

Phase Control Thyristors

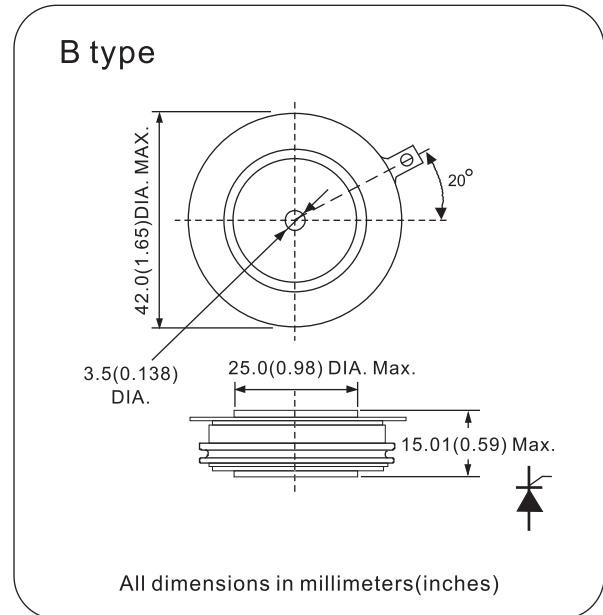
Features

1. 610 PT series Thyristors are deigned for various power controls
2. Voltage rating up to 2400 V.
3. Typical application
 - DC motor control
 - Controlled DC power supplies
 - AC controllers

Ordering code

610	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



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 , $T_C = 55^\circ C$			610	A
$I_T(RMS)$	Max. RMS on-state current	Double side cooled , $T_{hs}=25^\circ C$			1220	A
V_{RRM}	Repetitive peak off-state voltage	V_{DRM} & V_{RRM} $t_p=10ms$	2000	to	2400	V
V_{DRM}	Repetitive peak reverse voltage	V_{DsM} & $V_{RsM} = V_{DRM}$ & $V_{RRM} + 100V$				
I_{TSM}	Surge on-state current	10 ms half sine wave			7100	A
I_t^2	For fusing coordination	$V_R = 0.6V_{RRM}$			305	KA ² s
$V_T(TO)$	Threshold voltage				1.1	V
r_t	On-state slope resistance				0.8	mΩ
V_{TM}	Max. Forward voltage drop	$I_{TM}=900A$, $F=8.0KN$			2.35	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		- 40		125	°C
$R_{th}(j-h)$	Thermal resistance(junction to heatsink)	Double side cooled , clamping force 8.0 KN			0.05	°C/W
F_m	Mounting force		5		9	KN
W_t	Approximate weight			90		g

