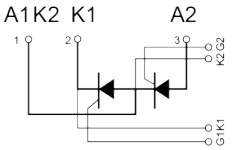
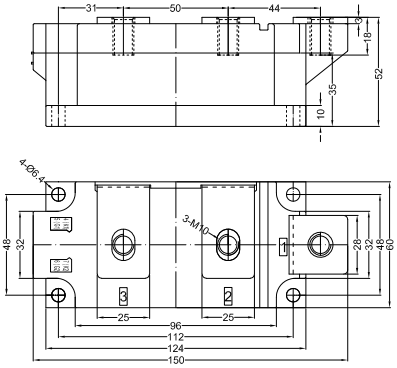
STT500GKxxBT

Thyristor-Thyristor Modules



Type	V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} 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°C; 180° sine		900 500	A
I_{TSM}, I_{FSM}	T_{VJ}=45°C V_R=0	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	17000 20000	A
	$T_{VJ}=T_{VJM}$ V_R=0	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	14500 17400	
$\int i^2dt$	T_{VJ}=45°C V_R=0	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	1445000 1734000	A^2s
	$T_{VJ}=T_{VJM}$ V_R=0	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	1050000 1260000	
$(di/dt)_{cr}$	$T_{VJ}=T_{VJM}$ f=50Hz, t_P=200us V_D=2/3V_{DRM} I_G=1A di_G/dt=1A/us	repetitive, I_T=960A non repetitive, $I_T=I_{TAVM}$	100 500	A/us
$(dv/dt)_{cr}$	$T_{VJ}=T_{VJM}$; R_{GK}=∞; method 1 (linear voltage rise)	V_{DR}=2/3V_{DRM}	1000	V/us
P_{GM}	$T_{VJ}=T_{VJM}$ $I_T=I_{TAVM}$	t_P=30us t_P=500us	120 60	W
P_{GAV}			20	W
V_{RGM}			10	V
T_{VJ} T_{VJM} T_{stg}			-40...+140 140 -40...+125	°C
V_{ISOL}	50/60Hz, RMS I_{ISOL}≤1mA	t=1min t=1s	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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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°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°C T_{VJ}=-40°C	2.2 3.0	V
I_{GT}	V_D=6V; T_{VJ}=25°C T_{VJ}=-40°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°C; t_p=30us; V_D=6V I_G=1A; di_G/dt=1A/us	1500	mA
I_H	T_{VJ}=25°C; V_D=6V; R_{GK}=∞	300	mA
t_{gd}	T_{VJ}=25°C; $V_D=1/2V_{DRM}$ I_G=1A; di_G/dt=1A/us	4	us
t_q	$T_{VJ}=T_{VJM}$; I_T=500A; t_p=200us; -di/dt=10A/us typ. V_R=100V; dv/dt=50V/us; $V_D=2/3V_{DRM}$	350	us
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

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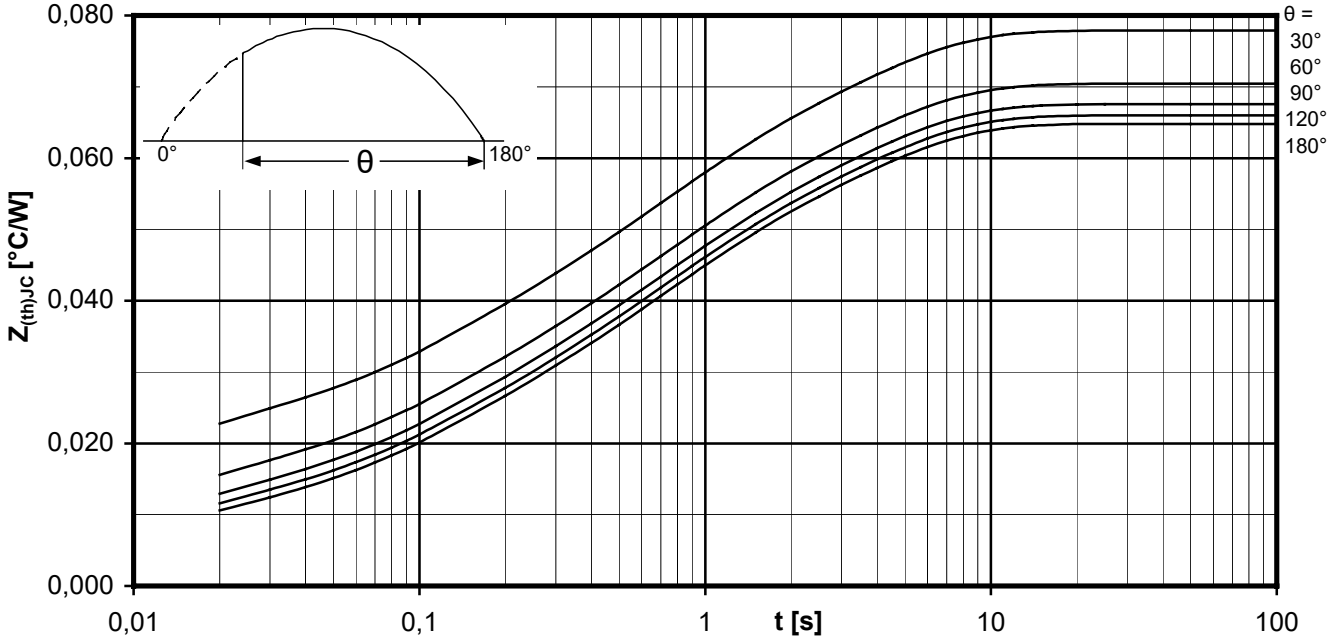
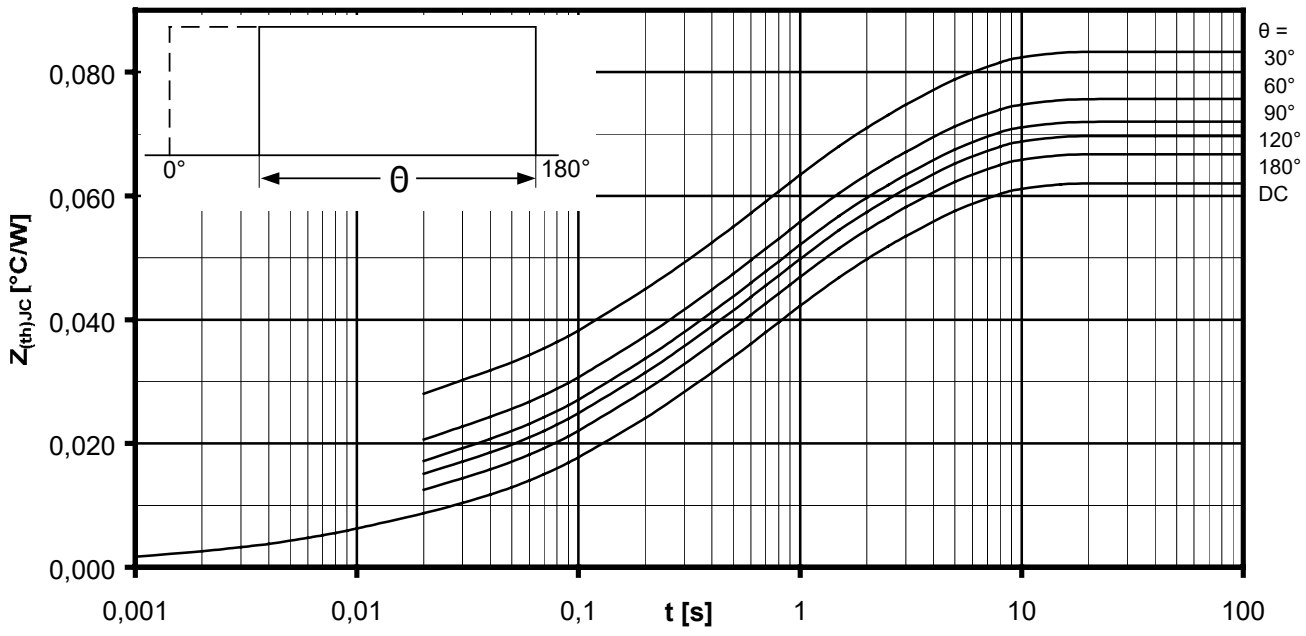


