

Phase Control Thyristors

Features

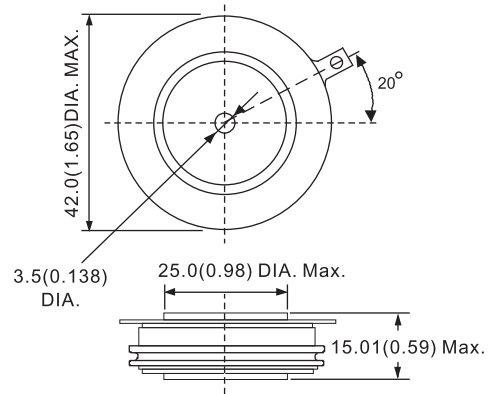
1. 680 PT series Thyristors are deigned for various power controls
2. Voltage rating up to 1800 V.
3. Typical application
 - DC motor control
 - Controlled DC power supplies
 - AC controllers

Ordering code

680	PT	xx	B	0
(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

B type



All dimensions in millimeters(inches)

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 , $T_C = 55^\circ C$			680	A
$I_{T(RMS)}$	Max. RMS on-state current	Double side cooled , $T_{HS} = 25^\circ C$			1360	A
V_{RRM} V_{DRM}	Repetitive peak off-state voltage Repetitive peak reverse voltage	$V_{DRM} \& V_{RRM} \ t_D = 10ms$ $V_{DSM} \& V_{RSM} = V_{DRM} \& V_{RRM} + 100V$	1200		1800	V
I_{TSM}	Surge on-state current	10 ms half sine wave			7500	A
I_t^2	For fusing coordination	$V_R = 0.6 V_{RRM}$			345	Ka ² s
$V_{T(TO)}$	Threshold voltage				1.09	V
r_t	On-state slope resistance				0.58	mΩ
V_{TM}	Max. Forward voltage drop	$I_{TM} = 900A$, $F = 8.0KN$			2	V
I_H	Holding current	$V_A = 12V$, $I_A = 1A$			600	mA
d_i/dt	Cirtical rate of rise of turned-on current	Gate drive 20V , 20 Ω , $t_r \leq 0.5 \mu s$			1000	A/μs
t_q	Typical turn-off time	$I_{TM} = 400A$, $d_v/dt = 30V/\mu s$ $d_iRR/dt = -10 A/\mu s$			100	μs
d_v/dt	Cirtical rate of rise of off-state voltage	$V_{DM} = 0.67 V_{DRM}$			500	V/μs
P_G	Max. average gate power	Square wavepulse width 100 μs			2	W
P_{GM}	Max. peak gate power square				30	W
I_{GT}	Gate trigger current	$V_A = 12V$, $I_A = 1A$			150	mA
V_{GT}	Gate trigger voltage				3	V
T_{stg}	Storage temperature		- 40		150	°C
T_j	Max.operating temperaturerange	Double side cooled , clamping force 8.0 KN	- 40		125	°C
$R_{th(j-h)}$	Thermal resistance(junction to heatsink)				0.05	°C/ W
F_m	Mounting force		5		9	KN
W_t	Approximate weight			90		g

Figure 1 – On-state current vs. Power dissipation Figure 2 – On-state current vs. Heatsink temperature
Double Side Cooled (Sine wave) – Double Side Cooled (Sine wave)

