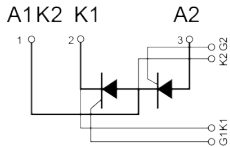


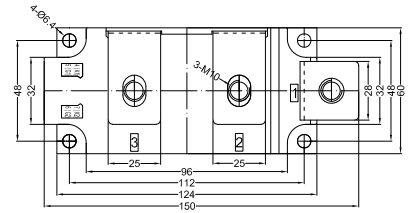
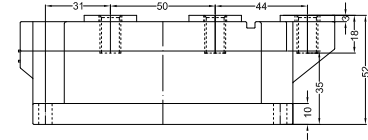
STT500GKxxBT

Thyristor-Thyristor Modules



Type	V_{RSM}	V_{RRM}
	V_{DSM}	V_{DRM}
	V	V
STT500GK08BT	900	800
STT500GK12BT	1300	1200
STT500GK14BT	1500	1400
STT500GK16BT	1700	1600
STT500GK18BT	1900	1800

Dimensions in mm (inch), 1mm=0.0394"



Symbol	Test Conditions		Maximum Ratings	Unit
I_{TRMS} , I_{FRMS} I_{TAVM} , I_{FAVM}	$T_{VJ}=T_{VJM}$ $T_C=85^{\circ}\text{C}$; 180° sine		900 500	A
I_{TSM} , I_{FSM}	$T_{VJ}=45^{\circ}\text{C}$ $V_R=0$ $t=10\text{ms}$ (50Hz), sine $t=8.3\text{ms}$ (60Hz), sine		17000 20000	A
	$T_{VJ}=T_{VJM}$ $V_R=0$ $t=10\text{ms}$ (50Hz), sine $t=8.3\text{ms}$ (60Hz), sine		14500 17400	
$\int i^2 dt$	$T_{VJ}=45^{\circ}\text{C}$ $V_R=0$ $t=10\text{ms}$ (50Hz), sine $t=8.3\text{ms}$ (60Hz), sine		1445000 1734000	A^2s
	$T_{VJ}=T_{VJM}$ $V_R=0$ $t=10\text{ms}$ (50Hz), sine $t=8.3\text{ms}$ (60Hz), sine		1050000 1260000	
$(di/dt)_{cr}$	$T_{VJ}=T_{VJM}$ $f=50\text{Hz}$, $t_p=200\mu\text{s}$ $V_D=2/3V_{DRM}$ $I_G=1\text{A}$ $di_G/dt=1\text{A}/\mu\text{s}$	repetitive, $I_T=960\text{A}$	100	A/ μs
		non repetitive, $I_T=I_{TAVM}$	500	
$(dv/dt)_{cr}$	$T_{VJ}=T_{VJM}$; $R_{GK}=\infty$; method 1 (linear voltage rise)	$V_{DR}=2/3V_{DRM}$	1000	V/ μs
P_{GM}	$T_{VJ}=T_{VJM}$ $I_T=I_{TAVM}$	$t_p=30\mu\text{s}$ $t_p=500\mu\text{s}$	120 60	W
P_{GAV}			20	W
V_{RGM}			10	V
T_{VJ} T_{VJM} T_{stg}			-40...+140 140 -40...+125	$^{\circ}\text{C}$
V_{ISOL}	50/60Hz, RMS $I_{ISOL}\leq 1\text{mA}$	$t=1\text{min}$ $t=1\text{s}$	3000 3600	V~
M_d	Mounting torque (M6) Terminal connection torque (M8)		4.5-7/40-60 11-13/97-115	Nm/lb.in.
Weight	Typical		1380	g

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STT500GKxxBT

Thyristor-Thyristor Modules

Symbol	Test Conditions	Characteristic Values	Unit
I_{RRM}	$T_{VJ}=T_{VJM}; V_R=V_{RRM}$	100	mA
V_{TM}	$I_{TM}=1500A; T_{VJ}=25^{\circ}C$	1.65	V
V_{TO}	For power-loss calculations only ($T_{VJ}=T_{VJM}$)	0.90	V
r_T		0.27	mΩ
V_{GT}	$V_D=6V; T_{VJ}=25^{\circ}C$ $T_{VJ}=-40^{\circ}C$	2.2 3.0	V
I_{GT}	$V_D=6V; T_{VJ}=25^{\circ}C$ $T_{VJ}=-40^{\circ}C$	300 400	mA
V_{GD}	$T_{VJ}=T_{VJM}; V_D=2/3V_{DRM}$	0.25	V
I_{GD}	$T_{VJ}=T_{VJM}; V_D=2/3V_{DRM}$	10	mA
I_L	$T_{VJ}=25^{\circ}C; t_p=30\mu s; V_D=6V$ $I_G=1A; di_G/dt=1A/\mu s$	1500	mA
I_H	$T_{VJ}=25^{\circ}C; V_D=6V; R_{GK}=\infty$	300	mA
t_{gd}	$T_{VJ}=25^{\circ}C; V_D=1/2V_{DRM}$ $I_G=1A; di_G/dt=1A/\mu s$	4	μs
t_q	$T_{VJ}=T_{VJM}; I_T=500A; t_p=200\mu s; -di/dt=10A/\mu s$ $V_R=100V; dv/dt=50V/\mu s; V_D=2/3V_{DRM}$ typ.	350	μs
R_{thJC}	DC current	0.062	K/W
R_{thJK}	DC current	0.065	K/W
d_s	Creeping distance on surface	12.7	mm
d_A	Creepage distance in air	9.6	mm
a	Maximum allowable acceleration	50	m/s ²

FEATURES

- * International standard package
- * Copper base plate
- * Pressure Contact Technology
- * BusBar Terminal
- * Isolation voltage 3600 V~
- * UL file NO.310749
- * RoHS compliant

