Phase Control Thyristors

Features

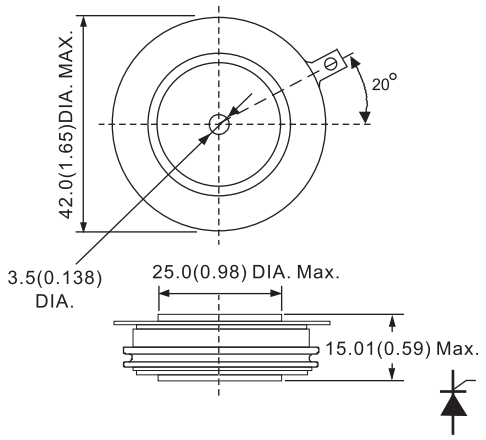
1.610 PT series Thyristors are deigned for various power controls
2. Voltage rating up to 2400 V.
3. Typical application
   - DC motor control
   - Controlled DC power supplies
   - AC controllers

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

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 °C			610	A
$I_{T(RMS)}$	Max. R_{MS} on-state current	Double side cooled , T_{hs}=25 °C			1220	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	2000	to	2400	V
I_{TSM}	Surge on-state current	10 ms half sine wave V_R = 0.6VRRM			7100	A
I^2t	For fusing coordination				305	KA^2s
$V_{T(TO)}$	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, tr≤0.5 μs			1000	A/μs
t_q	Typical turn-off time	I_{TM}=400A , $d_{v/dt}$=30V/μs $d_{iRR/dt}$=-10 A/μs			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

