Netz-Dioden-Modul
Rectifier Diode Module

DD98N

Infineon Technologies Bipolar GmbH & Co. KG

Key Parameters

V_{DRM} / V_{RRM}	2000 - 2500 V
I_{FAVM}	98 A (T_C=100 °C)
I_{FSM}	2400 A
V_{T0}	0,82 V
r_T	2,0 mΩ
R_{thJC}	0,185 K/W
Base plate	20 mm
Weight	160 g

For type designation please refer to actual short form catalog

http://www.ifbip.com/catalog

Merkmale

- Druckkontakt-Technologie für hohe Zuverlässigkeit
- Industrie-Standard-Gehäuse
- Elektrisch isolierte Bodenplatte

Features

- Pressure contact technology for high reliability
- Industrial standard package
- Electrically insulated base plate

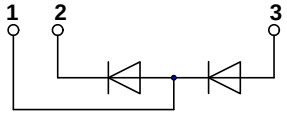
Typische Anwendungen

- Gleichrichter für Antriebsapplikationen
- Gleichrichter für UPS
- Batterieladegleichrichter

Typical Applications

- Rectifier for drives applications
- Rectifiers for UPS
- Battery chargers

content of customer DMX code	DMX code digit	DMX code digit quantity
type designation	1..18	18
serial number	19..23	5
internal production order number	24..31	8
material number	32..41	10
date code (YY/WW)	42..45	4
add on for date code	46	1



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DD98N **DD98N..K..-K**

Elektrische Eigenschaften / Electrical properties

Höchstzulässige Werte / Maximum rated values

Periodische Spitzensperrspannung repetitive peak reverse voltages	T_{vj} = -40°C... $T_{vj\,max}$	V_{RRM}	2000 2200 2400 2500	V V
Stoßspitzensperrspannung non-repetitive peak reverse voltage	T_{vj} = +25°C... $T_{vj\,max}$	V_{RSM}	2100 2300 2500 2600	V V
Durchlaßstrom-Grenzeffektivwert maximum RMS on-state current		I_{FRMSM}	160	A
Dauergrenzstrom average on-state current	T_C = 100°C	I_{FAVM}	98	A
Stoßstrom-Grenzwert surge current	T_{vj} = 25 °C, t_P = 10 ms T_{vj} = $T_{vj\,max}$, t_P = 10 ms	I_{FSM}	2.400 2.000	A A
Grenzlastintegral I²t-value	T_{vj} = 25 °C, t_P = 10 ms T_{vj} = $T_{vj\,max}$, t_P = 10 ms	I²t	28.800 20.000	A²s A²s

Charakteristische Werte / Characteristic values

Durchlaßspannung on-state voltage	T_{vj} = $T_{vj\,max}$, i_F = 300 A	v_F	max.	1,53	V
Schleusenspannung threshold voltage	T_{vj} = $T_{vj\,max}$	$V_{(TO)}$		0,82	V
Ersatzwiderstand slope resistance	T_{vj} = $T_{vj\,max}$	r_T		2	mΩ
Sperrstrom reverse current	T_{vj} = $T_{vj\,max}$, v_R = V_{RRM}	i_R	max.	25	mA
Isolations-Prüfspannung insulation test voltage	RMS, f = 50 Hz, t = 1 sec RMS, f = 50 Hz, t = 1 min	V_{ISOL}		3,0 2,5	kV kV

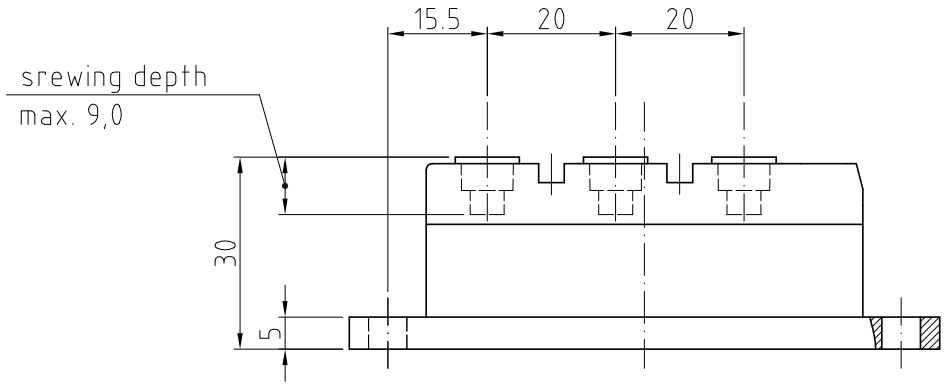
Thermische Eigenschaften / Thermal properties

