

## Phase Control Thyristors

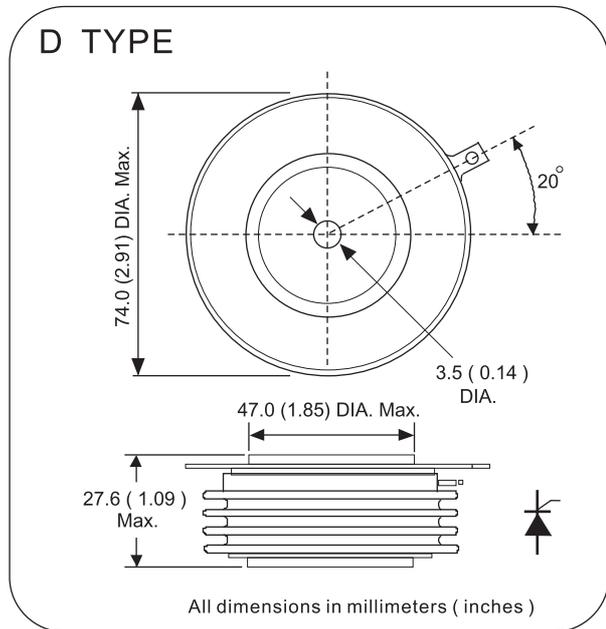
### Features

1. 1010 PT series Thyristors are designed for various power controls
2. Voltage rating up to 3800 V.
3. Typical application
  - DC motor control
  - Controlled DC power supplies
  - AC controllers

### Ordering code

<b>1010</b>	<b>PT</b>	<b>xx</b>	<b>D</b>	<b>0</b>
(1)	(2)	(3)	(4)	(5)

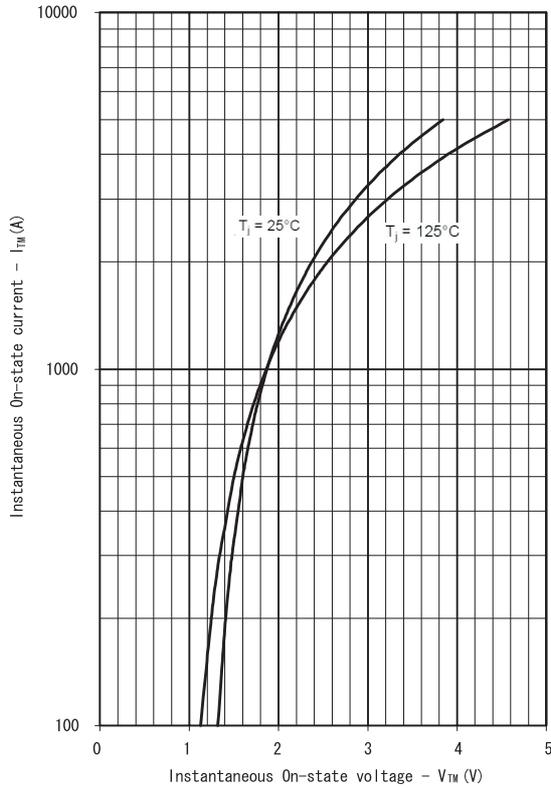
- (1) Maximum average on-state current , A  
 (2) For Phase Control Thyristor  
 (3) Voltage code , code x 100 =  $V_{RRM} / V_{DRM}$   
 (4) package style : A , B , C , D , E for Disc Type  
 (5) Terminal types  
 0 - for eyelet



