

Phase Control Thyristors

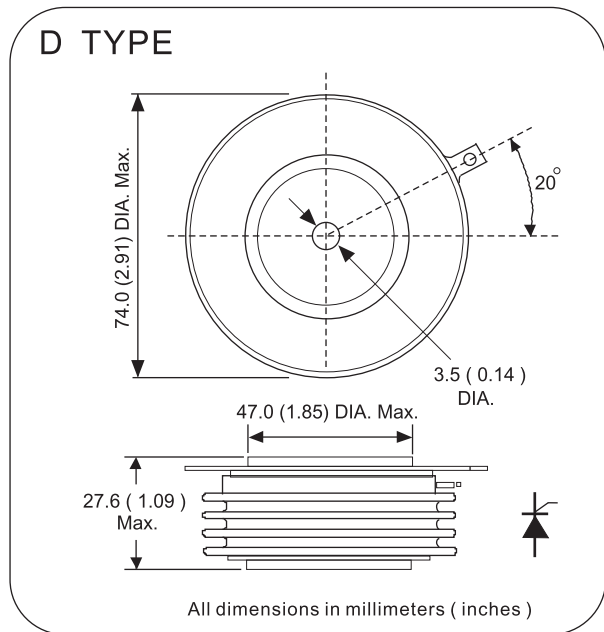
Features

- 1010 PT series Thyristors are designed for various power controls
- Voltage rating up to 3800 V.
- Typical application
 - DC motor control
 - Controlled DC power supplies
 - AC controllers

Ordering code

1010	PT	xx	D	0
(1)	(2)	(3)	(4)	(5)

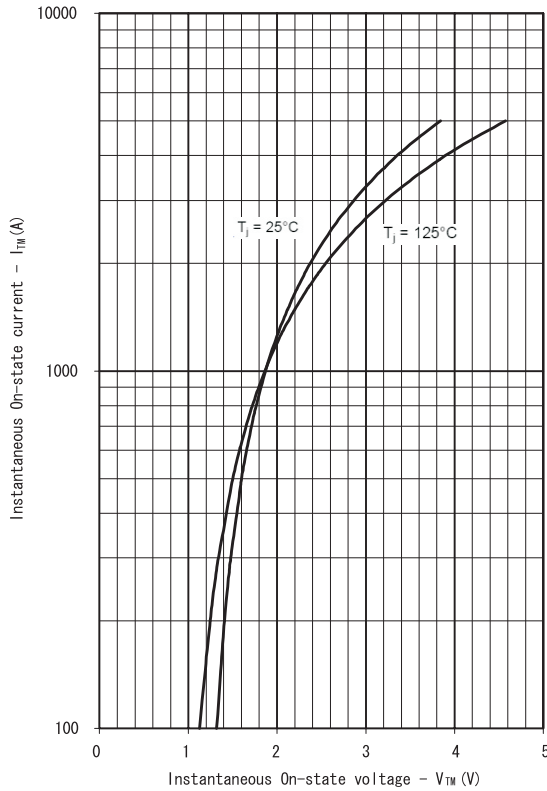
- (1) Maximum average on-state current , A
 (2) For Phase Control Thyristor
 (3) Voltage code , code x 100 = V_{RRM} / V_{DRM}
 (4) package style : A , B , C , D , E for Disc Type
 (5) Terminal types
 0 - for eyelet