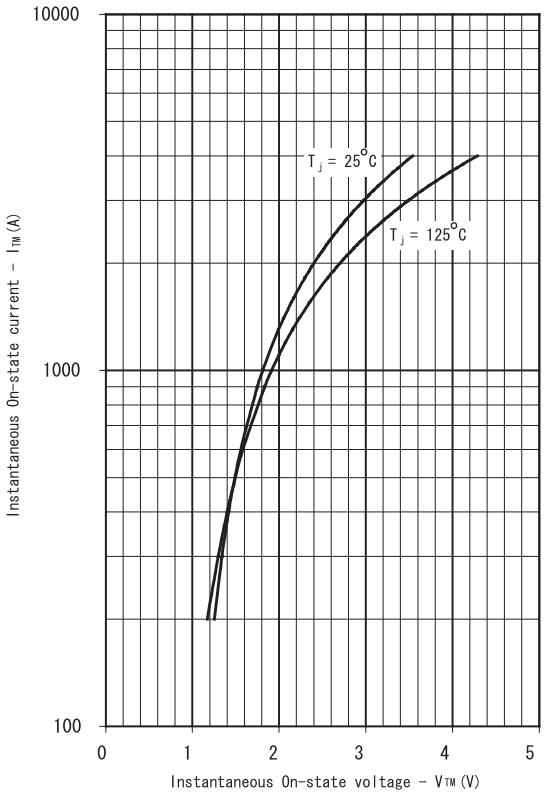


Figure 2 - Transient thermal impedance

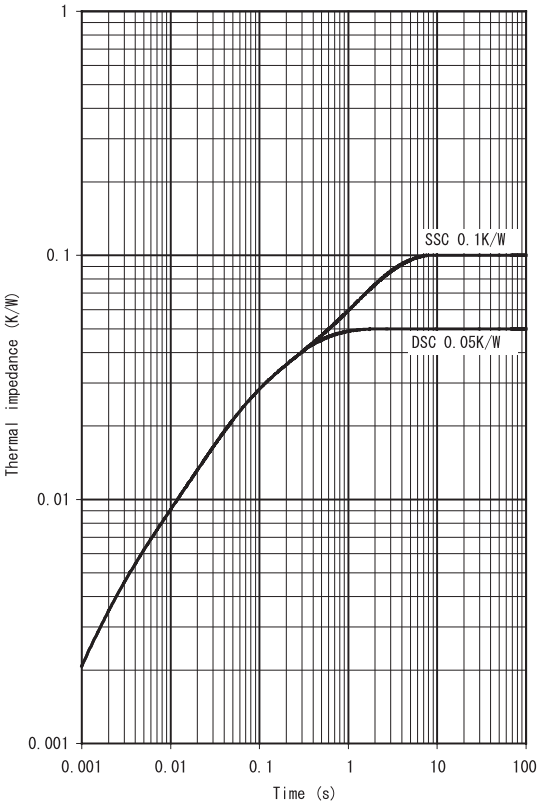


Figure 3 - Gate characteristics - Trigger limits

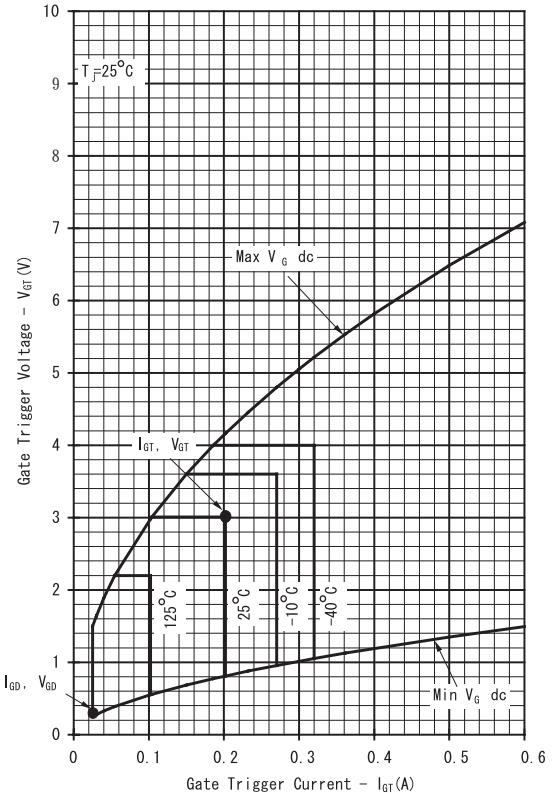


Figure 4 - Gate characteristics - Power curves

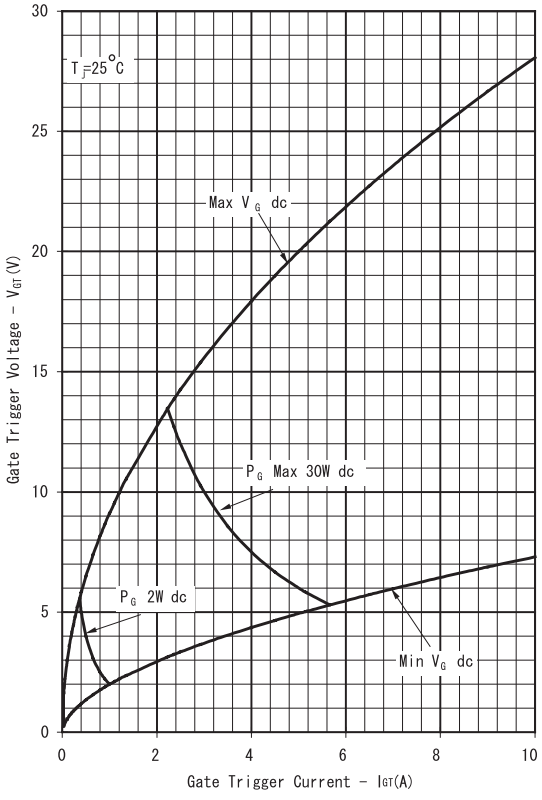


Figure 5 – Total recovered charge, Q_{rr}

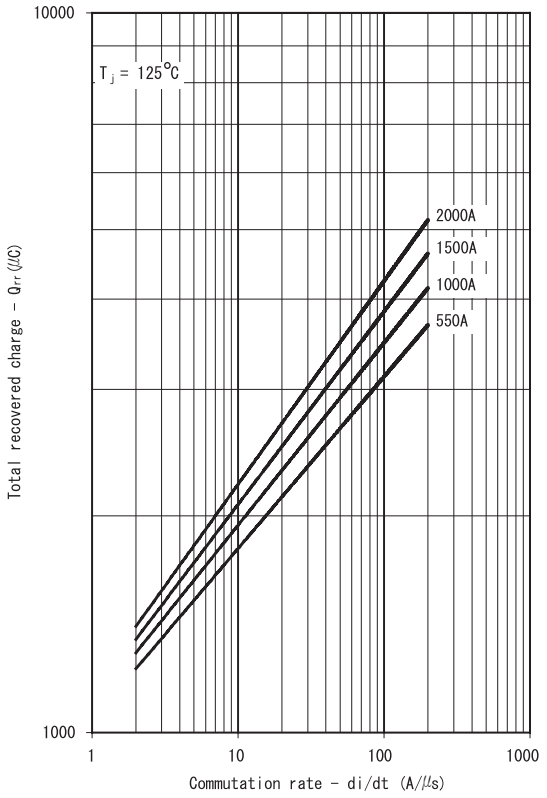


Figure 6 – Recovered charge, Q_{ra} (50% chord)