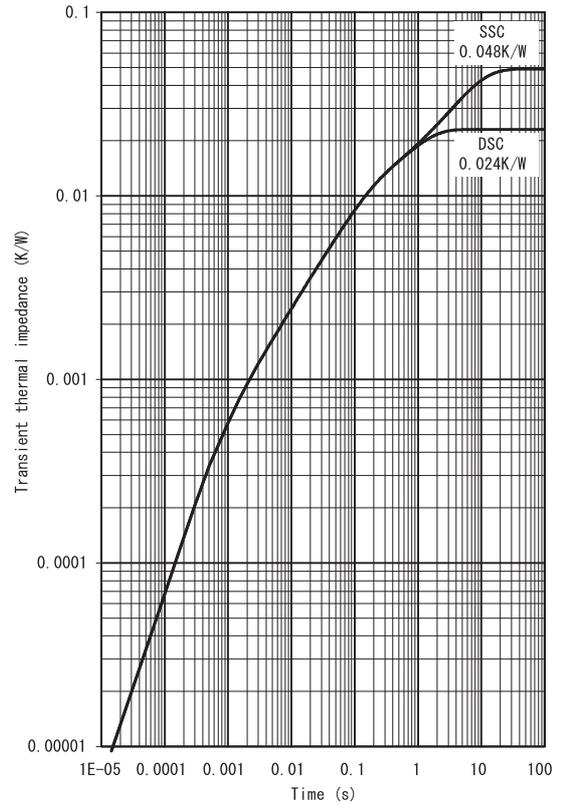
### Electrical Characteristics

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	°C
$T_{stg}$	Storage temperature		- 40		150	°C
$R_{th(j-h)}$	Thermal resistance(junction to heatsink)	Double side cooled , clamping force 24 KN			0.004	°C/W
$F_m$	Mounting force		19		26	KN
$M_t$	Approximate weight				425	g

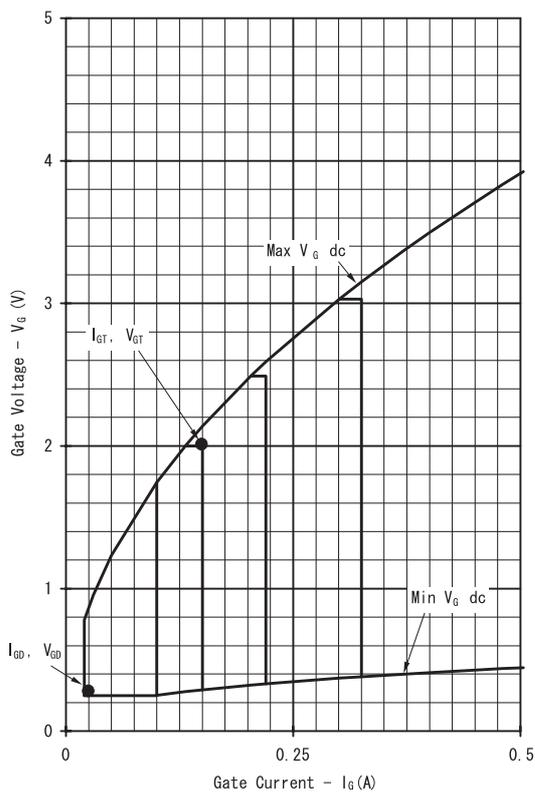
On-state characteristics of Limit device