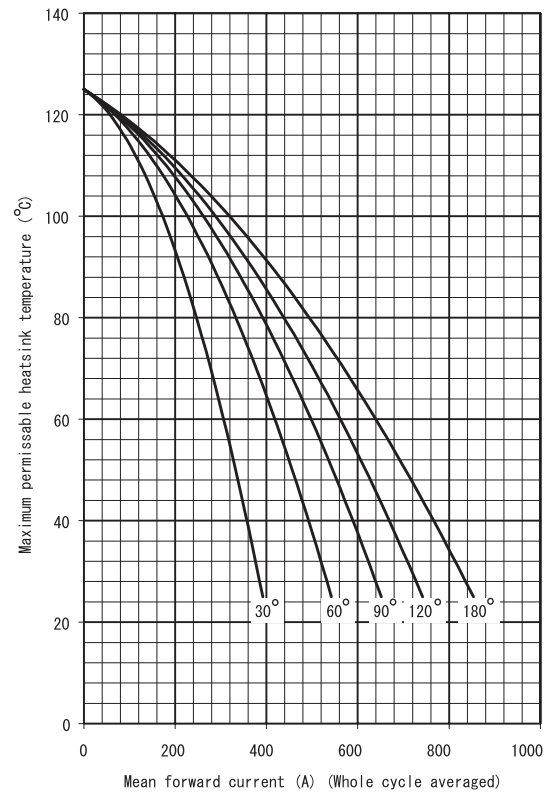
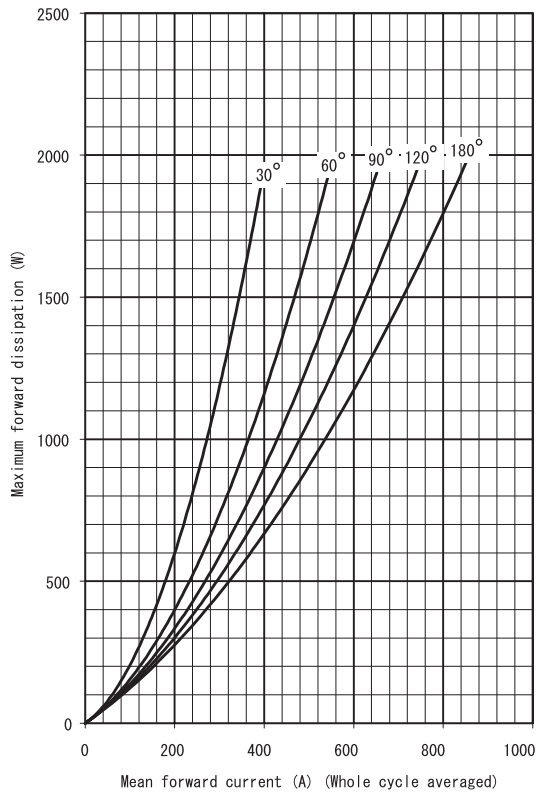


Figure 3 – On-state current vs. Power dissipation
Double Side Cooled (Square wave)

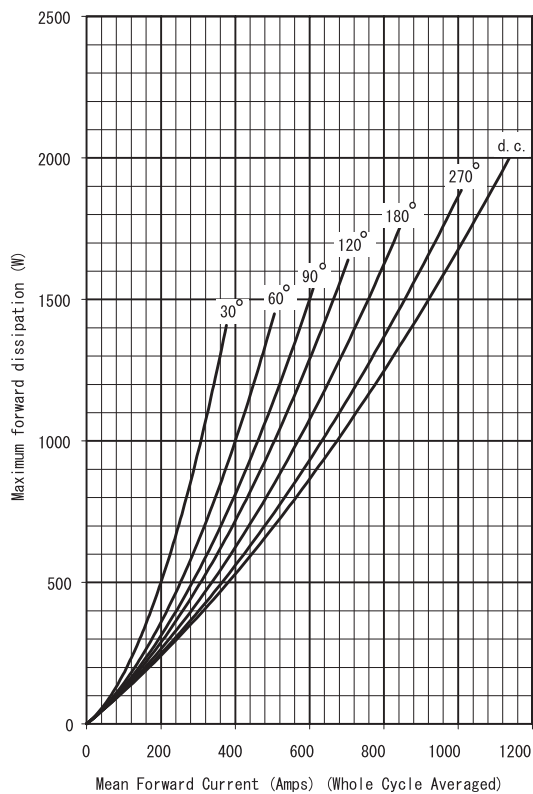


Figure 4 – On-state current vs. Heatsink temperature
– Double Side Cooled (Square wave)

