Diode Module
AMDD104N18K

Key Parameters

$I_{F(AV)M}$	=	104	A
V_{RRM}	=	1800	V
I_{FSM}	=	2900	A
V_{T0}	=	0.7	V
r_T	=	2.1	mΩ

Properties

- International standard package
- High operation reliability
- Electrically insulated base plate

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters			Maximum Limits	Unit
V_{RRM}	Repetitive peak reverse voltage	T_{vj} = -40°C... $T_{vj\ max}$	1800	V
V_{RSM}	Non-repetitive peak reverse voltage	T_{vj} = +25°C... $T_{vj\ max}$	1900	V
I_{FAVM}	Average on-state current	T_C = 100°C	104	A
I_{FRMSM}	Maximum RMS on-state current		160	A
I_{FSM}	Surge current	T_{vj} = 25°C, t_P = 10 ms T_{vj} = $T_{vj\ max}$, t_P = 10 ms	2900 2500	A A
I^2t	Safety factor	T_{vj} = 25°C, t_P = 10 ms T_{vj} = $T_{vj\ max}$, t_P = 10 ms	42000 31250	A^2s A^2s

CHARACTERISTICS

Symbols and parameters			Value			Unit
			min	typ	max	
v_F	On-state voltage	$T_{vj} = T_{vj\ max}$, I_F = 300 A			1.4	V
$V_{(TO)}$	Threshold voltage	$T_{vj} = T_{vj\ max}$			0.7	V
r_T	Slope resistance	$T_{vj} = T_{vj\ max}$			2.1	mΩ
I_R	Reverse current	$T_{vj} = T_{vj\ max}$, $v_R = V_{RRM}$			20	mA
V_{ISOL}	Insulation test voltage	RMS, f = 50Hz, t = 1 sec RMS, f = 50Hz, t = 1 min			3.0 2.5	kV