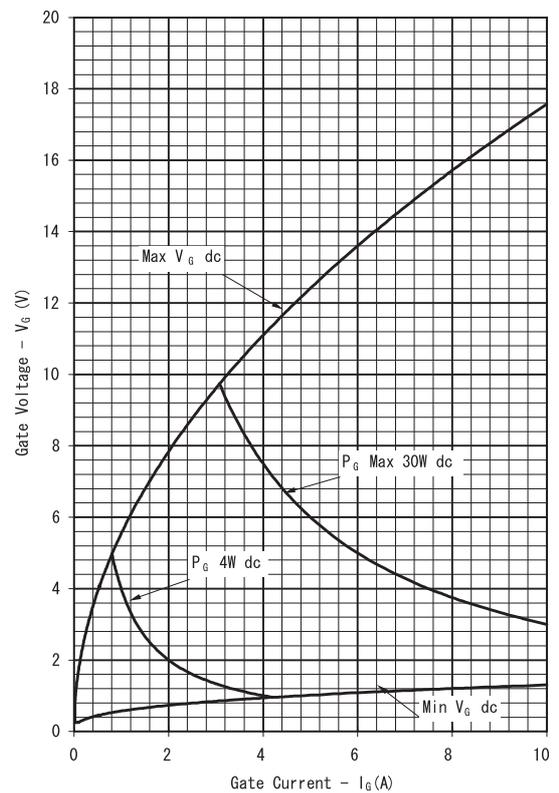
Transient Thermal Impedance



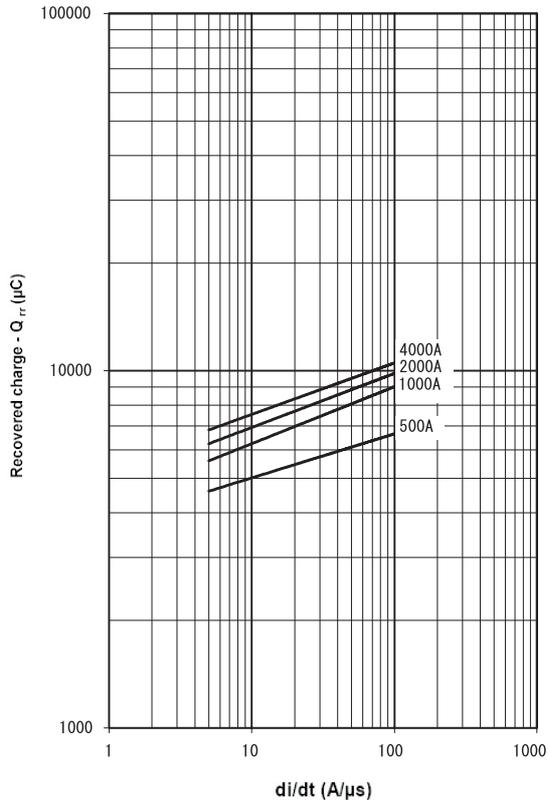
Gate Characteristics - Trigger Limits



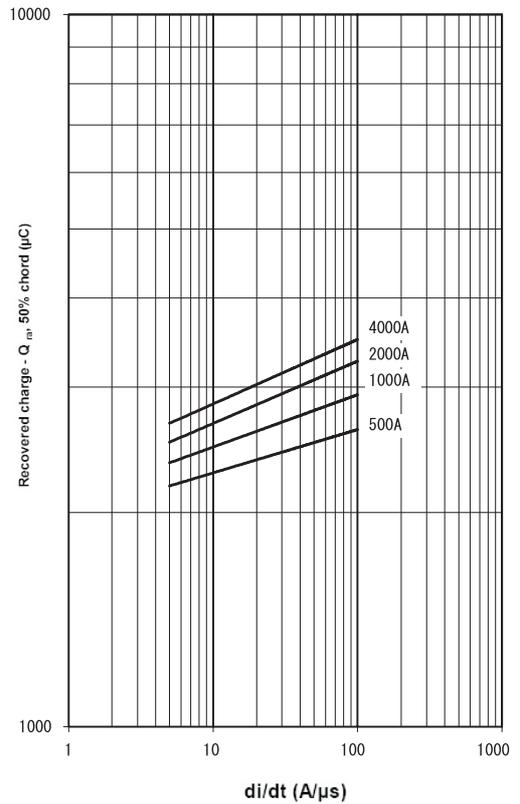
Gate Characteristics - Power Curves



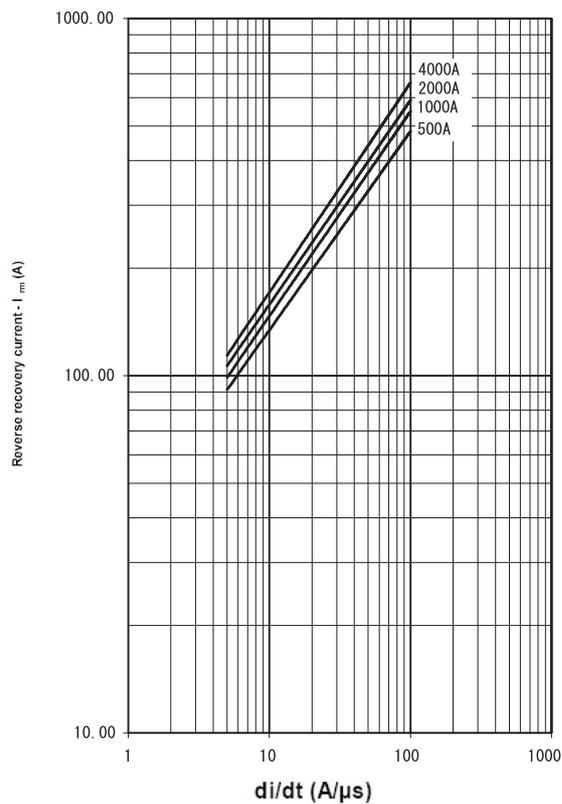