Figure 1 – On-state characteristics of Limit device

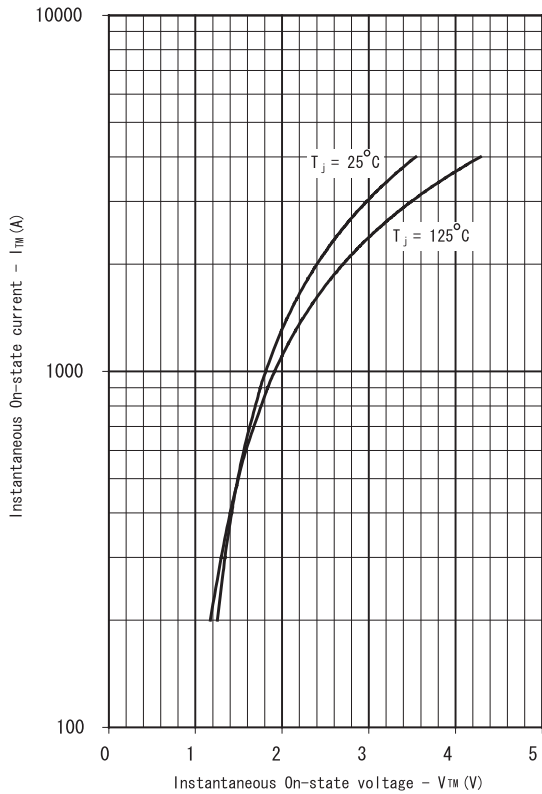


Figure 2 – Transient thermal impedance

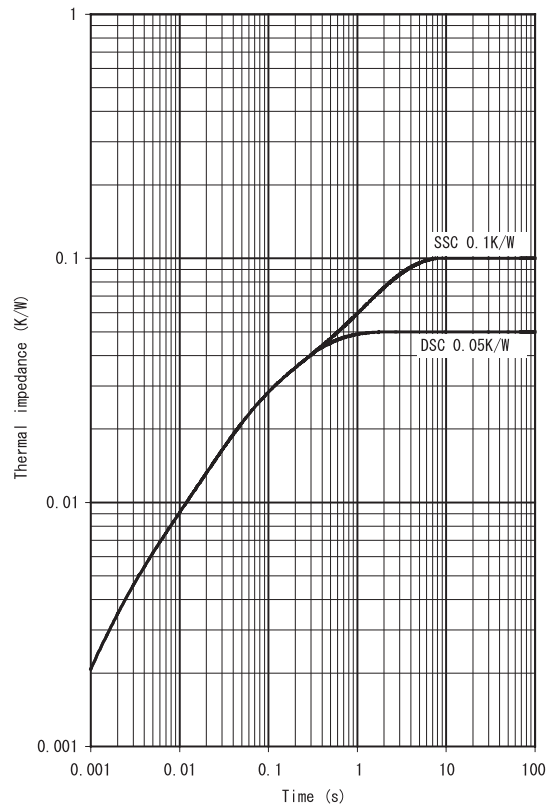


Figure 3 – Gate characteristics – Trigger limits

