Diode Module
AMDD170N36K

Key Parameters

$I_{F(AV)M}$	=	170	A
V_{RRM}	=	3600	V
I_{FSM}	=	5300	A
V_{T0}	=	0.9	V
r_T	=	1.35	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... $T_{vj\ max}$	3600	V
V_{RSM}	Non-repetitive peak reverse voltage	T_{vj} = +25°C... $T_{vj\ max}$	3700	V
I_{FAVM}	Average on-state current	T_C = 100°C	170	A
I_{FRMSM}	Maximum RMS on-state current		270	A
I_{FSM}	Surge current	T_{vj} = 25°C, t_P = 10 ms T_{vj} = $T_{vj\ max}$, t_P = 10 ms	5300 4300	A A
I^2t	Safety factor	T_{vj} = 25°C, t_P = 10 ms T_{vj} = $T_{vj\ max}$, t_P = 10 ms	140450 92450	A²s A²s

CHARACTERISTICS

Symbols and parameters			Value			Unit
			min	typ	max	
v_F	On-state voltage	$T_{vj} = T_{vj\,max}$, $I_F = 600$ A			1.82	V
$V_{(TO)}$	Threshold voltage	$T_{vj} = T_{vj\,max}$			0.9	V
r_T	Slope resistance	$T_{vj} = T_{vj\,max}$			1.35	mΩ
I_R	Reverse current	$T_{vj} = T_{vj\,max}$, $v_R = V_{RRM}$			25	mA
V_{ISOL}	Insulation test voltage	RMS, f = 50Hz, t = 1 sec RMS, f = 50Hz, t = 1 min			3.6 3.0	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	0.100 0.200 0.0967 0.1934	K/W
$R_{th(c-h)}$	Thermal resistance, case to heatsink	per Module per arm	0.03 0.06	K/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%	6	Nm
M2	Terminal connection torque	Tolerance ± 10%	6	Nm
W	Weight		310	g
a	Vibration resistance	f = 50 Hz	50	m/s²