APPLICATIONS

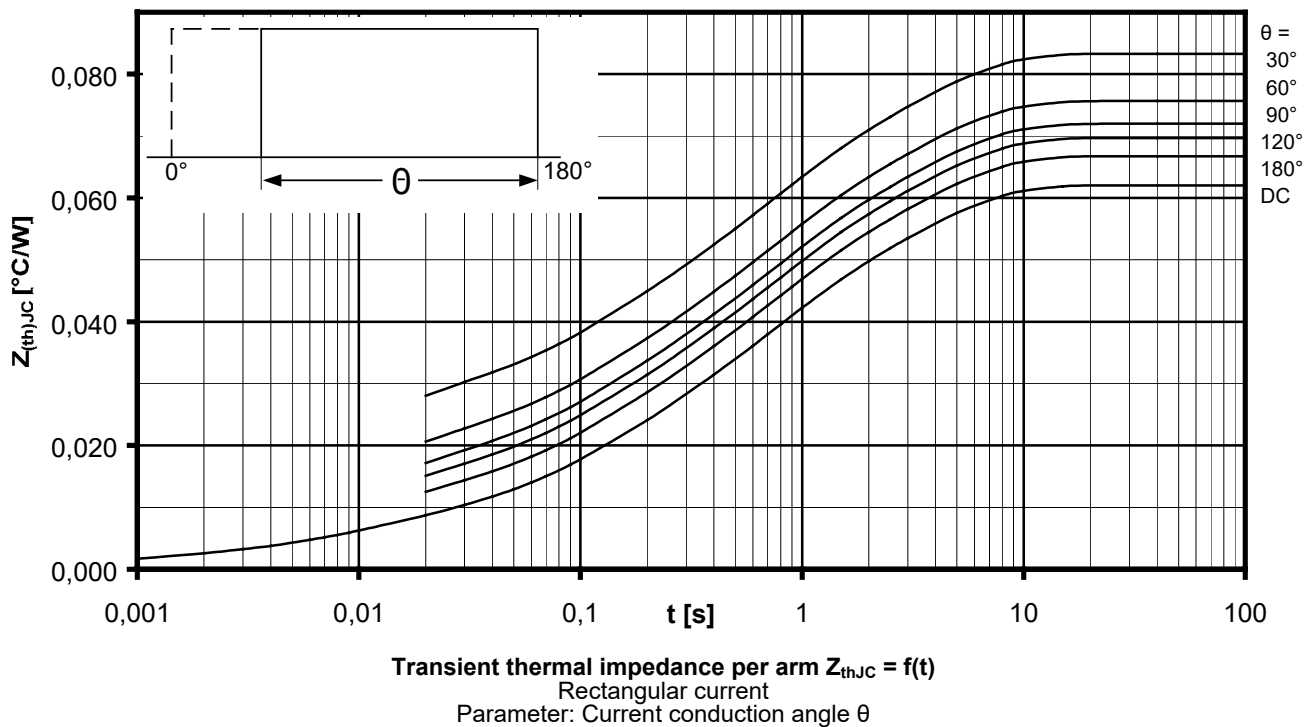
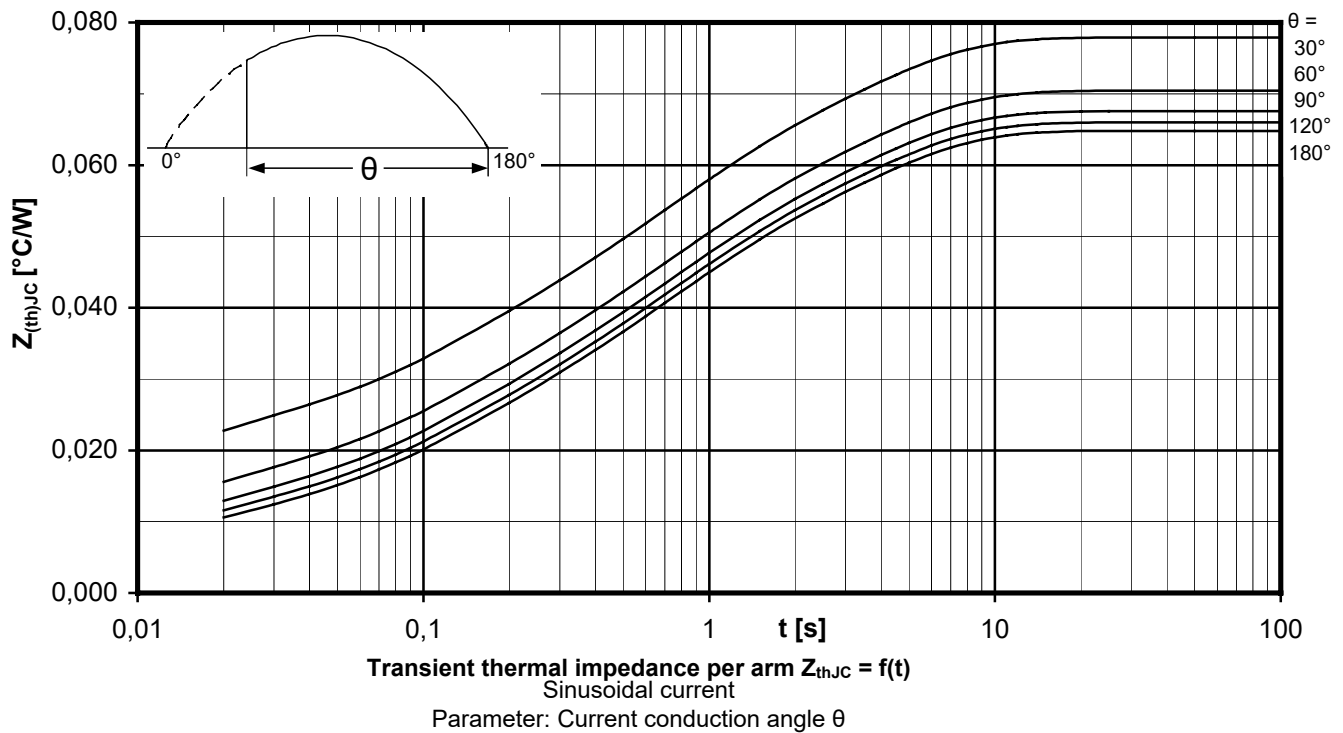
- * Motor control, softstarter
- * Power converter
- * Heat and temperature control for industrial furnaces and chemical processes
- * Lighting control
- * Solid state switches

ADVANTAGES

- * Simple mounting
- * Improved temperature and power cycling
- * Reduced protection circuits