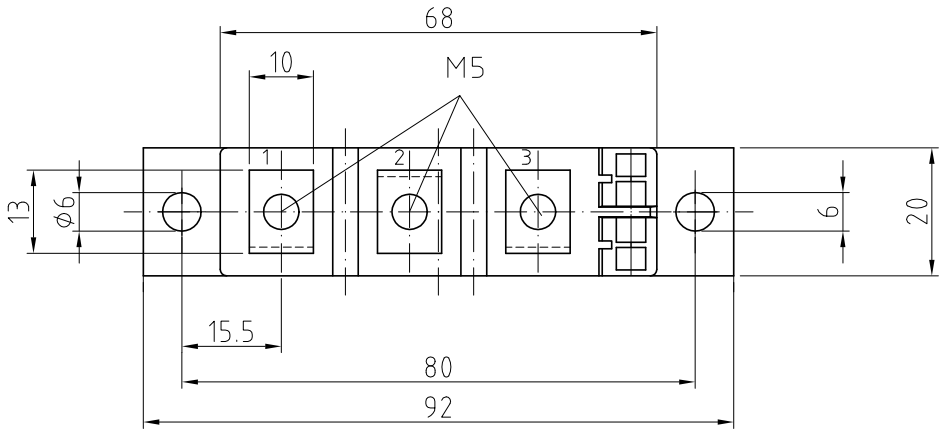
Innerer Wärmewiderstand thermal resistance, junction to case	pro Modul / per Module, Θ = 180° sin pro Zweig / per arm, Θ = 180° sin pro Modul / per Module, DC pro Zweig / per arm, DC	R_{thJC}	max. max. max. max.	0,195 0,390 0,185 0,370	°C/W °C/W °C/W °C/W
Übergangs-Wärmewiderstand thermal resistance, case to heatsink	pro Modul / per Module pro Zweig / per arm	R_{thCH}	max. max.	0,05 0,10	°C/W °C/W
Höchstzulässige Sperrschichttemperatur maximum junction temperature		$T_{vj\,max}$		150	°C
Betriebstemperatur operating temperature		$T_{c\,op}$		- 40...+150	°C
Lagertemperatur storage temperature		T_{stg}		- 40...+150	°C

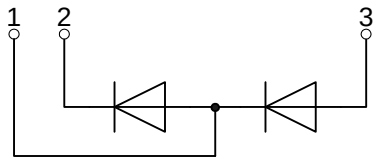
prepared by:	A.G.		date of publication:	23.05.2016
approved by:	M. S.		revision:	3.2

Mechanische Eigenschaften / Mechanical properties

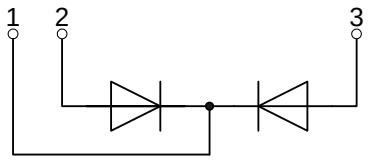
Gehäuse, siehe Anlage case, see annex			Seite 4 page 4	
Si-Element mit Druckkontakt Si-pellet with pressure contact				
Innere Isolation internal insulation			AlN	
Anzugsdrehmoment für mechanische Anschlüsse mounting torque	Toleranz ±15%	M1	4	Nm
Anzugsdrehmoment für elektrische Anschlüsse terminal connection torque	Toleranz ±10%	M2	4	Nm
Gewicht weight		G	typ. 160	g
Kriechstrecke creepage distance			15	mm
Schwingfestigkeit vibration resistance	f = 50 Hz		50	m/s²
	file-No.		E 83335	


