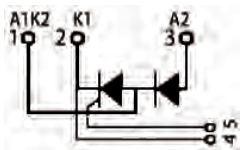
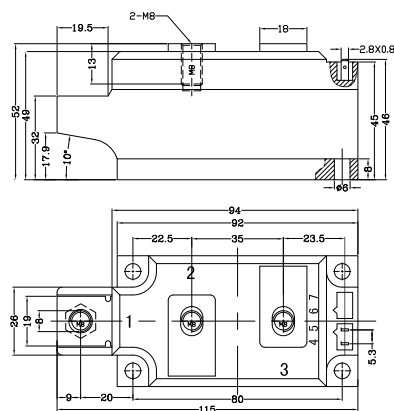


Thyristor-Diode Modules



Dimensions in mm

P1

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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

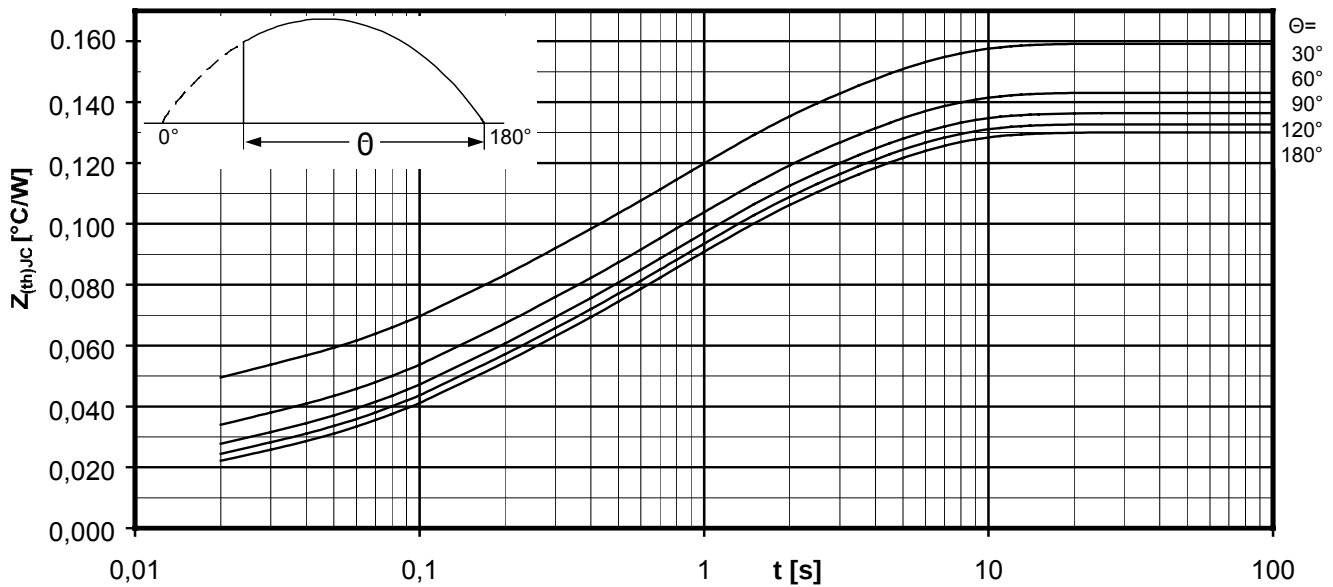
- * Motor control
- * Power converter
- * Heat and temperature control for industrial furnaces and chemical processes
- * Lighting control
- * Contactless switches

ADVANTAGES

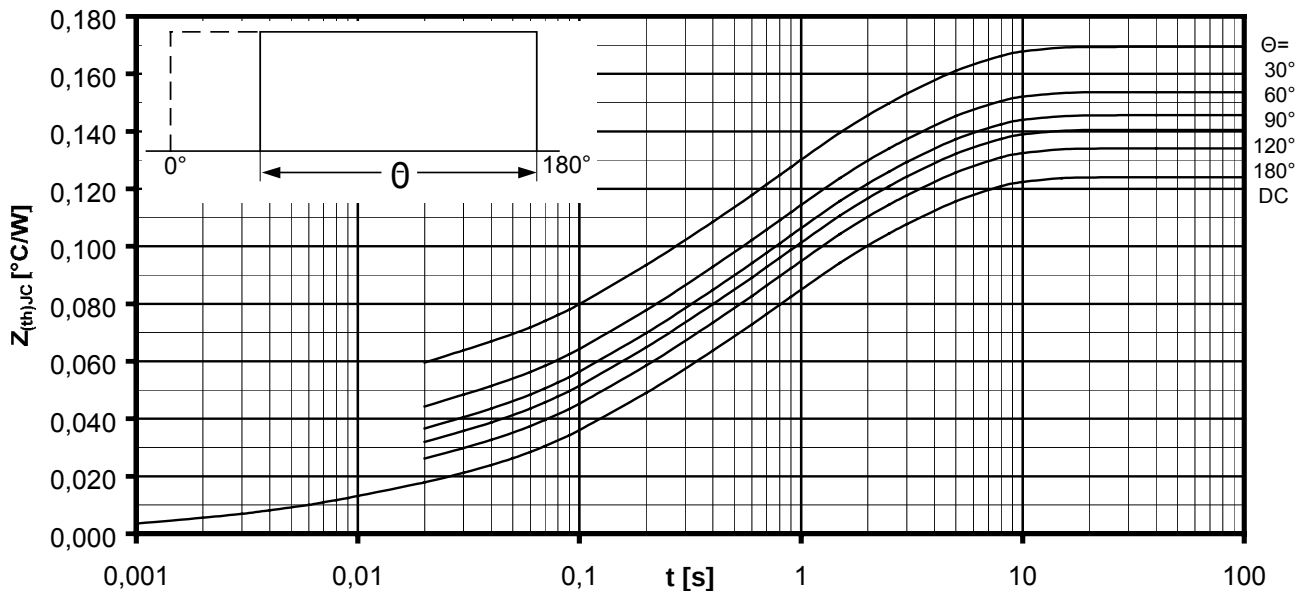
- * Space and weight savings
- * Simple mounting
- * Improved temperature and power cycling
- * Reduced protection circuits