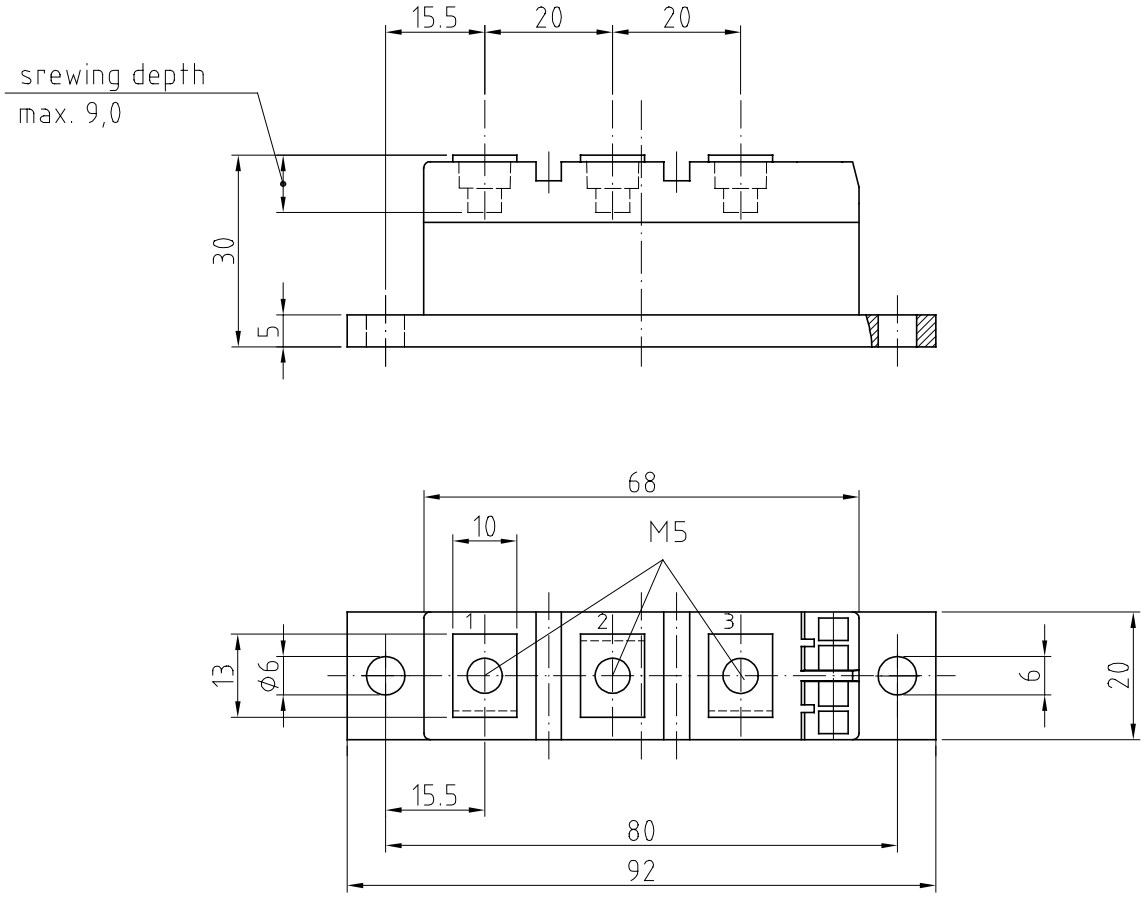
THERMAL PARAMETERS

Symbols and parameters			Value	Unit
$R_{th(j-c)}$	Thermal resistance, junction to case	per Module, θ = 180° sin per arm, θ = 180° sin per Module, DC per arm, DC	0.195 0.390 0.185 0.370	°C/W
$R_{th(c-h)}$	Thermal resistance, case to heatsink	per Module per arm	0.05 0.10	°C/W
$T_{vj\ max}$	Maximum junction temperature		+150	°C