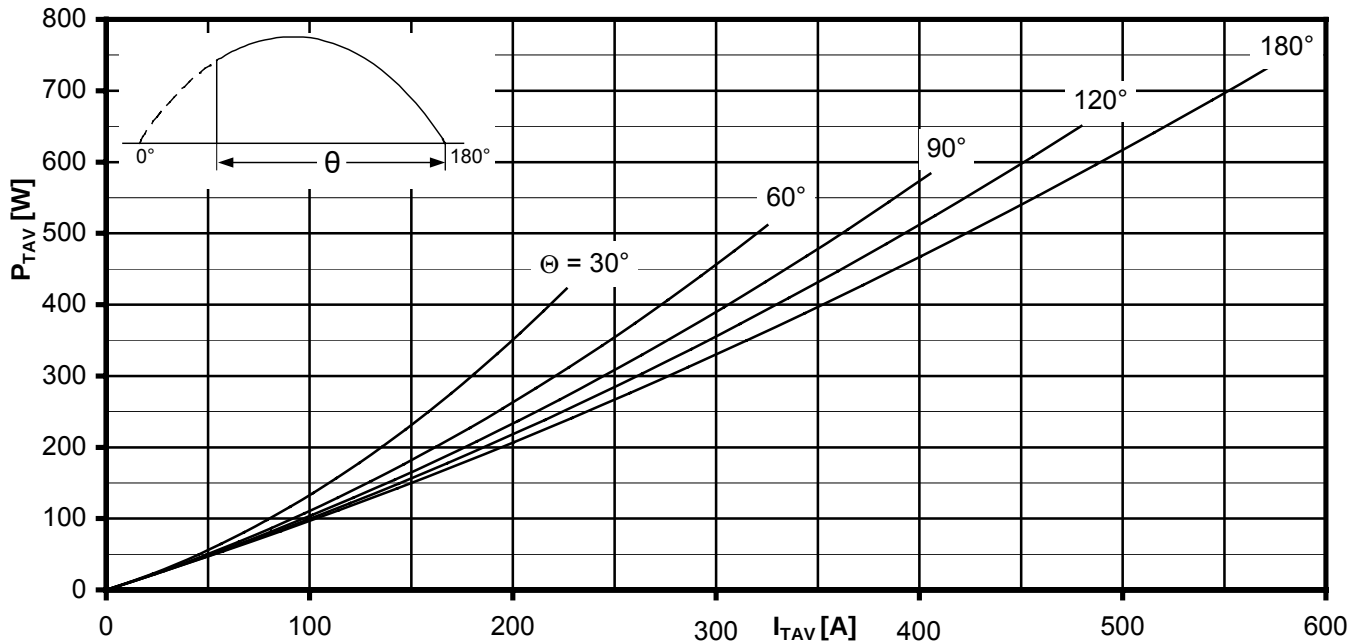
STT500GKxxBT

Thyristor-Thyristor Modules



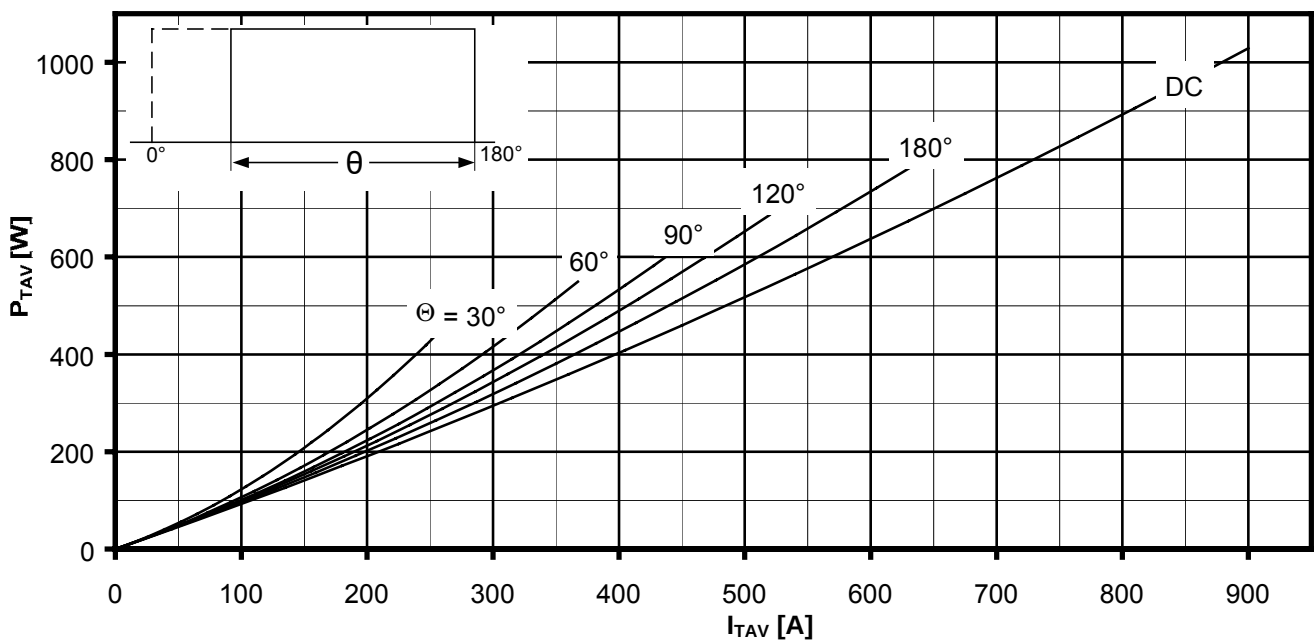
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Thyristor-Thyristor Modules



On-state power loss per arm $P_{TAV} = f(I_{TAV})$
Sinusoidal current Current load per arm

Calculation base P_{TAV} (switching losses should be considered separately)
Parameter: Current conduction angle θ

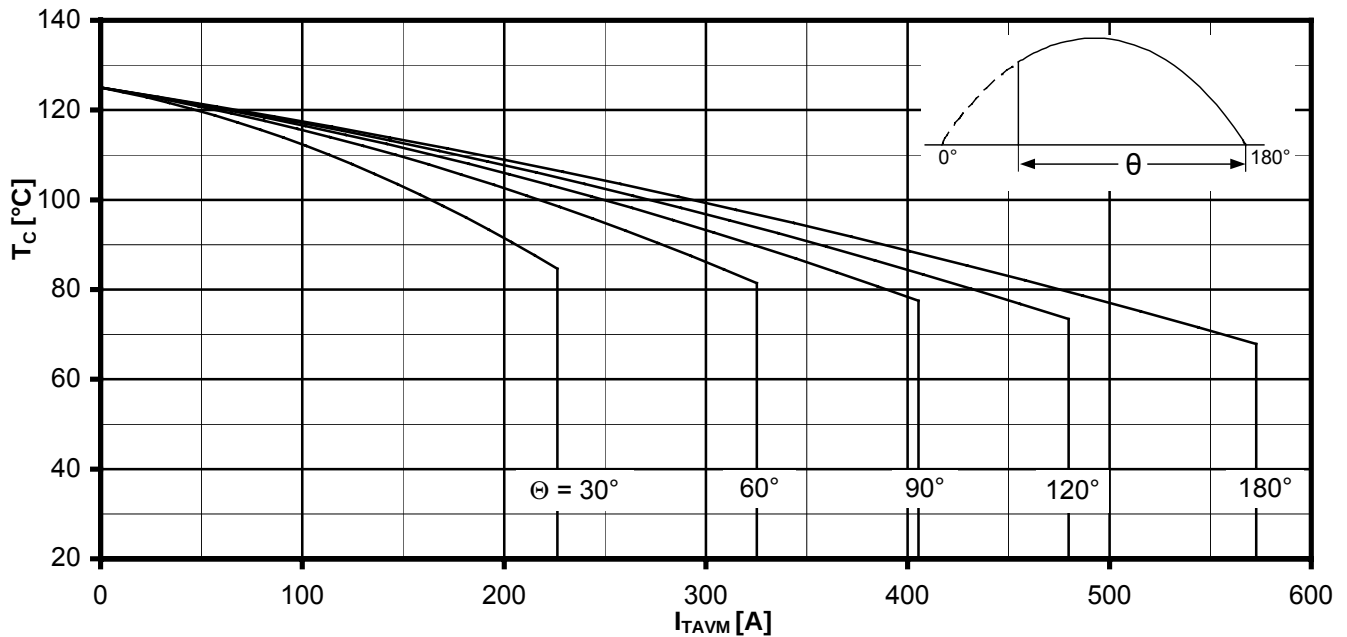


On-state power loss per arm $P_{TAV} = f(I_{TAV})$
Rectangular current Current load per arm

