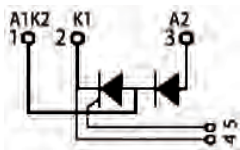
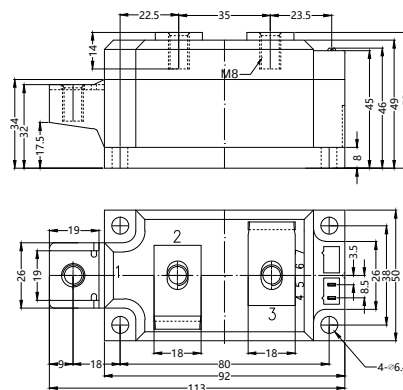


Thyristor-Diode Modules



Type	V_{RSM}	V_{RRM}
	V_{DSM}	V_{DRM}
	V	V
STD253GK08BT	900	800
STD253GK12BT	1300	1200
STD253GK14BT	1500	1400
STD253GK16BT	1700	1600
STD253GK18BT	1900	1800
STD253GK20BT	2100	2000
STD253GK22BT	2300	2200
STD253GK24BT	2500	2400
STD253GK26BT	2700	2600

Dimensions in mm (1mm=0.0394")



Symbol	Test Conditions	Maximum Ratings	Unit
I_{TRMS}, I_{FRMS} I_{TAVM}, I_{FAVM}	$T_{VJ}=T_{VJM}$; 50Hz/60Hz $T_C=85^{\circ}C$; 180° sine	410/490 250	A
I_{TSM}, I_{FSM}	$T_{VJ}=45^{\circ}C$ $V_R=0$ t=10ms (50Hz), sine t=8.3ms (60Hz), sine	9100 10900	A
	$T_{VJ}=T_{VJM}$ $V_R=0$ t=10ms(50Hz), sine t=8.3ms(60Hz), sine	8000 9600	
$\int i^2 dt$	$T_{VJ}=45^{\circ}C$ $V_R=0$ t=10ms (50Hz), sine t=8.3ms (60Hz), sine	470000 565000	A^2s
	$T_{VJ}=T_{VJM}$ $V_R=0$ t=10ms(50Hz), sine t=8.3ms(60Hz), sine	414000 496000	
$(di/dt)_{cr}$	$T_{VJ}=T_{VJM}$ f=50Hz, $t_p=200\mu s$ $V_D=2/3V_{DRM}$ $I_G=0.5A$ diG/dt=0.5A/us repetitive	150	A/us
	non repetitive	500	
$(dv/dt)_{cr}$	$T_{VJ}=T_{VJM}$; $V_{DR}=2/3V_{DRM}$ $R_{GK}=\infty$; method 1 (linear voltage rise)	1000	V/us
P_{GM}	$T_{VJ}=T_{VJM}$ $I_T=I_{TAVM}$ $t_p=30\mu s$ $t_p=500\mu s$	120 60	W
P_{GAV}		8	W
V_{RGM}		10	V
T_{VJ} T_{VJM} T_{stg}		-40...+125 125 -40...+125	$^{\circ}C$
V_{ISOL}	50/60Hz, RMS $I_{ISOL}\leq 1mA$ t=1min t=1s	2000 2500	V~
M_d	Mounting torque (M6)	5	Nm
	Terminal connection torque (M6)	5	
Weight	Typical	173	g

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Thyristor-Diode Modules

Symbol	Test Conditions	Characteristic Values		Unit
I_{RRM}, I_{DRM}	$T_{VJ}=T_{VJM}; V_R=V_{RRM}; V_D=V_{DRM}$	50		mA
V_{TM}	$I_{TM}=750A; T_{VJ}=25^{\circ}C$	$\leq 1800V$	2000-2200V	V
		1.75	2.10	
V_{TO}	For power-loss calculations only ($T_{VJ}=T_{VJM}$)	1.2		V
r_T		2.3		mΩ
V_{GT}	$V_D=6V; T_{VJ}=25^{\circ}C$ $T_{VJ}=-40^{\circ}C$	2 2.6		V
I_{GT}	$V_D=6V; T_{VJ}=25^{\circ}C$ $T_{VJ}=-40^{\circ}C$	150 200		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	$T_{VJ}=25^{\circ}C; t_p=30\mu s; V_D=6V$ $I_G=0.45A; di_G/dt=0.45A/\mu s$	800		mA
I_H	$T_{VJ}=25^{\circ}C; V_D=6V; R_{GK}=\infty$	250		mA
t_{gd}	$T_{VJ}=25^{\circ}C; V_D=1/2V_{DRM}$ $I_G=0.5A; di_G/dt=0.5A/\mu s$	2		μs
t_q	$T_{VJ}=T_{VJM}; I_T=250A; t_p=200\mu s; -di/dt=10A/\mu s$ $V_R=100V; dv/dt=20V/\mu s; V_D=2/3V_{DRM}$ typ.	300		μs
Q_s	$T_{VJ}=T_{VJM}; I_T, I_F=250A; -di/dt=50A/\mu s$	650		μC
I_{RM}		235		A
R_{thJC}	per thyristor/diode; DC current per module	0.130 0.065		K/W
R_{thCH}	per thyristor/diode; DC current per module	0.124 0.062		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
- * Isolation voltage 3600 V~
- * Pressure Contacts Technology
- * UL File NO.E310749
- * RoHS Compliant