$T_{C\ op}$	Operating temperature range		-40...+150	°C
T_{stg}	Storage temperature range		-40...+150	°C

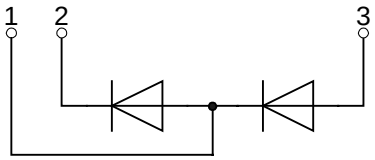
MECHANICAL PARAMETERS

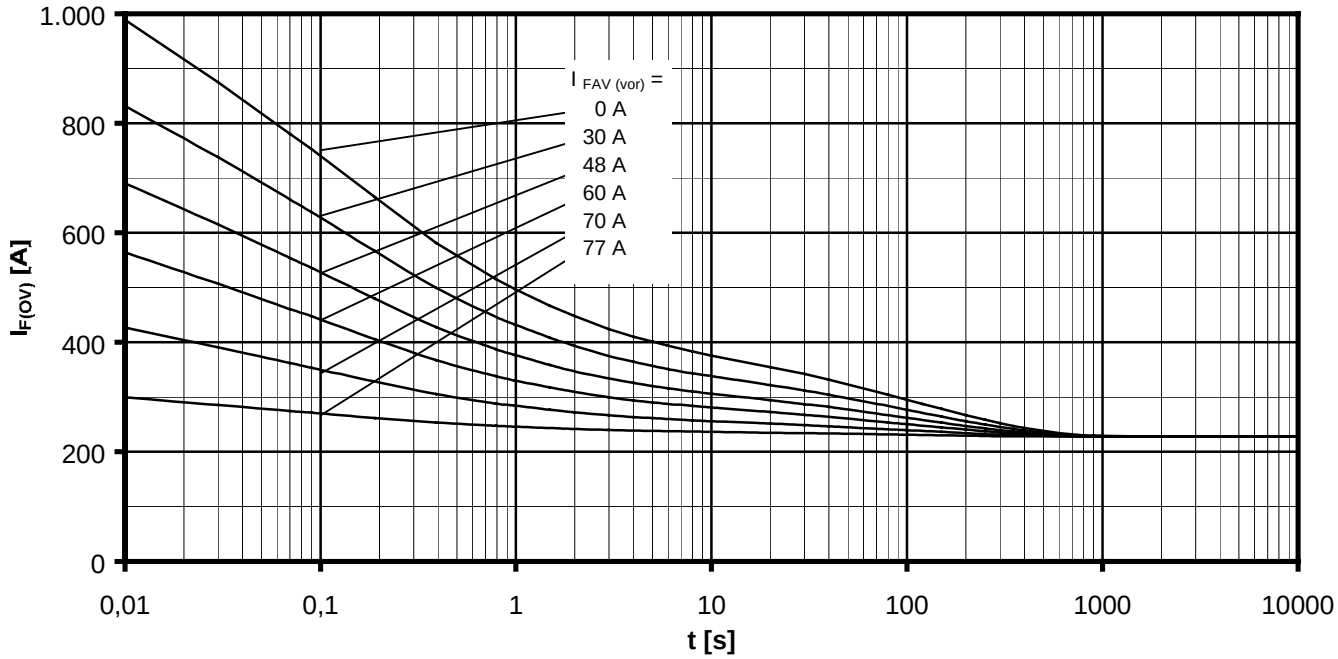
Symbols and parameters			Value	Unit
M1	Mounting torque	Tolerance ± 15%	4	Nm
M2	Terminal connection torque	Tolerance ± 10%	4	Nm
W	Weight		160	g
a	Vibration resistance	f = 50 Hz	50	m/s²