DIMENSIONS

screwing depth
max. 11,0

17±0,2   23±0,2   23±0,2

4 wide and 2,5 deep

30±0,5

5-0,2

13

M6

22

6.3+0,2

13

34±0,2

80±0,2

94±0,2
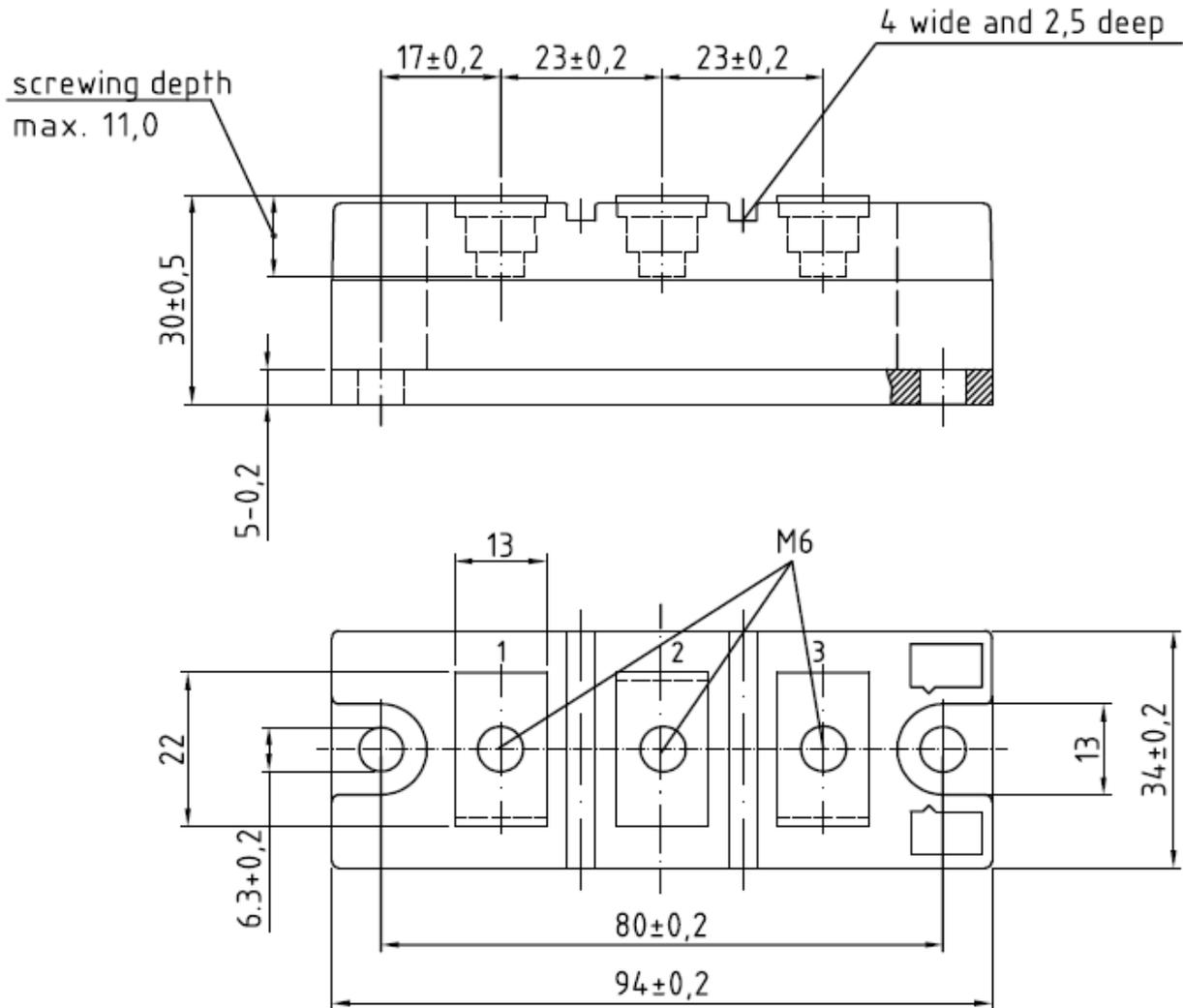
# TOPOLOGY OF INTERNAL CONNECTION

1   2   3
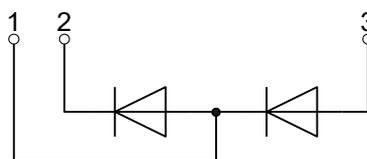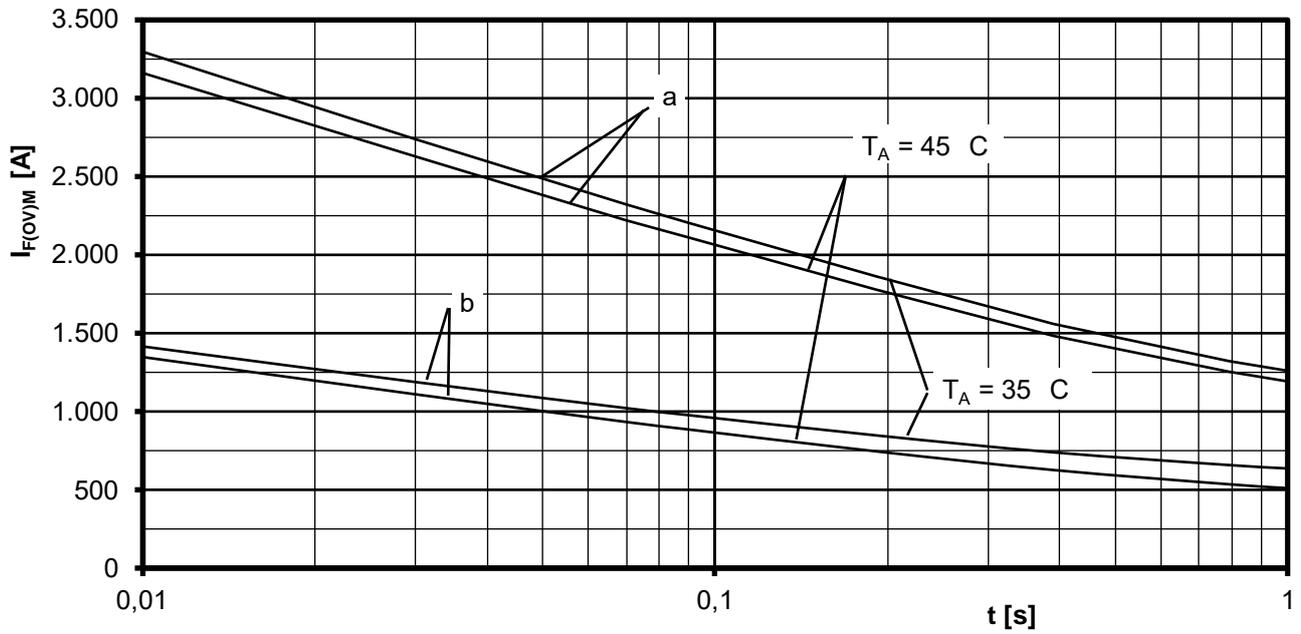
Maximum overload on-state current per arm $I_{F(OV)M} = f(t)$, $v_{RM} = 0,8\ V_{RRM}$

