

Key Parameters

V_{DRM} / V_{RRM}	2800 - 4000 V
I_{FAVM}	435 A ($T_C=100\text{ °C}$)
I_{FSM}	14500 A
V_{T0}	0,84 V
r_T	0,6 m Ω
R_{thJC}	0,078 K/W
Base plate	60 mm
Weight	1500 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

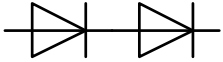
Typical Applications

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

	DMX code digit	DMX code digit quantity
content of customer DMX code		
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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Datenblatt / Data sheet



Netz-Dioden-Modul
Rectifier Diode Module

DD435N

Infineon Technologies Bipolar
GmbH & Co. KG

DD435N

Elektrische Eigenschaften / Electrical properties

Höchstzulässige Werte / Maximum rated values

Periodische Spitzensperrspannung repetitive peak reverse voltages	$T_{vj} = -25^{\circ}\text{C} \dots T_{vj\text{max}}$	V_{RRM}	2800 3400 4000	3200 3600 V	V
Stoßspitzensperrspannung non-repetitive peak reverse voltage	$T_{vj} = +25^{\circ}\text{C} \dots T_{vj\text{max}}$	V_{RSM}	2900 3700	3300 4100	V
Durchlaßstrom-Grenzeffektivwert maximum RMS on-state current		I_{FRMSM}		900	A
Dauergrenzstrom average on-state current	$T_C = 100^{\circ}\text{C}$ $T_C = 75^{\circ}\text{C}$	I_{FAVM}		435 573	A
Stoßstrom-Grenzwert surge current	$T_{vj} = 25^{\circ}\text{C}, t_P = 10\text{ ms}$ $T_{vj} = T_{vj\text{max}}, t_P = 10\text{ ms}$	I_{FSM}		14.500 12.000	A
Grenzlastintegral I^2t -value	$T_{vj} = 25^{\circ}\text{C}, t_P = 10\text{ ms}$ $T_{vj} = T_{vj\text{max}}, t_P = 10\text{ ms}$	I^2t		1.050.000 720.000	A ² s

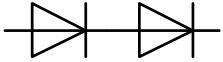
Charakteristische Werte / Characteristic values

Durchlaßspannung on-state voltage	$T_{vj} = T_{vj\text{max}}, I_F = 1200\text{ A}$	V_F	max.	1,71	V
Schleusenspannung threshold voltage	$T_{vj} = T_{vj\text{max}}$	$V_{(TO)}$		0,84	V
Ersatzwiderstand slope resistance	$T_{vj} = T_{vj\text{max}}$	r_T		0,6	mΩ
Sperrstrom reverse current	$T_{vj} = T_{vj\text{max}}, V_R = V_{RRM}$	I_R	max.	50	mA
Isolations-Prüfspannung insulation test voltage	RMS, $f = 50\text{ Hz}, t = 1\text{ sec}$ RMS, $f = 50\text{ Hz}, t = 1\text{ min}$	V_{ISOL}		3,6 3,0	kV

Thermische Eigenschaften / Thermal properties

Innerer Wärmewiderstand thermal resistance, junction to case	pro Modul / per Module, $\Theta = 180^{\circ}\text{ sin}$ pro Zweig / per arm, $\Theta = 180^{\circ}\text{ sin}$ pro Modul / per Module, DC pro Zweig / per arm, DC	R_{thJC}	max.	0,0390 0,0780 0,0373 0,0745	°C/W
Übergangs-Wärmewiderstand thermal resistance, case to heatsink	pro Modul / per Module pro Zweig / per arm	R_{thCH}	max.	0,01 0,02	°C/W
Höchstzulässige Sperrschichttemperatur maximum junction temperature		$T_{vj\text{max}}$		150	°C
Betriebstemperatur operating temperature		$T_{c\text{op}}$		- 40...+150	°C
Lagertemperatur storage temperature		T_{stg}		- 40...+150	°C

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Datenblatt / Data sheet




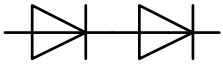
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Mechanische Eigenschaften / Mechanical properties