Transient thermal impedance per arm Z_{thJC} = f(t)
Sinusoidal current
Parameter: Current conduction angle θ



Transient thermal impedance per arm Z_{thJC} = f(t)
Rectangular current
Parameter: Current conduction angle θ

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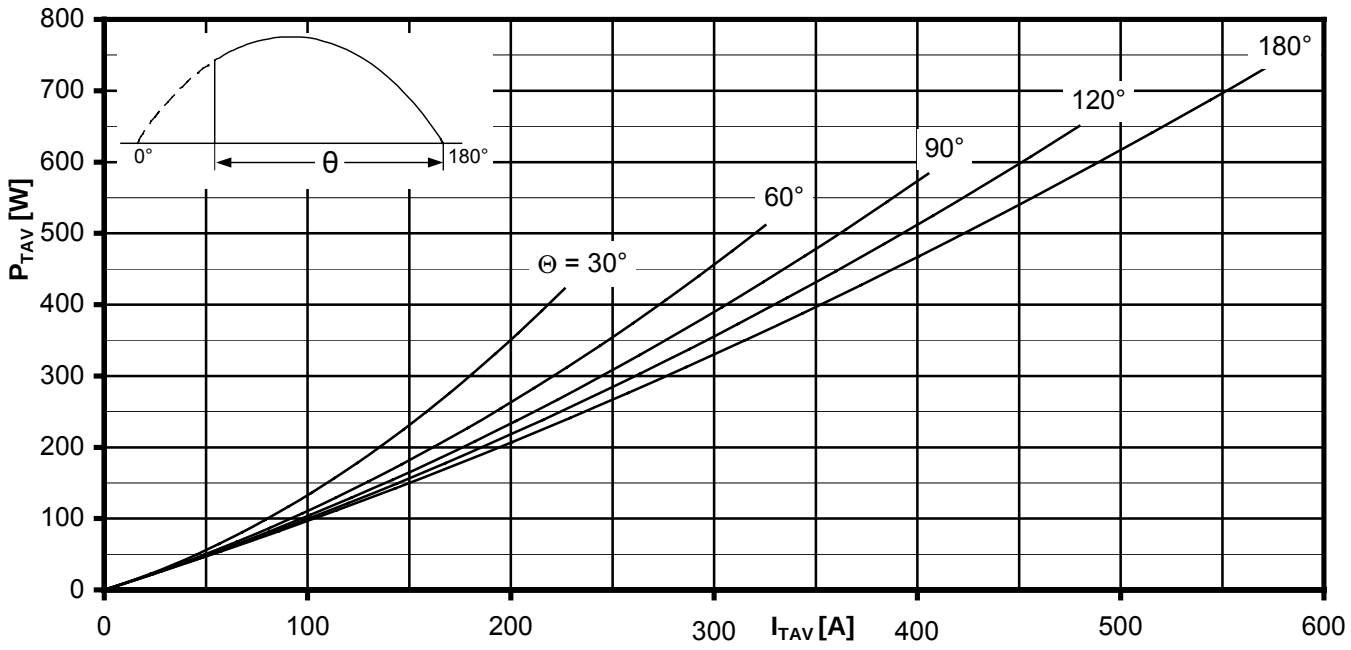
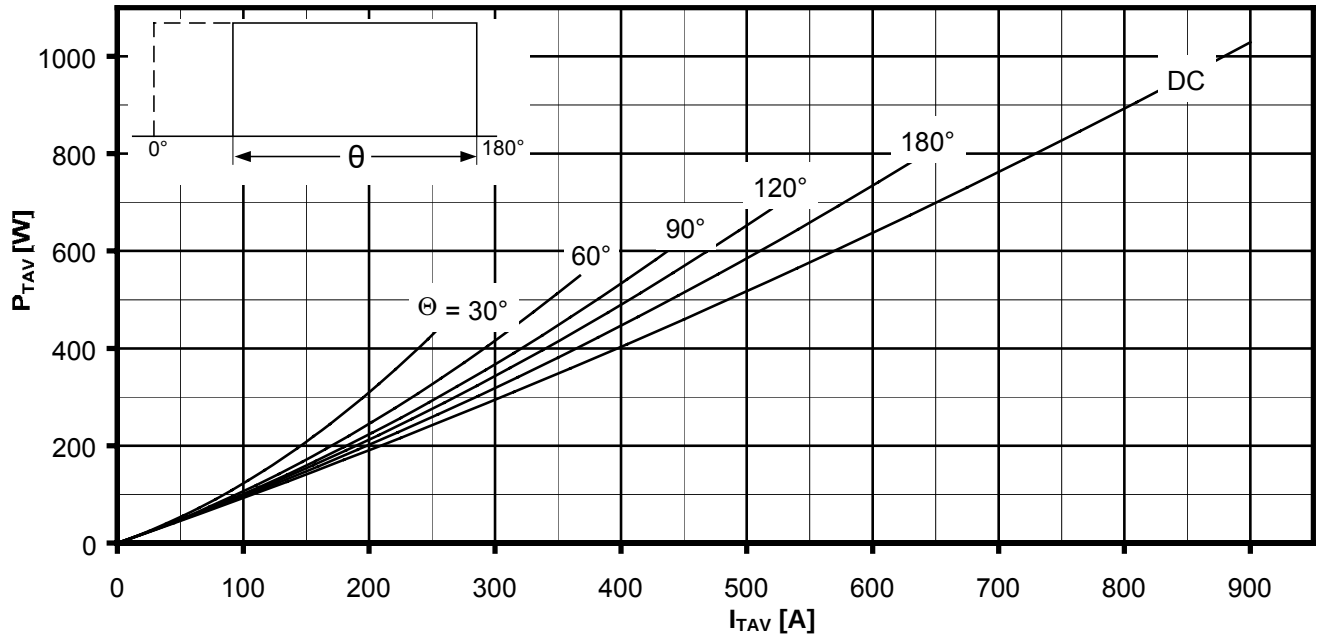