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

$T_a = 35°C$, Forced air cooling   Heatsink type: KM17 (Papst 4650)

$T_a = 45°C$, Natural air cooling   Heatsink type: KM17 (60W)
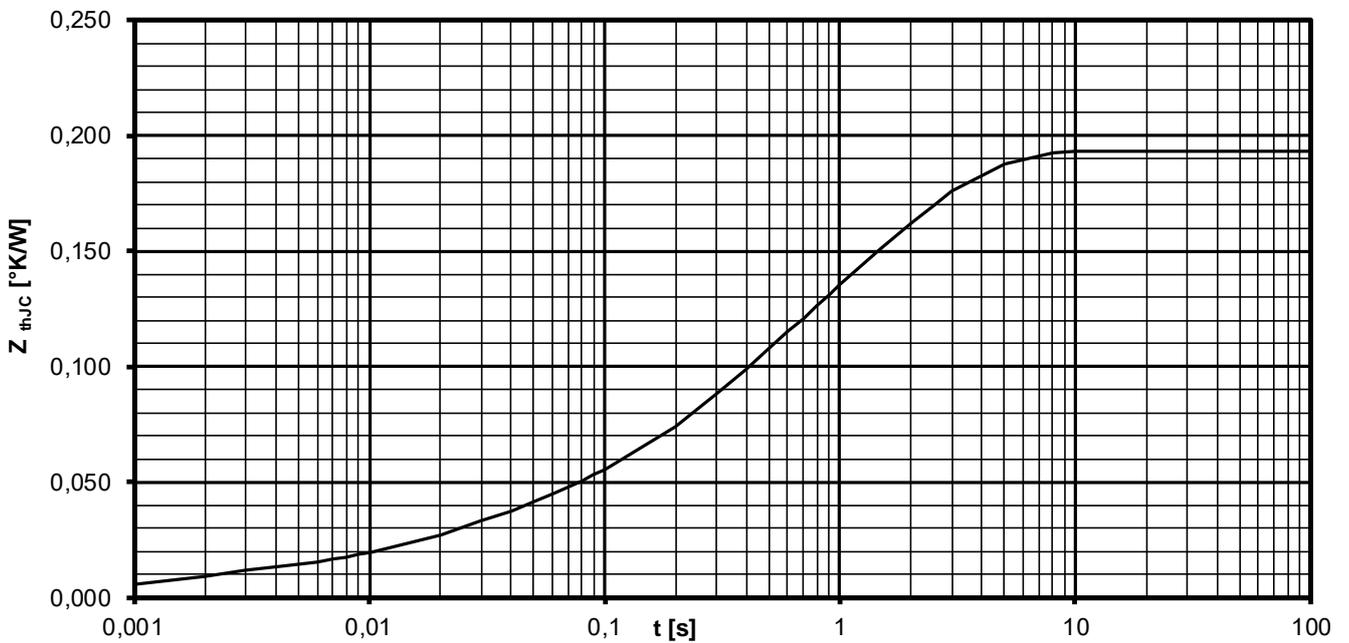
Transient thermal impedance per arm $Z_{thJC} = f(t)$