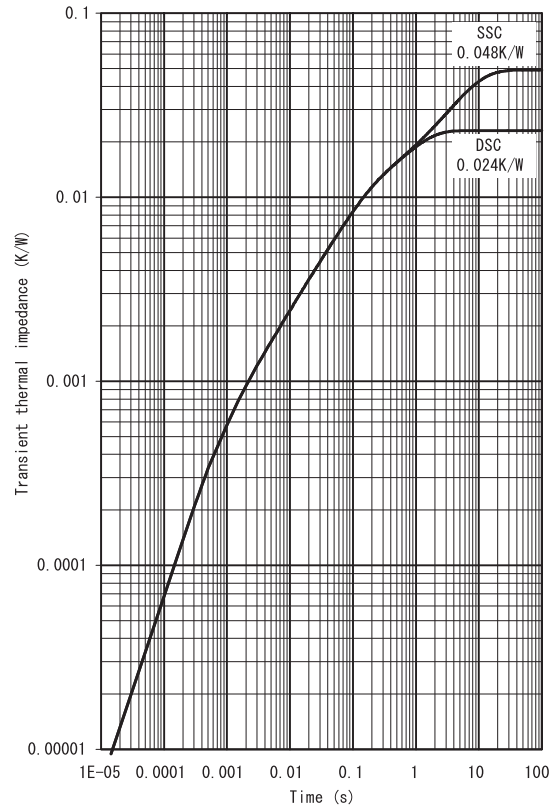
Electrical Characteristics

Symbol	Parameter	Condition	Value			Unit
			Min.	Type	Max.	
$I_{T(AV)}$	Mean on-state current	180° half sine wave , 50Hz Double side cooled , $T_c=85^\circ\text{C}$			1010	A
$I_{T(RMS)}$	Max. RMS on-state current	Double side cooled , $T_{hs}=25^\circ\text{C}$			1754	A
V_{RRM} V_{DRM}	Repetitive peak off-state voltage Repetitive peak reverse voltage	V_{DRM} & V_{RRM} $t_p=10\text{ms}$ V_{DSM} & $V_{RSM}=V_{DRM}$ & $V_{RRM} + 100\text{V}$	2500		3800	V
I_{TSM}	Surge on-state current	10 ms half sine wave			12100	A
I_t^2	For fusing coordination	$V_R=0.6V_{RRM}$			8000	$10^3\text{A}^2\text{s}$
$V_{T(TO)}$	Threshold voltage				1.03	V
r_t	On-state slope resistance				0.32	mΩ
V_{TM}	Max. Forward voltage drop	$I_{TM}=4000\text{A}$, $F=24.0\text{KN}$			1.8	V
I_H	Holding current	$V_A=12\text{V}$, $I_A=1\text{A}$			600	mA
d_i/dt	Critical rate of rise of turned-on current	Gate drive 20V , 20Ω , $t_r \leq 0.5 \mu\text{s}$			300	A/ μs
t_q	Typical turn-off time	$I_{TM}=600\text{A}$, $d_v/dt=30\text{V}/\mu\text{s}$ $d_iRR/dt=-10 \text{A}/\mu\text{s}$			300	μs
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			10	W
P_{GM}	Max. peak gate power square				150	W
I_{GT}	Gate trigger current	$V_A=12\text{V}$, $I_A=1\text{A}$			400	mA
V_{GT}	Gate trigger voltage				4	V
T_j	Max. operating temperature range		- 40		125	$^\circ\text{C}$
T_{stg}	Storage temperature		- 40		150	$^\circ\text{C}$
$R_{th(j-h)}$	Thermal resistance(junction to heatsink)	Double side cooled , clamping force 24 KN			0.004	$^\circ\text{C}/\text{W}$
F_m	Mounting force		19		26	KN
M_t	Approximate weight			425		g

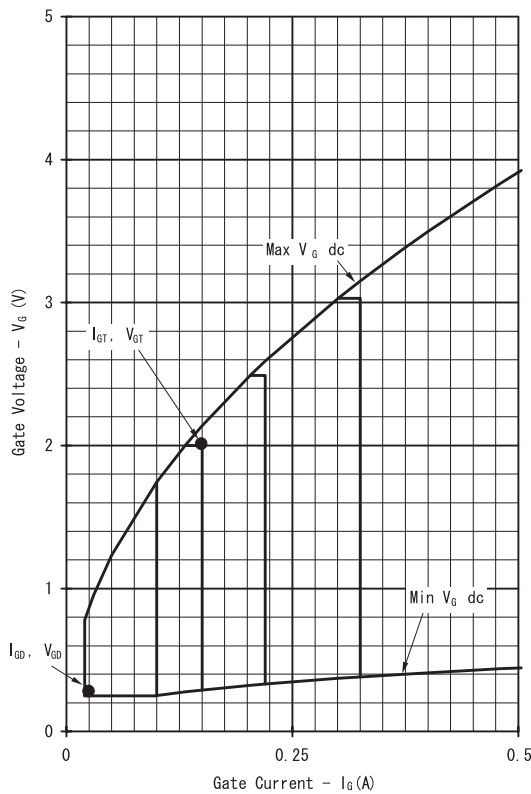
On-state characteristics of Limit device