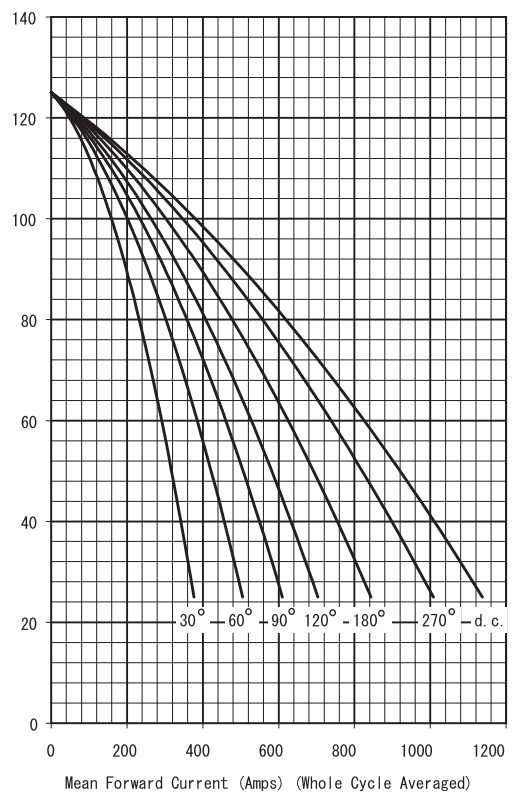


Figure 5 – On-state current vs. Power dissipation Single Side Cooled (Sine wave) Figure 6 – On-state current vs. Heatsink temperature – Single Side Cooled (Sine wave)

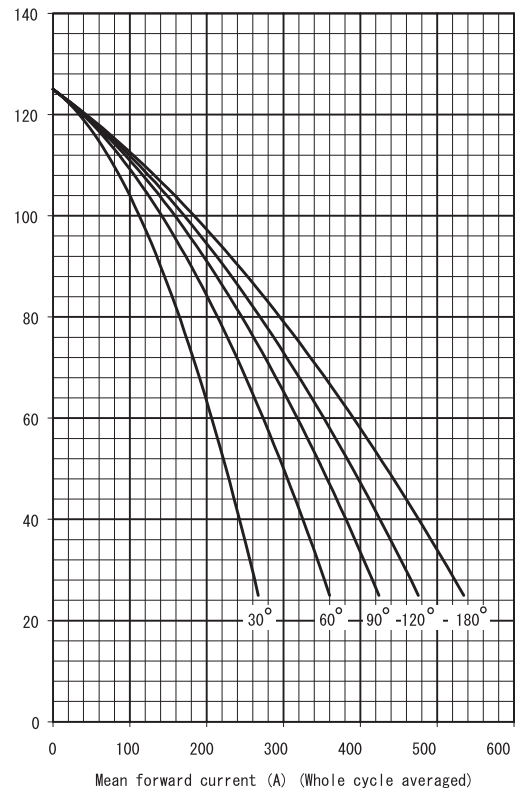
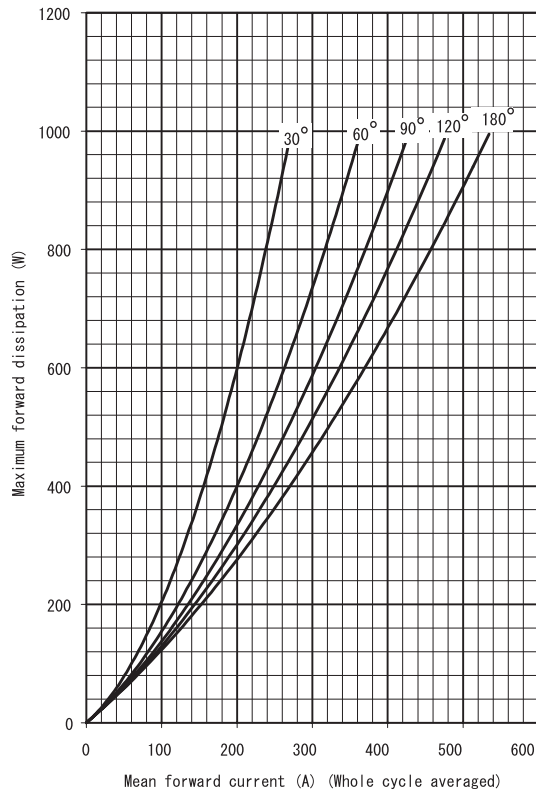


Figure 7 – On-state current vs. Power dissipation Single Side Cooled (Square wave)