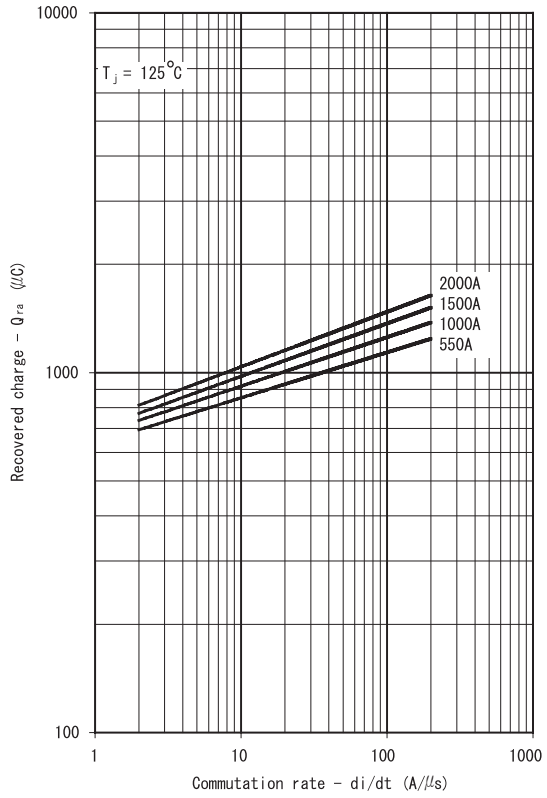


Figure 7 – Peak reverse recovery current, I_{rm}

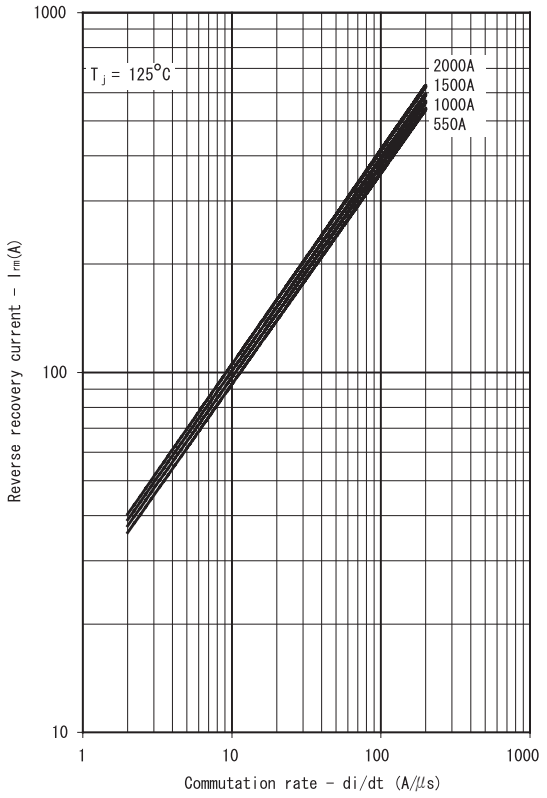


Figure 8 – Maximum recovery time, t_{rr} (50% chord)