On-state power loss per arm $P_{TAV} = f(I_{TAV})$
Sinusoidal current Current load per arm

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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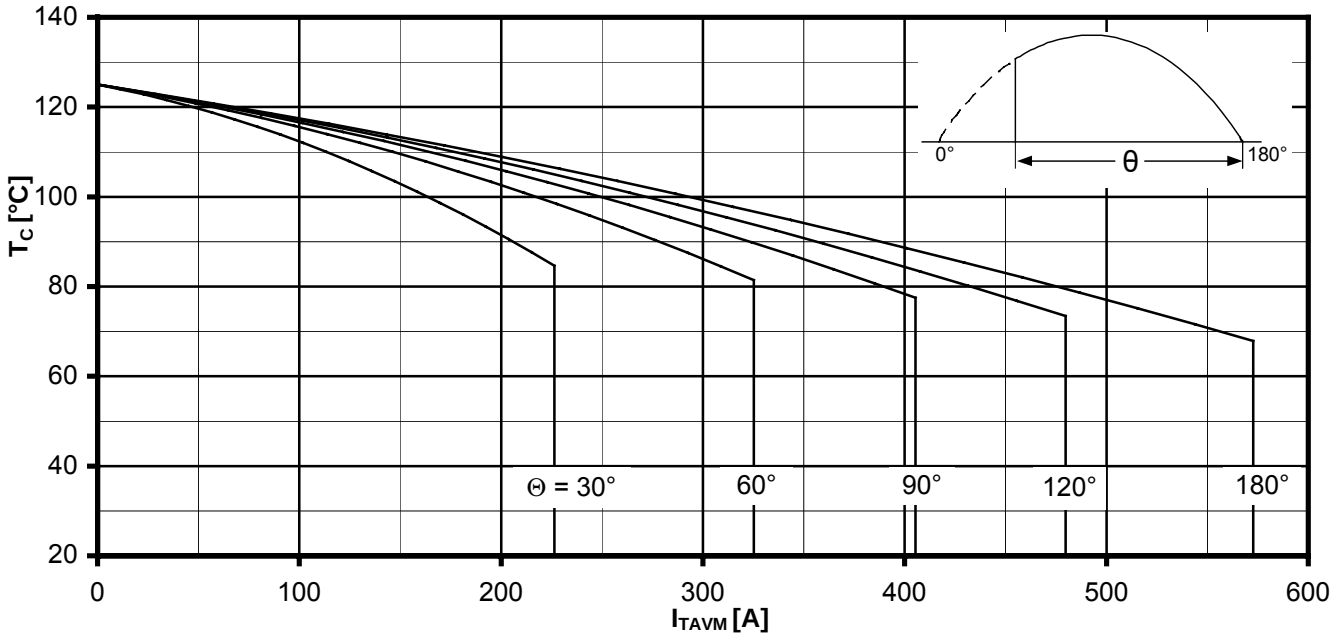
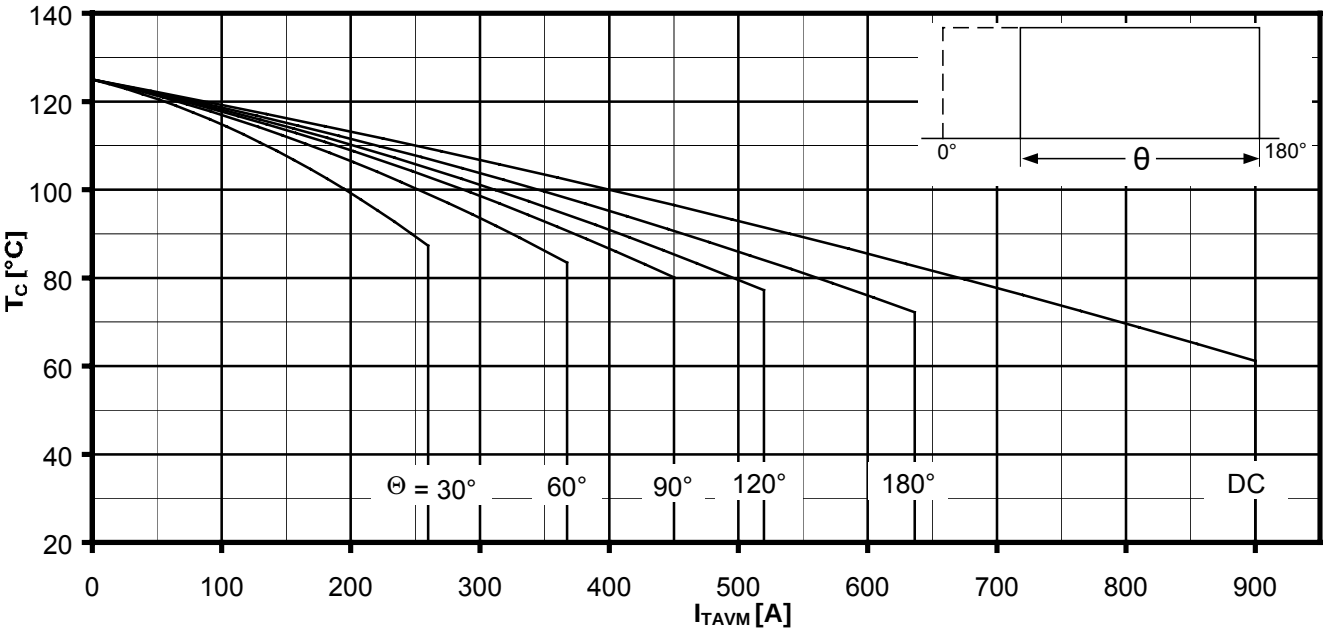