Gehäuse, siehe Anlage case, see annex			Seite 4 page 4	
Si-Element mit Druckkontakt Si-pellet with pressure contact				
Innere Isolation internal insulation			AIN	
Anzugsdrehmoment für mechanische Anschlüsse mounting torque	Toleranz $\pm 15\%$	M1	6	Nm
Anzugsdrehmoment für elektrische Anschlüsse terminal connection torque	Toleranz $\pm 10\%$	M2	12	Nm
Gewicht weight		G	typ. 1500	g
Kriechstrecke creepage distance			19	mm
Schwingfestigkeit vibration resistance	f = 50 Hz		50	m/s ²
	file-No.		E 83335	



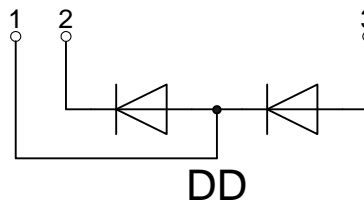
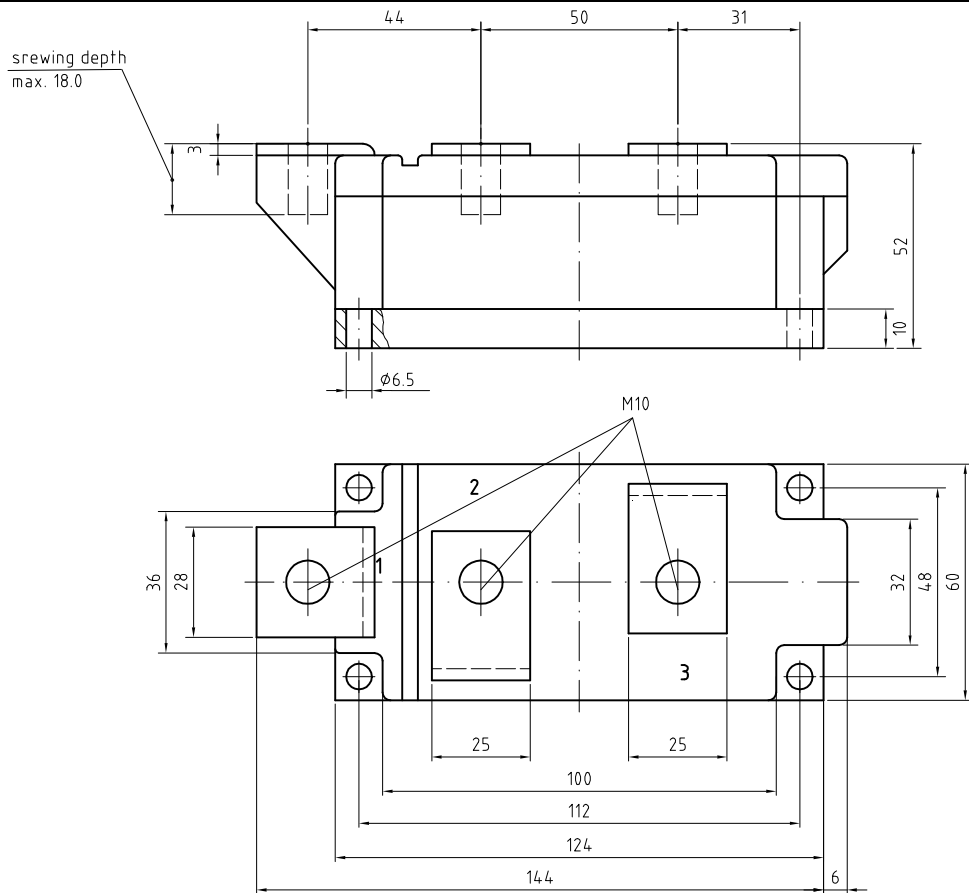
Datenblatt / Data sheet