Parameter: Current conduction angle Θ
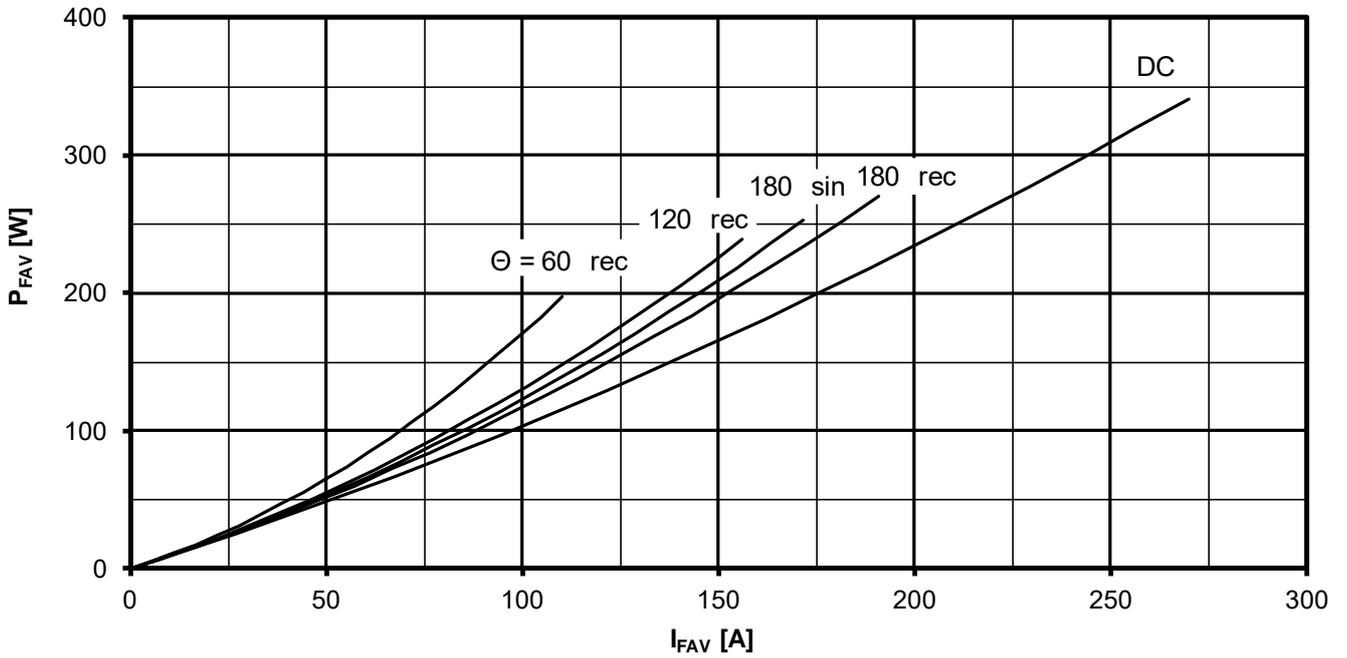
On-state power loss per arm P$_{FAV}$ = f(I$_{FAV}$)