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Thyristor-Diode Modules



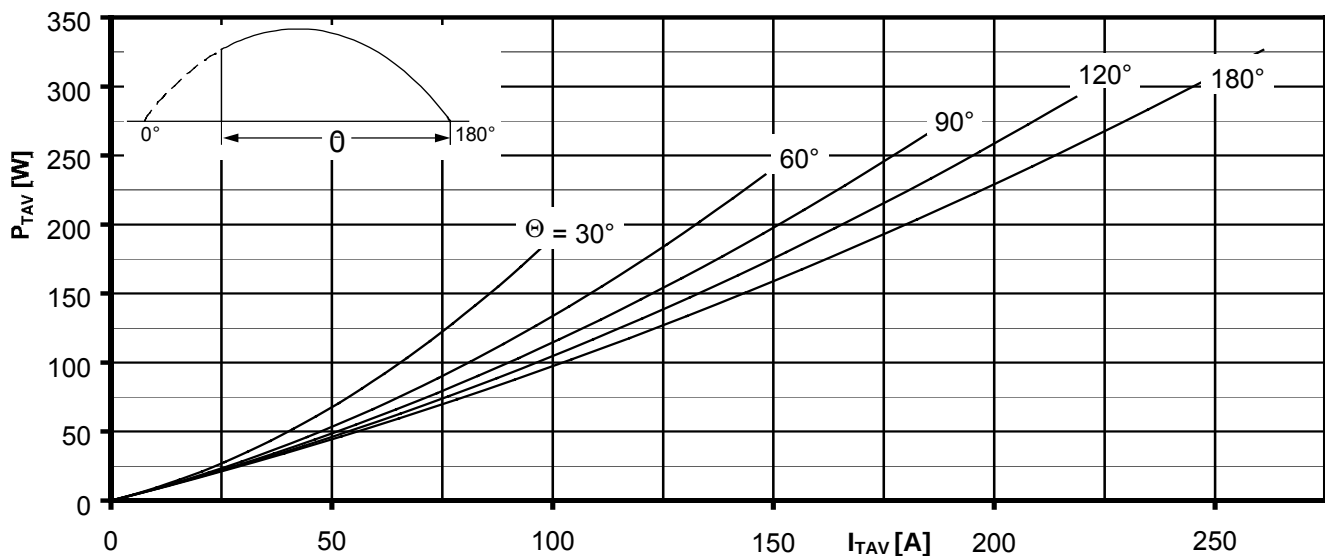
Transient thermal impedance per arm $Z_{thJC} = f(t)$
Sinusoidal current
Parameter: Current conduction angle Θ



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

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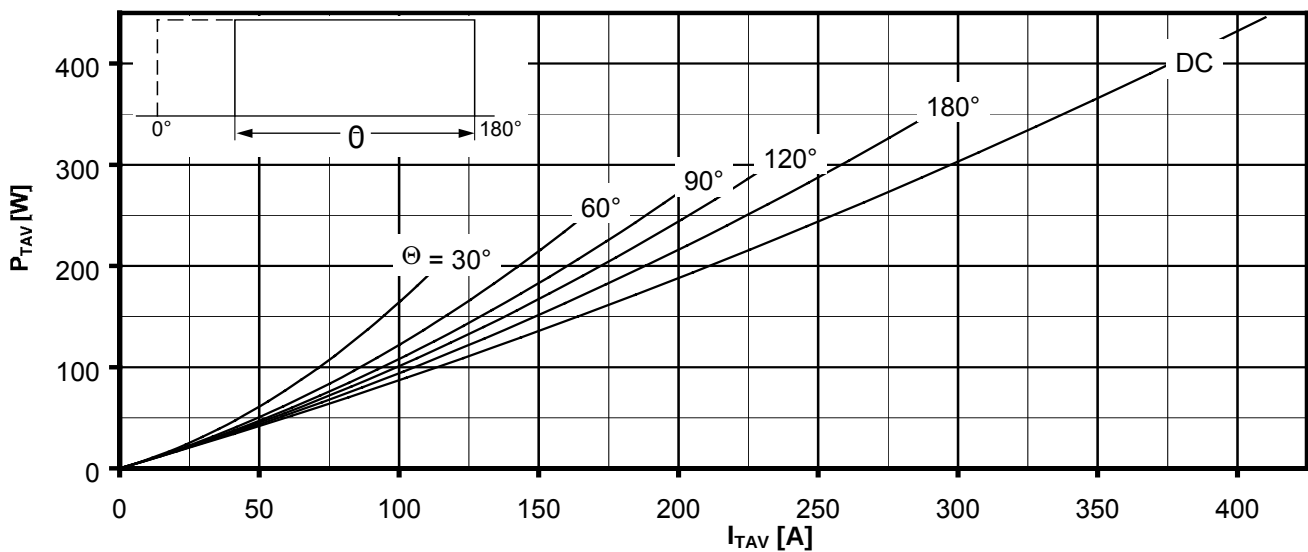
Thyristor-Diode Modules