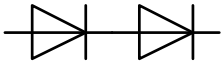


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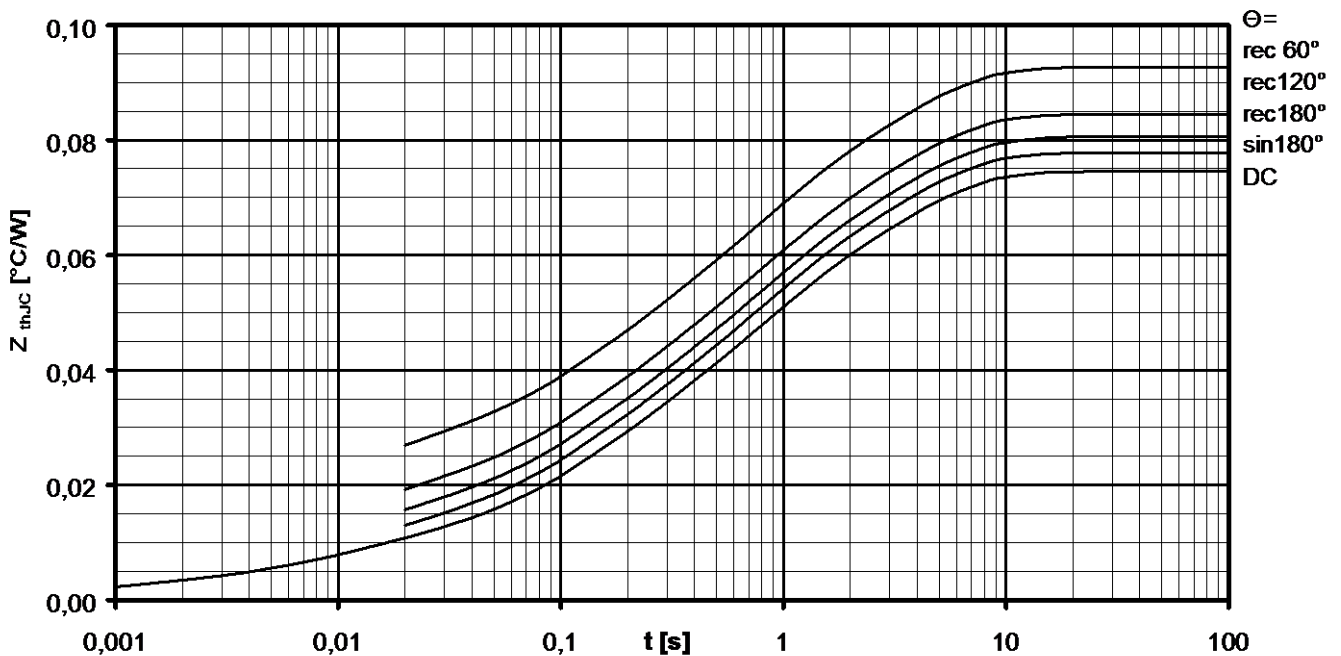


Analytische Elemente des transienten Wärmewiderstandes Z_{thJC} für DC
Analytical elements of transient thermal impedance Z_{thJC} for DC

Pos. n	1	2	3	4	5	6	7
R_{thn} [°C/W]	0,00194	0,00584	0,01465	0,0254	0,0267		
T_n [s]	0,000732	0,00824	0,108	0,57	3		

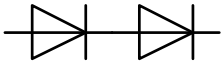
Analytische Funktion / Analytical function:

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



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
1 Modul pro Kühler / 1 module per heatsink
Kühler / Heatsink type: KM17 (160W)

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]	0,00672	0,0537	0,539				
T_n [s]	2,17	22,4	1130				