DIMENSIONS



TOPOLOGY OF INTERNAL CONNECTION

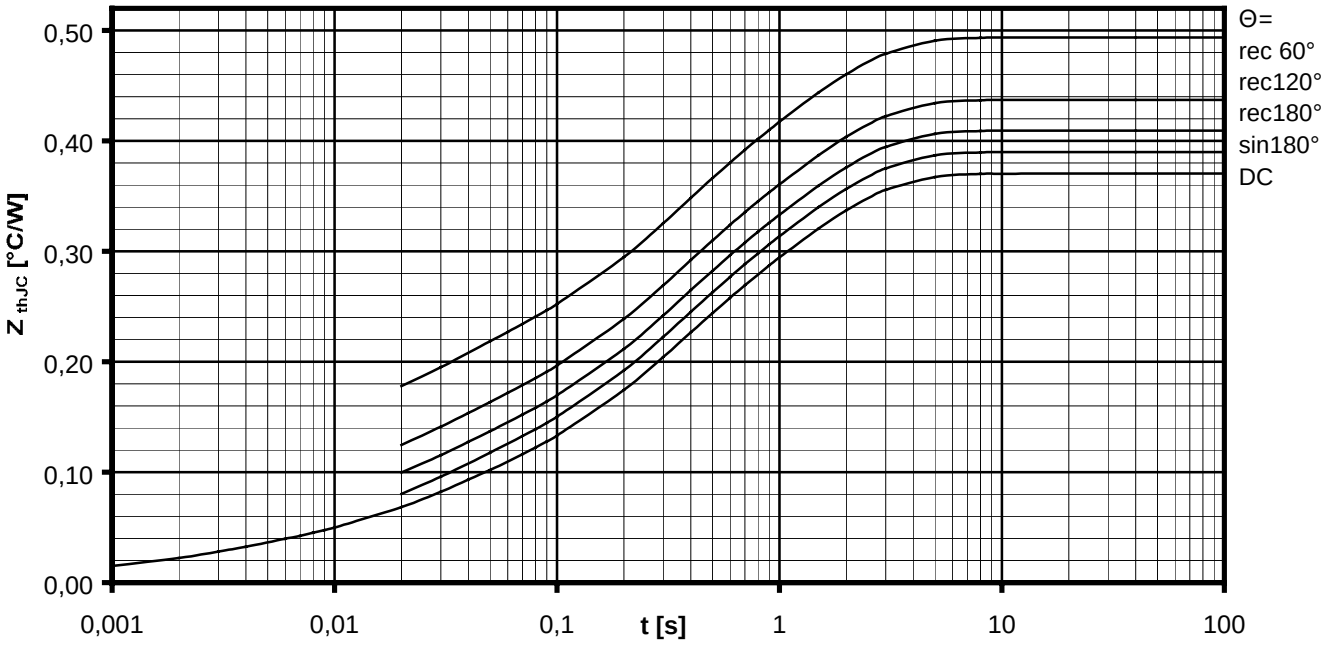




Overload on-state current $I_{F(OV)}$

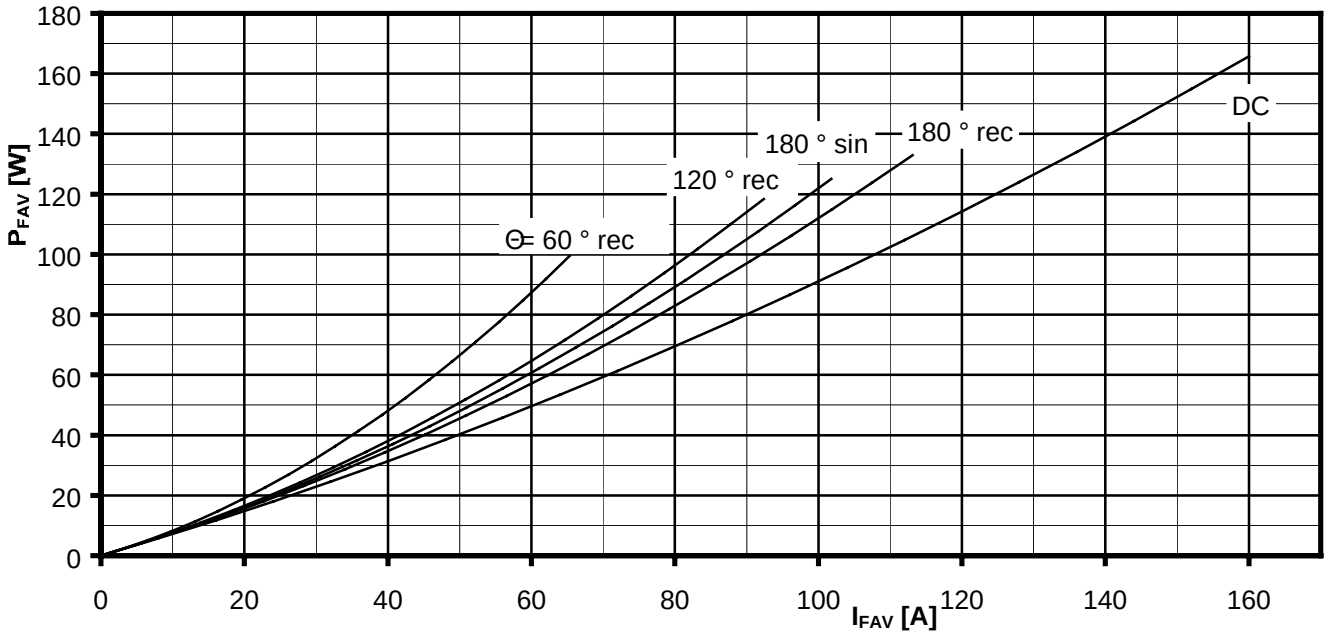
B6- Six-pulse bridge circuit 120° rectangular Heatsink type KM14 (Papst 4650)