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



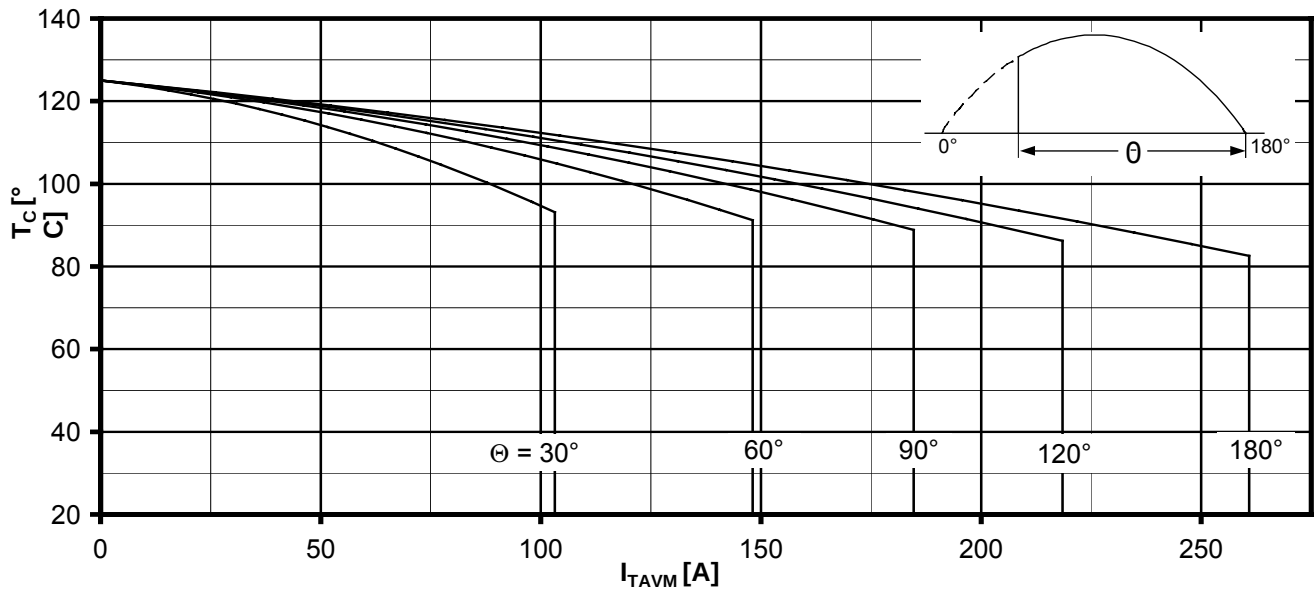
On-state power loss per arm $P_{TAV} = f(I_{TAV})$