Maximum allowable case temperature $T_C = f(I_{TAVM})$

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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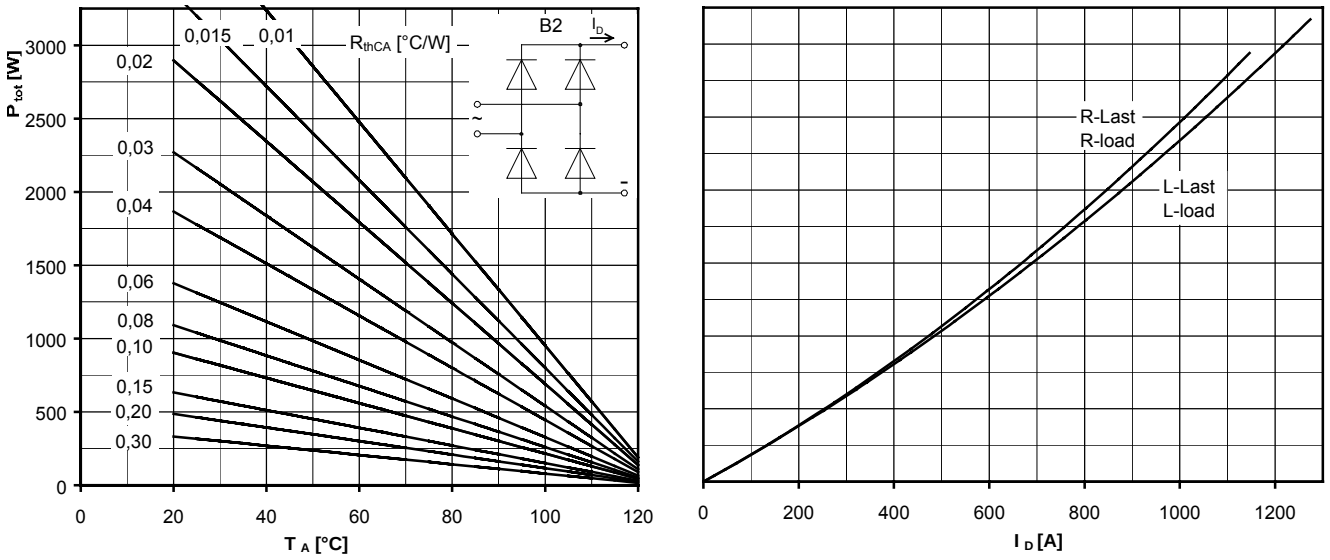
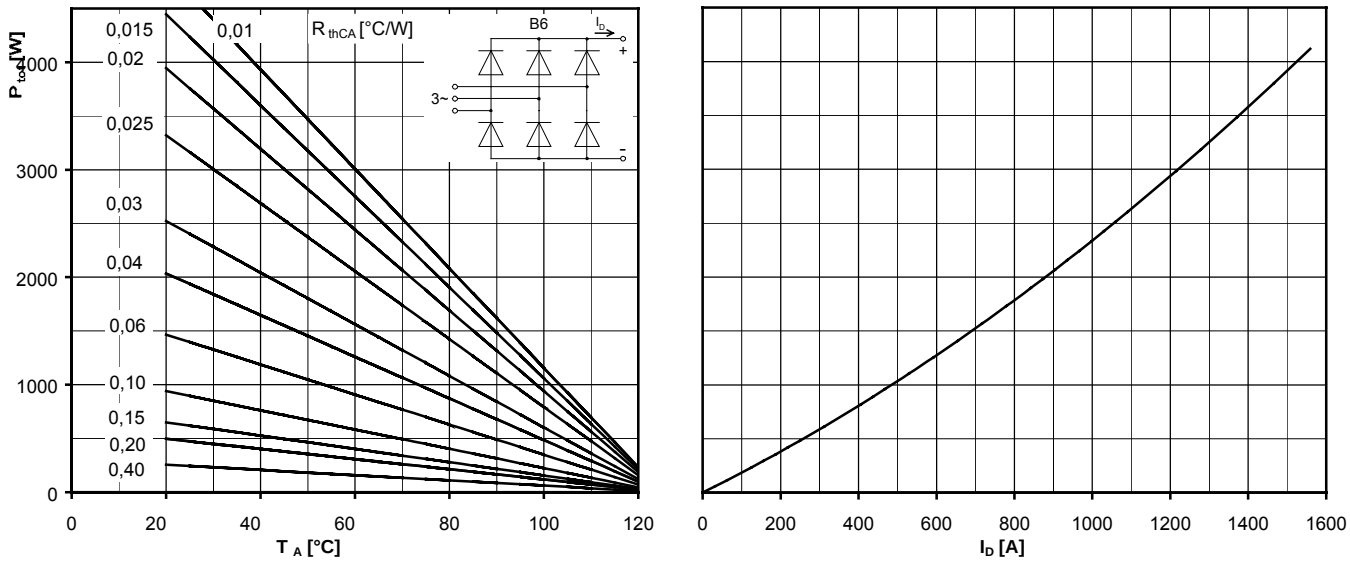