APPLICATIONS

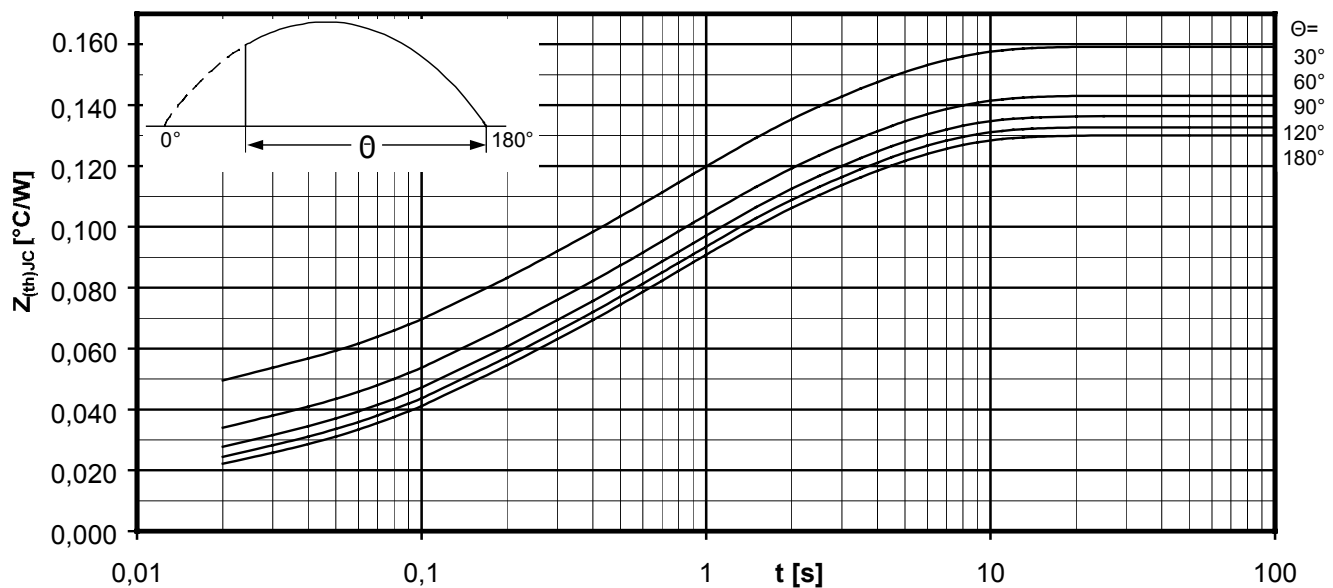
- * Motor control
- * Power converter
- * Heat and temperature control for industrial furnaces and chemical processes
- * Lighting control
- * Contactless switches

ADVANTAGES

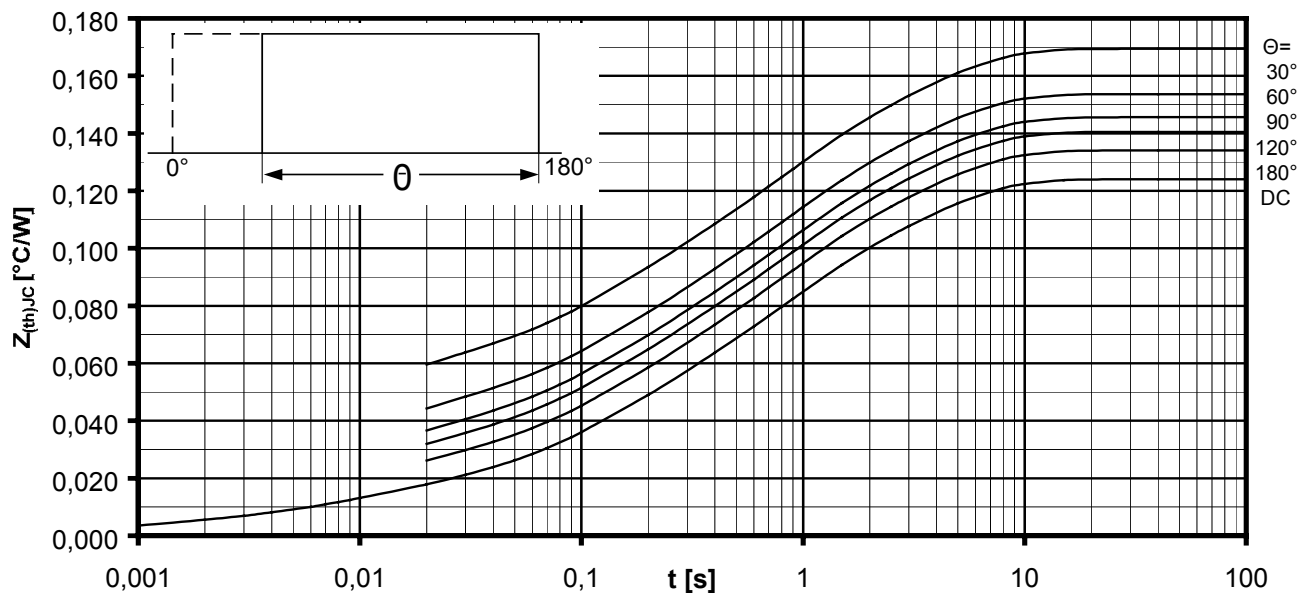
- * Space and weight savings
- * Simple mounting
- * Improved temperature and power cycling
- * Reduced protection circuits