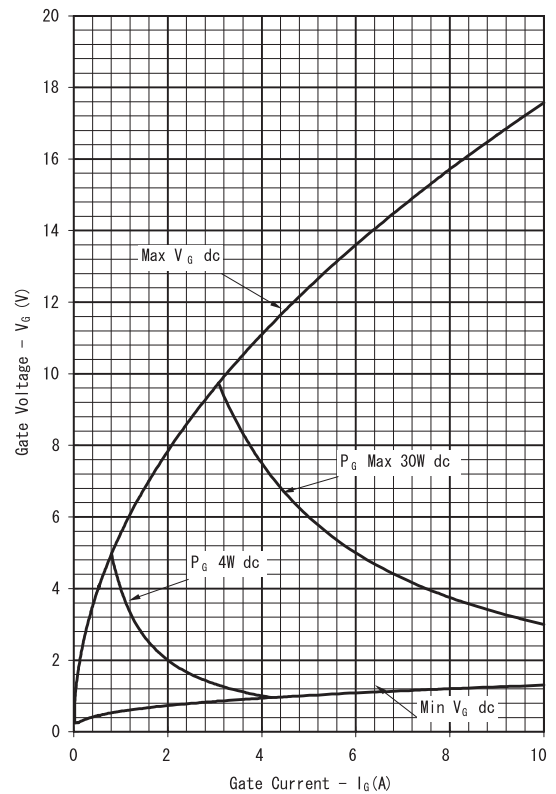
Transient Thermal Impedance



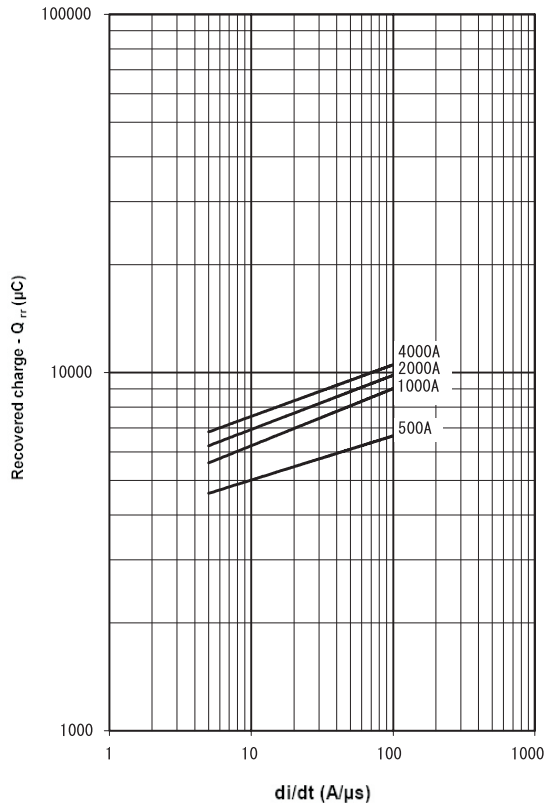
Gate Characteristics - Trigger Limits



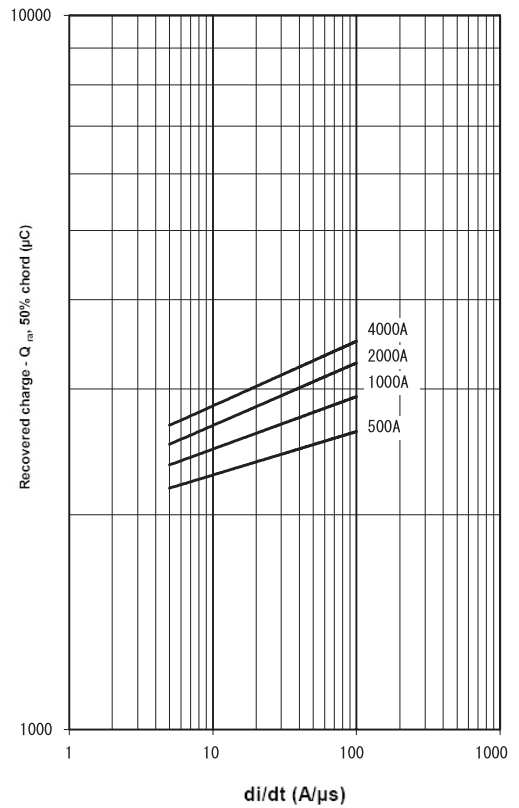