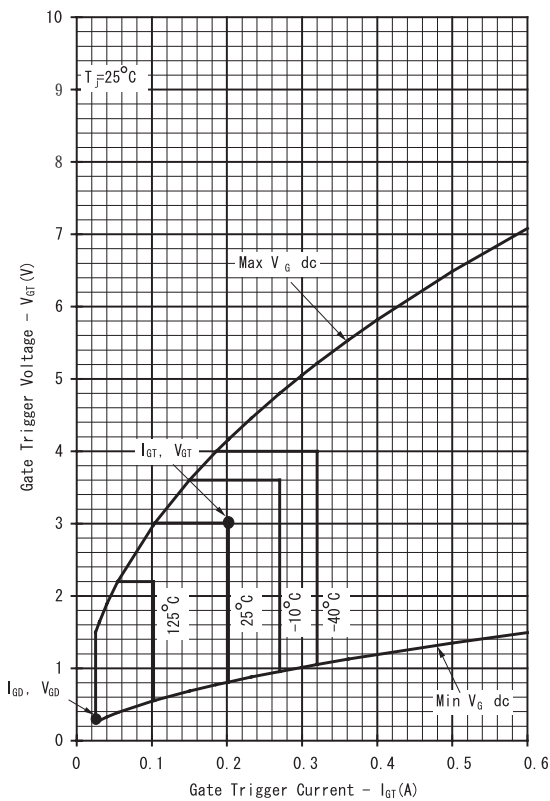


Figure 4 – Gate characteristics – Power curves

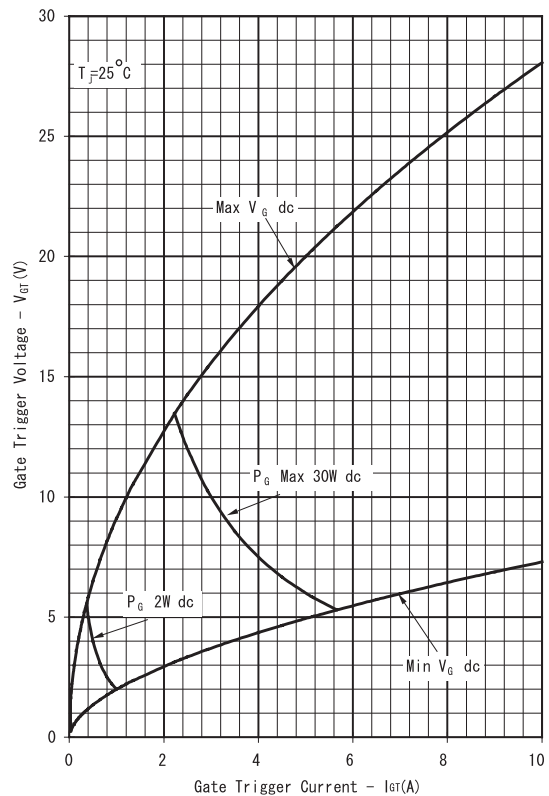


Figure 5 – Total recovered charge, Q_{rr}

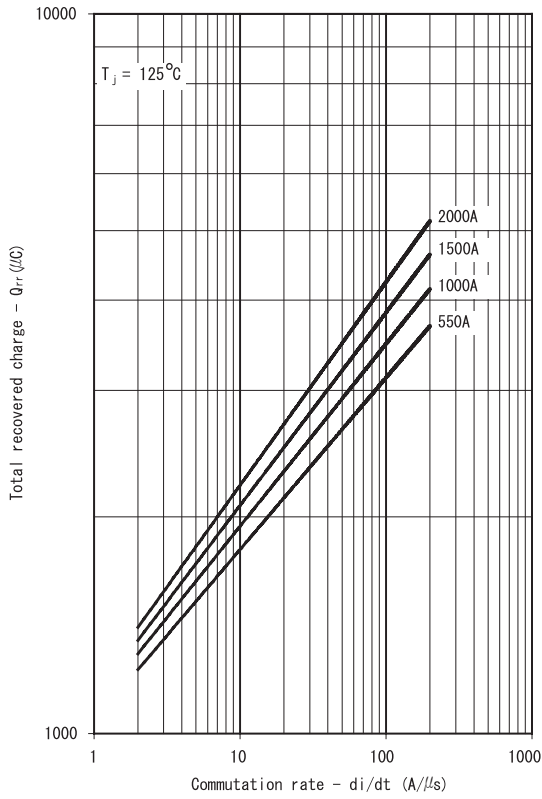


Figure 6 – Recovered charge, Q_{ra} (50% chord)