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

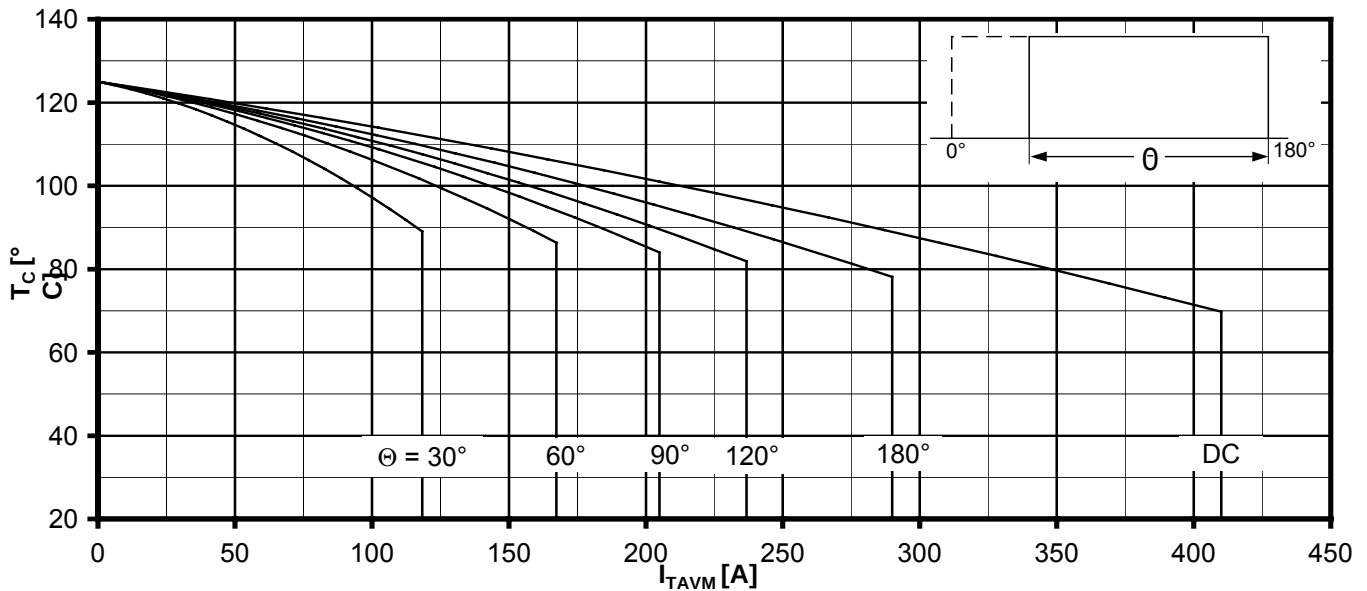


Maximum allowable case temperature $T_C = f(I_{TAVM})$

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

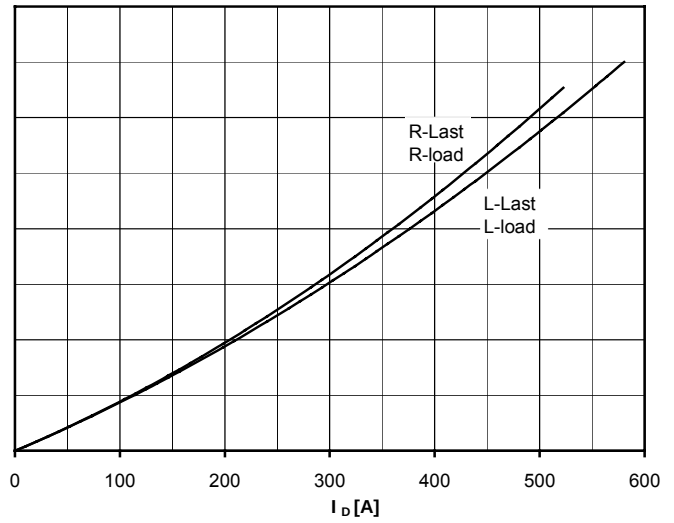
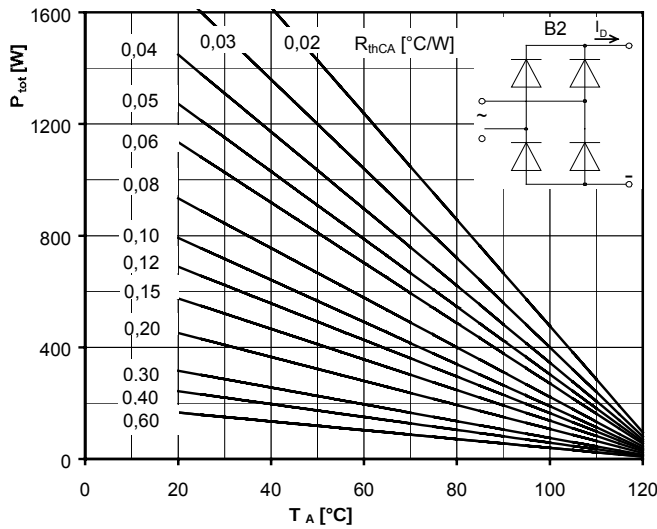
Calculation base P_{TAV} (switching losses should be considered separately)

Parameter: Current conduction angle Θ

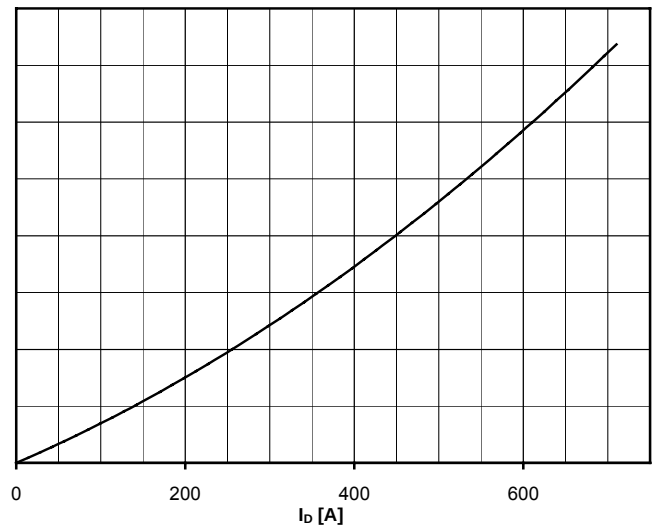
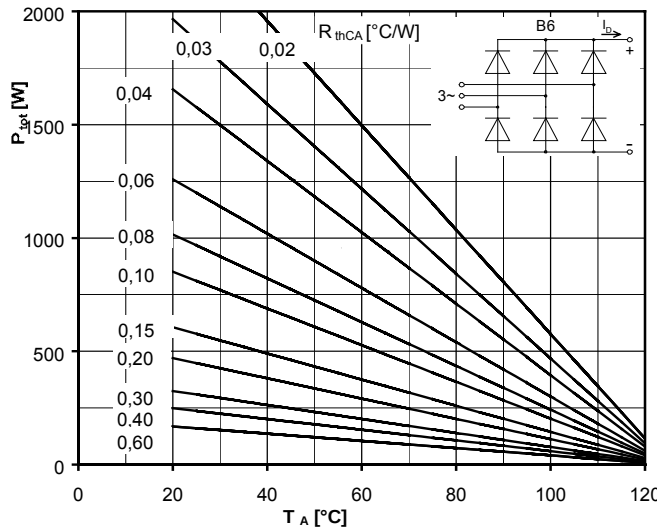
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Thyristor-Diode Modules