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Thyristor-Diode Modules



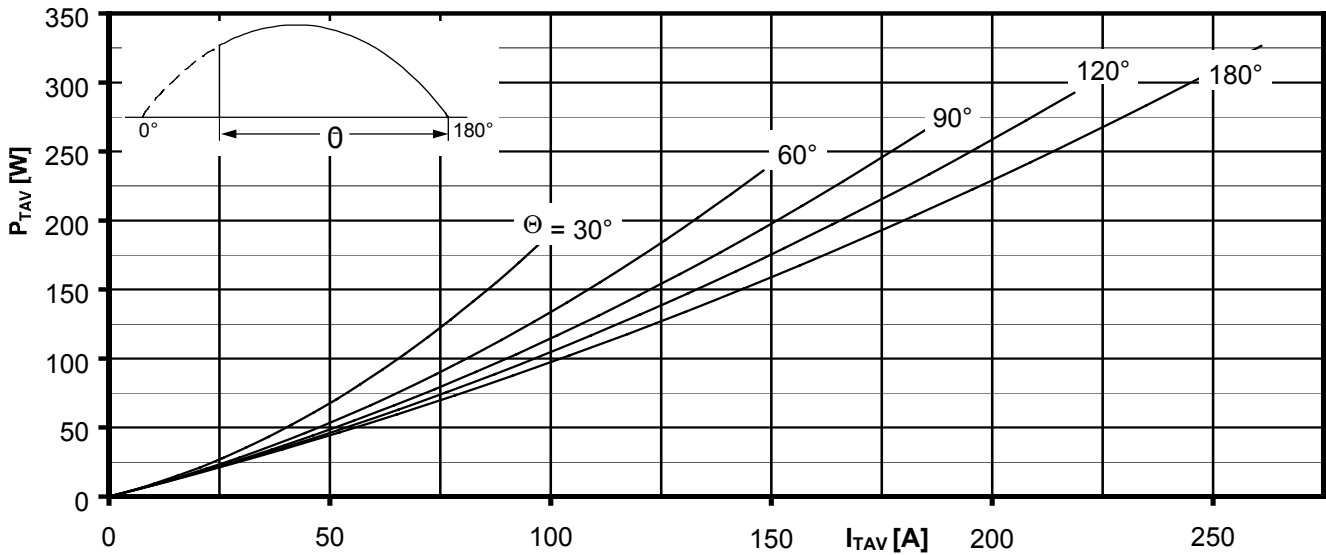
Transient thermal impedance per arm $Z_{thJC} = f(t)$
Sinusoidal current
Parameter: Current conduction angle Θ



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

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Thyristor-Diode Modules

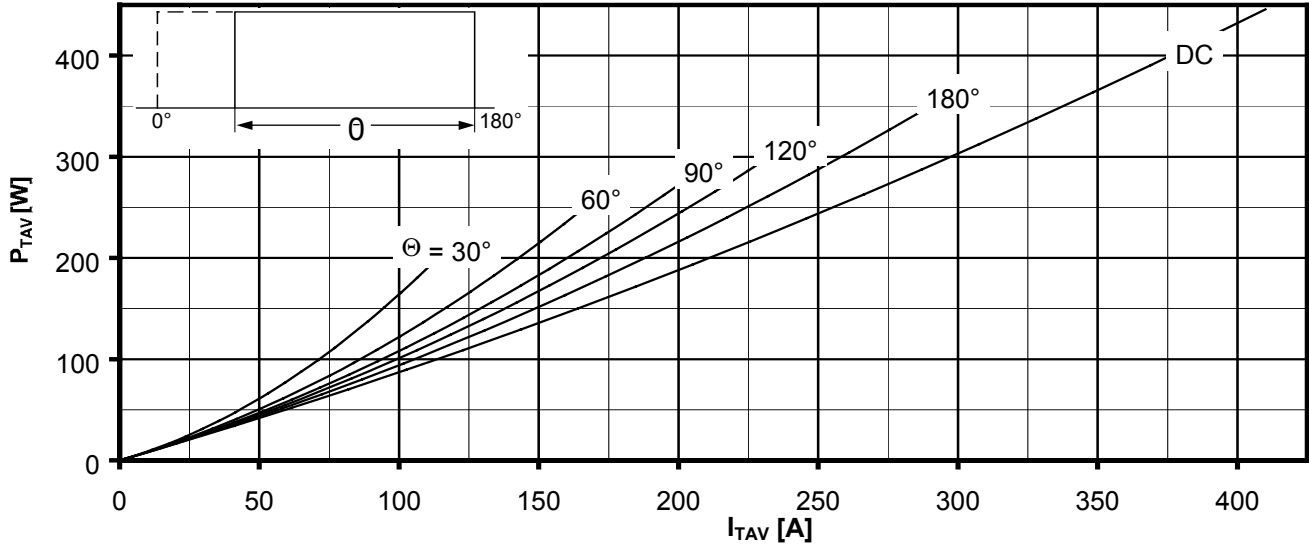


On-state power loss per arm $P_{TAV} = f(I_{TAV})$

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

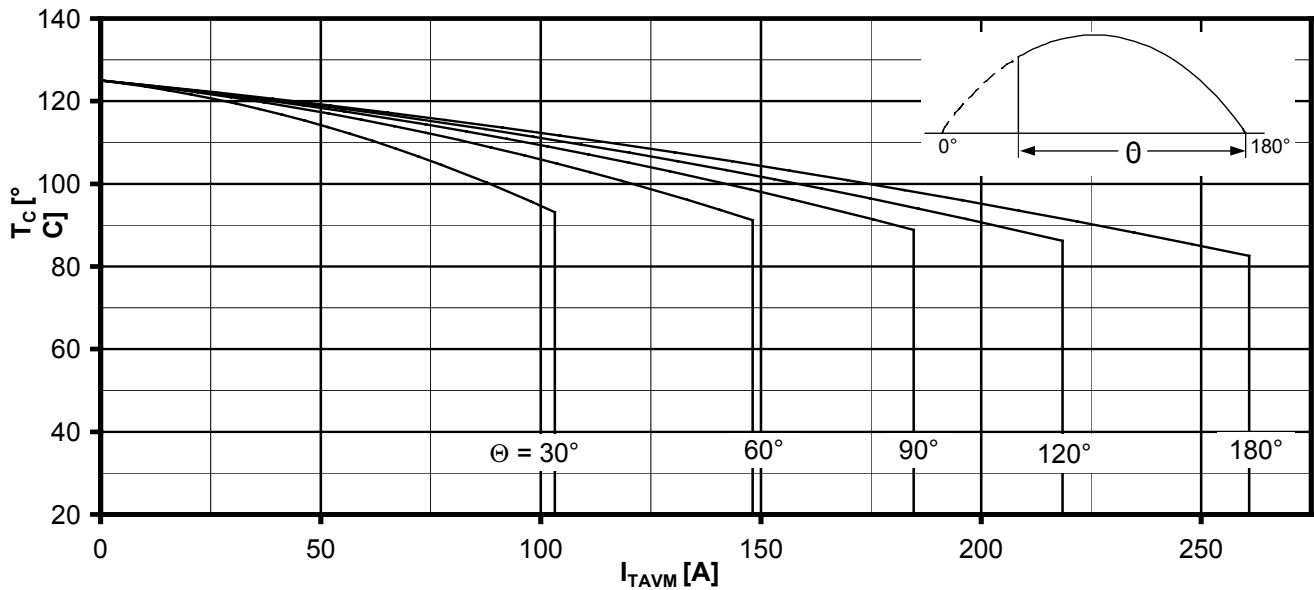
Calculation base P_{TAV} (switching losses should be considered separately)