Calculation base P_{TAV} (switching losses should be considered separately)
Parameter: Current conduction angle θ

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Thyristor-Thyristor Modules

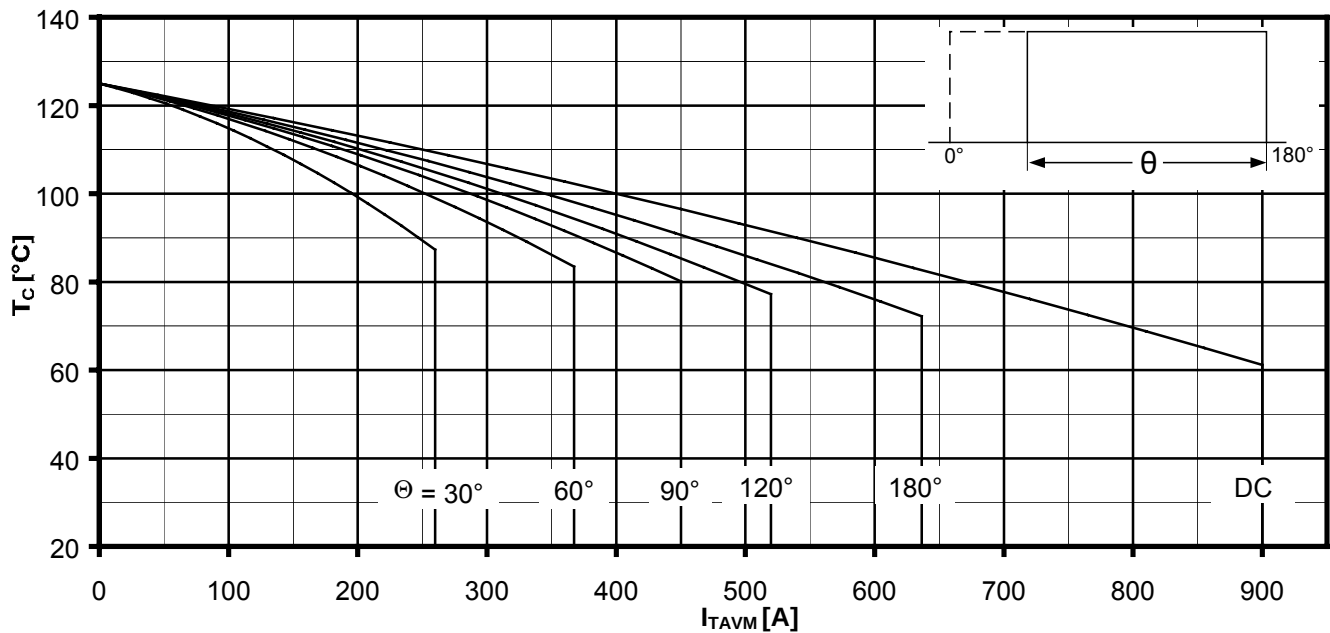


Maximum allowable case temperature $T_c = f(I_{TAVM})$

Sinusoidal current Current load per arm

Calculation base P_{TAV} (switching losses should be considered separately)

Parameter: Current conduction angle θ



Maximum allowable case temperature $T_c = f(I_{TAVM})$

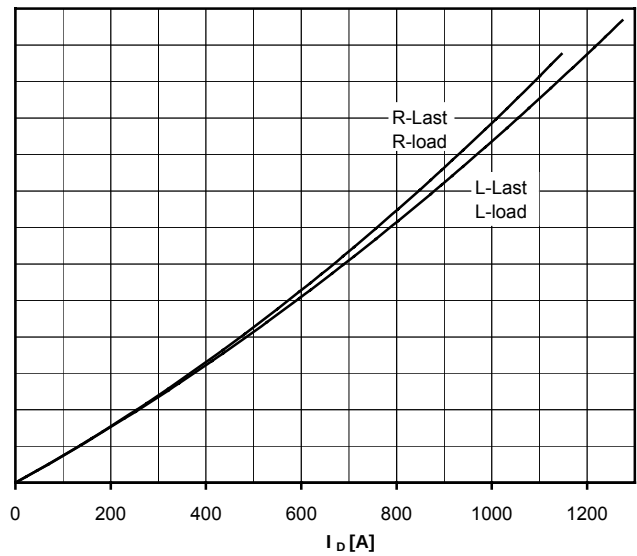
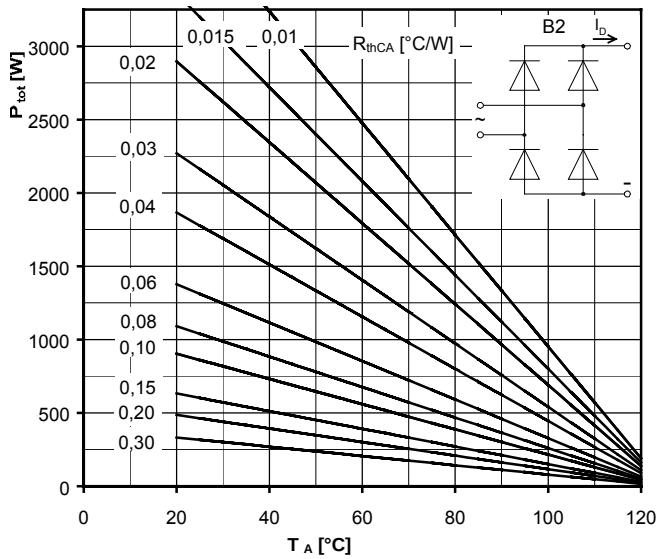
Rectangular current Current load per arm

Calculation base P_{TAV} (switching losses should be considered separately)