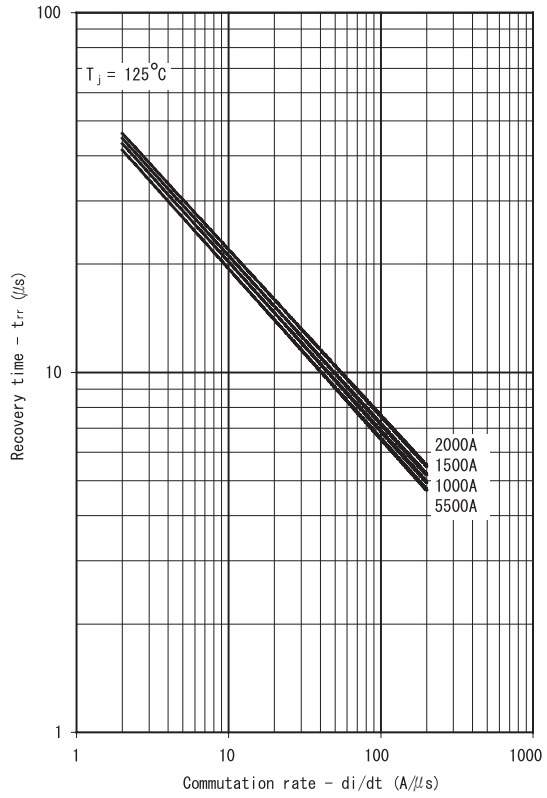


Figure 9 On-state current vs. Power dissipation Double Side Cooled (Sine wave)

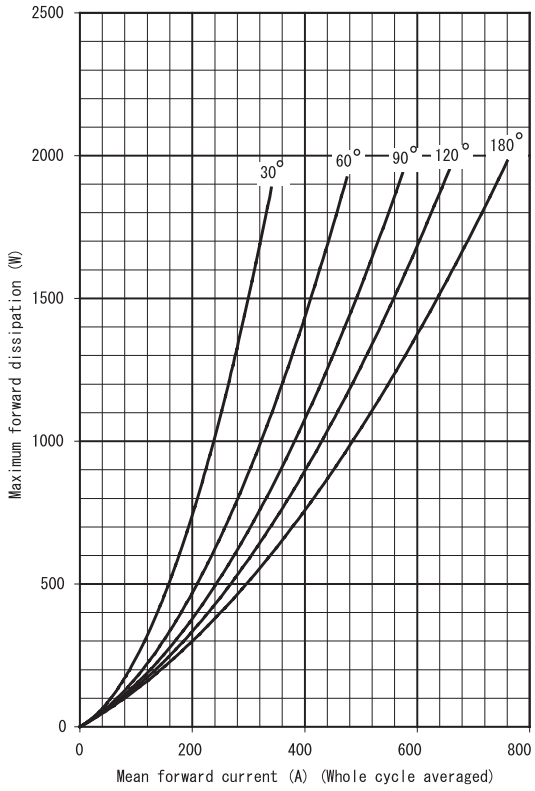


Figure 10 On-state current vs. Heatsink temperature - Double Side Cooled (Sine wave)

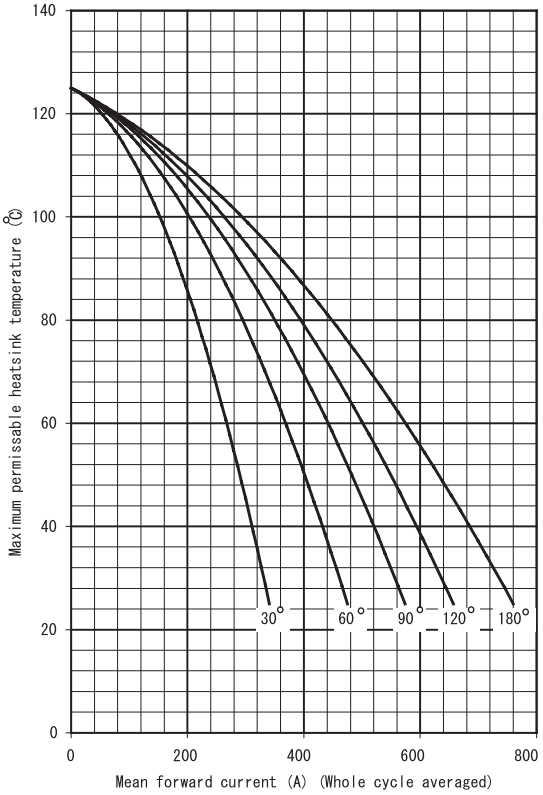


Figure 11 On-state current vs. Power dissipation Double Side Cooled (Square wave)