Parameter: Current conduction angle Θ
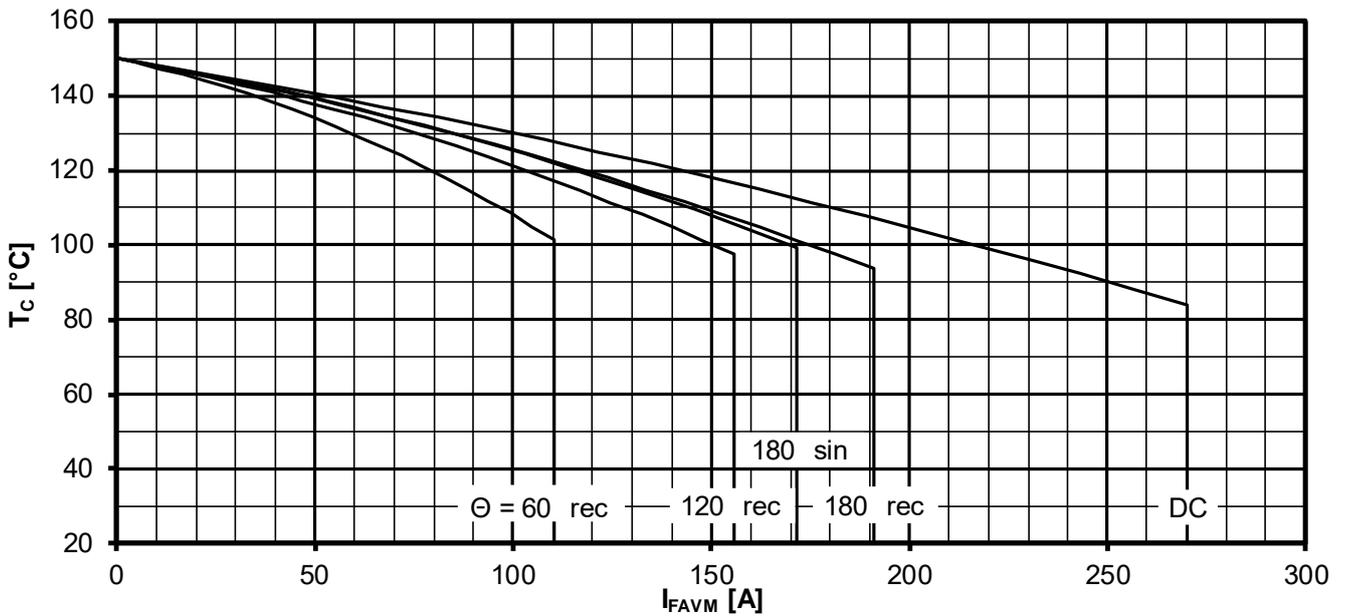
Maximum allowable case temperature T$_C$ = f(I$_{FAVM}$)