Forced cooling at T_A = 35°C Parameter: Pre-load current per arm $I_{FAV(vor)}$



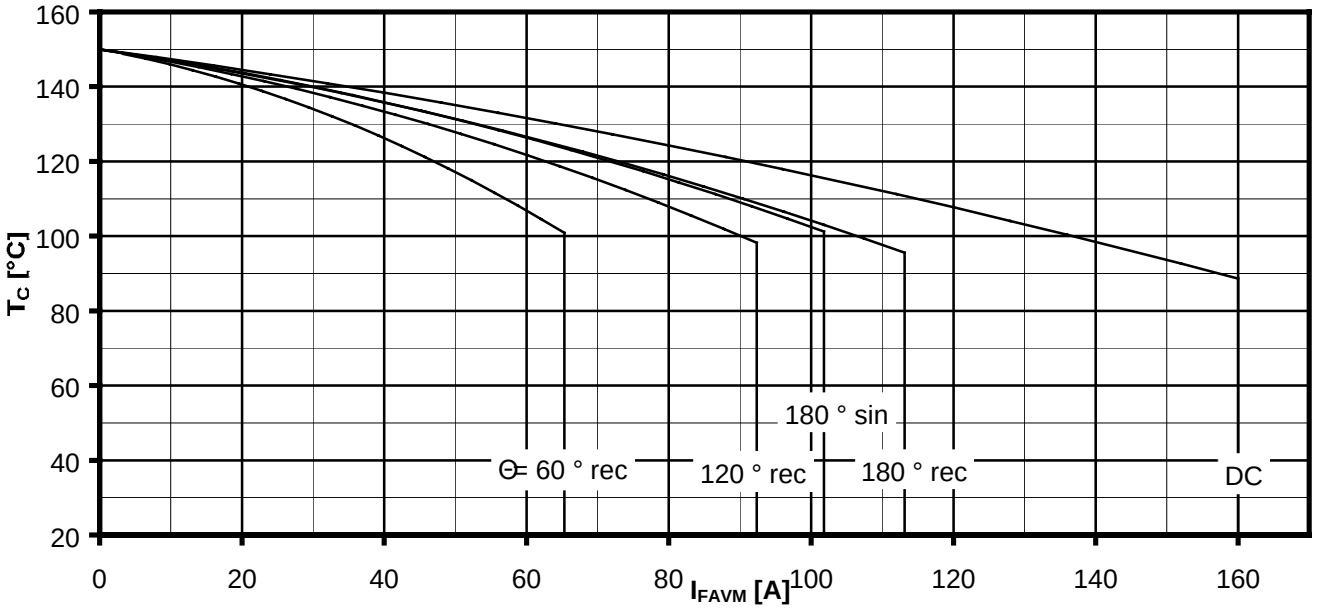
Transient thermal impedance per arm Z_{thJC} = f(t)