15.5
20
20
srewing depth
max. 9,0
30
5


68
10
M5
1
2
3
13
ϕ6
6
20
15.5
80
92


1
2
3

DD


1
2
3

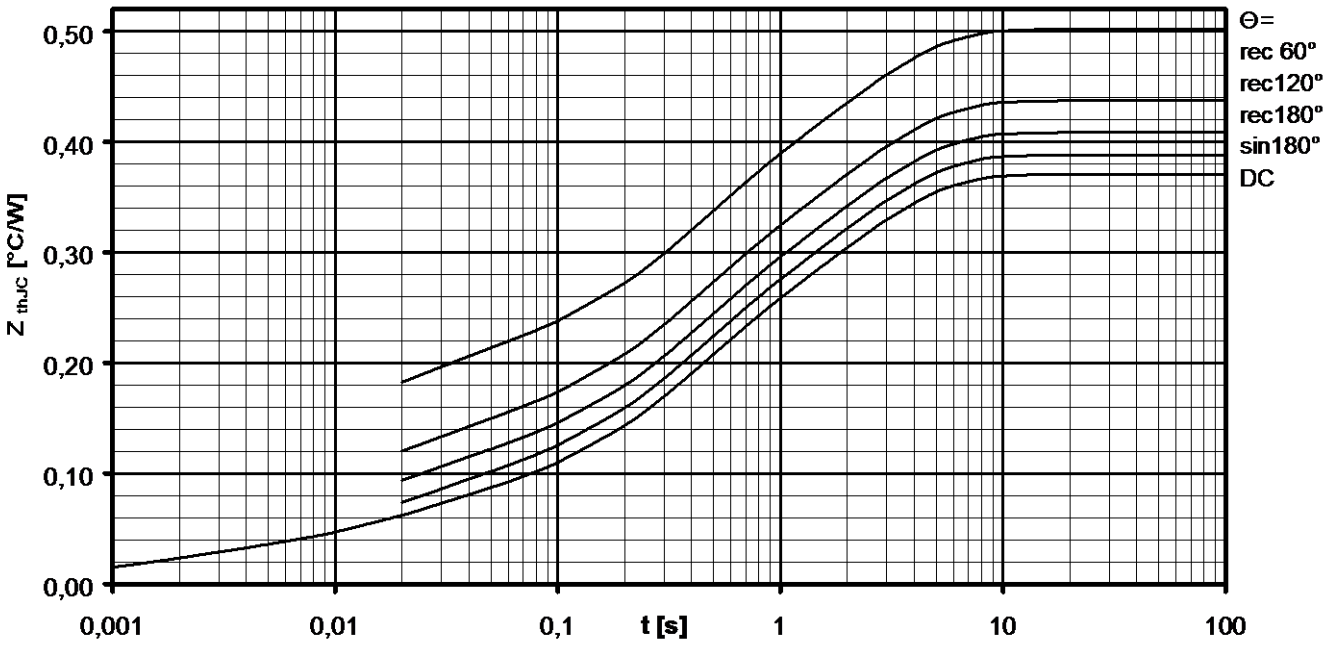
DD-K

Analytische Elemente des transienten Wärmewiderstandes Z_{thJC} für DC
Analytical elements of transient thermal impedance Z_{thJC} for DC

Pos. n	1	2	3	4	5	6	7
R_{thn} [°C/W]	0,0233	0,0433	0,134	0,17			
T_n [s]	0,00137	0,0175	0,325	2,11			

Analytische Funktion / Analytical function:

$$Z_{thJC} = \sum_{n=1}^{n_{max}} R_{thn} \left(1 - e^{\frac{-t}{\tau_n}}\right)$$



Transienter innerer Wärmewiderstand je Zweig / Transient thermal impedance per arm Z_{thJC} = f(t)

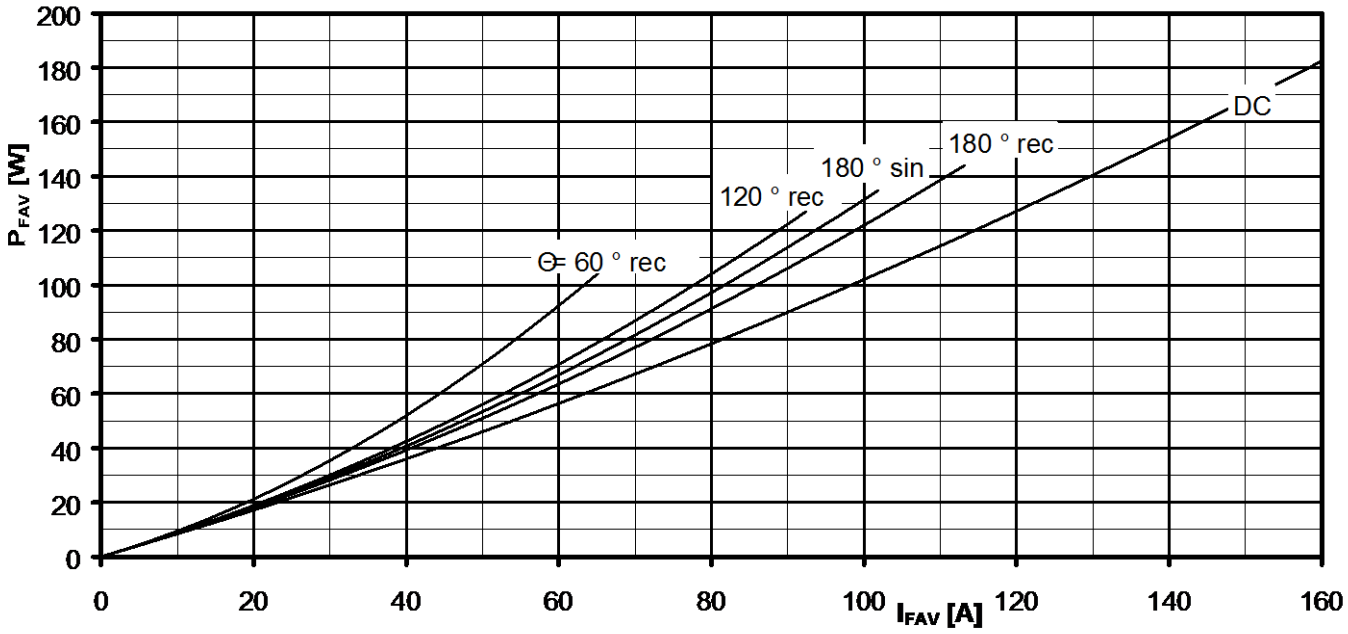
Parameter: Stromflußwinkel Θ / Current conduction angle Θ