Current load per arm

Calculation base P$_{TAV}$

Parameter: Current conduction angle Θ
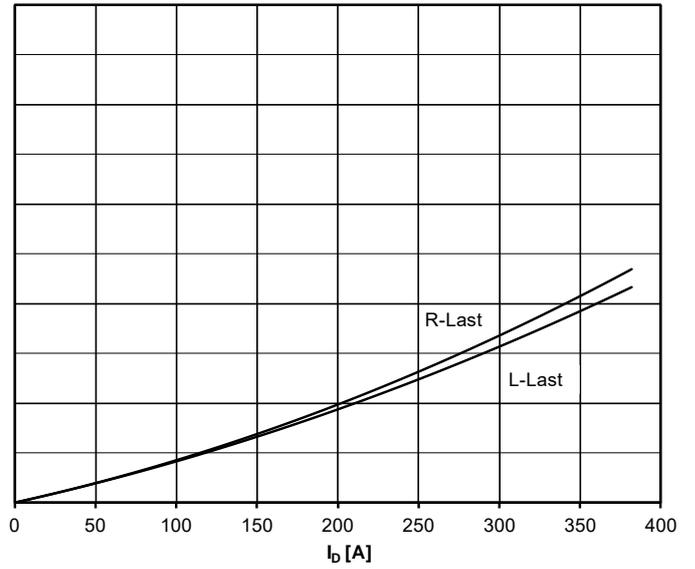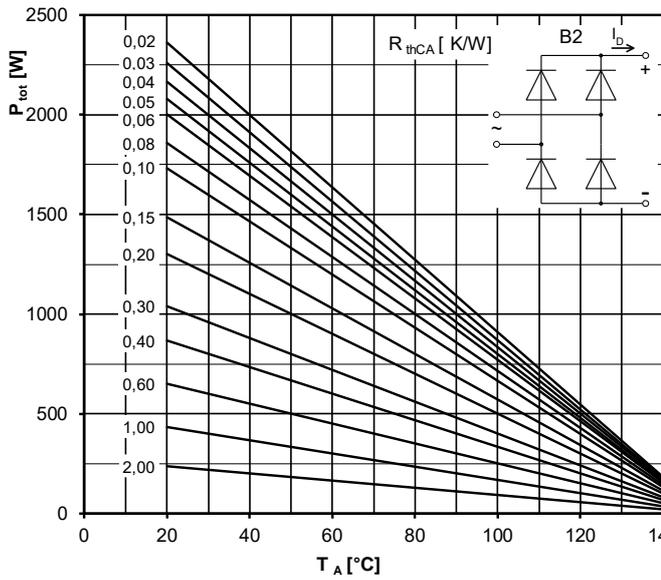
Maximum rated output current I$_D$

B2- Two-pulse bridge circuit

Total power dissipation at circuit P$_{tot}$

Parameter:
Thermal resistance cases to ambient R$_{thCA}$
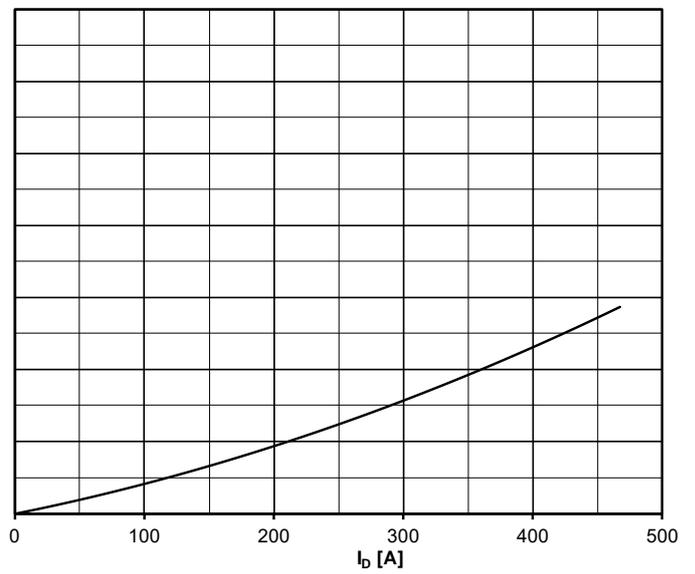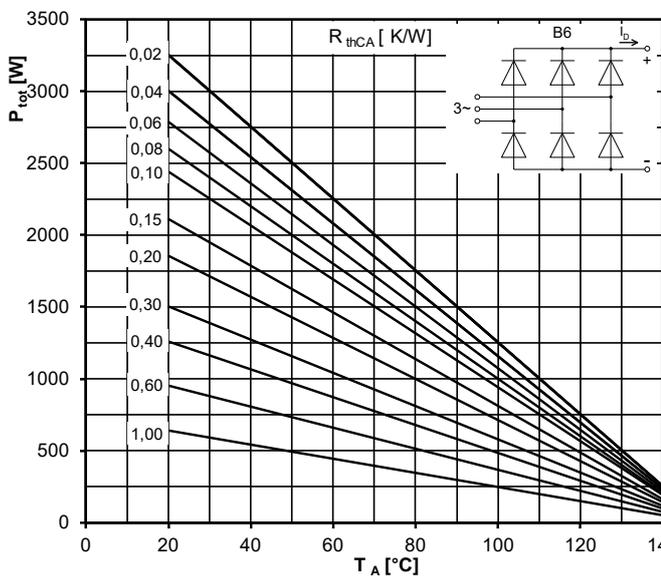
Maximum rated output current I$_D$