Parameter: Current conduction angle Θ



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

Parameter: Current conduction angle Θ

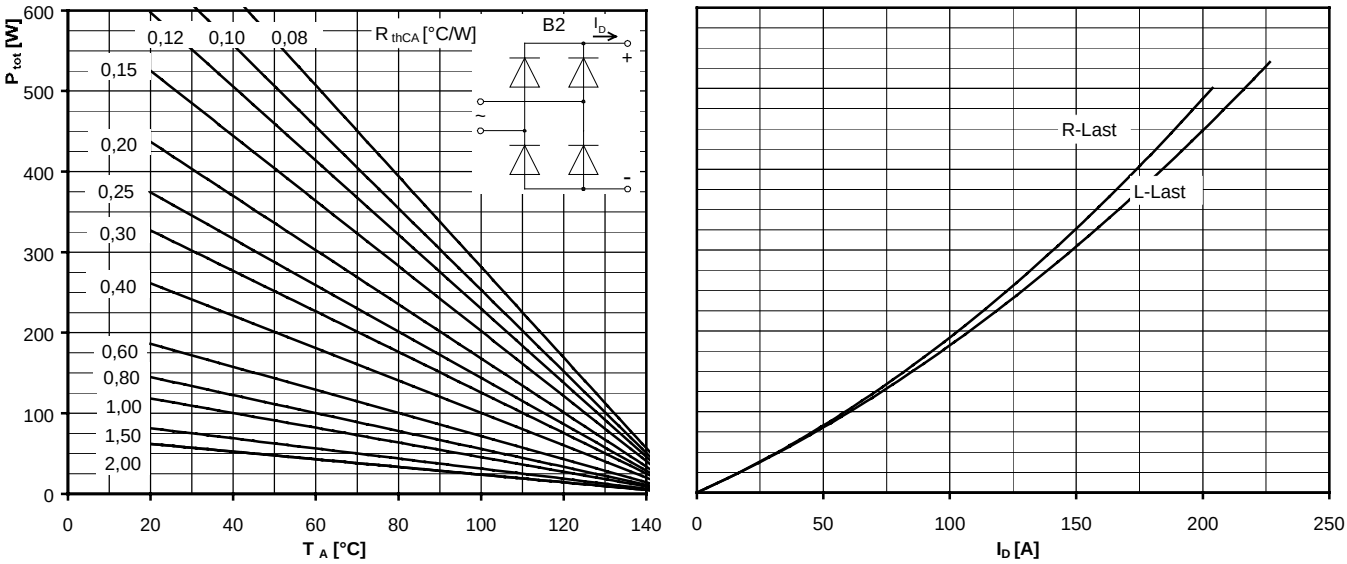


Maximum allowable case temperature $T_C = f(I_{FAVM})$

Current load per arm

Calculation base P_{TAV}

Parameter: Current conduction angle Θ

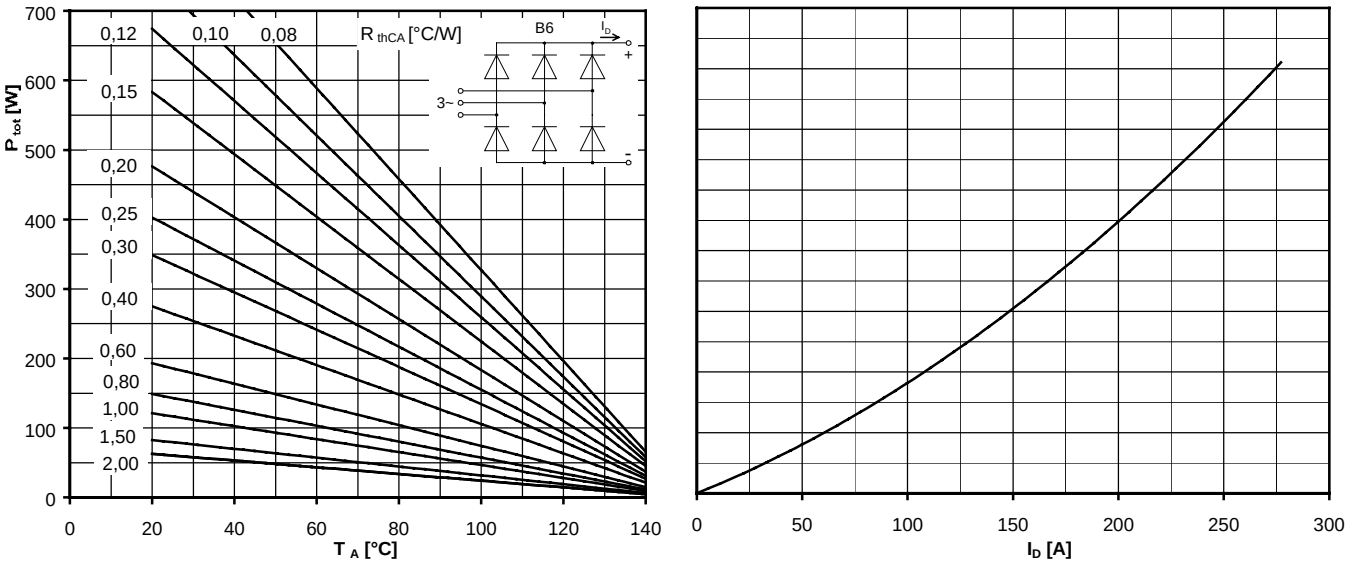


Maximum rated output current I_D