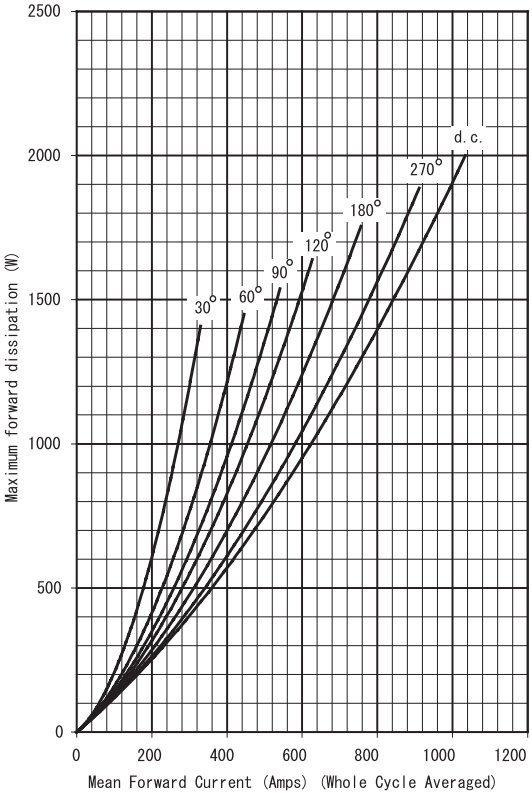


Figure 12 On-state current vs. Heatsink temperature Double Side Cooled (Square wave)

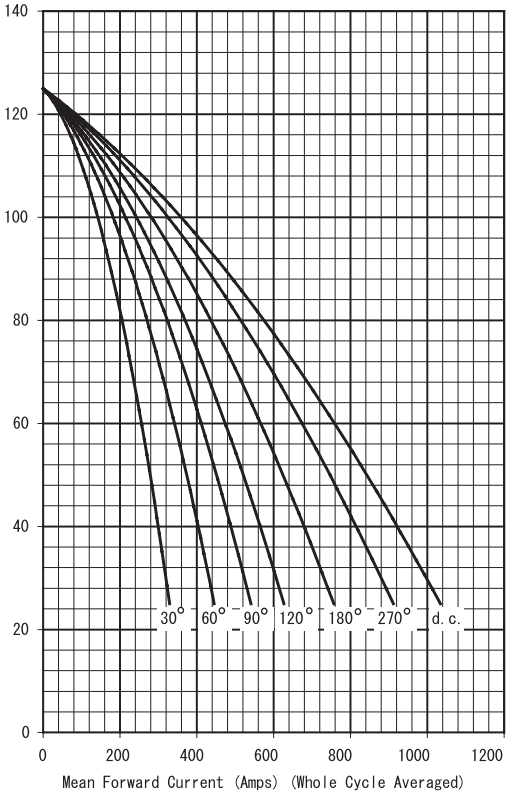


Figure 13 On-state current vs. Power dissipation Single Side Cooled (Sine wave)

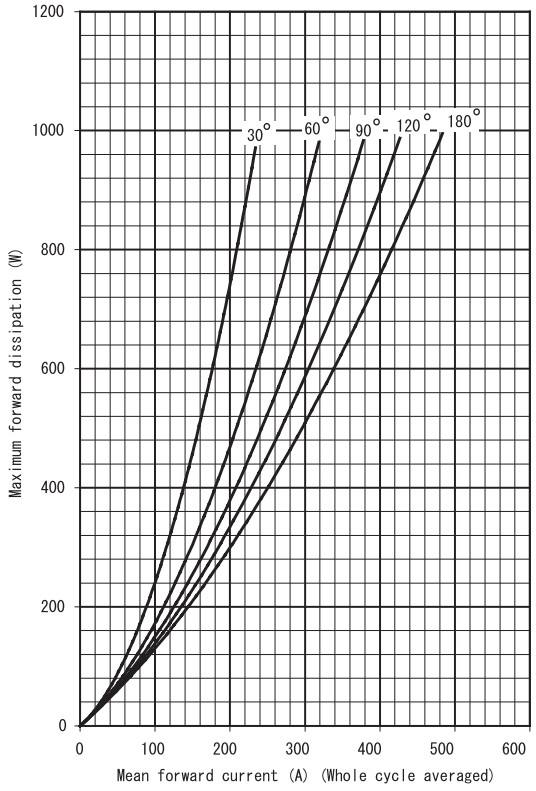


Figure 14 On-state current vs. Heatsink temperature Single Side Cooled (Sine wave)