Gate Characteristics - Power Curves



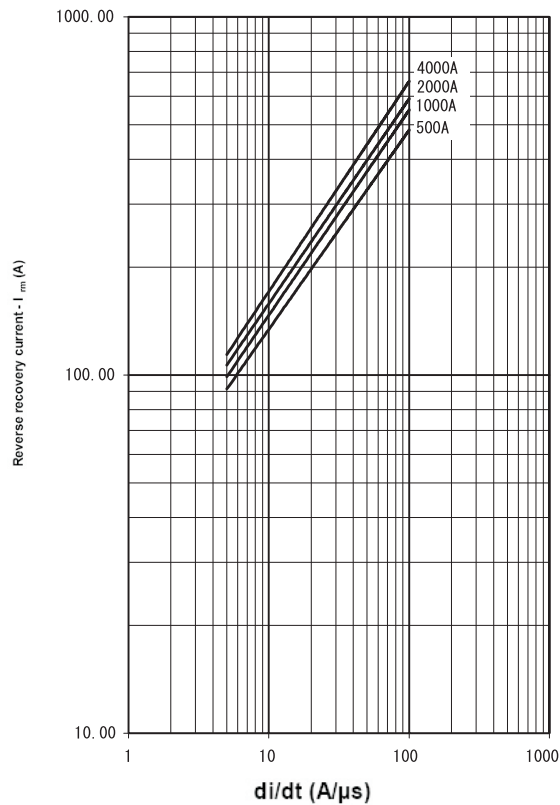
Recovered Charge, Q_{rr}



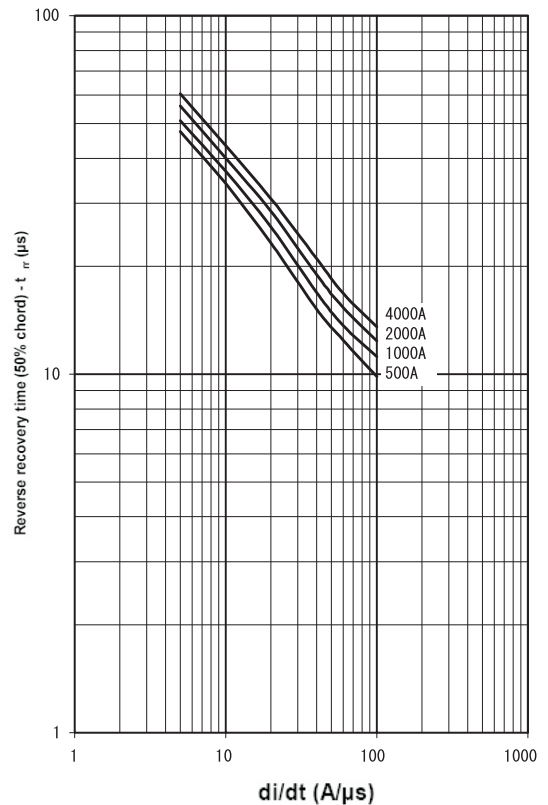
Recovered charge, Q_{ra} (50% chord)