B2- Two-pulse bridge circuit

Total power dissipation at circuit P_{tot}

Parameter:
Thermal resistance cases to ambient R_{thCA}

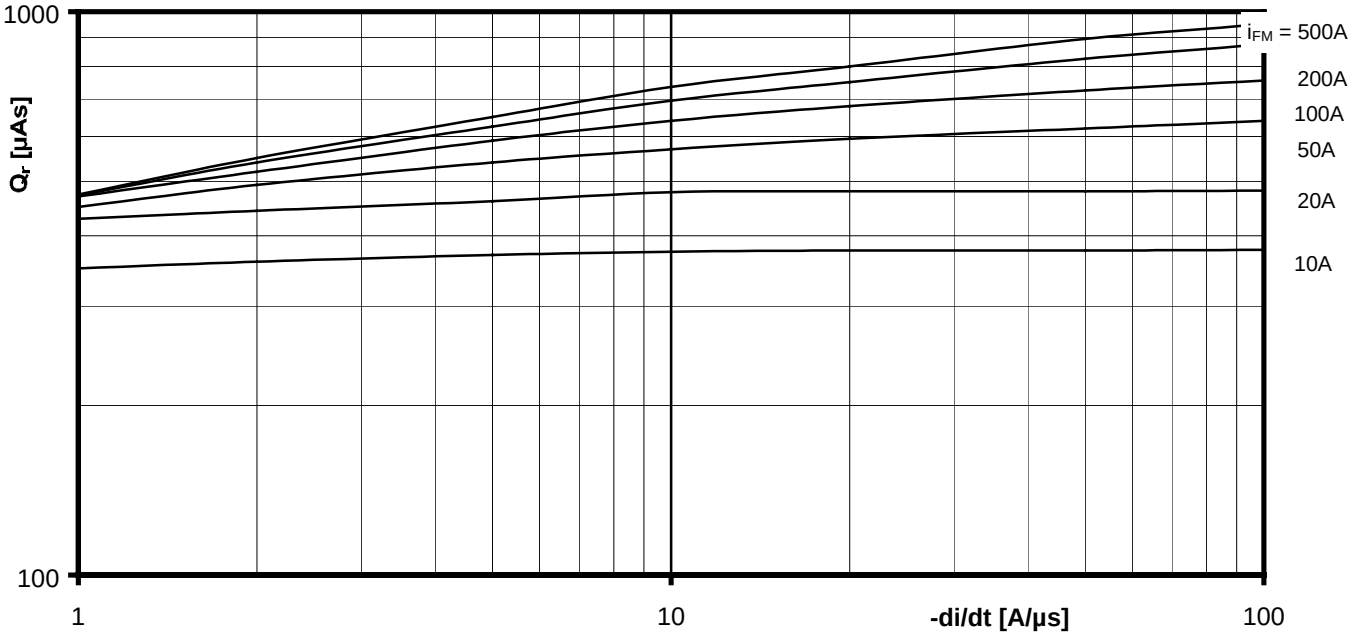


Maximum rated output current I_D

B6- Six-pulse bridge circuit

Total power dissipation at circuit P_{tot}

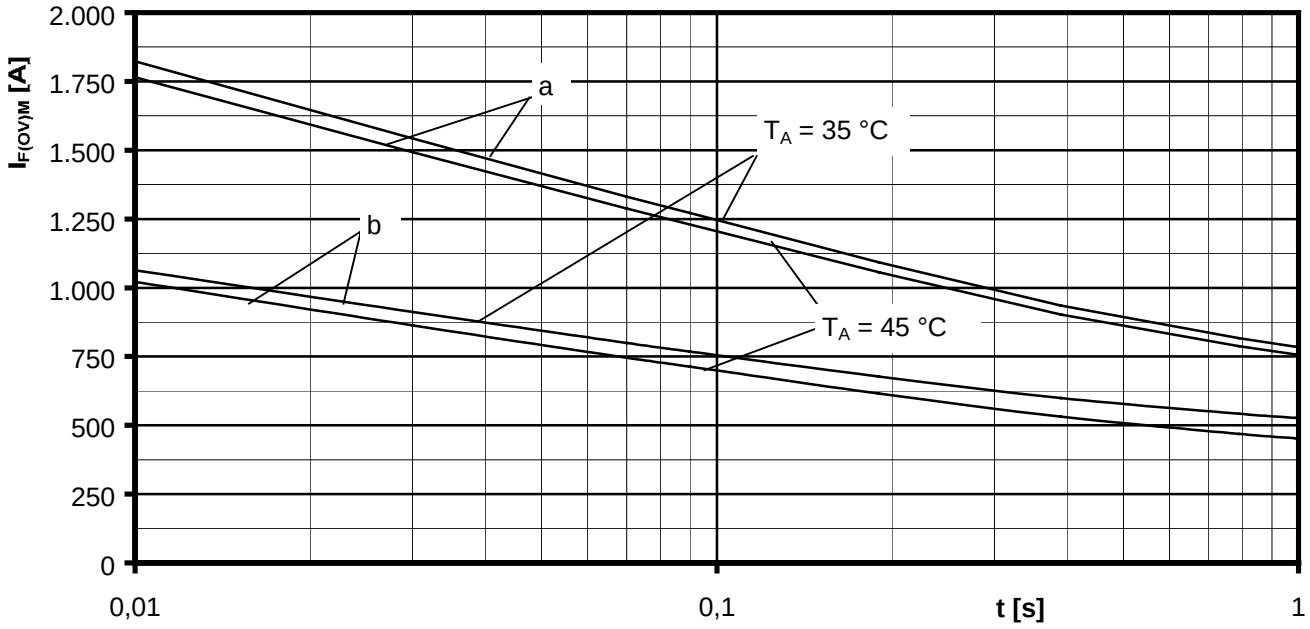
Parameter:
Thermal resistance cases to ambient R_{thCA}