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}

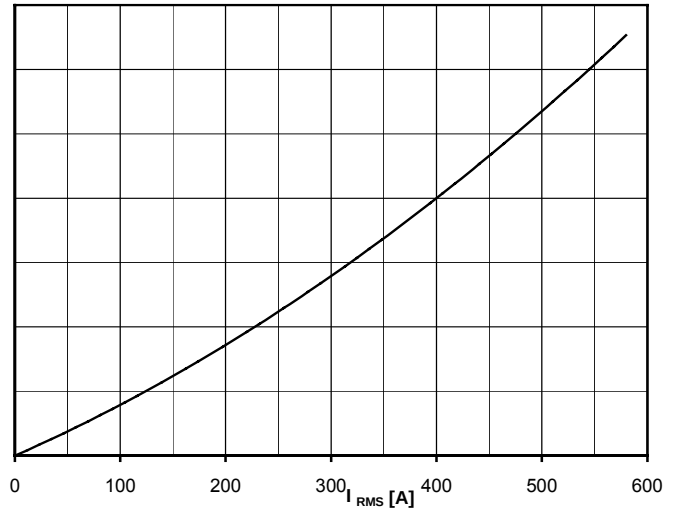
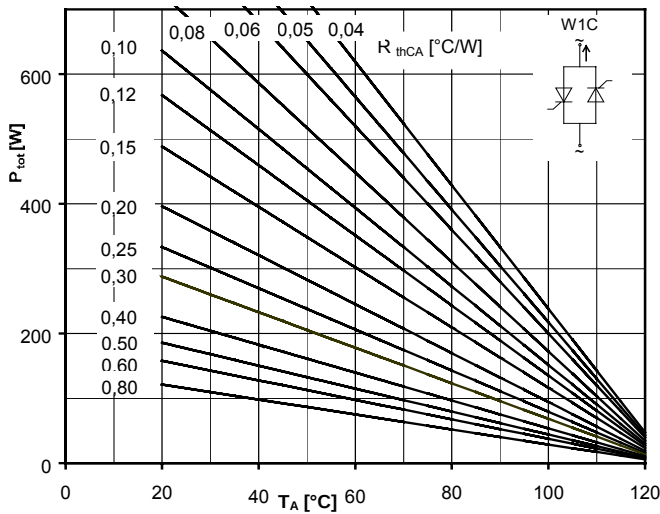


Maximum rated output current I_D
 Six-pulse bridge circuit
 Total power dissipation at circuit P_{tot}
 Parameter:
 Thermal resistance cases to ambient R_{thCA}

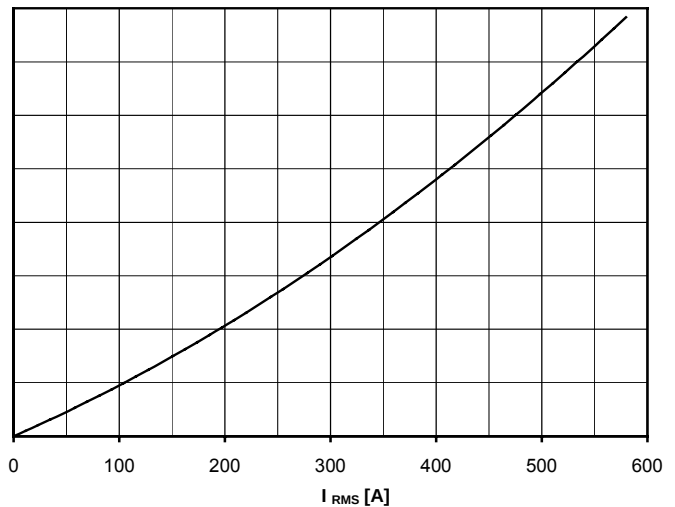
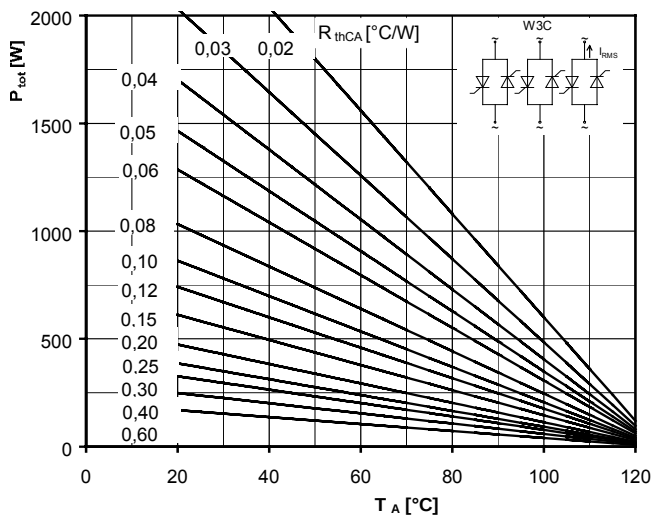
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Thyristor-Diode Modules



