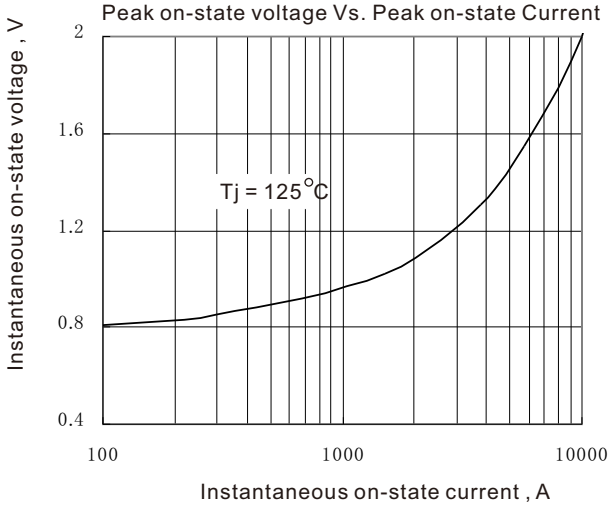


Fig. 2
Max. Junction to heatsink thermal impedance Vs. Time

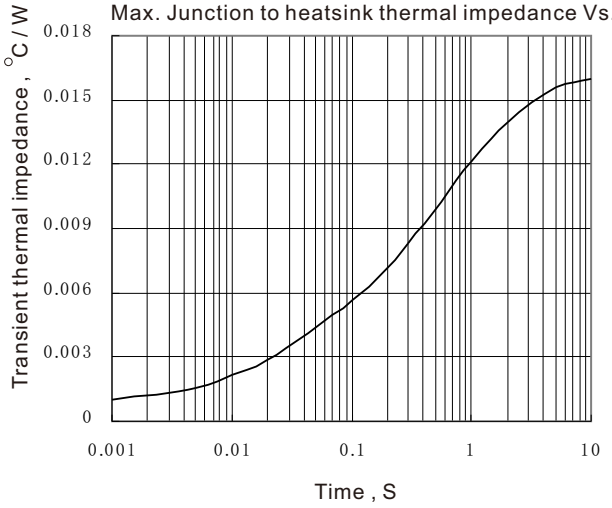


Fig. 3
Max. Power Dissipation Vs. Mean on-state Current

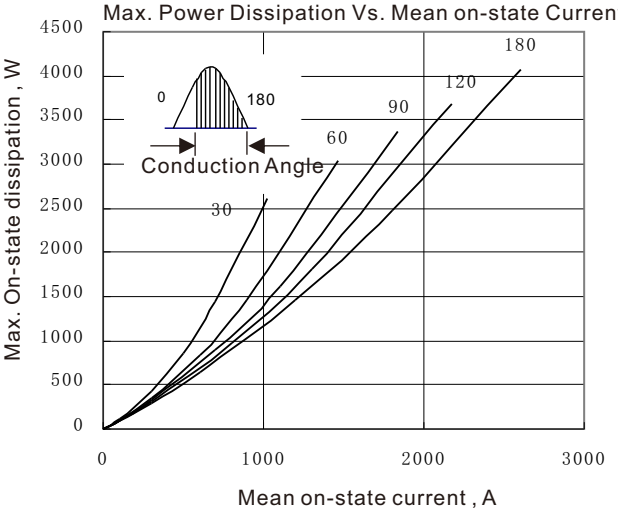


Fig. 4
Max. heatsink Temperature Vs. Mean on-state Current

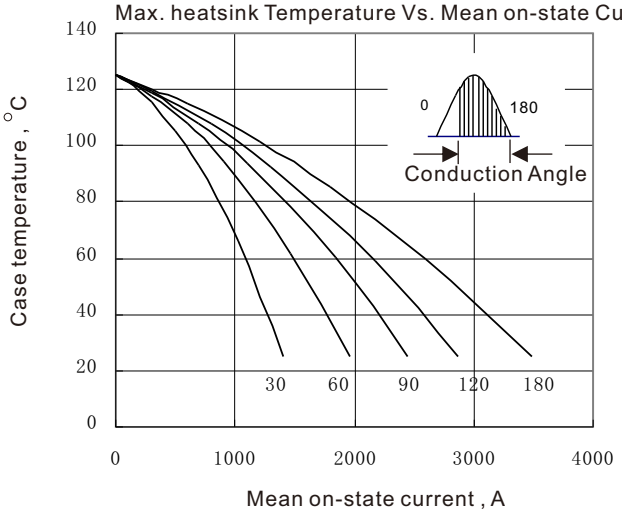


Fig. 5
Max. Power Dissipation Vs. Mean on-state Current

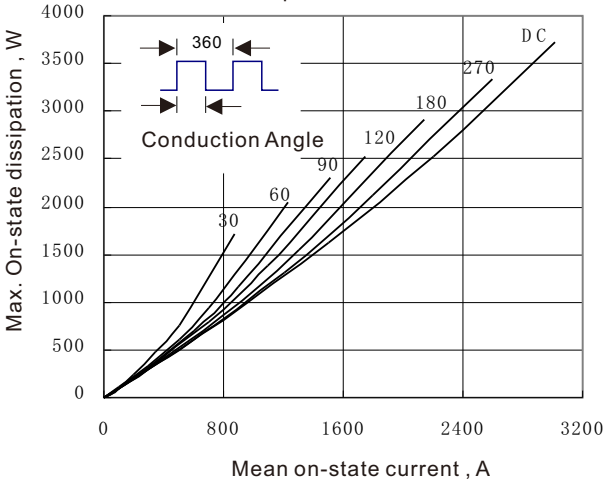


Fig. 6
Max. heatsink Temperature Vs. Mean on-state Current