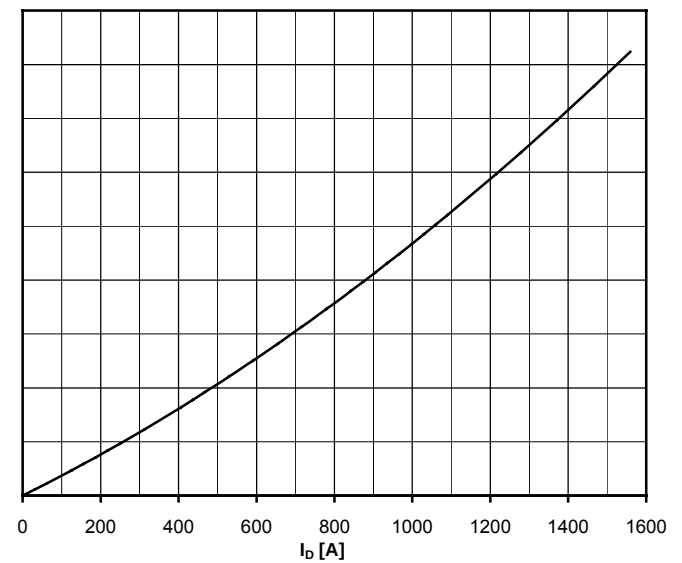
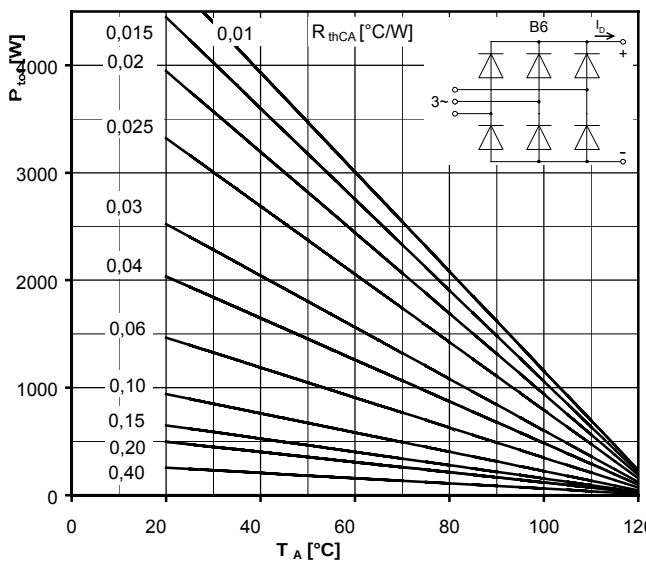
Parameter: Current conduction angle θ

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Thyristor-Thyristor Modules



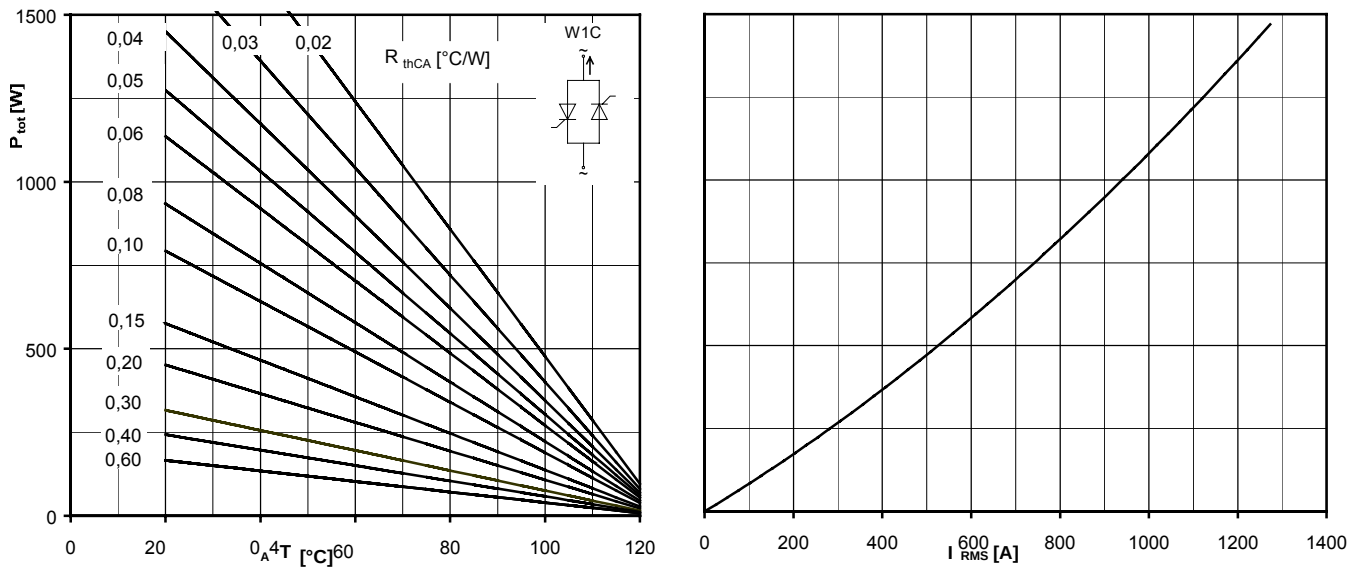
Maximum rated output current I_D
Two-pulse bridge circuit
Total power dissipation at circuit P_{tot} Parameter:
Thermal resistance cases to ambient R_{thCA}



Maximum rated output current I_D
Six-pulse bridge circuit
Total power dissipation at circuit P_{tot} Parameter:
Thermal resistance cases to ambient R_{thCA}

STT500GKxxBT

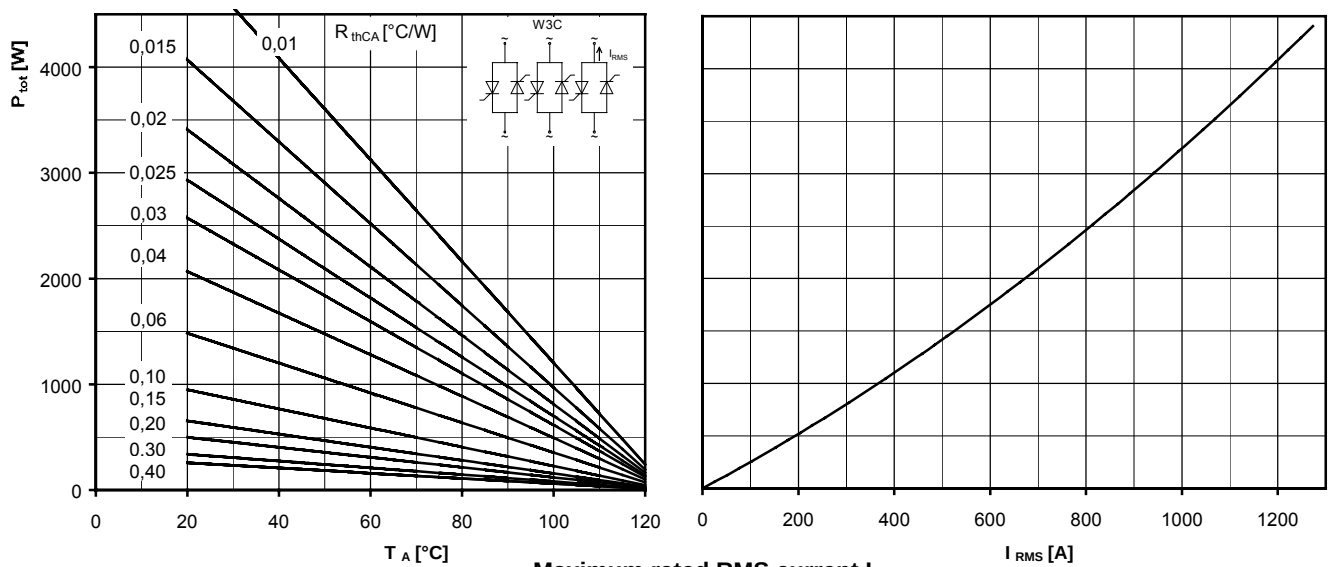
Thyristor-Thyristor Modules



Maximum rated RMS current I_{RMS}

Single-phase inverse parallel circuit

Total power dissipation at circuit P_{tot} Parameter:
Thermal resistance case to ambient R_{thCA}