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}

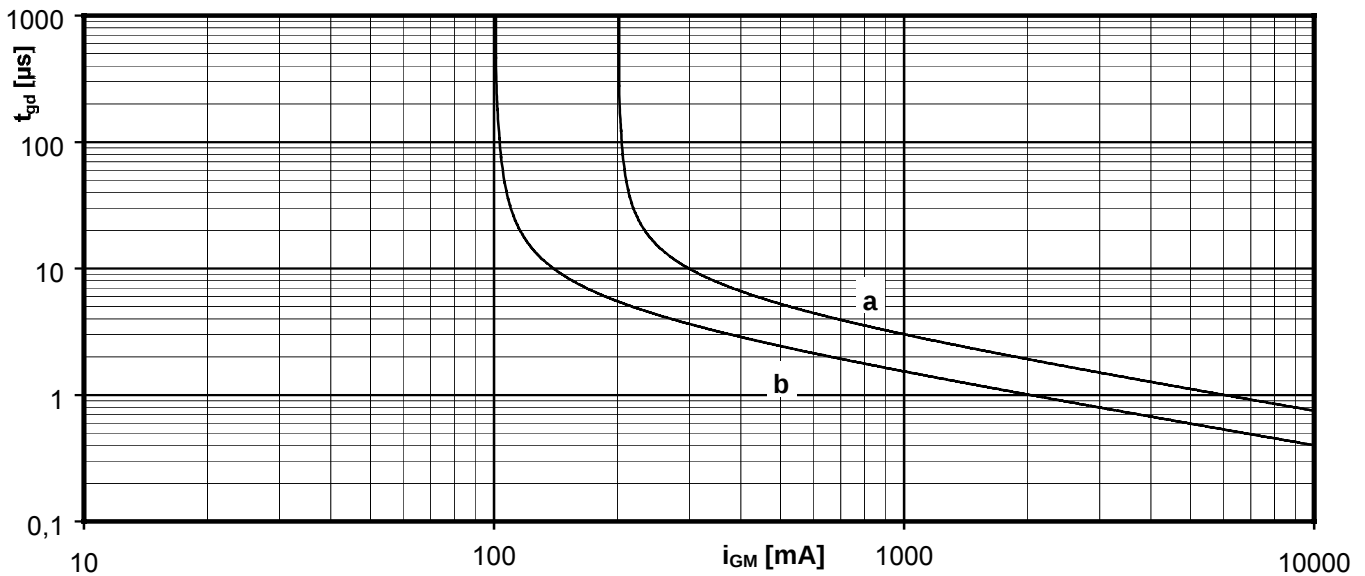
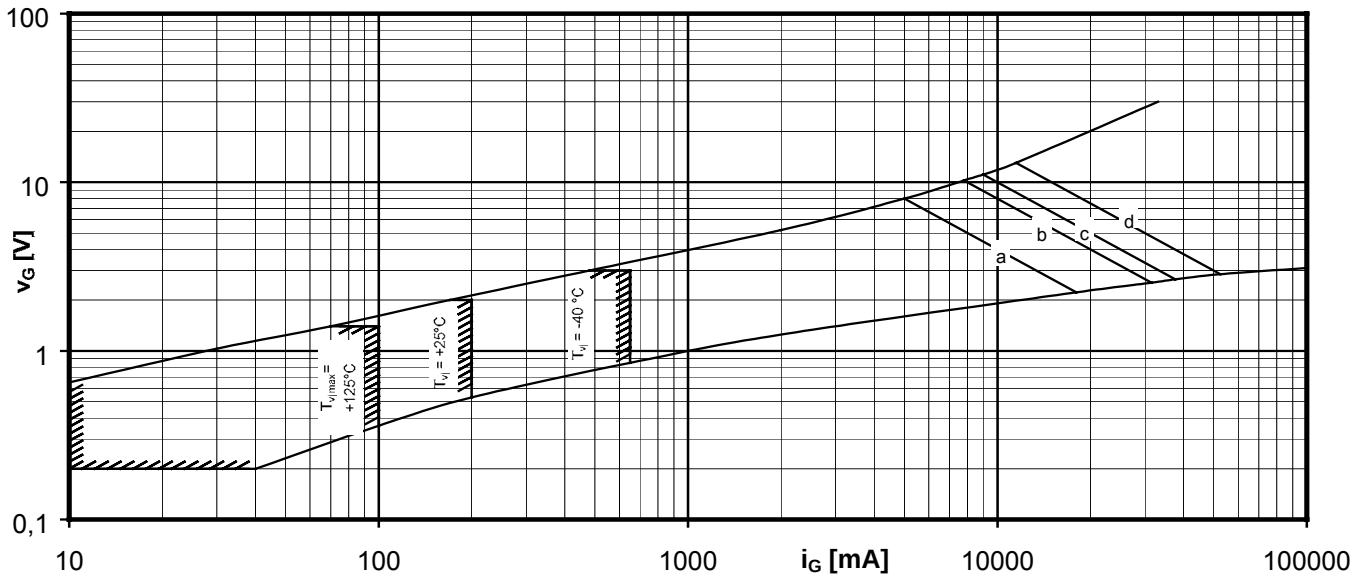


Maximum rated RMS current I_{RMS}
 Three-phase inverse parallel circuit
 Total power dissipation at circuit P_{tot}
 Parameter:
 Thermal resistance cases to ambient R_{thCA}