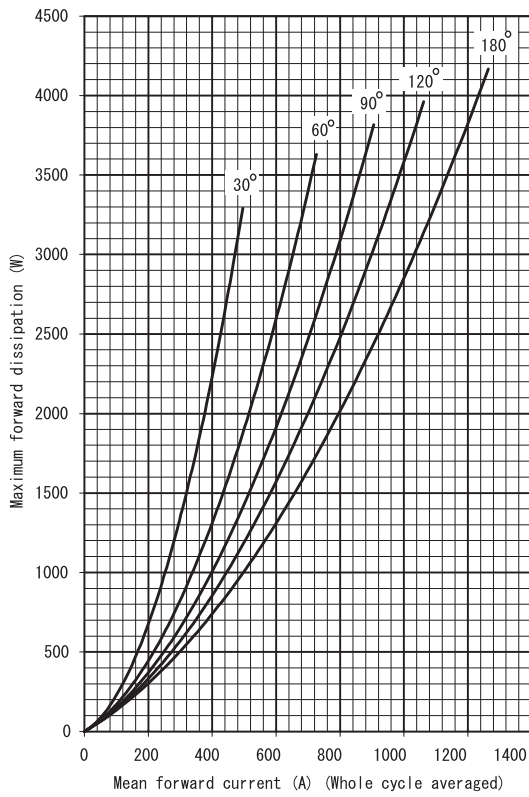
Reverse recovery current, I_{rm}



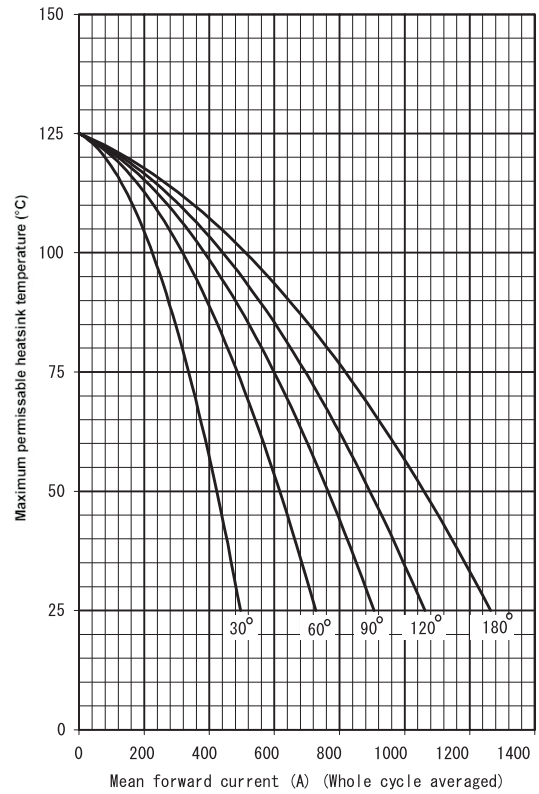
Reverse recovery time, t_{rr} (50% chord)



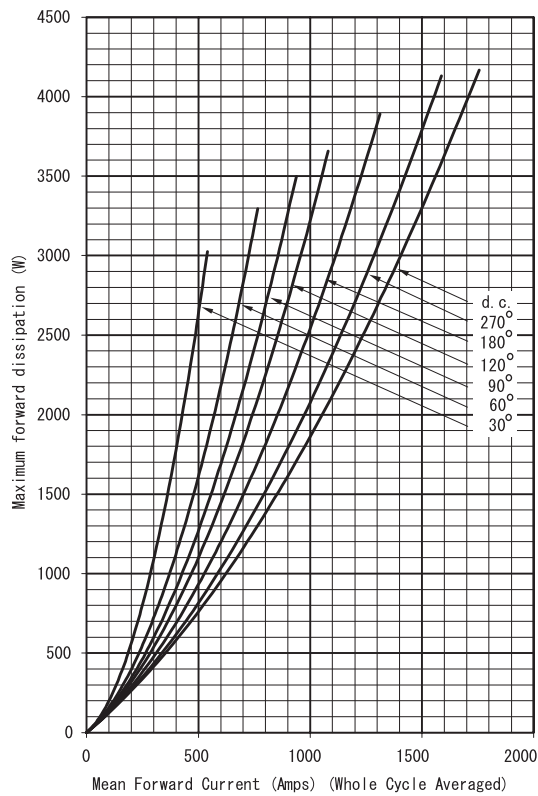
Double Side Cooled (Sine wave)



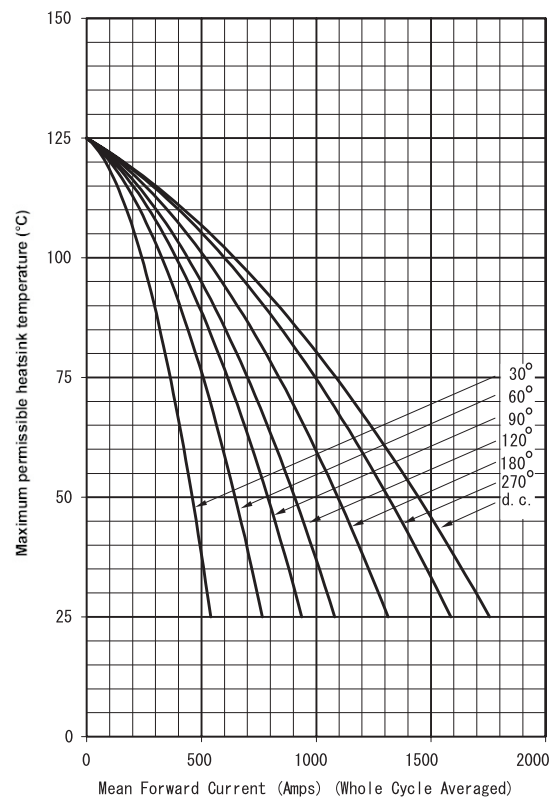
temperature - Double Side Cooled (Sine wave)