Natürliche Kühlung / Natural cooling 3 Module pro Kühler / 3 modules per heatsink Kühler / Heatsink type: KM14 (50W)							
Analytische Elemente des transienten Wärmewiderstandes Z_{thCA} Analytical elements of transient thermal impedance Z_{thCA}							
Pos. n	1	2	3	4	5	6	7
R_{thn} [°C/W]	0,007	0,141	0,119	2,133			
T_n [s]	0,701	4,72	42,5	910			

Verstärkte Kühlung / Forced cooling 3 Module pro Kühler / 3 modules per heatsink Kühler / Heatsink type: KM14 (Papst 4650)							
Analytische Elemente des transienten Wärmewiderstandes Z_{thCA} Analytical elements of transient thermal impedance Z_{thCA}							
Pos. n	1	2	3	4	5	6	7
R_{thn} [°C/W]	0,007	0,141	0,119	0,583			
T_n [s]	0,701	4,72	42,5	249			

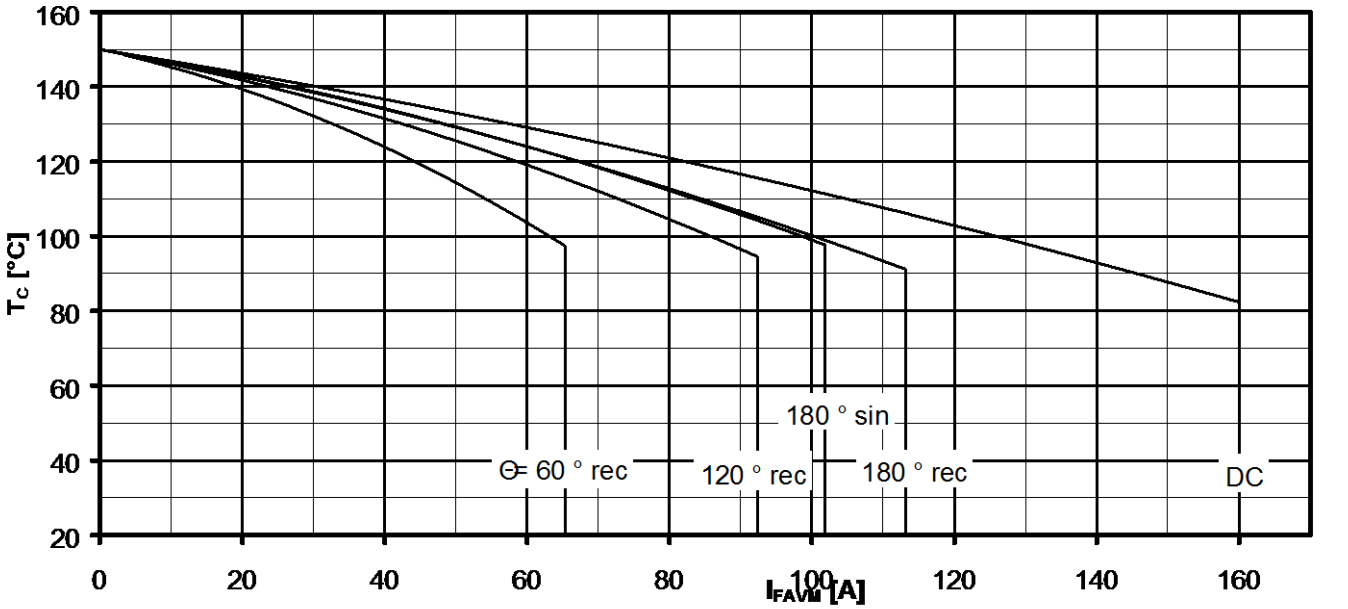
Analytische Funktion / Analytical function:

$$Z_{thCA} = \sum_{n=1}^{n_{max}} R_{thn} \left(1 - e^{\frac{-t}{\tau_n}}\right)$$