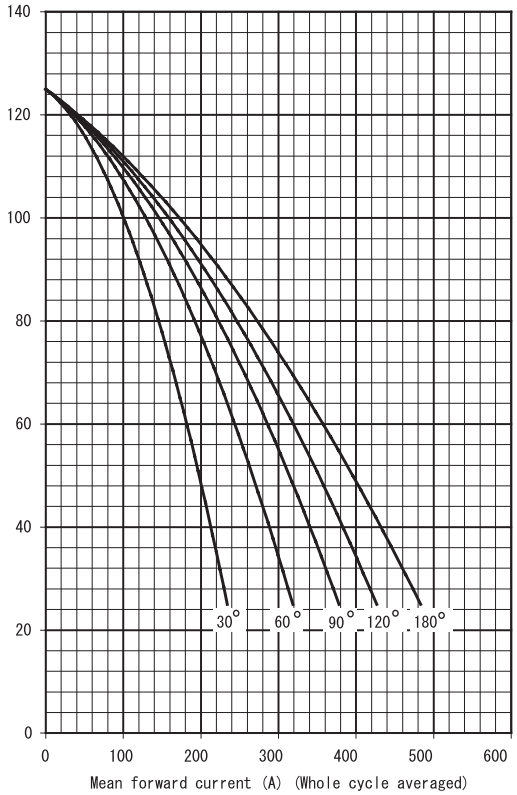


Figure 15 On-state current vs. Power dissipation Single Side Cooled (Square wave)

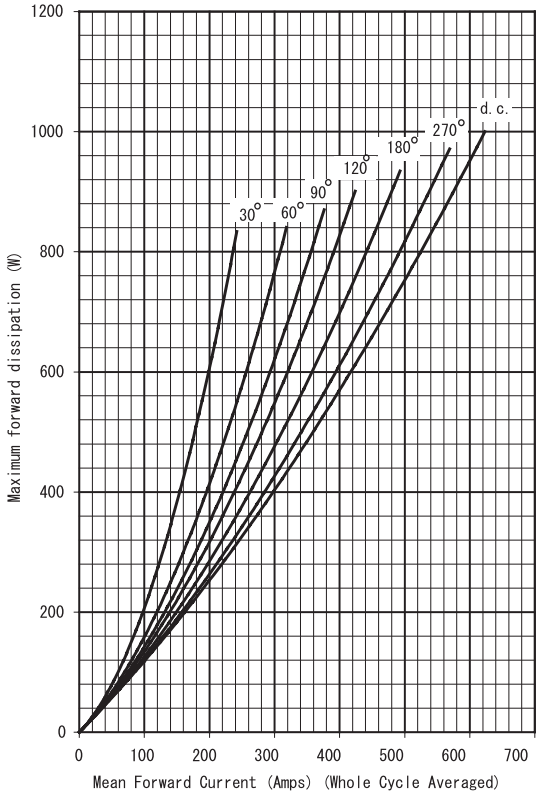


Figure 16 On-state current vs. Heatsink

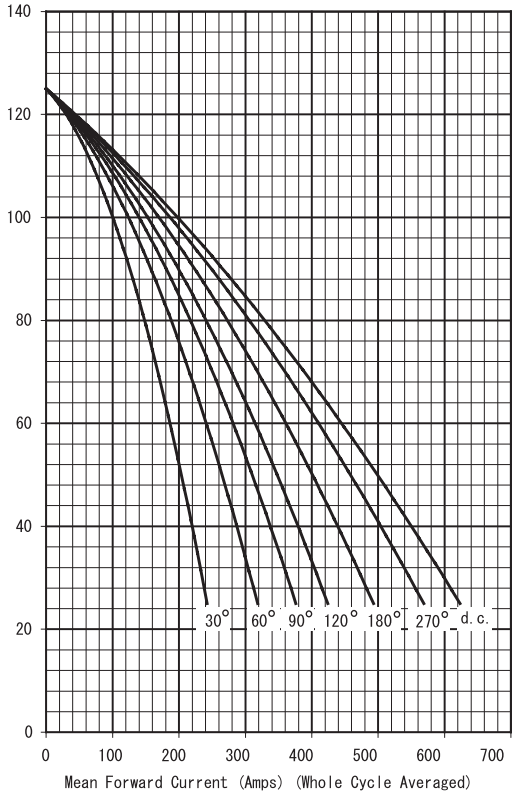


Figure 17 - Maximum surge and I^2t Ratings