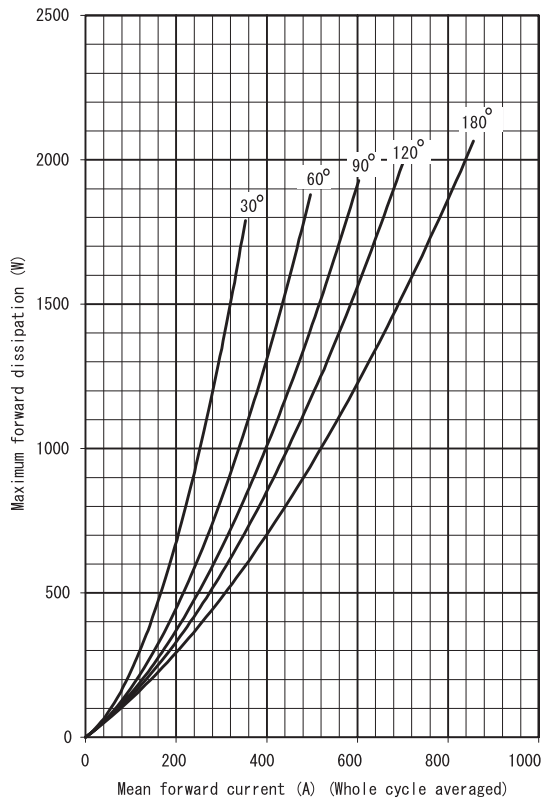
Double Side Cooled (Square wave)



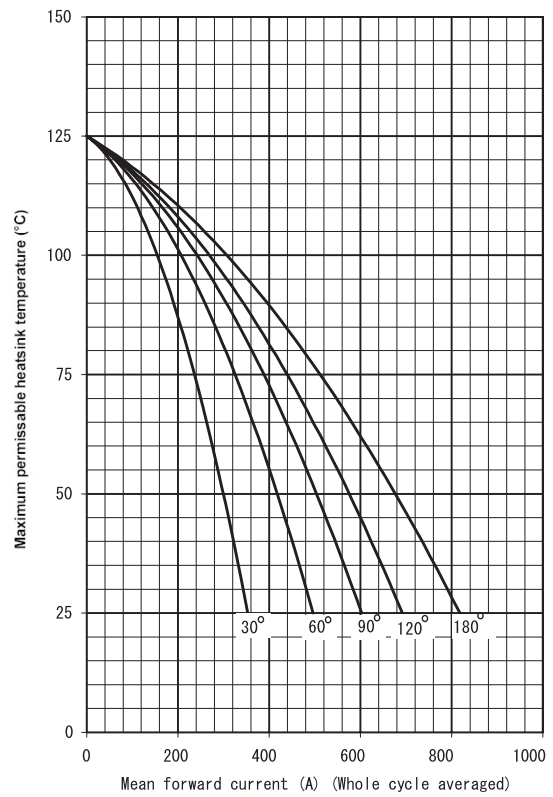
temperature - Double Side Cooled (Square wave)



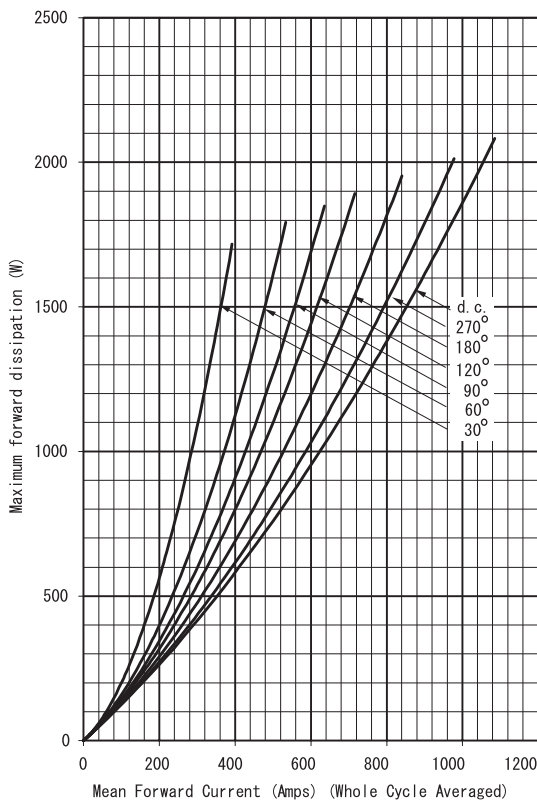
Single Side Cooled (Sine wave)



temperature – Single Side Cooled (Sine wave)



Single Side Cooled (Square wave)



temperature – Single Side Cooled (Square wave)