Maximum rated output current I_D
Two-pulse bridge circuit
Total power dissipation at circuit P_{tot} Parameter:
Thermal resistance cases to ambient R_{thCA}



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}

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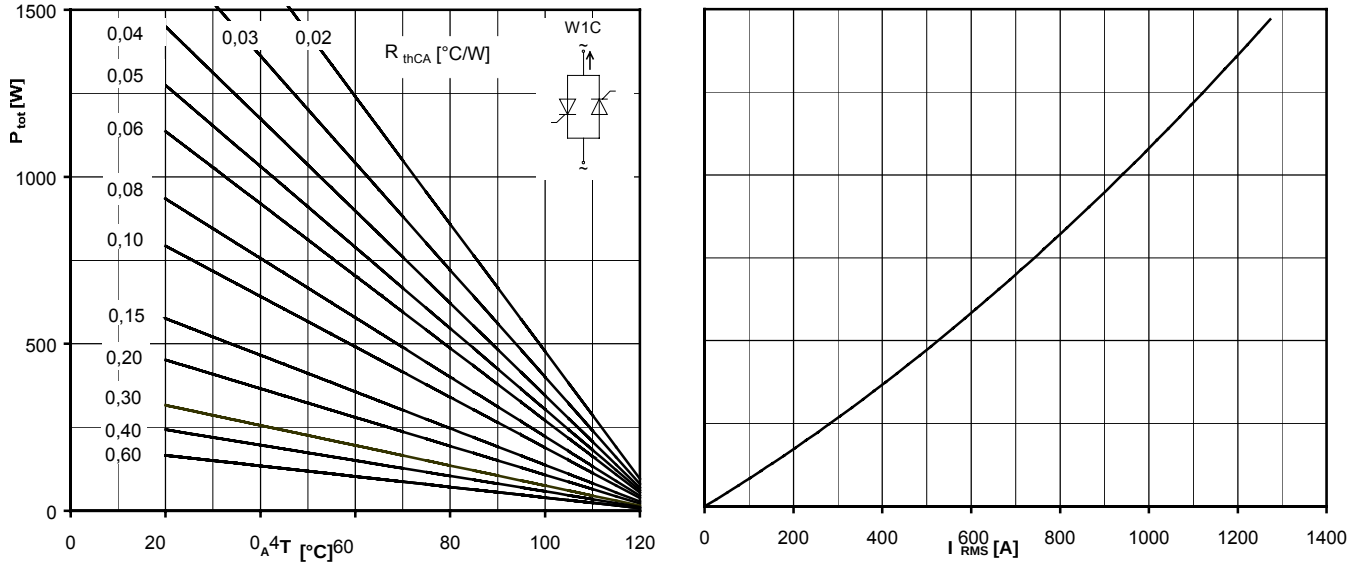
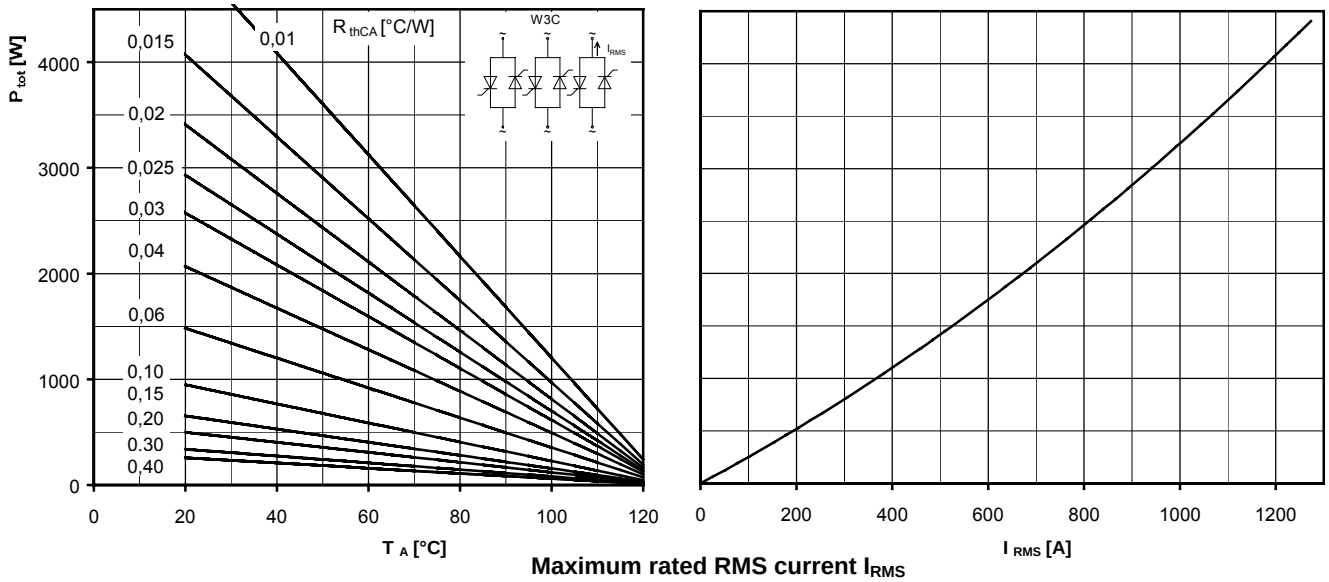