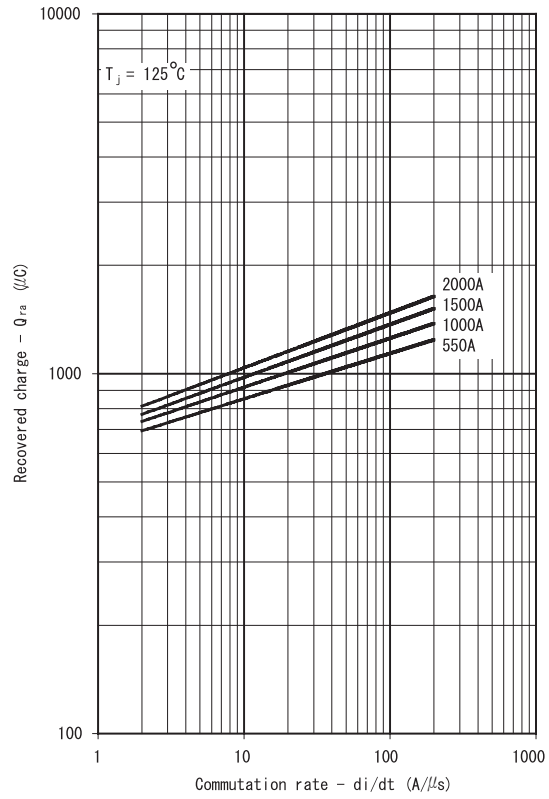


Figure 7 – Peak reverse recovery current, I_{rm}

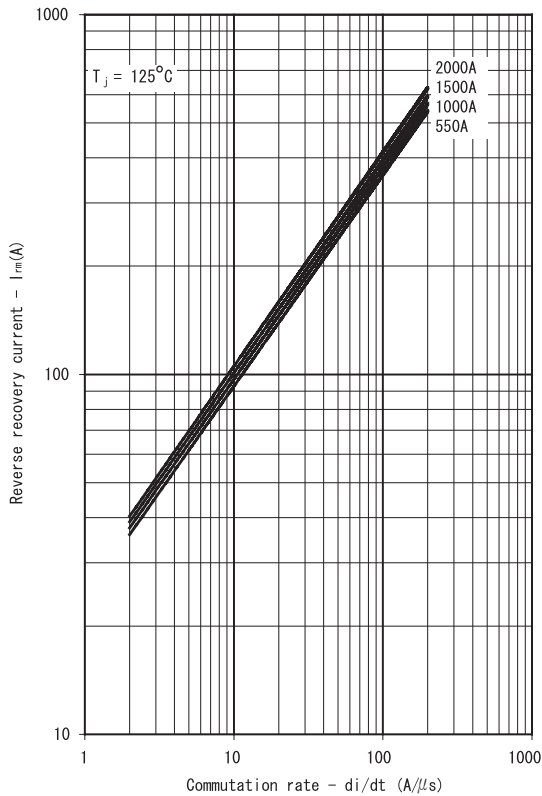


Figure 8 – Maximum recovery time, t_{rr} (50% chord)

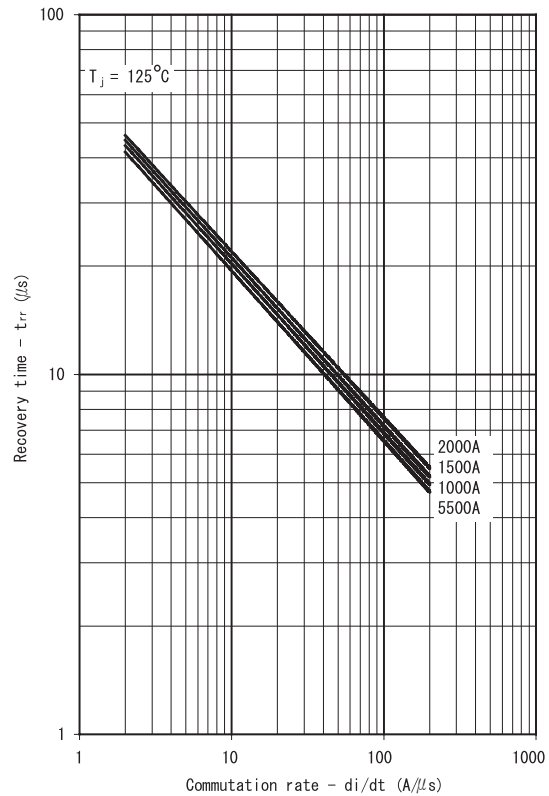


Figure 9 On-state current vs. Power dissipation
Double Side Cooled (Sine wave)