Maximum rated RMS current I_{RMS}

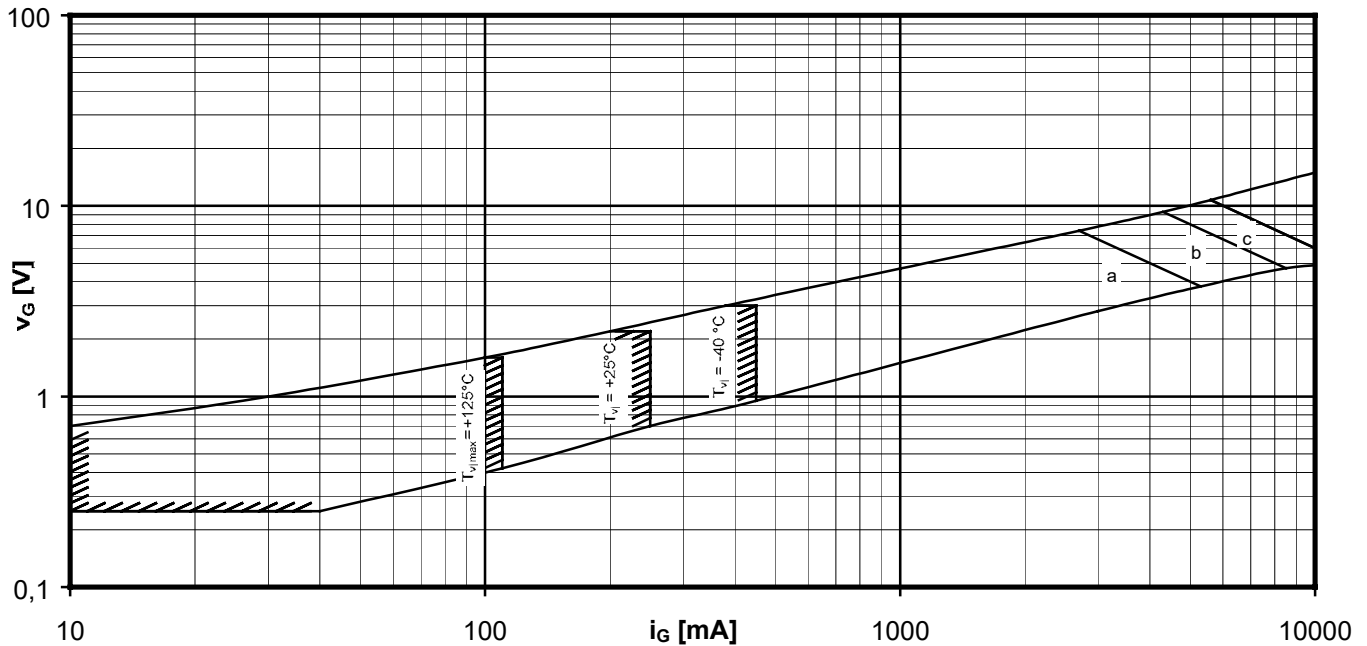
Three-phase inverse parallel circuit

Total power dissipation at circuit P_{tot} Parameter:
Thermal resistance cases to ambient R_{thCA}

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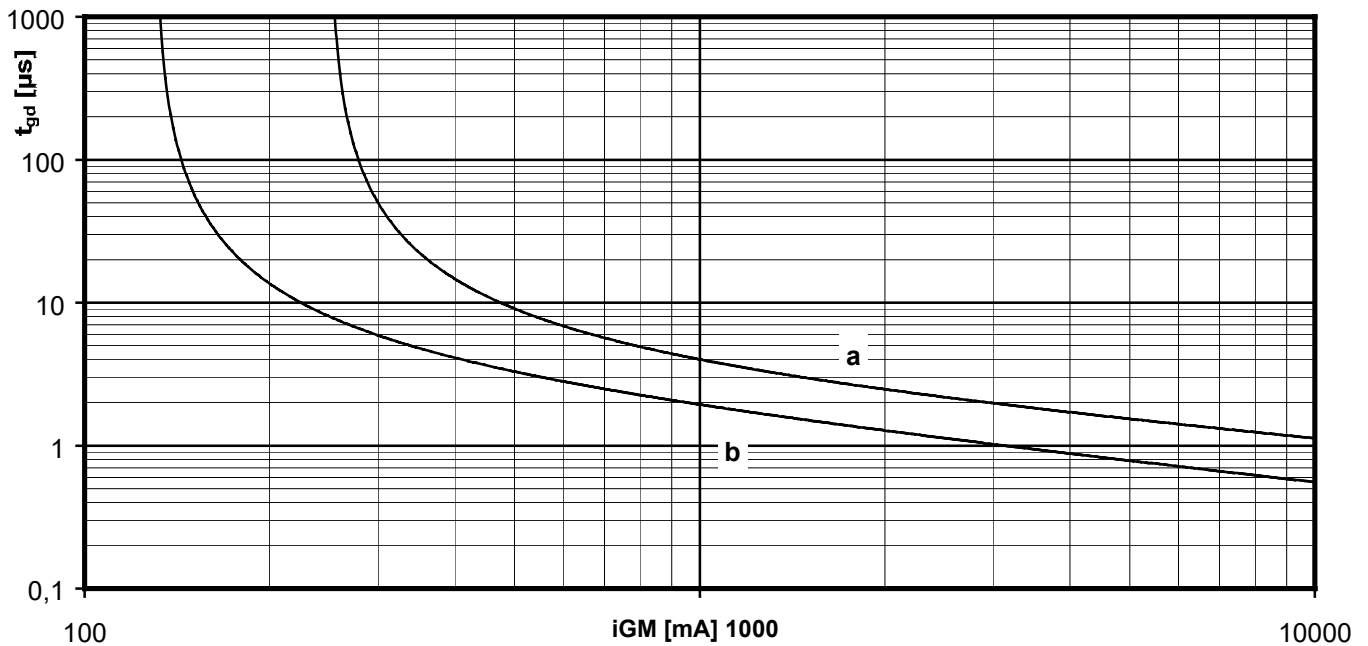
Thyristor-Thyristor Modules