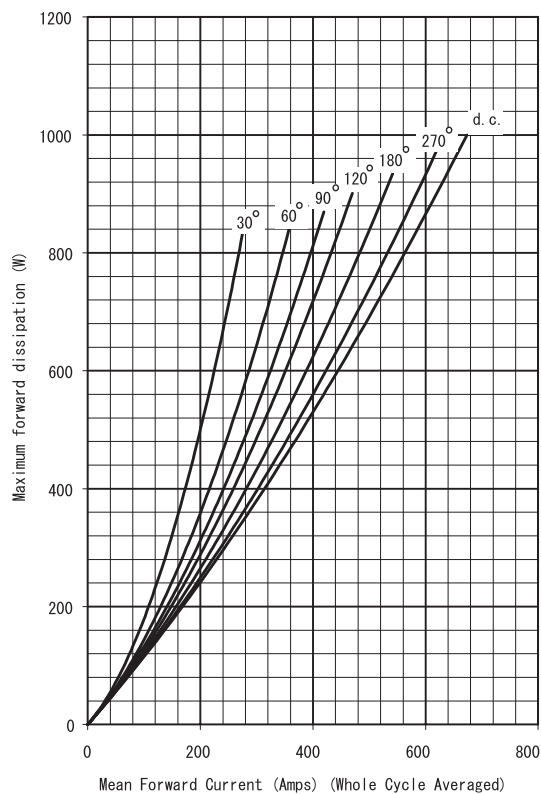


Figure 8 – On-state current vs. Heatsink temperature – Single Side Cooled (Square wave)