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

Parameter: Stromflußwinkel / Current conduction angle Θ

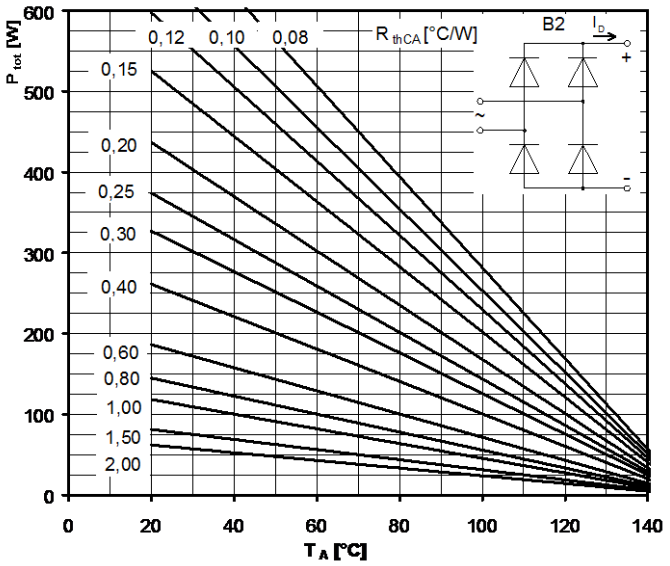


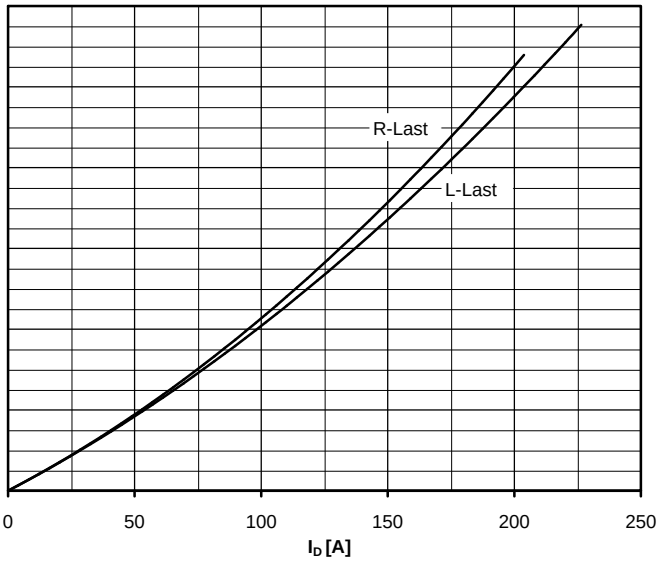
Höchstzulässige Gehäusetemperatur / Maximum allowable case temperature $T_C = f(I_{FAVM})$

Strombelastung je Zweig / Current load per arm

Berechungsgrundlage P_{TAV} (Schaltverluste gesondert berücksichtigen)
Calculation base P_{TAV} (switching losses should be considered separately)