Maximum rated RMS current I_{RMS}

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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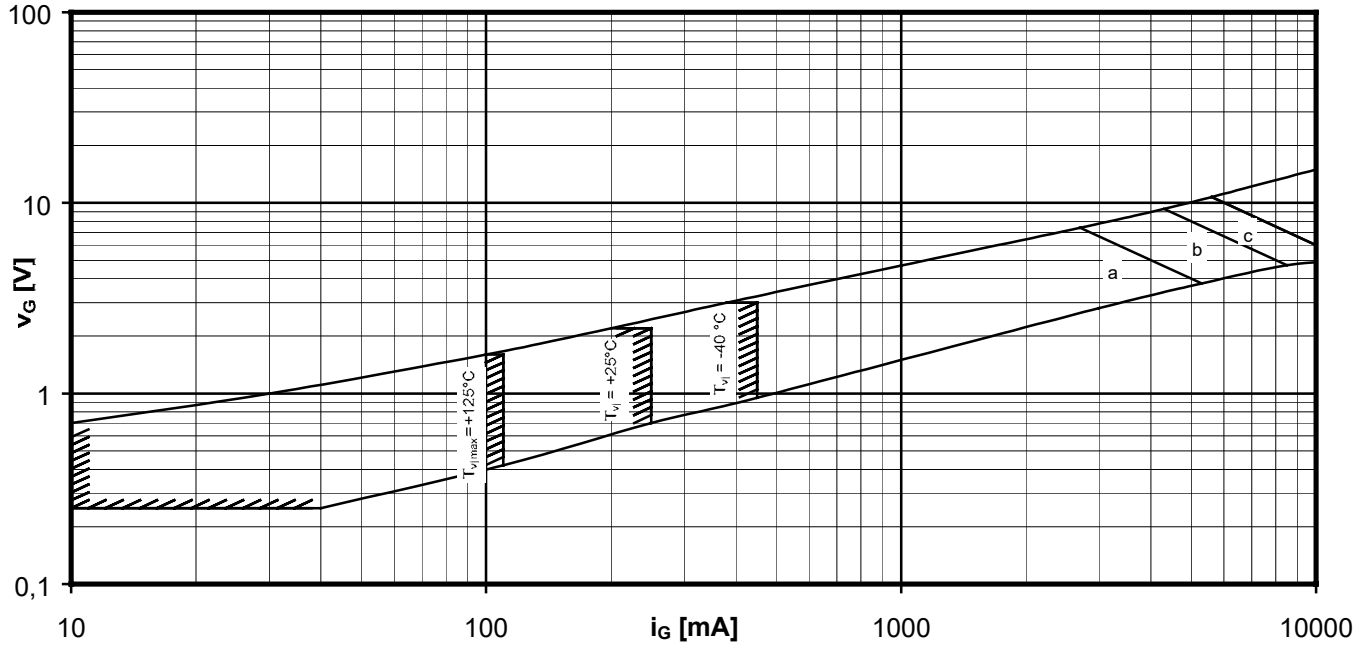
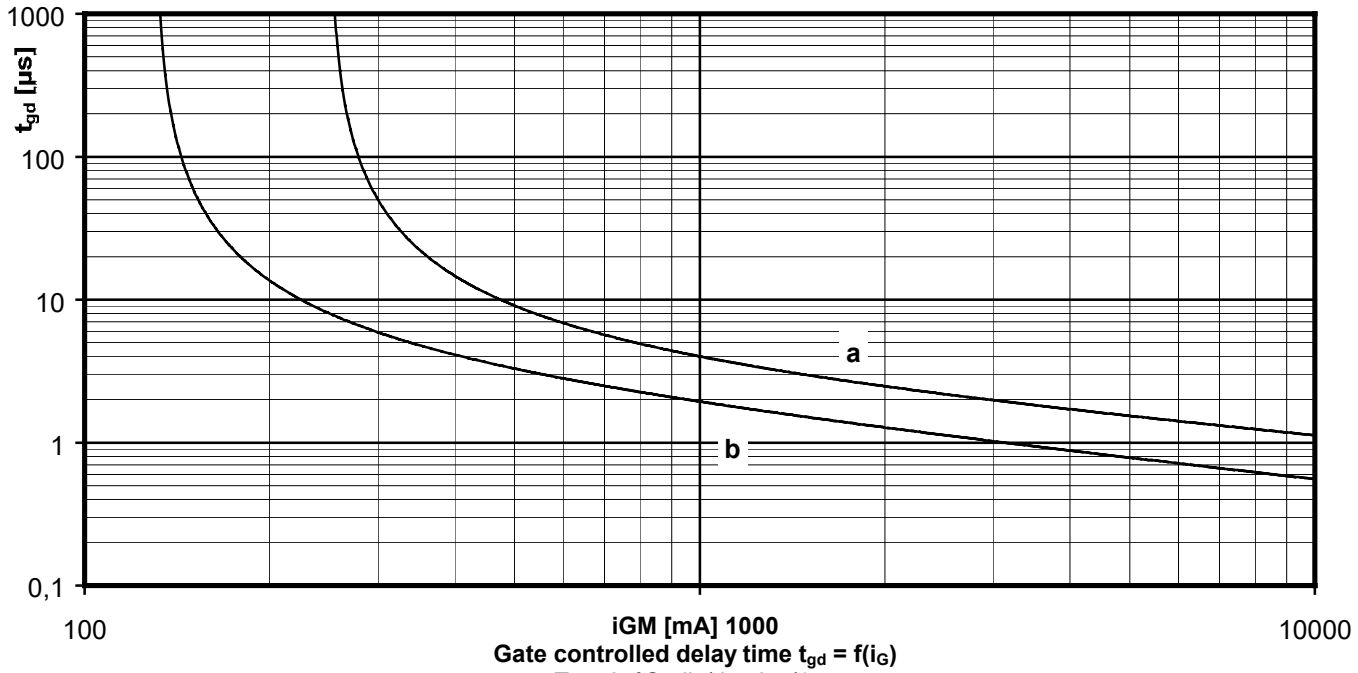


Gate characteristic $v_G = f(i_G)$ with triggering area for V_D = 6 V
Maximum rated peak gate power dissipation $P_{GM} = f(t_g)$:
a - 40 W/10ms b - 80 W/1ms c - 100 W/0,5ms d – 150W/0,1ms