Parameter: Current conduction angle Θ

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Thyristor-Diode Modules

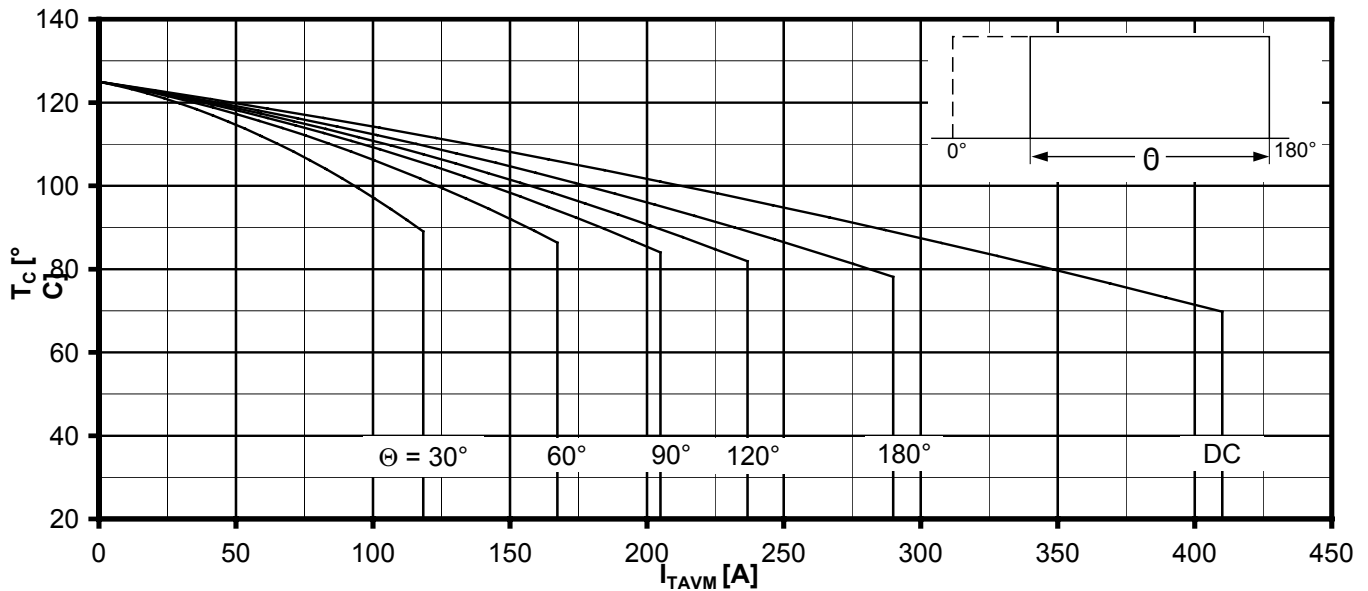


Maximum allowable case temperature $T_c = f(I_{TAVM})$

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

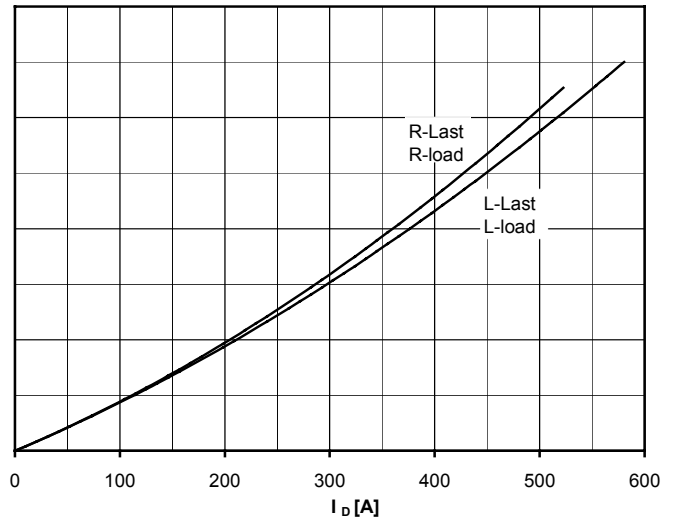
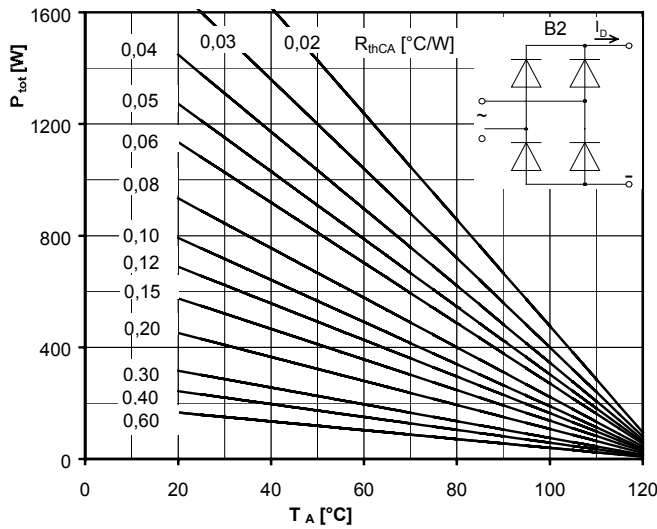
Calculation base P_{TAV} (switching losses should be considered separately)