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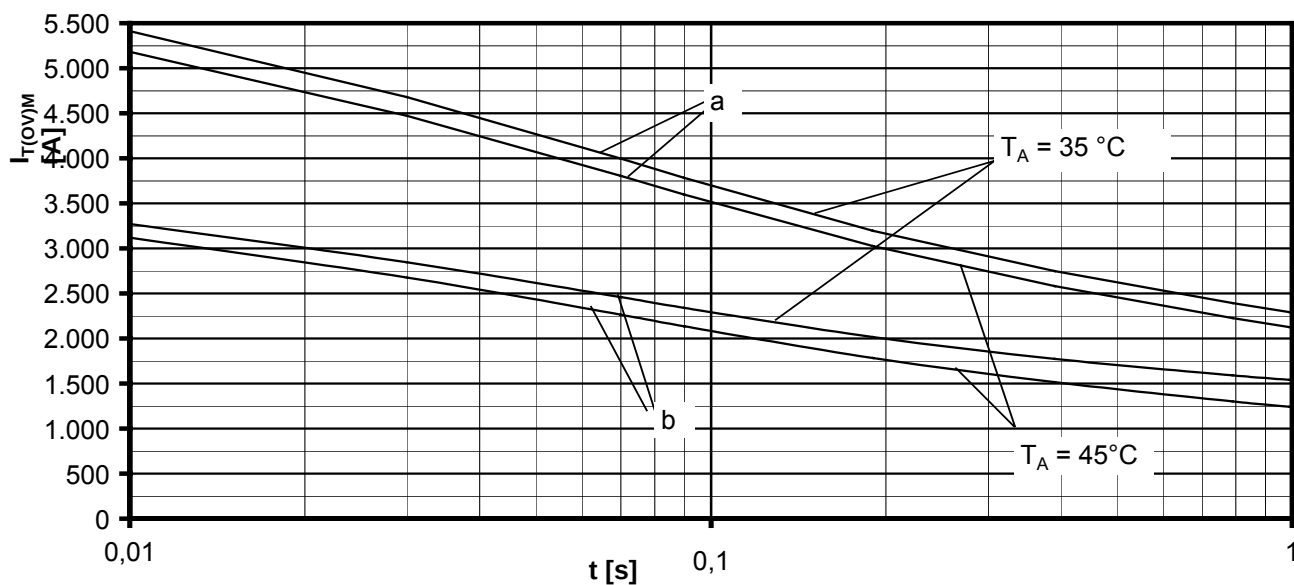
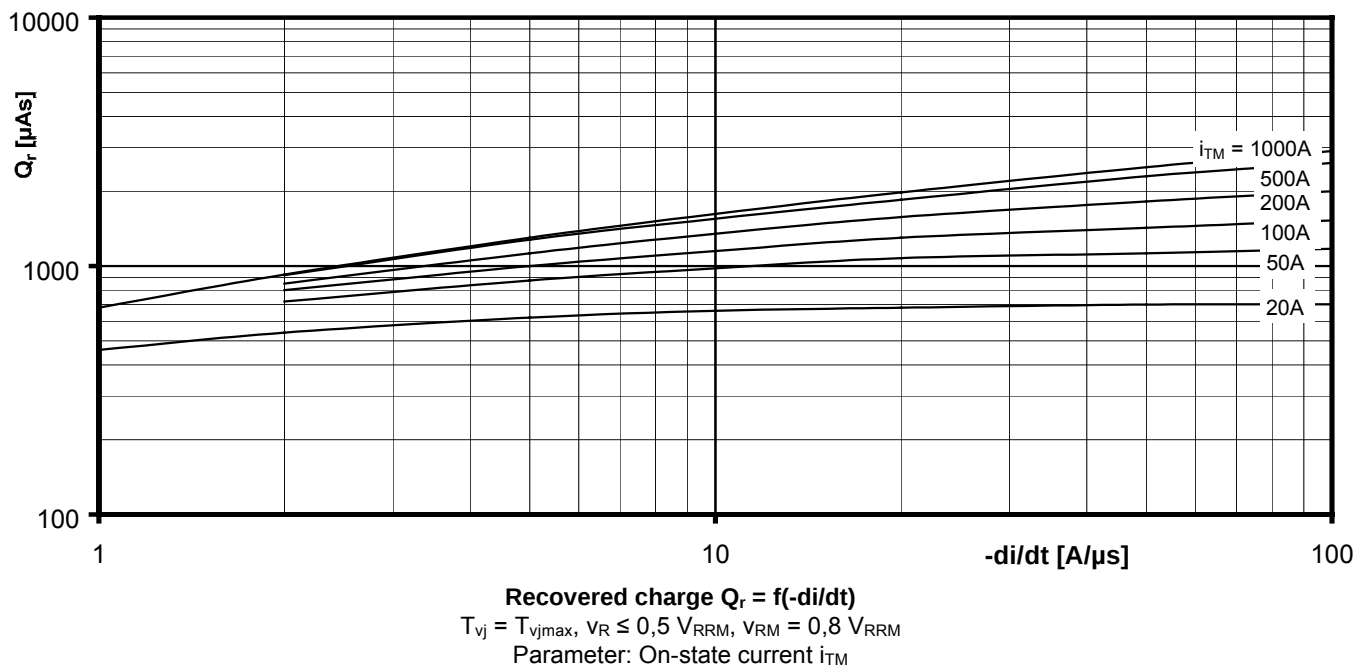
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Thyristor-Diode Modules