Parameter: Stromflußwinkel Θ / Current conduction angle Θ



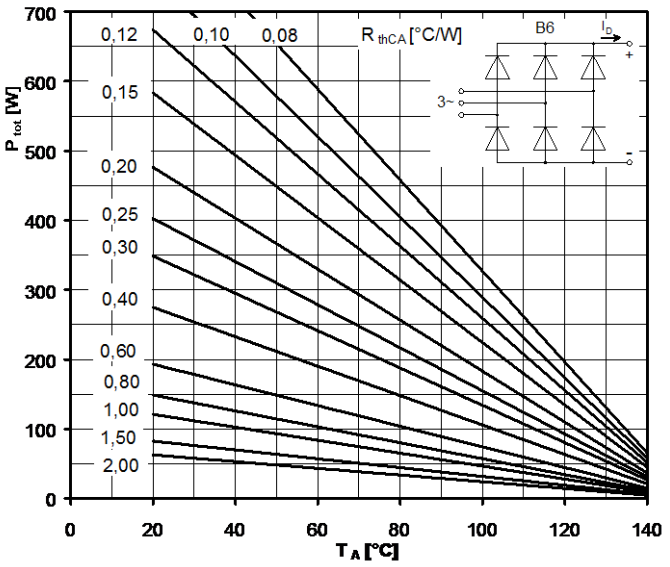


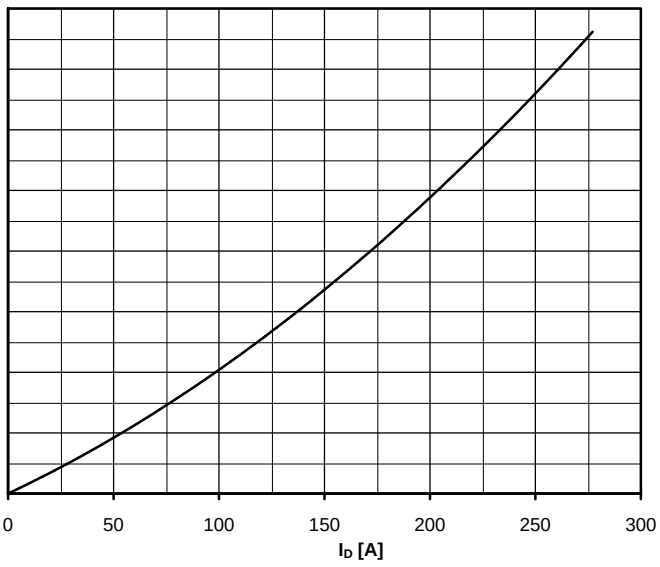
Höchstzulässiger Ausgangsstrom / Maximum rated output current I_D

B2- Zweipuls-Brückenschaltung / Two-pulse bridge circuit

Gesamtverlustleistung der Schaltung / Total power dissipation at circuit P_{tot}

Parameter:
Wärmewiderstand zwischen den Gehäusen und Umgebung / Thermal resistance cases to ambient R_{thCA}