Gate characteristic $v_G = f(i_G)$ with triggering area for $V_D = 6\text{ V}$

Maximum rated peak gate power dissipation $P_{GM} = f(t_g)$:

a - 40 W/10ms b - 80 W/1ms c - 100 W/0,5ms d - 150W/0,1ms



Gate controlled delay time $t_{gd} = f(i_G)$

$T_{vj} = 25^\circ\text{C}$, $di_G/dt = i_{GM}/1\mu\text{s}$

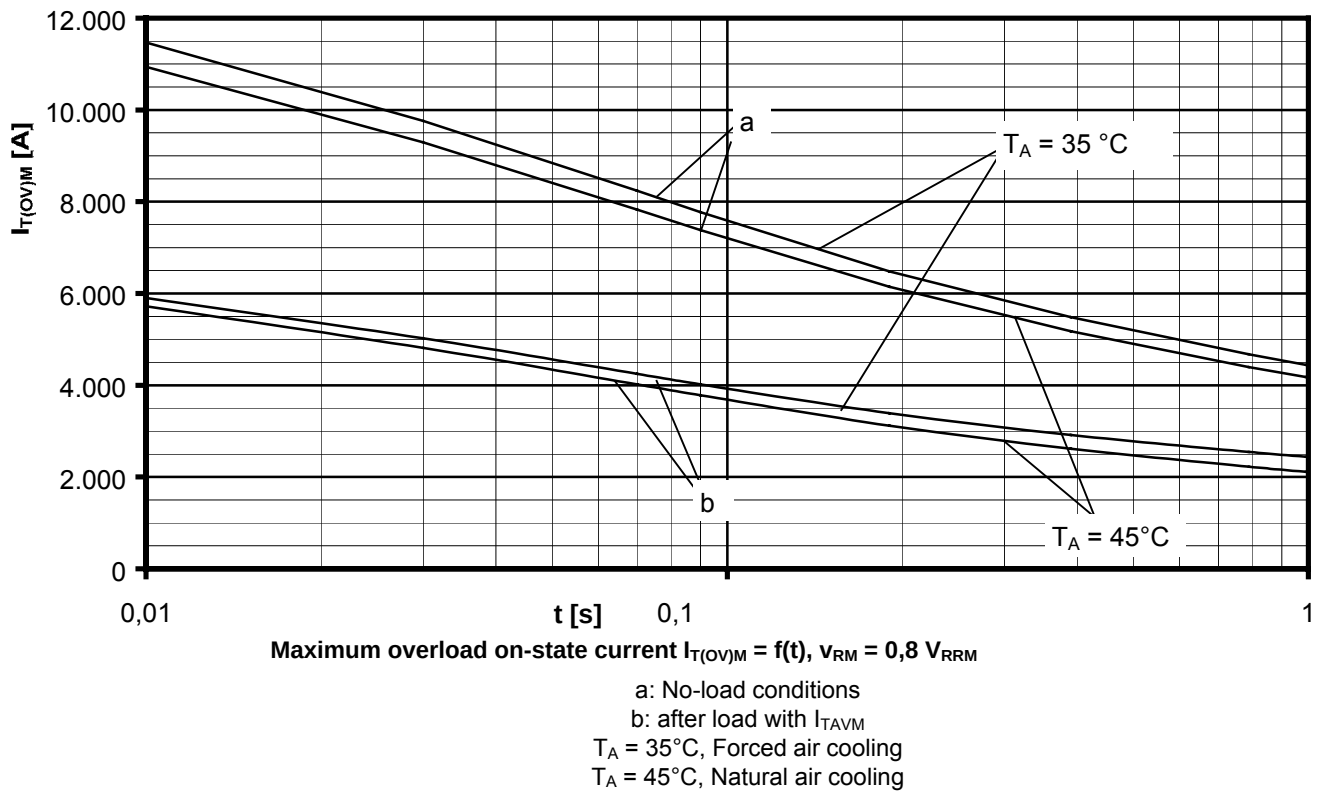
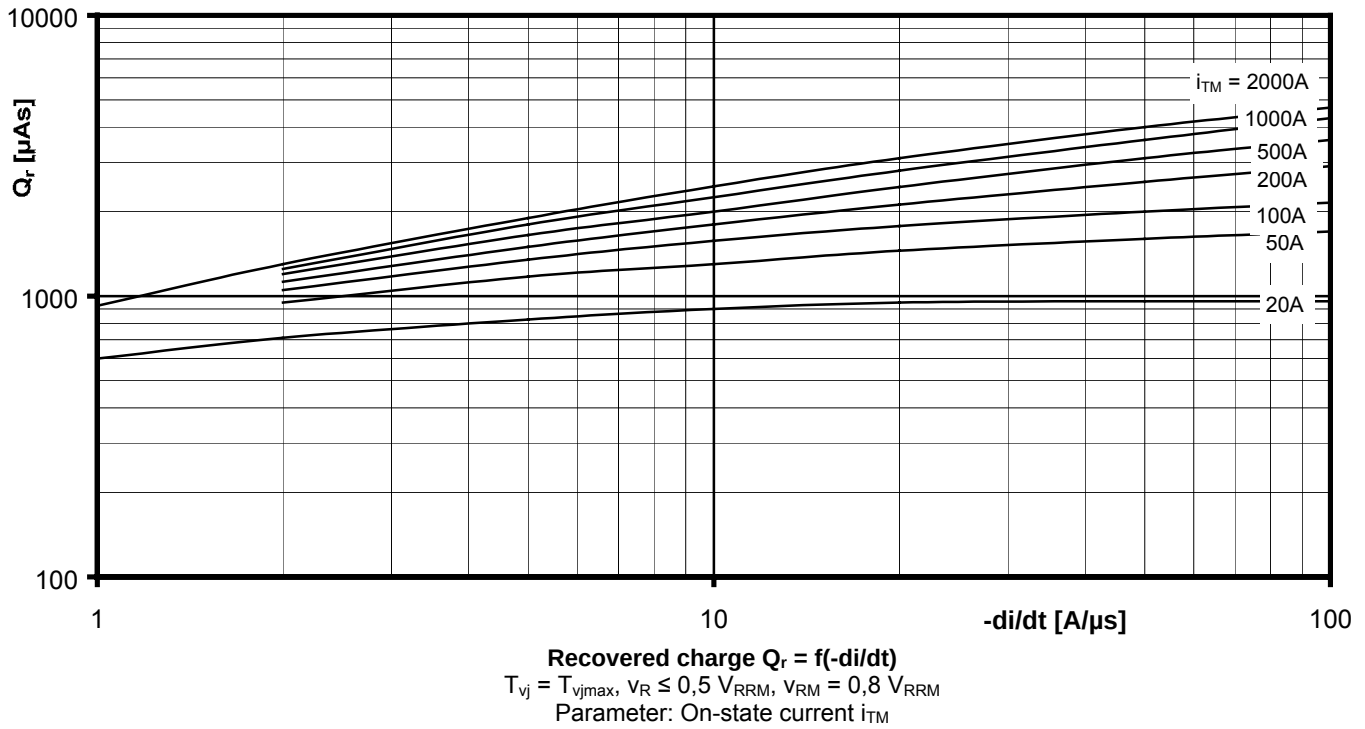
a - Limiting characteristic