Recovered Charge,  $Q_{rr}$



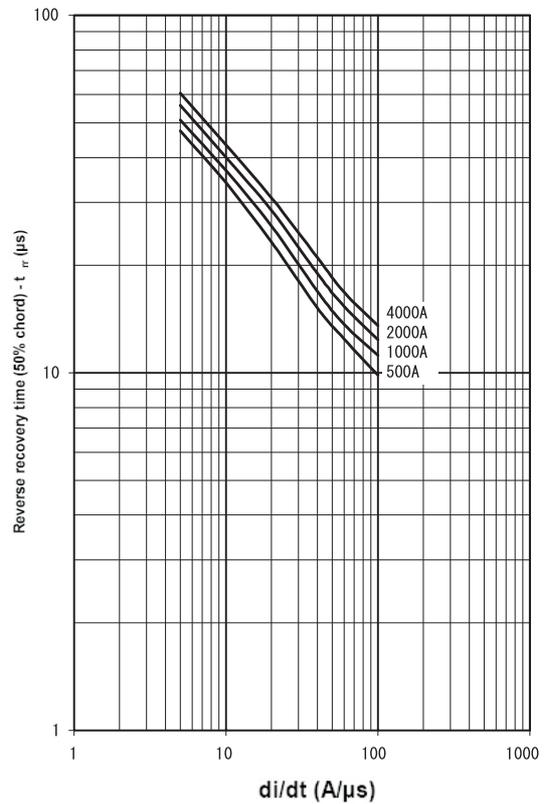
Recovered charge,  $Q_{ra}$  (50% chord)



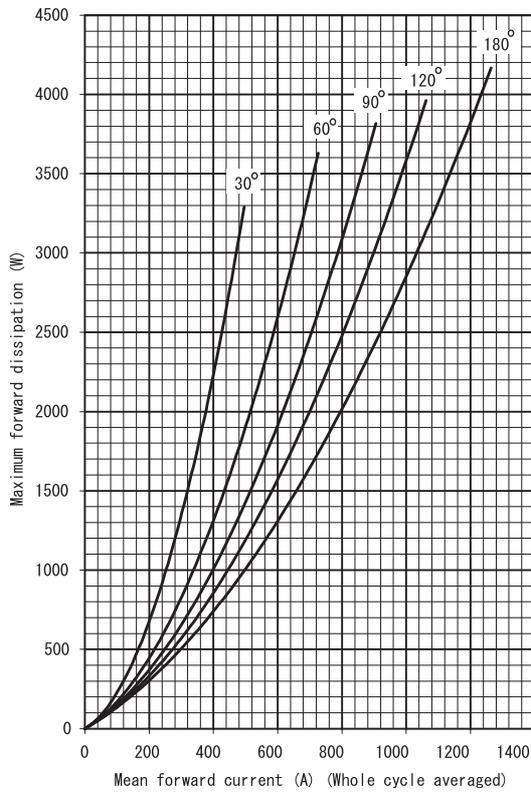
Reverse recovery current,  $I_{rm}$



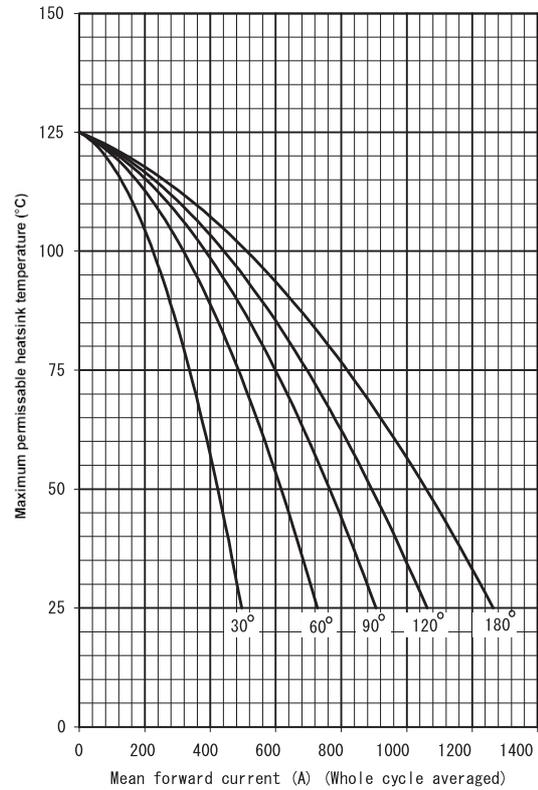
Reverse recovery time,  $t_{rr}$  (50% chord)