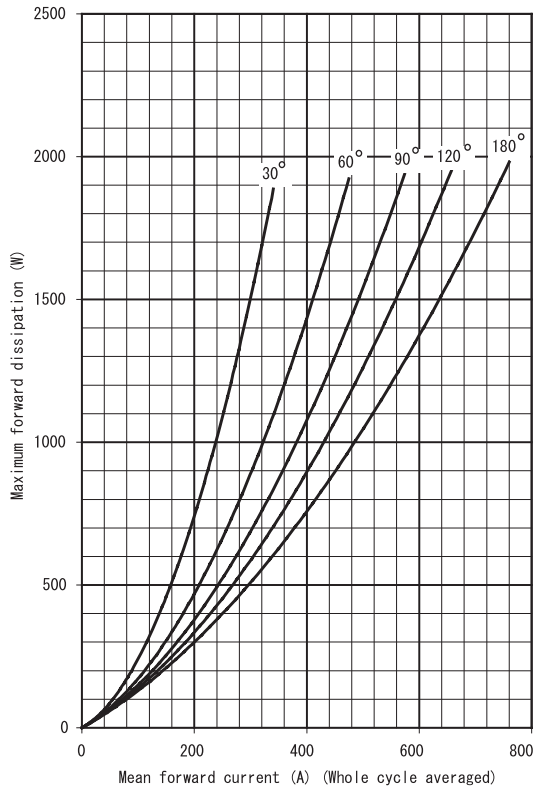


Figure 10 On-state current vs. Heatsink temperature
temperature - Double Side Cooled (Sine wave)

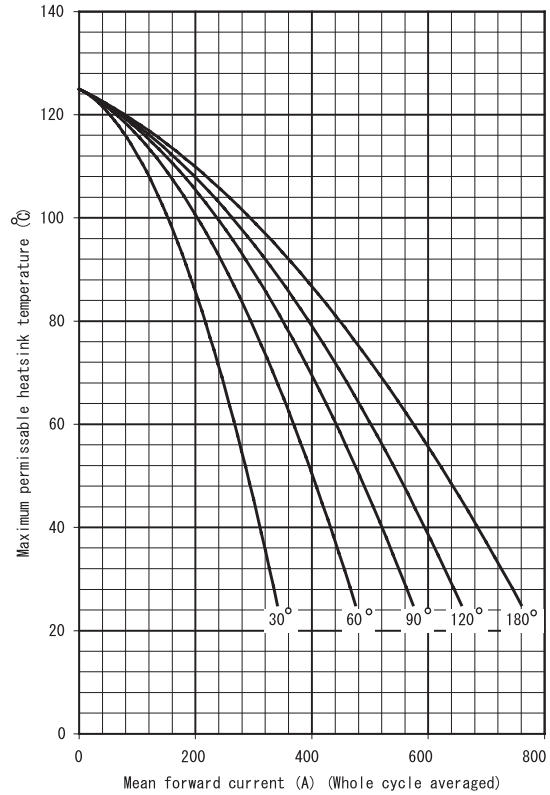


Figure 11 On-state current vs. Power dissipation
Double Side Cooled (Square wave)

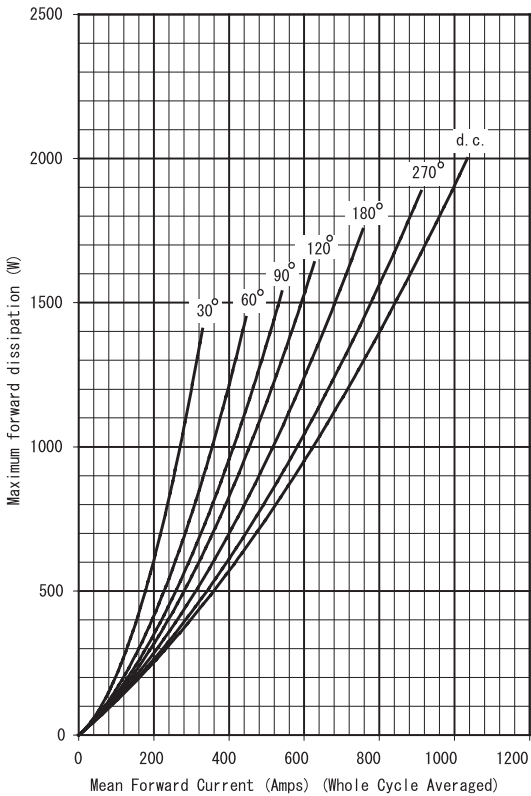


Figure 12 On-state current vs. Heatsink temperature
temperature Double Side Cooled (Square wave)