Gate controlled delay time $t_{gd} = f(i_G)$
T_{vj} = 25°C, $di_G/dt = i_{GM}/1\mu s$
a - Limiting characteristic
b - Typical characteristic

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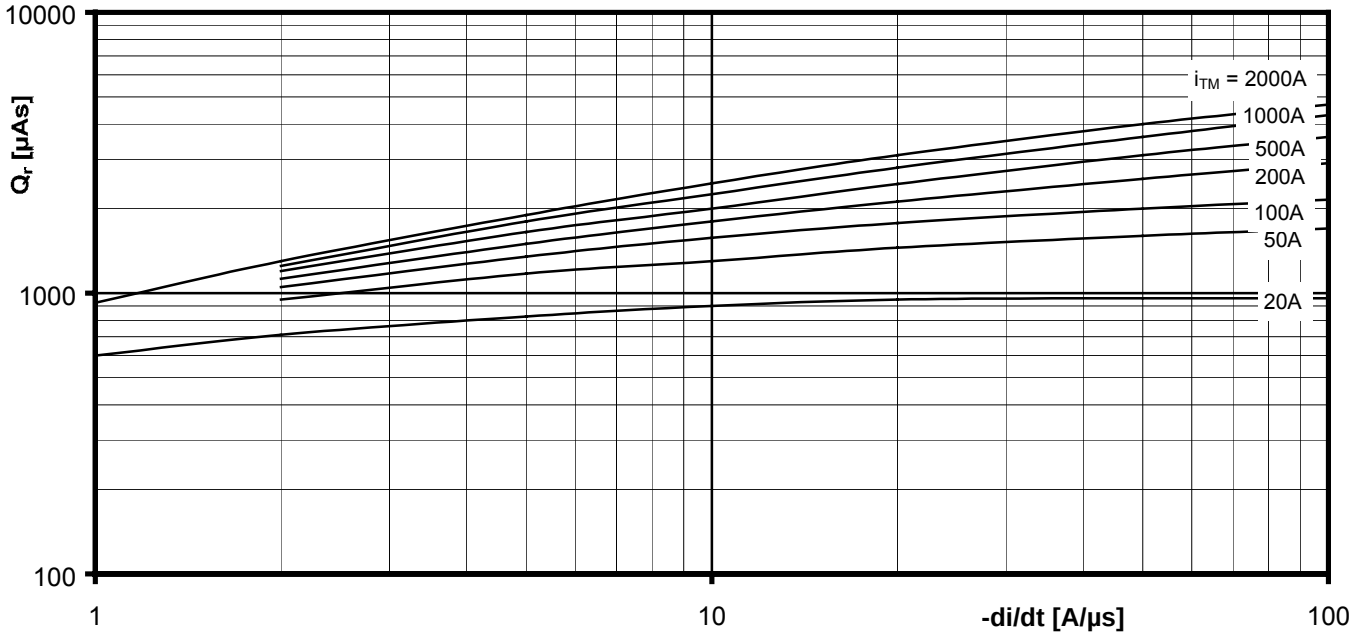
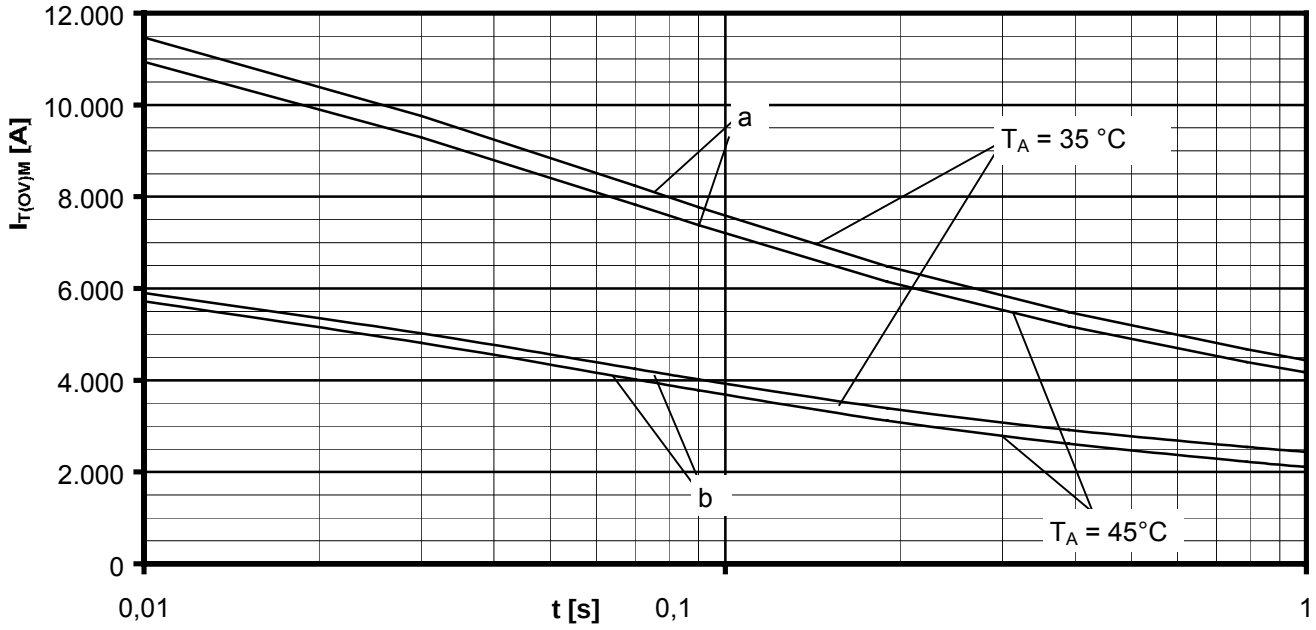


Recovered charge Q_r = f(-di/dt)
$T_{vj} = T_{vjmax}$, $v_R \leq 0,5\ V_{RRM}$, $v_{RM} = 0,8\ V_{RRM}$
Parameter: On-state current i_{TM}



Maximum overload on-state current $I_{T(OV)M}$ = f(t), v_{RM} = 0,8 V_{RRM}

a: No-load conditions
b: after load with I_{TAVM}
T_A = 35°C, Forced air cooling
T_A = 45°C, Natural air cooling