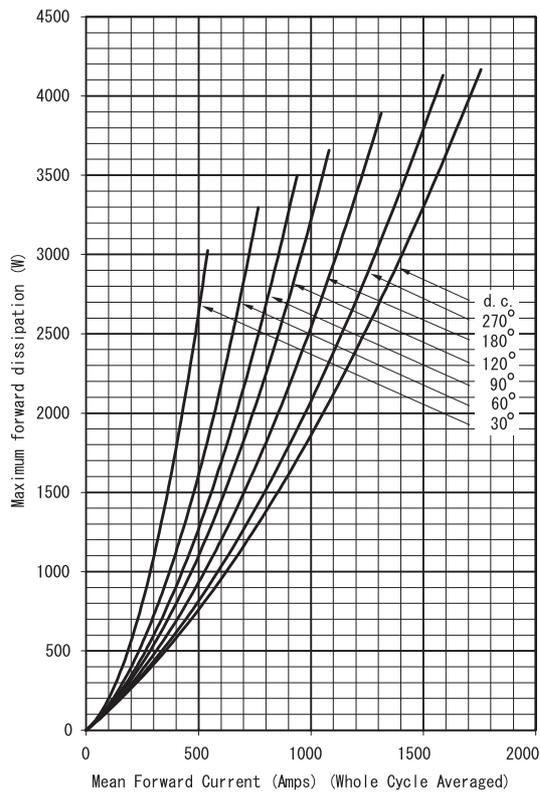
Double Side Cooled (Sine wave)



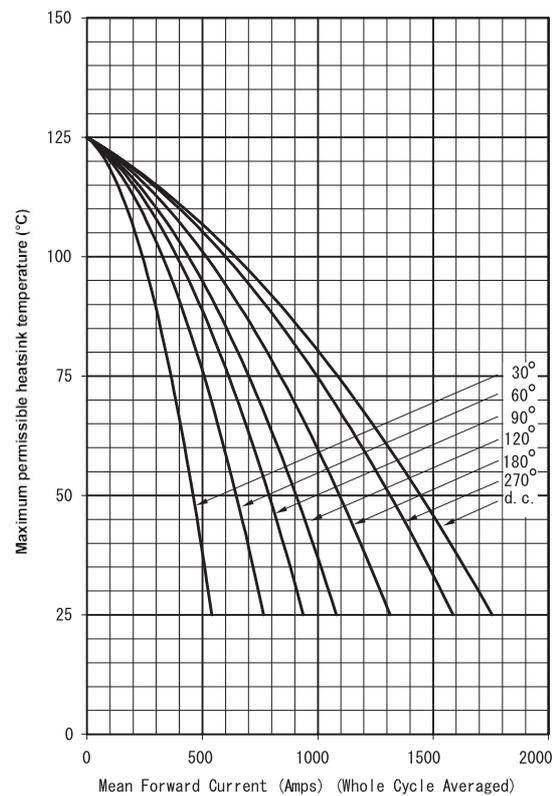
temperature - Double Side Cooled (Sine wave)