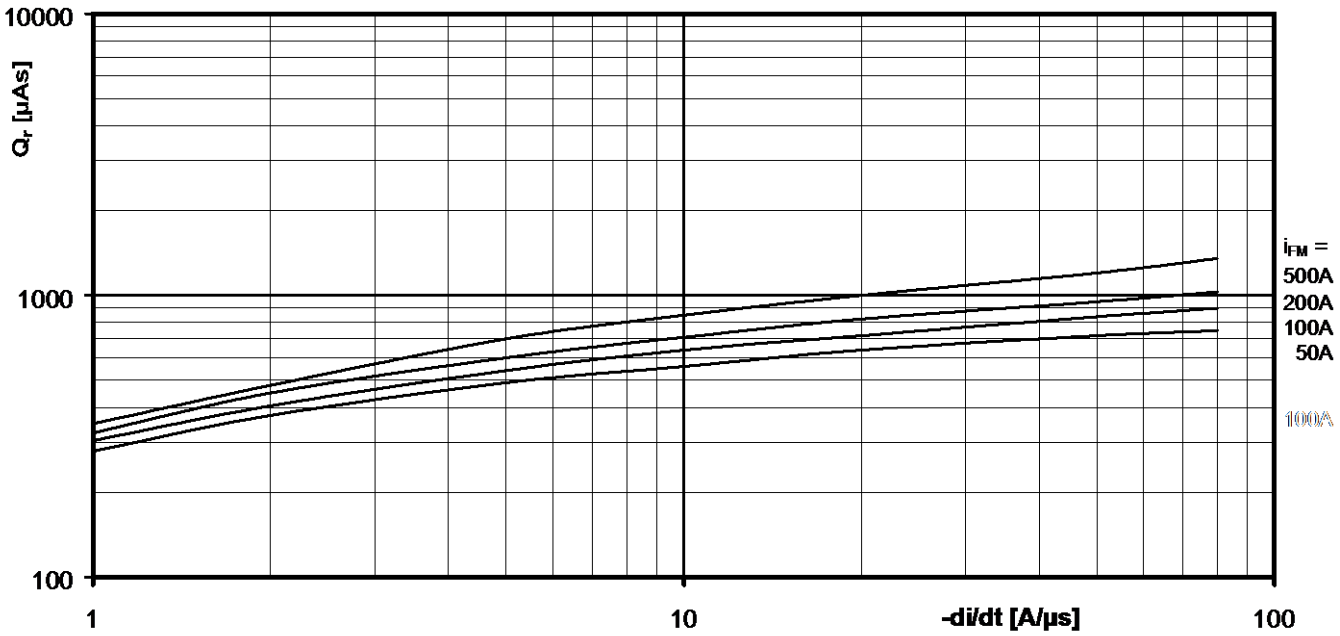


Höchstzulässiger Ausgangsstrom / Maximum rated output current I_D

B6- Sechspuls-Brückenschaltung / Six-pulse bridge circuit

Gesamtverlustleistung der Schaltung / Total power dissipation at circuit P_{tot}

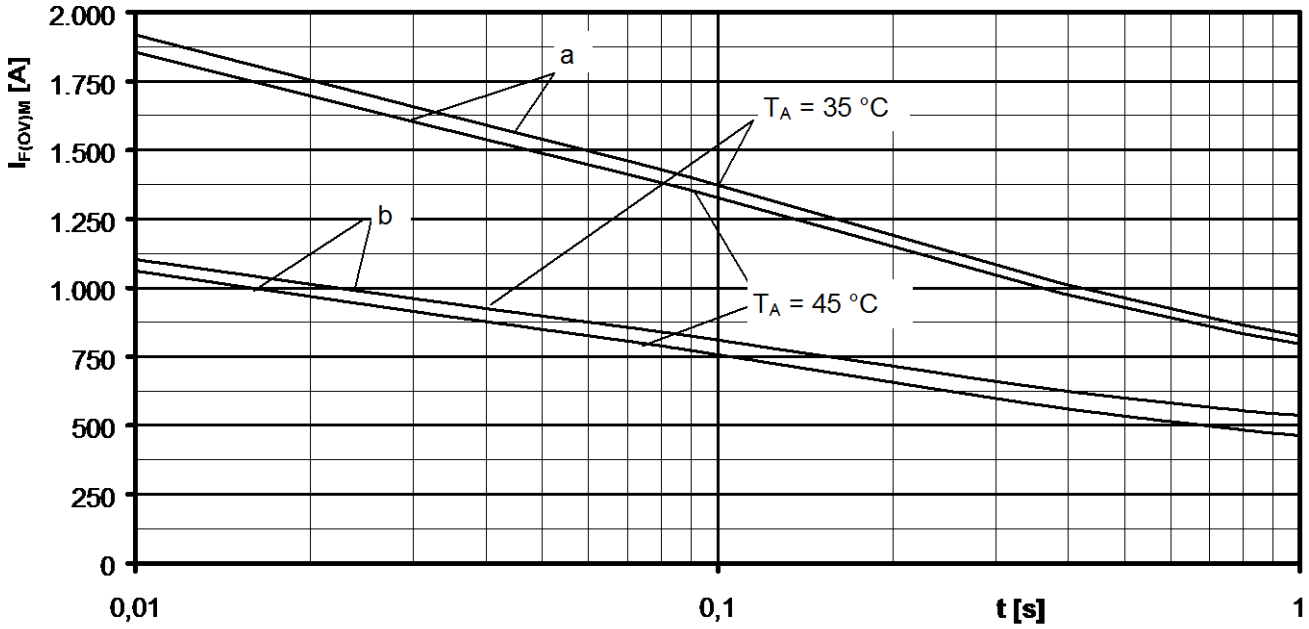
Parameter:
Wärmewiderstand zwischen den Gehäusen und Umgebung / Thermal resistance cases to ambient R_{thCA}



Sperrverzögerungsladung / 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: Durchlaßstrom / On-state current i_{FM}