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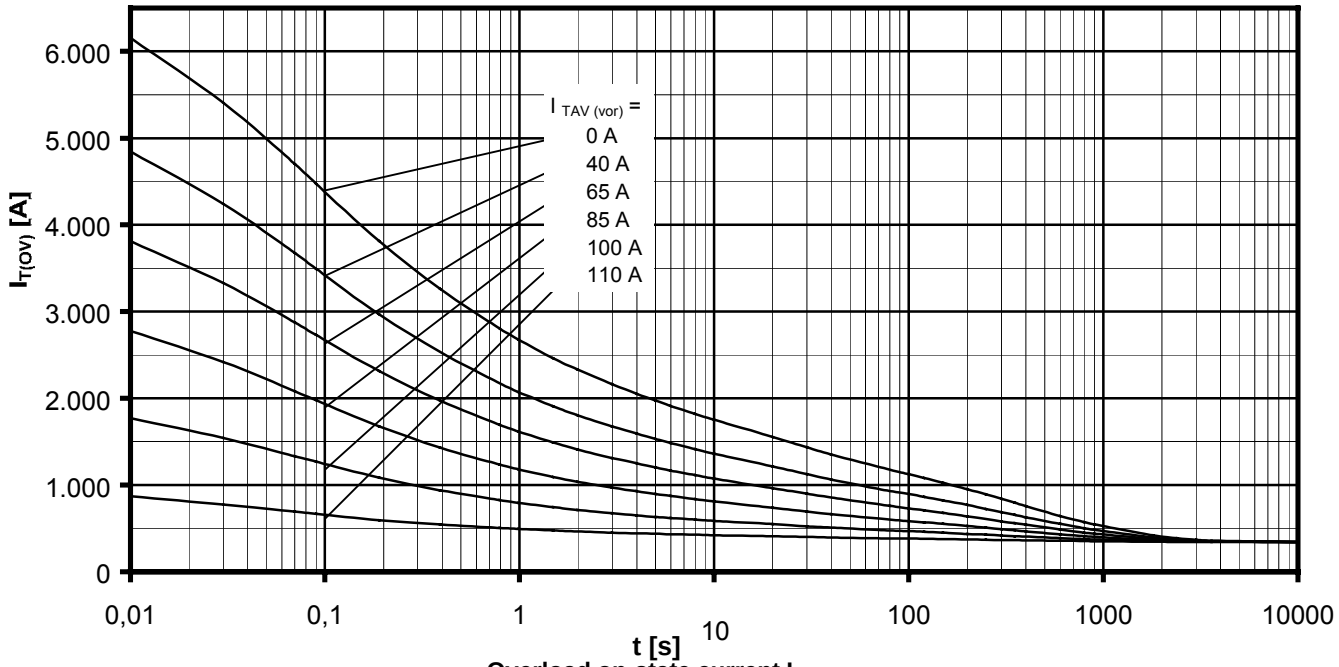
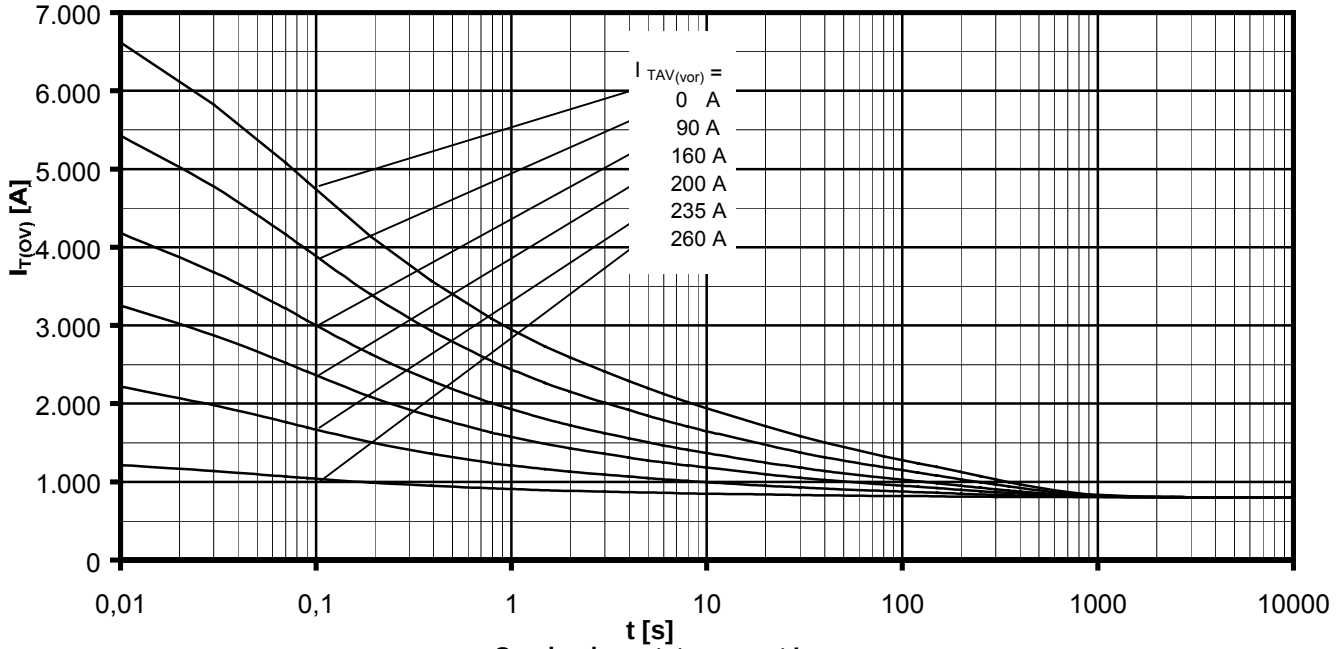


Overload on-state current $I_{T(OV)}$
Six-pulse bridge circuit, 120° rectangular
Heatsink type KM17 (45W) Natural cooling at T_A = 45°C
Parameter: Pre-load current per arm $I_{TAV(vor)}$



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

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