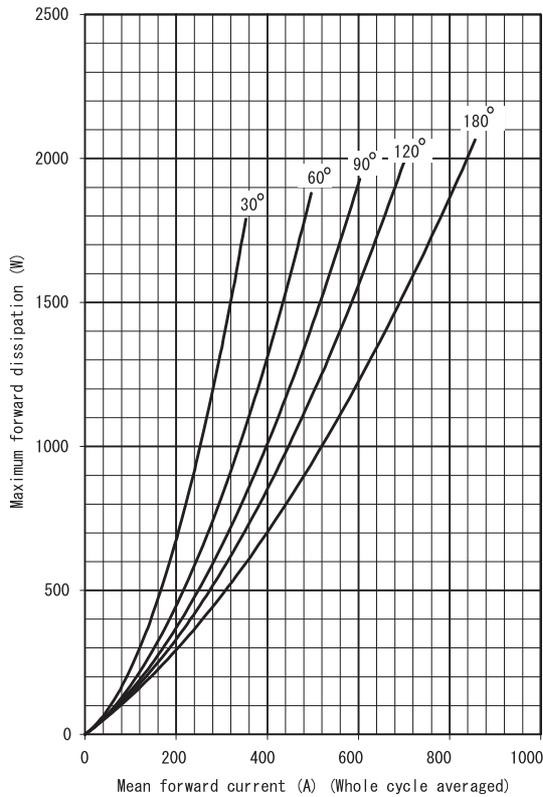
Double Side Cooled (Square wave)



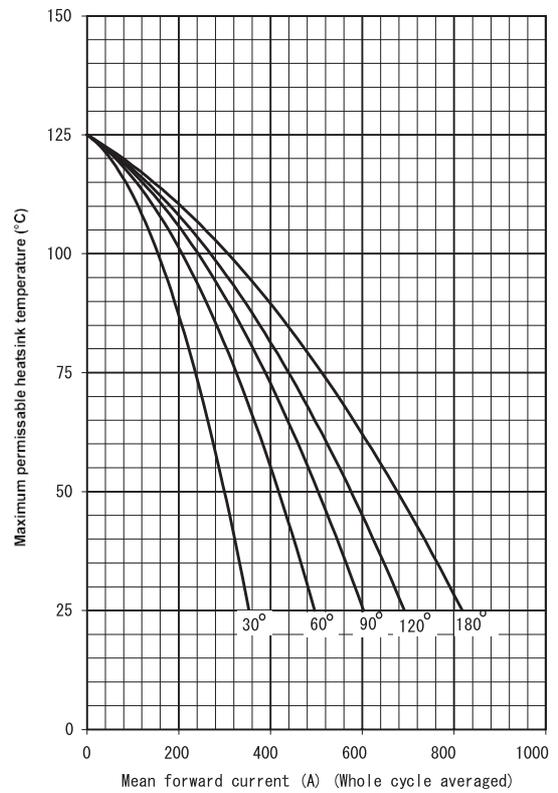
temperature - Double Side Cooled (Square wave)



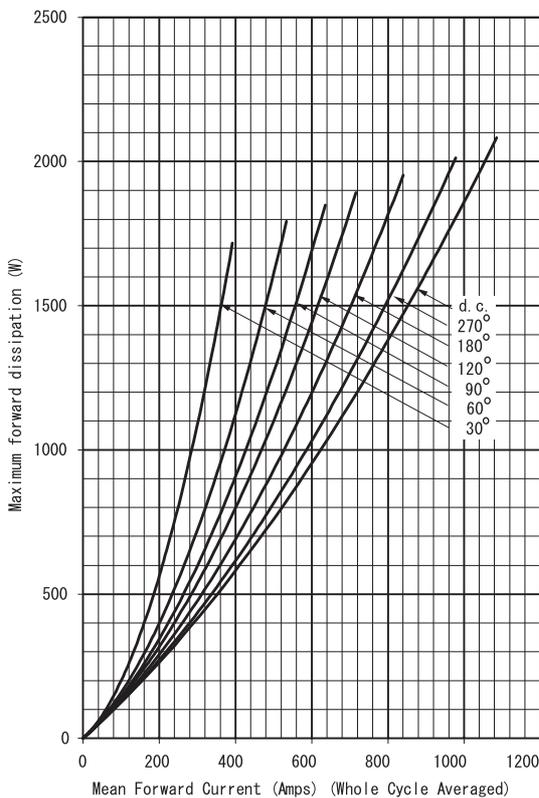
Single Side Cooled (Sine wave)



temperature – Single Side Cooled (Sine wave)



Single Side Cooled (Square wave)



temperature – Single Side Cooled (Square wave)