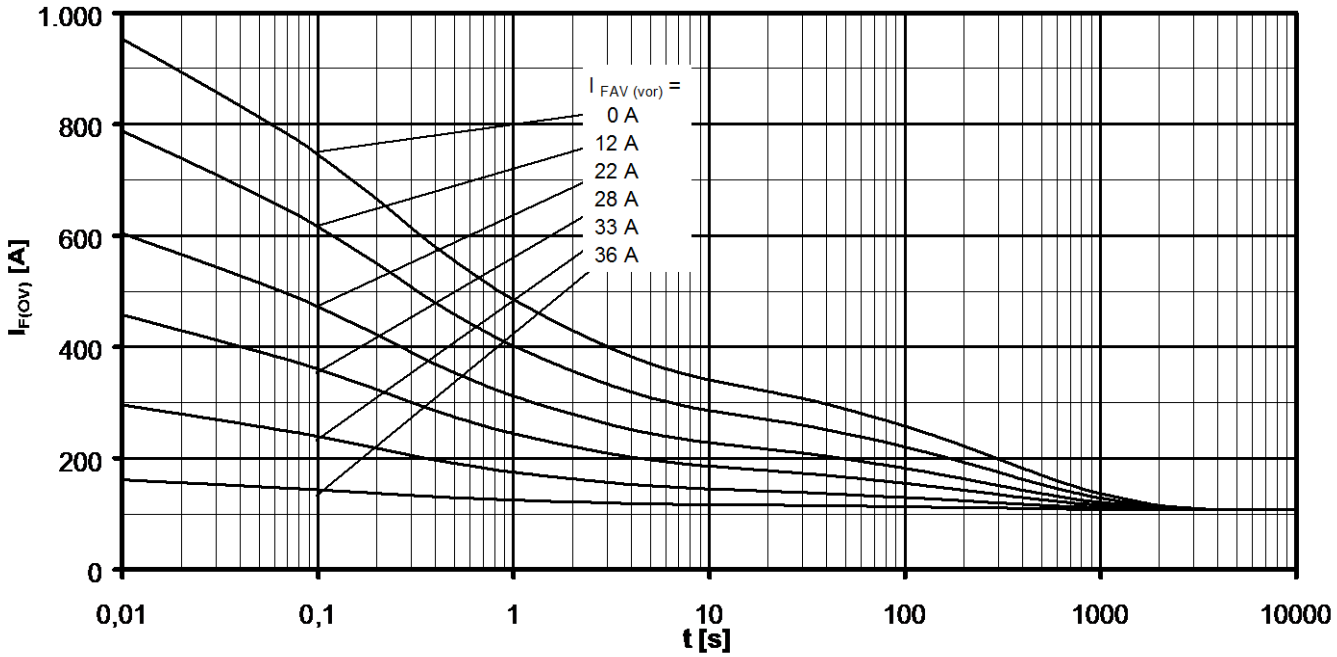


Grenzstrom je Zweig / Maximum overload on-state current per arm $I_{F(OV)M} = f(t)$, $v_{RM} = 0{,}8\ V_{RRM}$

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

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

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

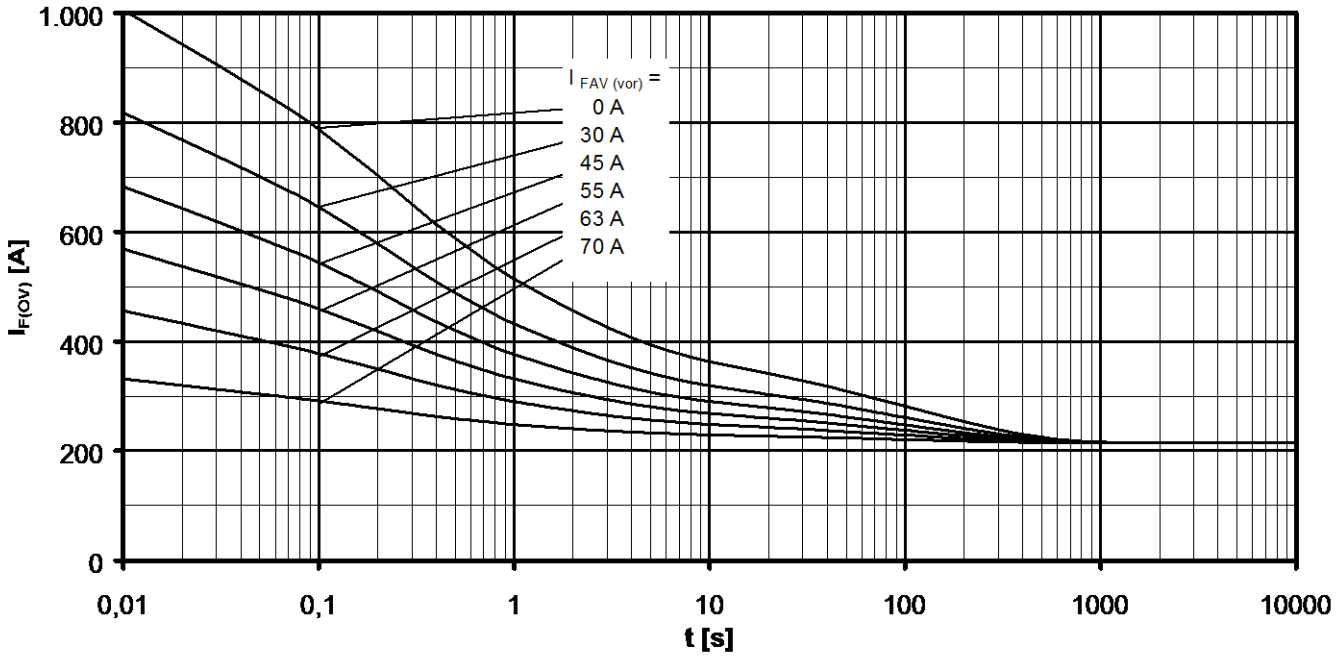


Überstrom je Zweig / Overload on-state current $I_{F(OV)}$

B6- Sechspuls-Brückenschaltung, 120° Rechteck / Six-pulse bridge circuit, 120° rectangular

Kühlkörper / Heatsink type KM14 (50W) Natürliche Kühlung bei / Natural cooling at T_A = 45°C

Parameter: Vorlaststrom je Zweig / Pre-load current per arm $I_{FAV(vor)}$



Überstrom je Zweig / Overload on-state current $I_{F(OV)}$

B6- Sechspuls-Brückenschaltung, 120° Rechteck / Six-pulse bridge circuit 120° rectangular

Kühlkörper / Heatsink type KM14 (Papst 4650) Verstärkte Kühlung bei / Forced cooling at T_A = 35°C

Parameter: Vorlaststrom je Zweig / Pre-load current per arm $I_{FAV(vor)}$