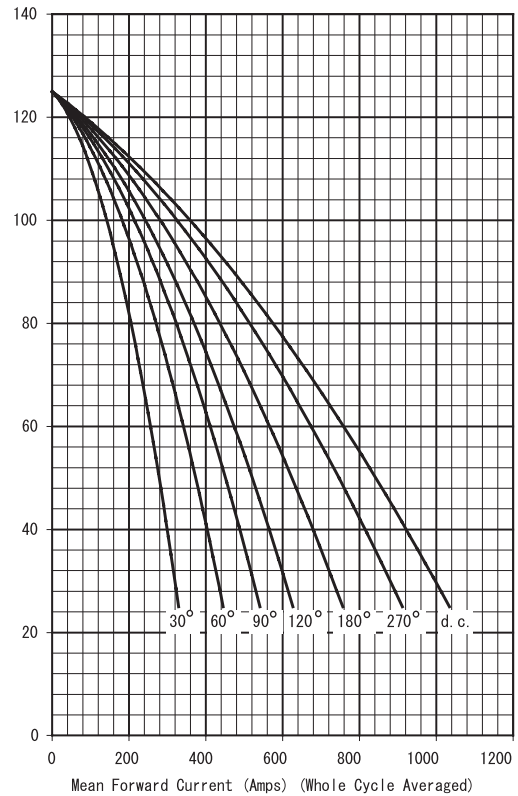


Figure 13 On-state current vs. Power dissipation Single Side Cooled (Sine wave)

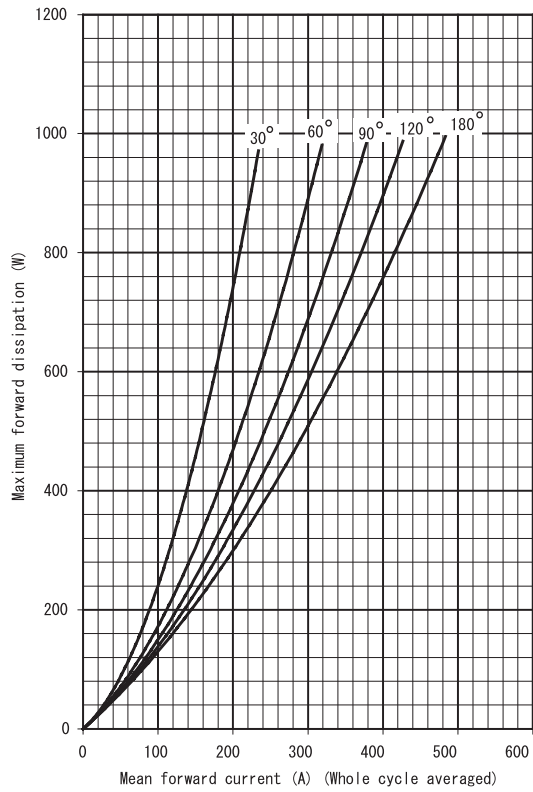


Figure 14 On-state current vs. Heatsink temperature Single Side Cooled (Sine wave)