Parameter: Current conduction angle Θ

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Thyristor-Diode Modules



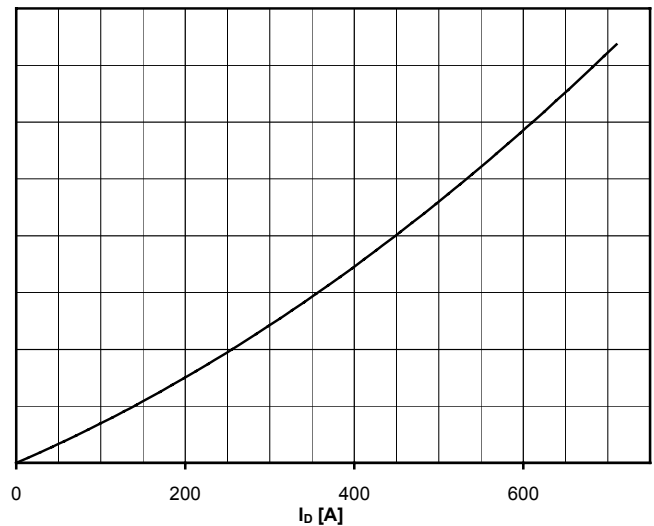
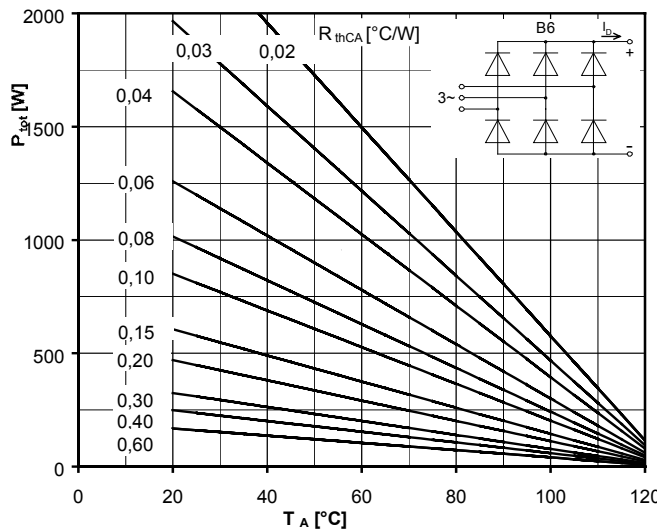
Maximum rated output current I_D

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}

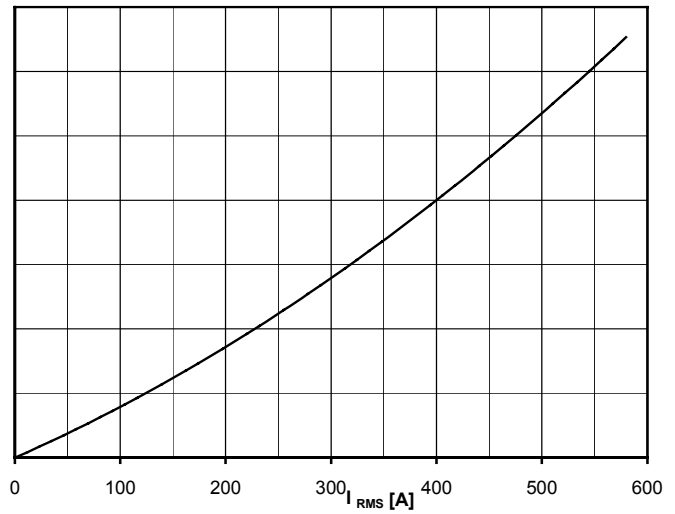
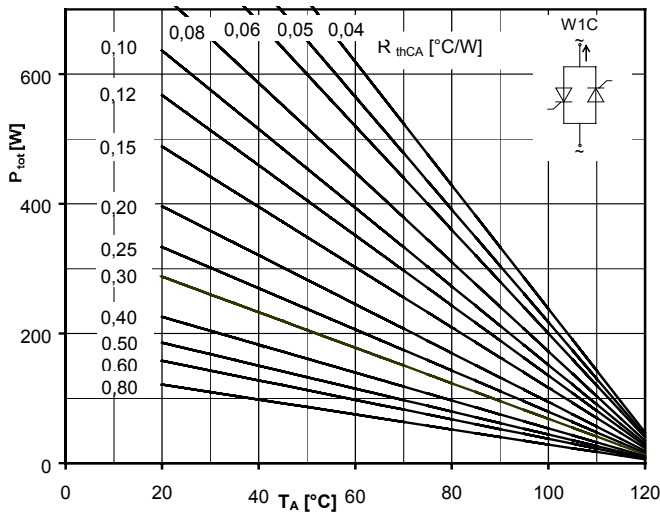
Parameter:

Thermal resistance cases to ambient R_{thCA}

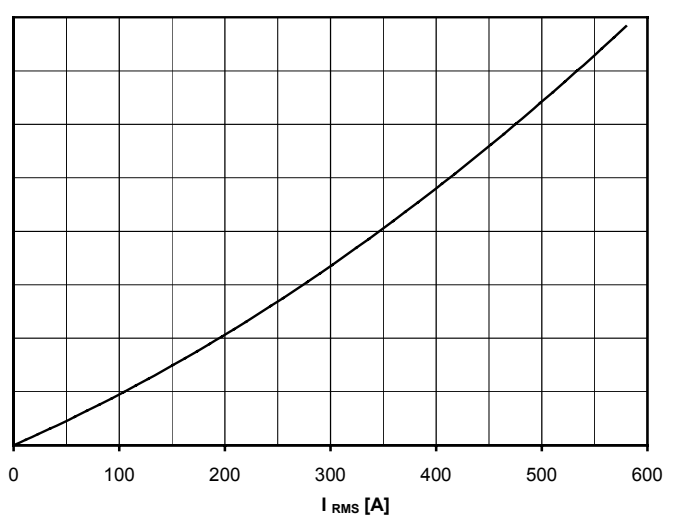
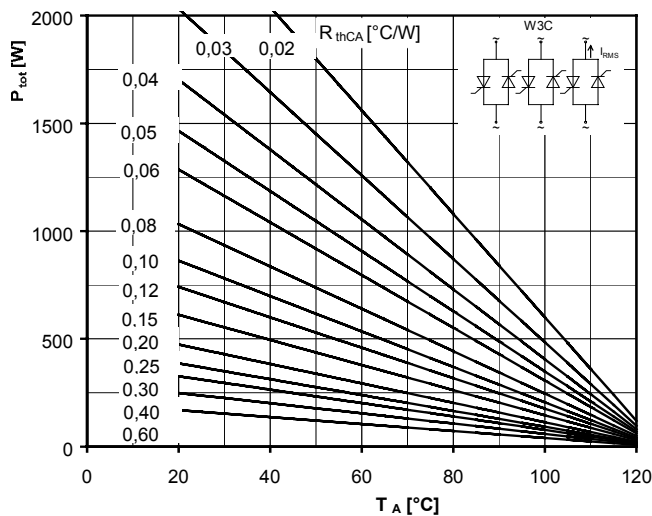
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Thyristor-Diode Modules



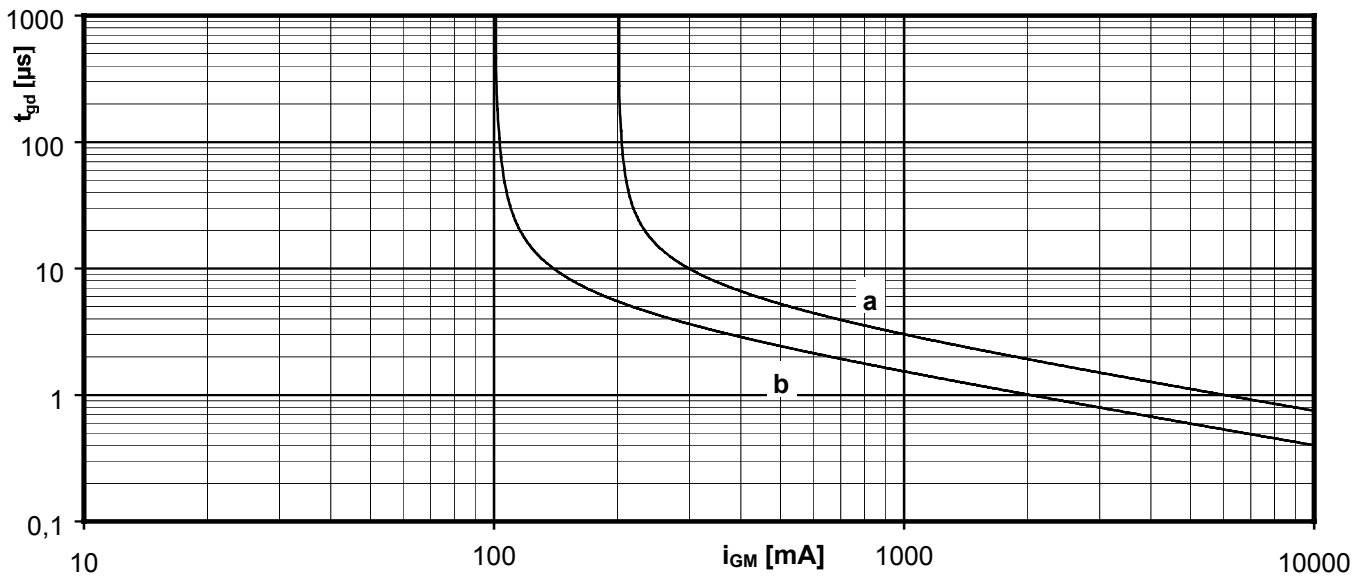
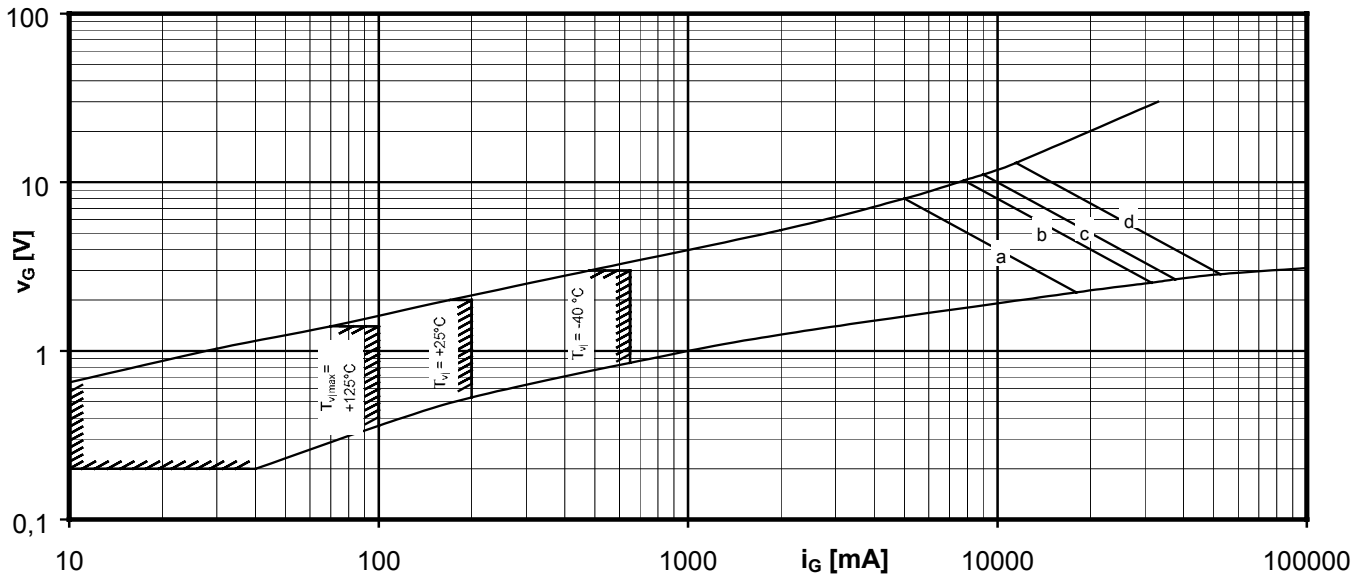
Maximum rated RMS current I_{RMS}
 Single-phase inverse parallel circuit
 Total power dissipation at circuit P_{tot}
 Parameter:
 Thermal resistance case to ambient R_{thCA}