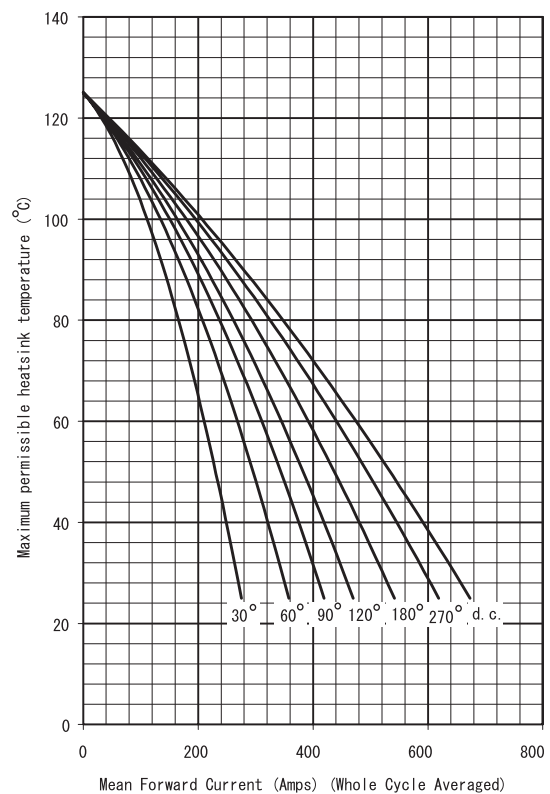


Figure 9 – On-state characteristics of Limit device

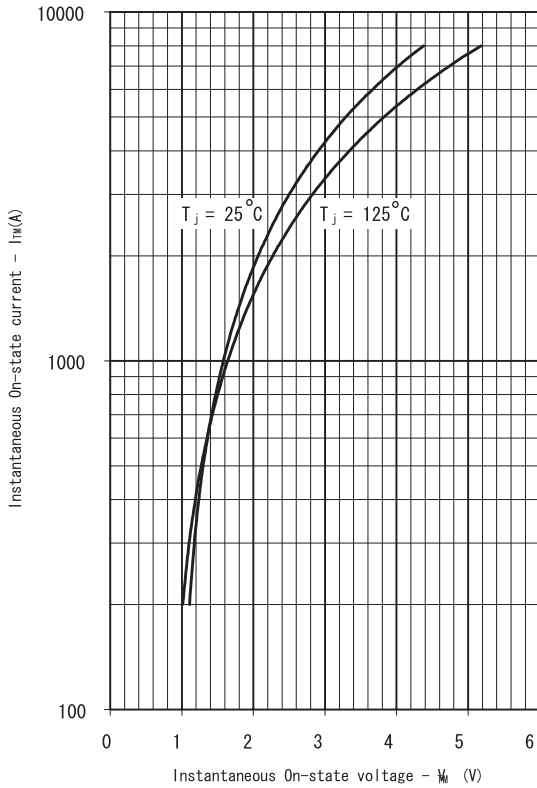


Figure 10 – Transient Thermal Impedance

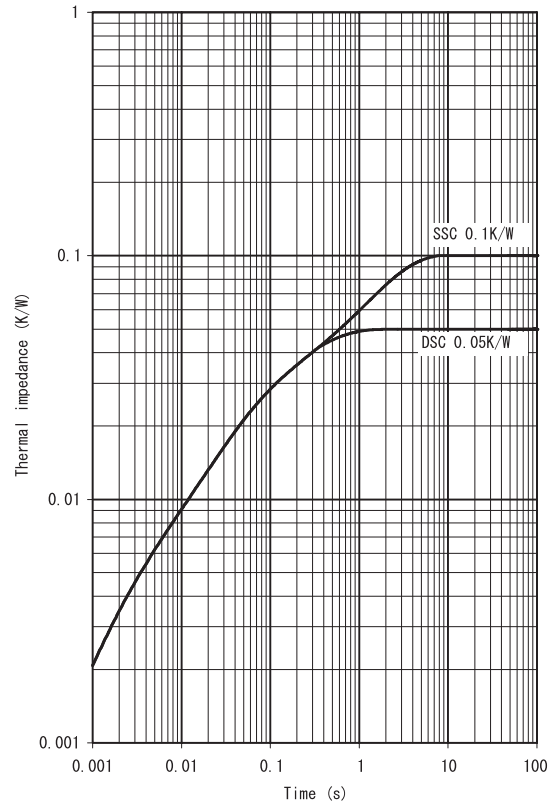


Figure 11 – Gate Characteristics – Trigger Limits

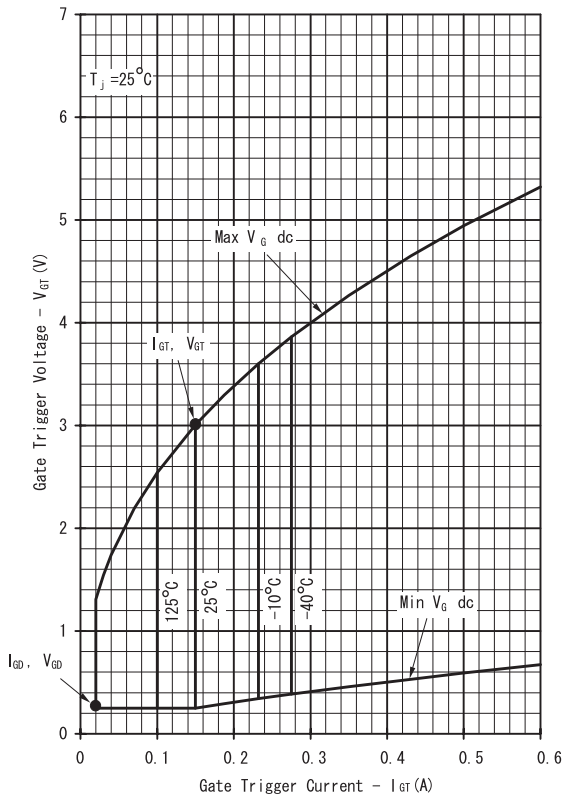


Figure 12 – Gate Characteristics – Power Curves

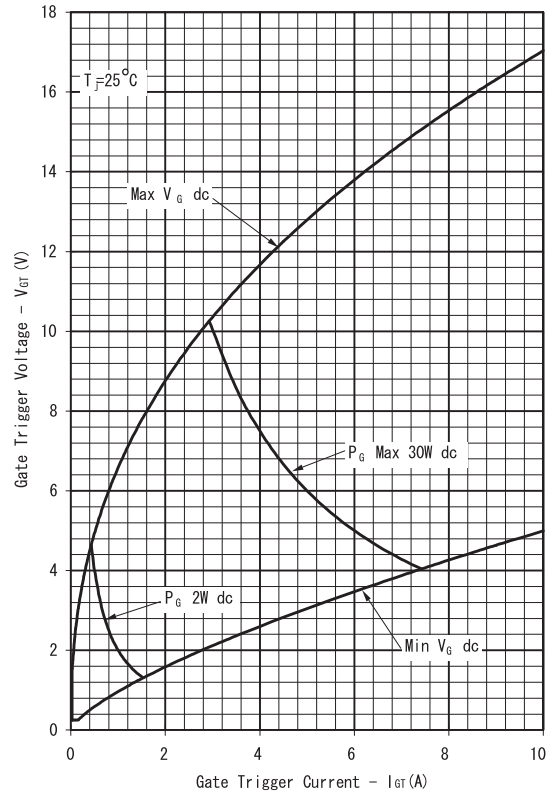


Figure 13 – Maximum surge and I^2t Ratings