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_{FM}

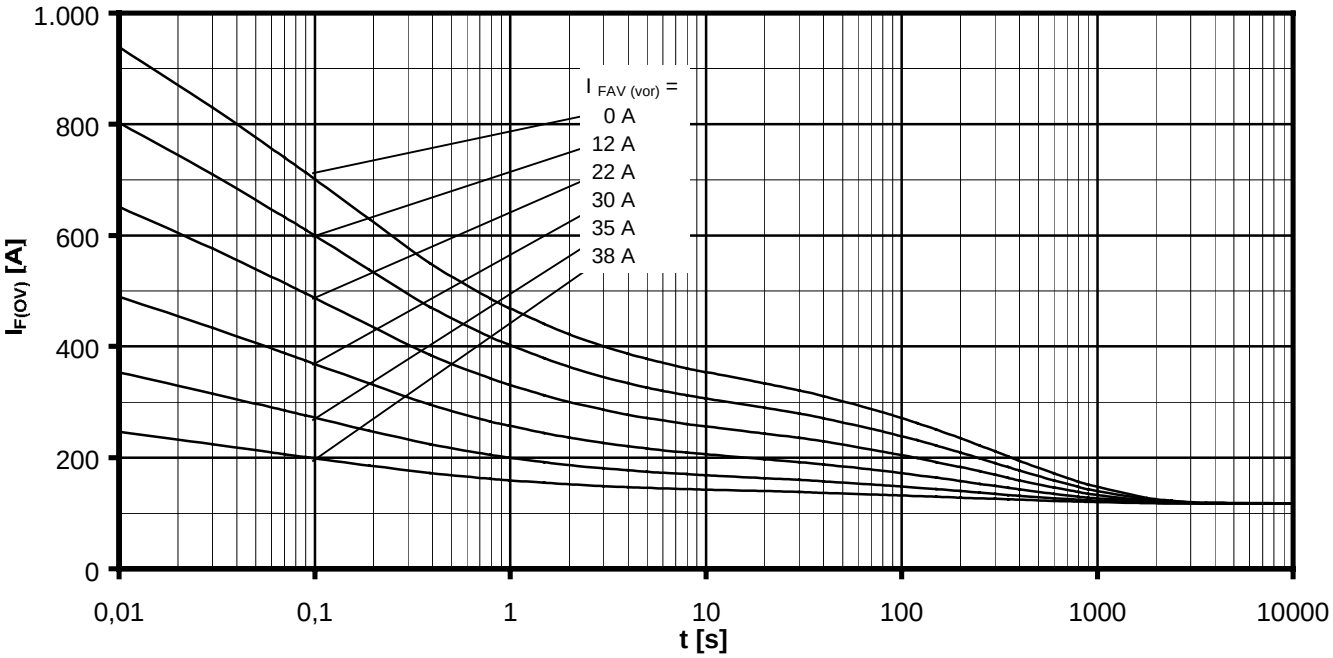


Maximum overload on-state current per arm $I_{F(OV)M}$ = f(t), v_{RM} = 0,8 V_{RRM}

a: No-load conditions
b: Pre-load current per arm $I_{FAV(vor)} = I_{FAVM}$

T_a = 35°C, Forced air cooling Heatsink type: KM14 (Papst 4650)

T_a = 45°C, Natural air cooling Heatsink type: KM14 (50W)



Overload on-state current $I_{F(OV)}$

B6- Six-pulse bridge circuit, 120° rectangular Heatsink type KM14 (50W)

Natural cooling at T_A = 45°C Parameter: Pre-load current per arm $I_{FAV(vor)}$