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}

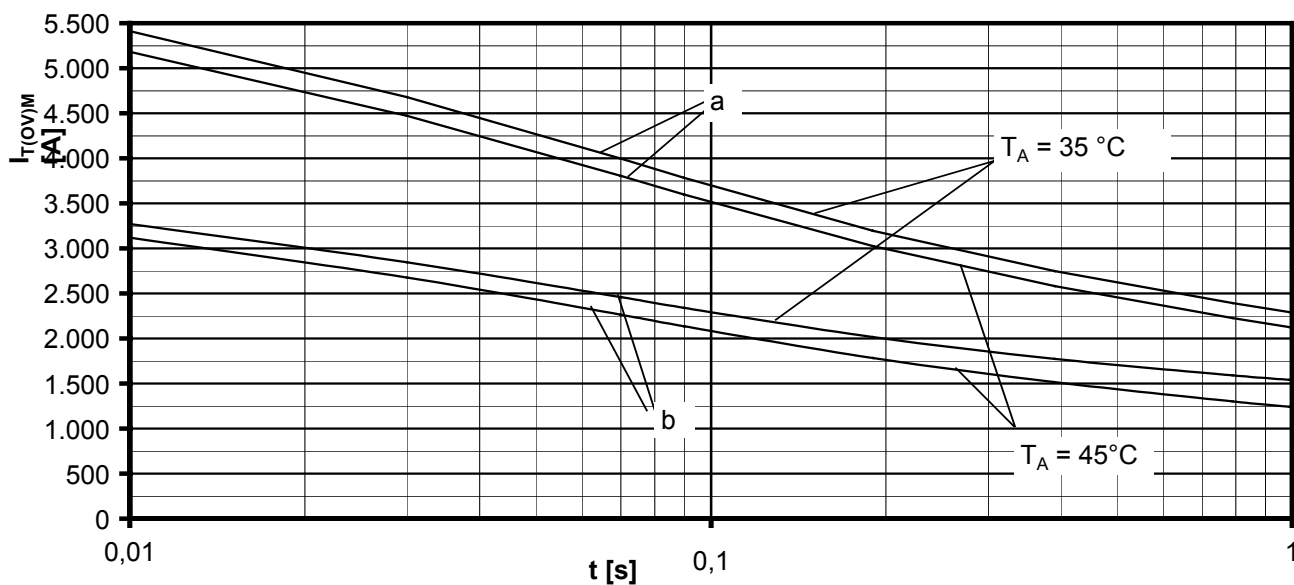
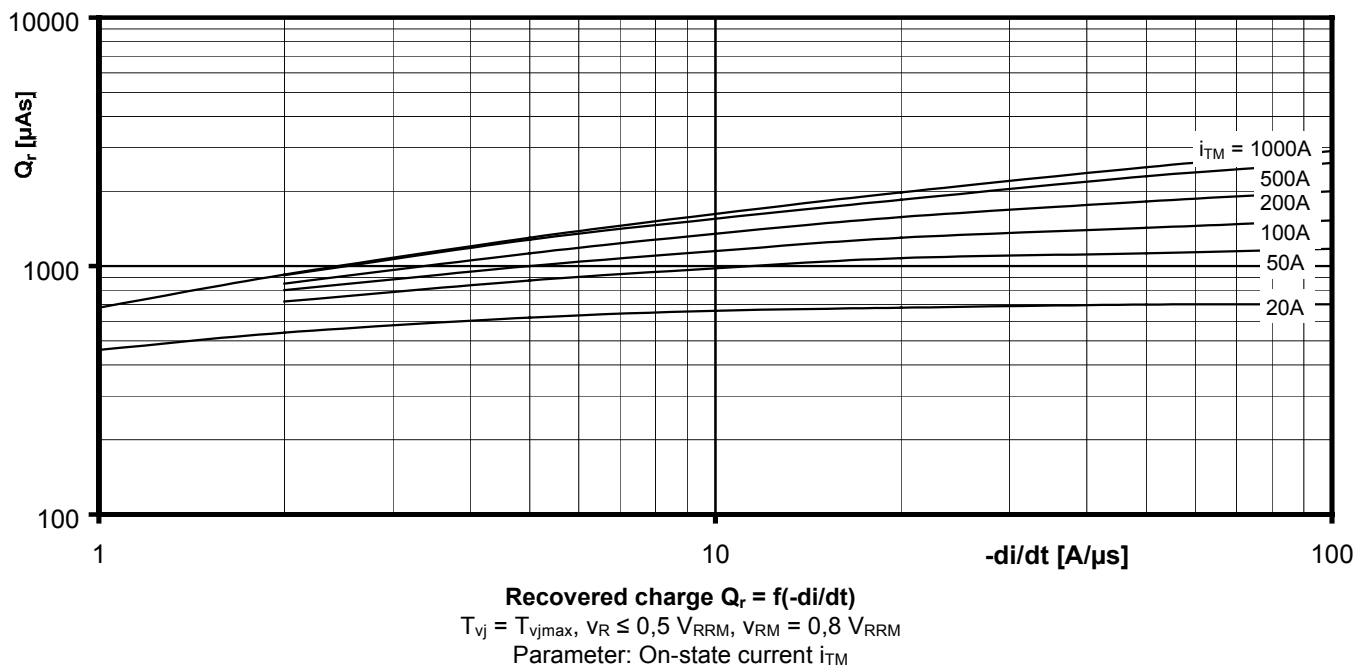
STD253GK18BT