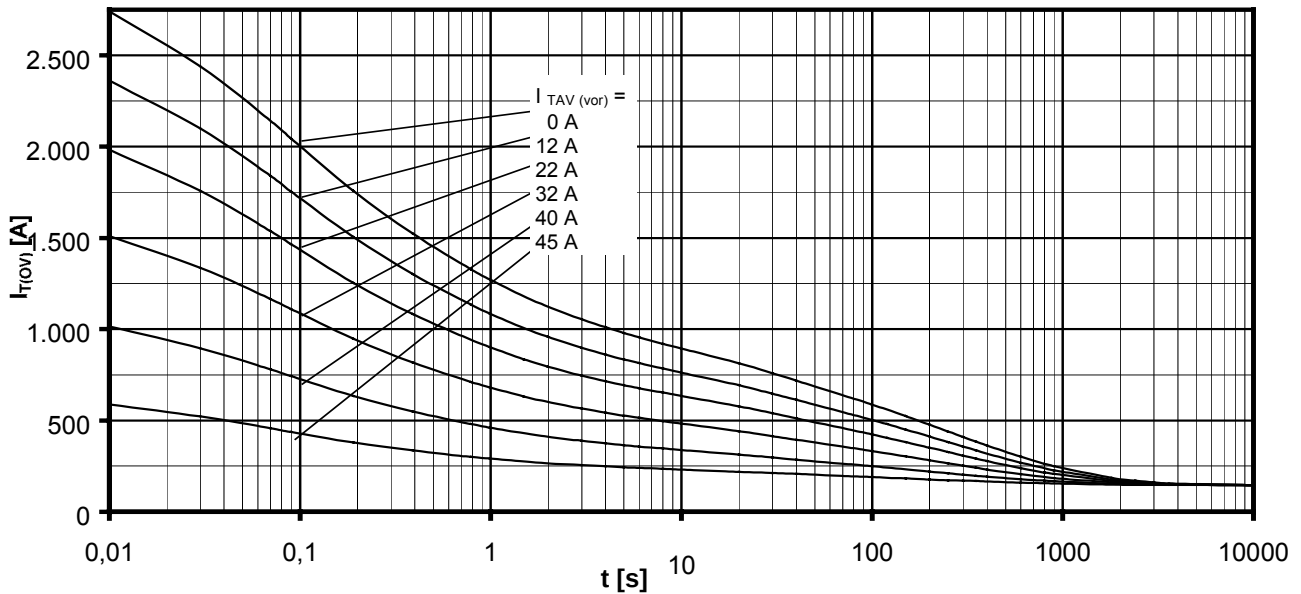
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Thyristor-Diode Modules

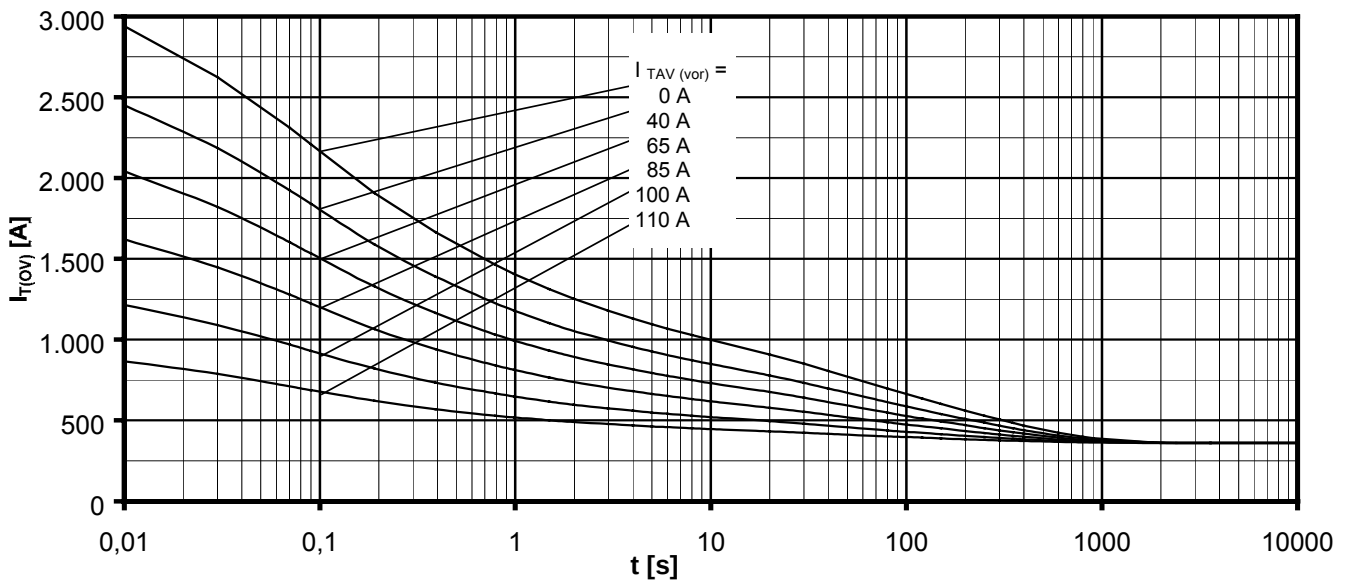


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Thyristor-Diode Modules



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 $I_{TAV(vor)}$