B6- Six-pulse bridge circuit

Total power dissipation at circuit P$_{tot}$

Parameter:
Thermal resistance cases to ambient R$_{thCA}$
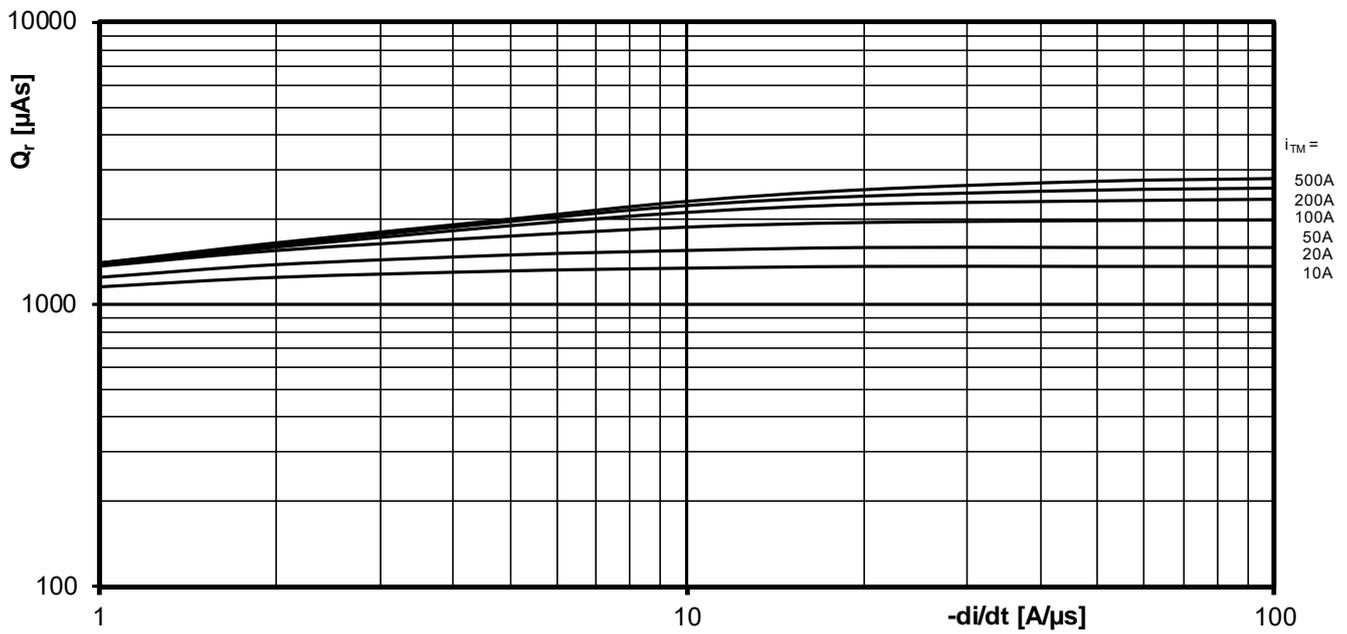
Recovered charge Q$_r$ = f(-di/dt)

T$_{vj}$ = T$_{vjmax}$, v$_R$ ≤ 0,5 V$_{RRM}$, v$_{RM}$ = 0,8 V$_{RRM}$

Parameter: On-state current i$_{FM}$