Thyristor-Diode Modules



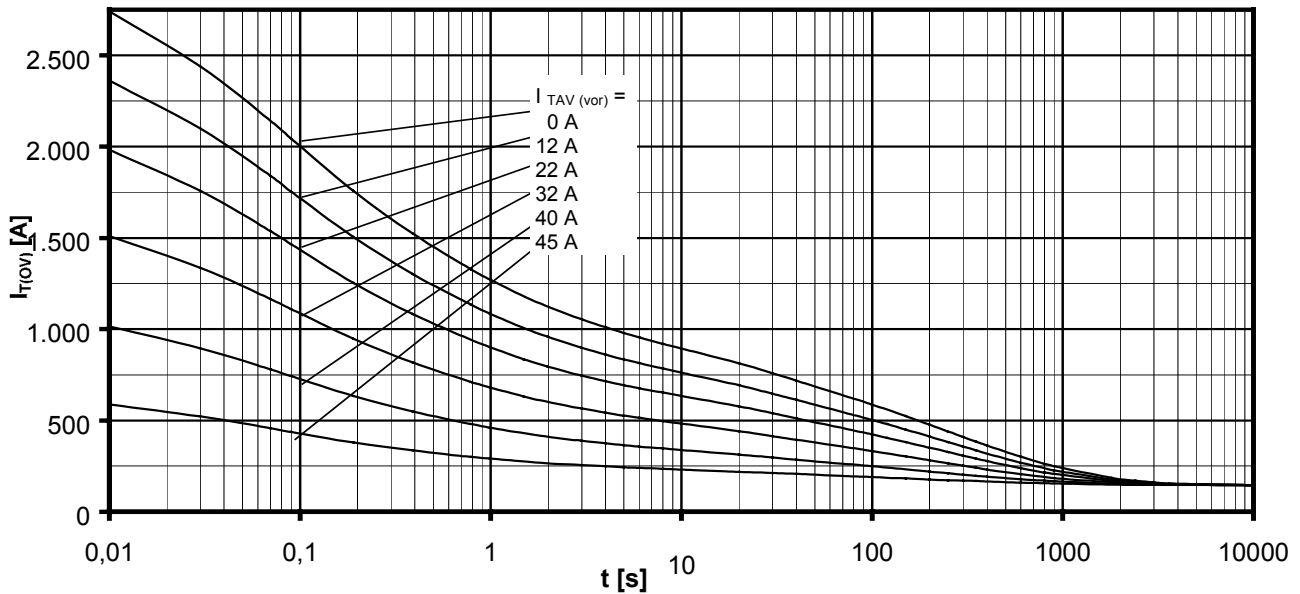
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Thyristor-Diode Modules

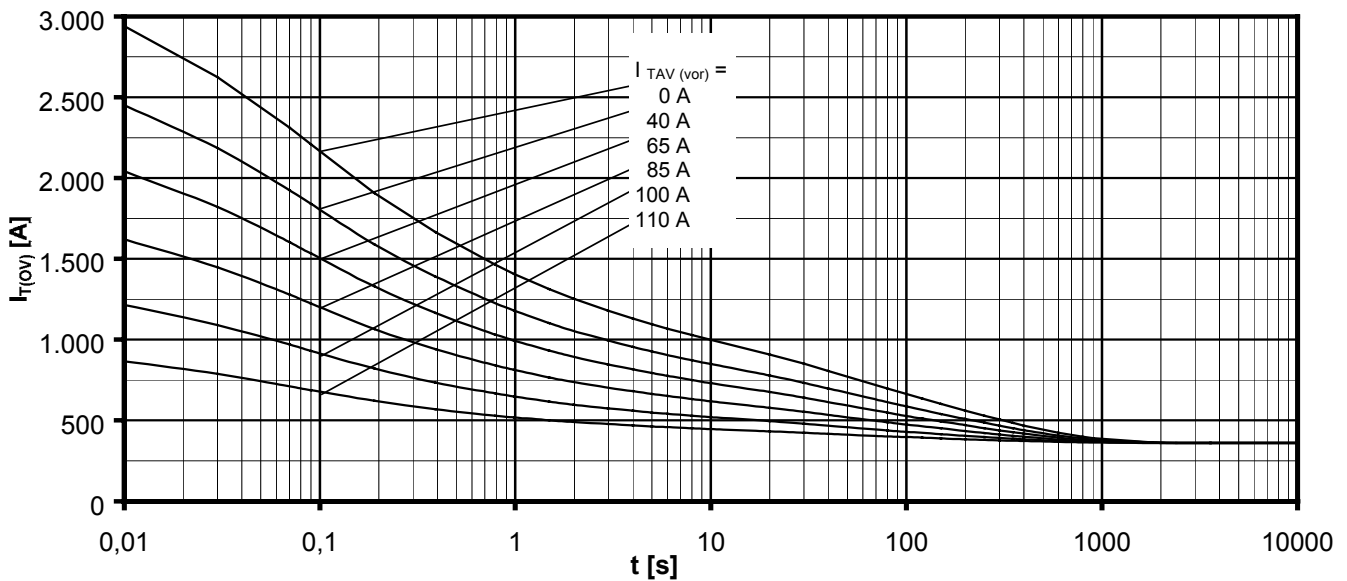


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Thyristor-Diode Modules



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 $T_A = 35^\circ\text{C}$
 Parameter: Pre-load current per arm $I_{TAV(vor)}$