b - Typical characteristic

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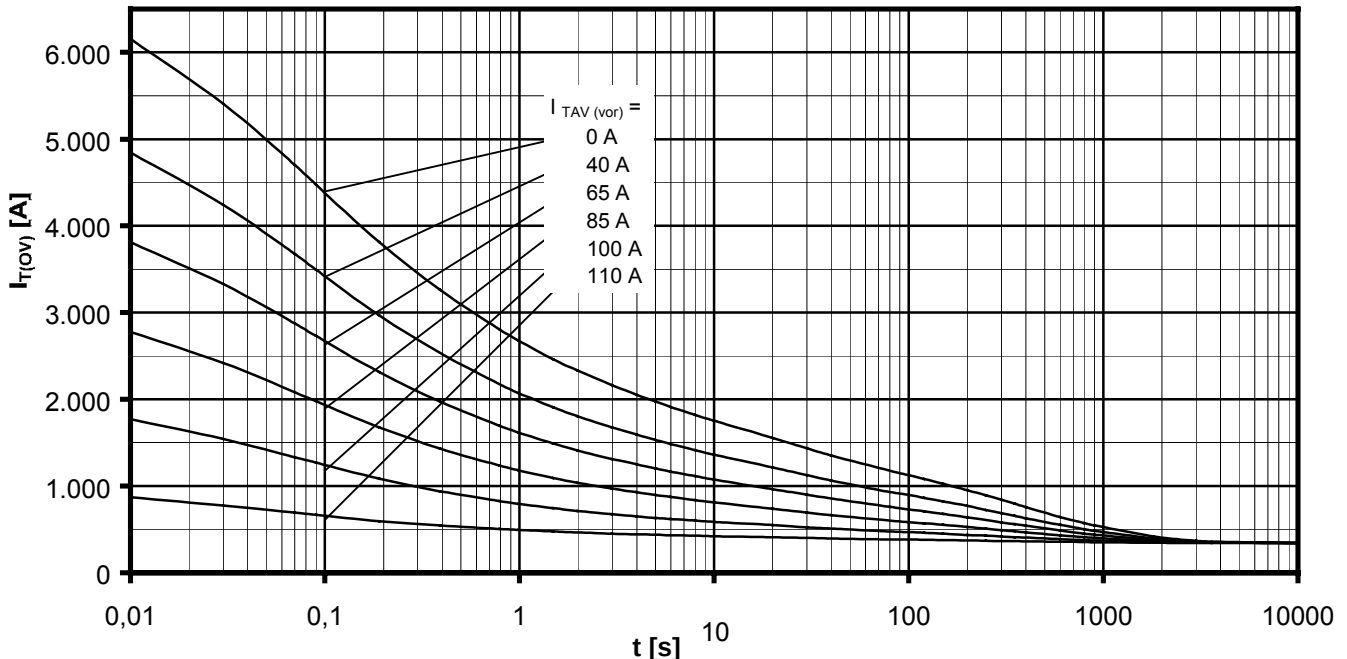
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Thyristor-Thyristor Modules

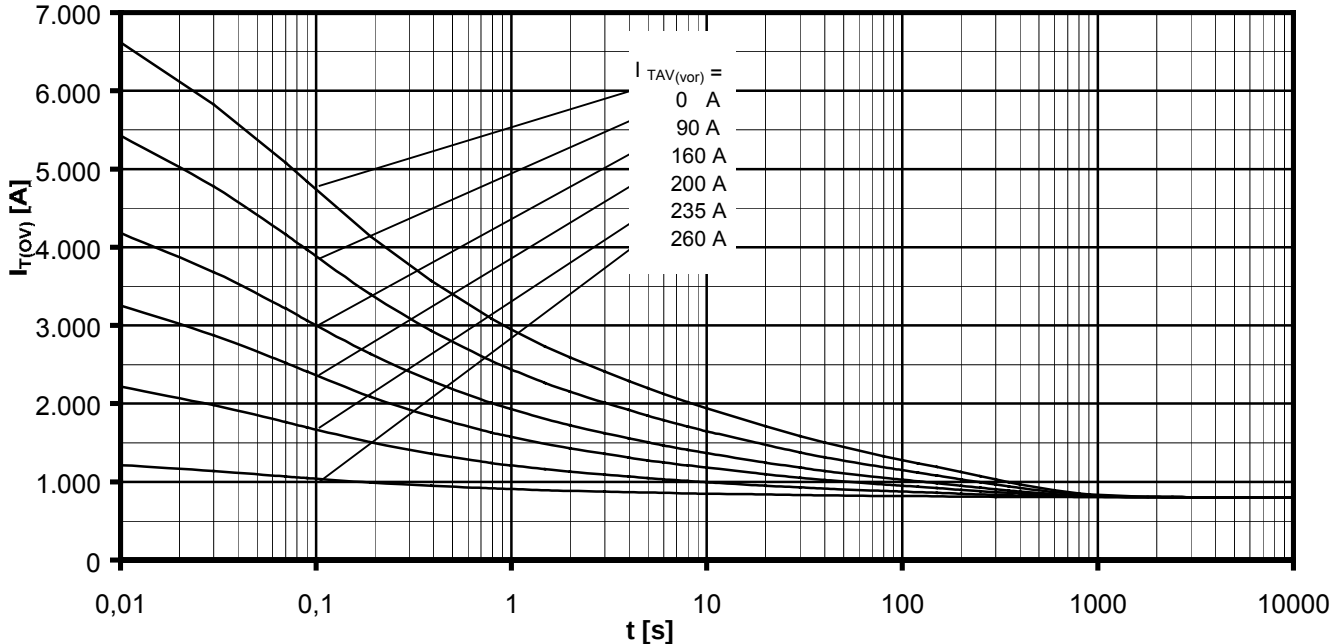


STT500GKxxBT

Thyristor-Thyristor Modules



Overload on-state current $I_{T(ov)}$
 Six-pulse bridge circuit, 120° rectangular
 Heatsink type KM17 (45W) Natural cooling at $T_A = 45^\circ\text{C}$
 Parameter: Pre-load current per arm $I_{TAV(vor)}$



Overload on-state current $I_{T(ov)}$
 Six-pulse bridge circuit, 120° rectangular
 Heatsink type KM17(45W) Forced cooling at $T_A = 35^\circ$
 C Parameter: Pre-load current per arm $I_{TAV(vor)}$