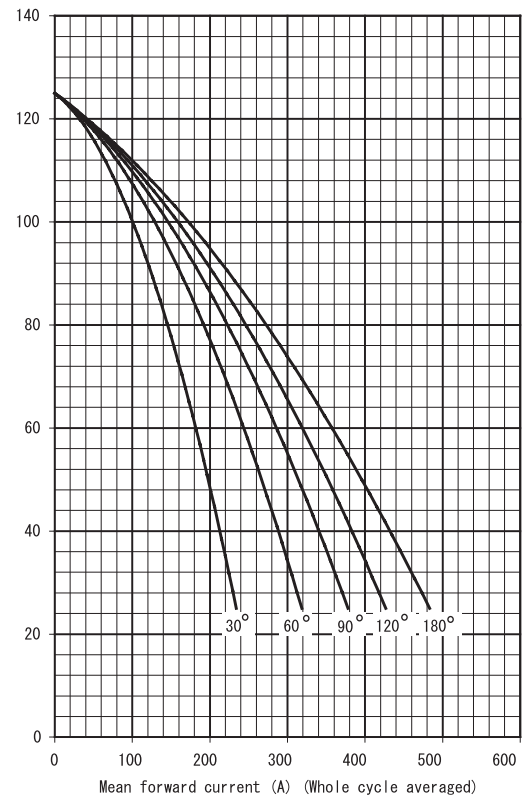


Figure 15 On-state current vs. Power dissipation Single Side Cooled (Square wave)

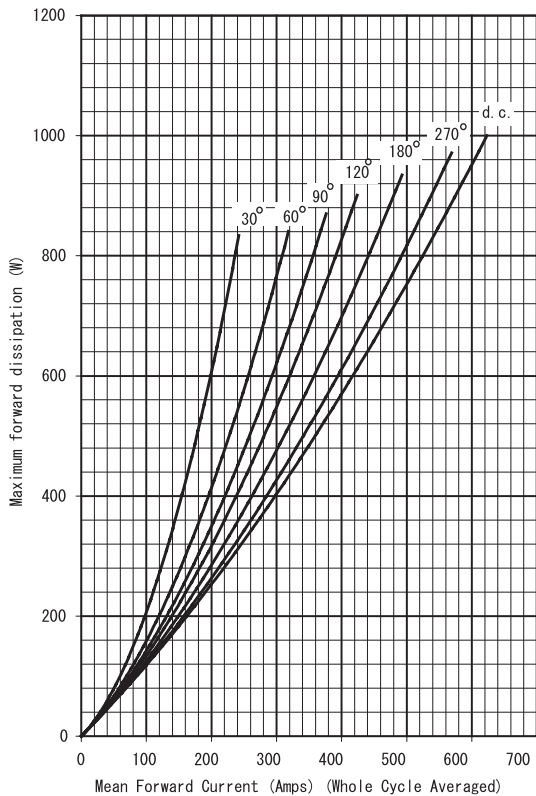


Figure 16 On-state current vs. Heatsink temperature Single Side Cooled (Square wave)

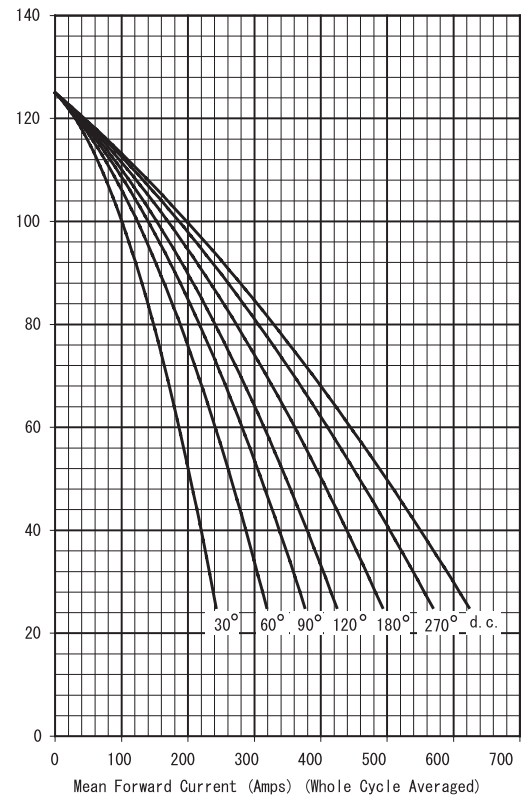


Figure 17 - Maximum surge and I^2t Ratings