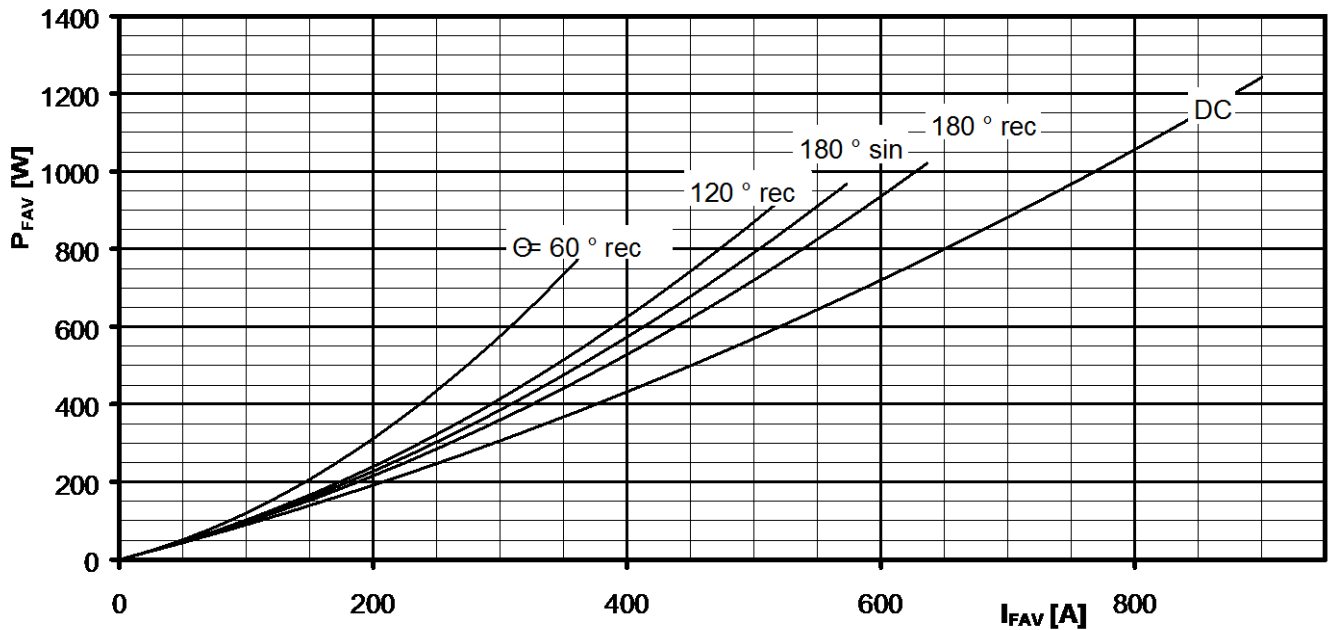
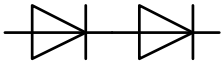
Verstärkte Kühlung / Forced cooling
1 Modul pro Kühler / 1 module per heatsink
Kühler / Heatsink type: KM17 (Papst 4650)

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]	0,0064	0,0566	0,168				
T_n [s]	4,1	24,7	395				

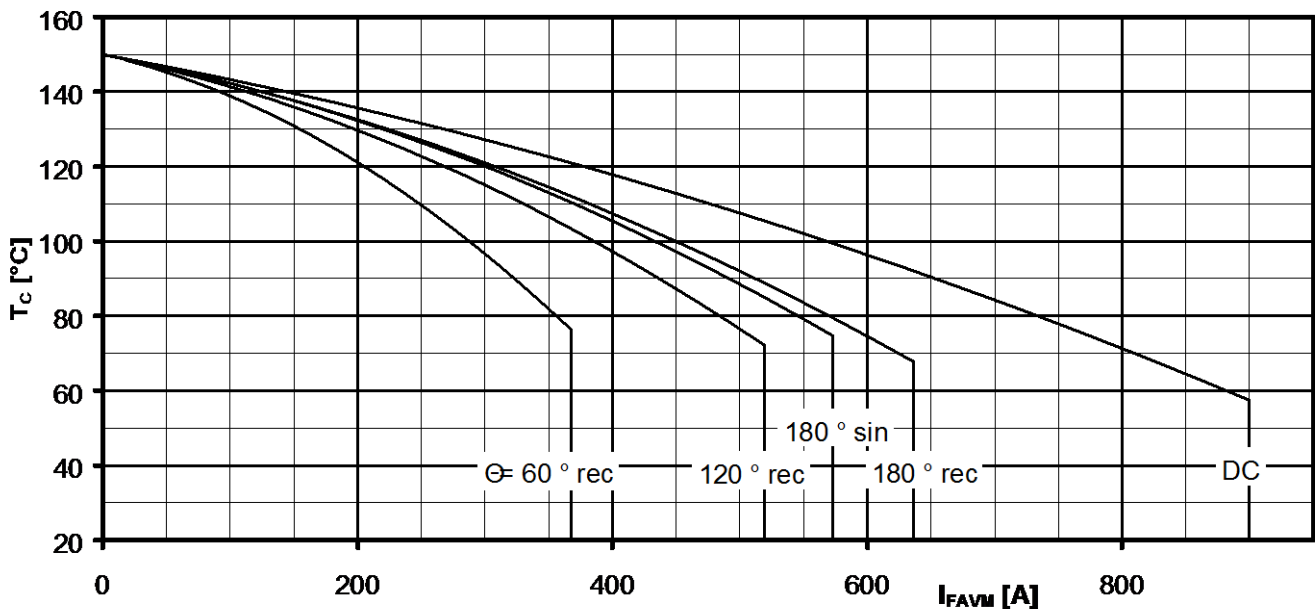
Analytische Funktion / Analytical function:

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



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

Parameter: Stromflußwinkel / Current conduction angle Θ

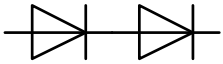


Höchstzulässige Gehäusetemperatur / Maximum allowable case temperature $T_C = f(I_{FAVM})$

Strombelastung je Zweig / Current load per arm

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

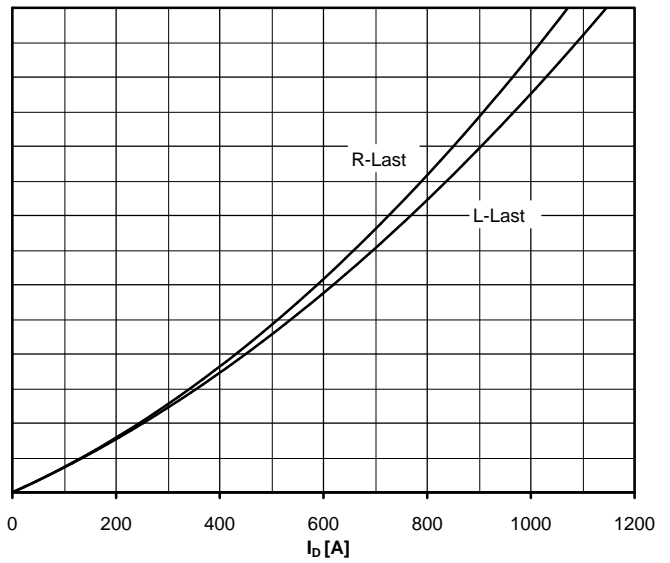
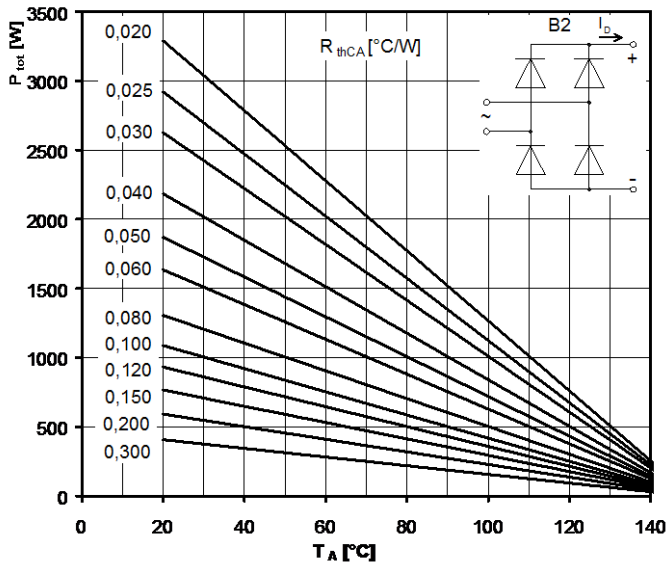
Parameter: Stromflußwinkel Θ / Current conduction angle Θ



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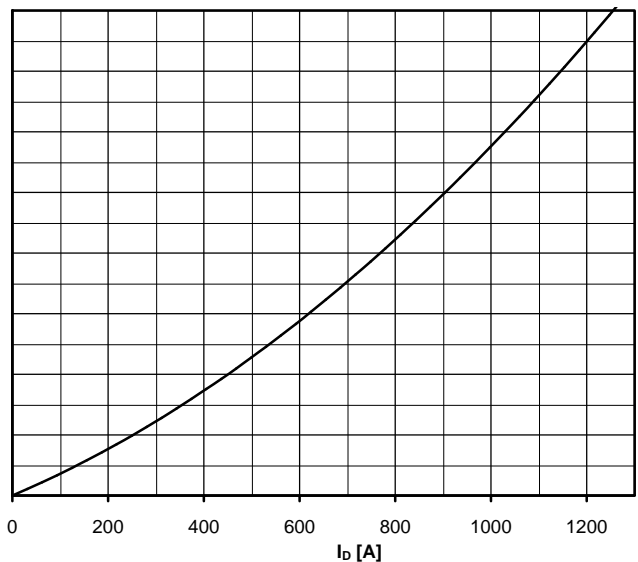
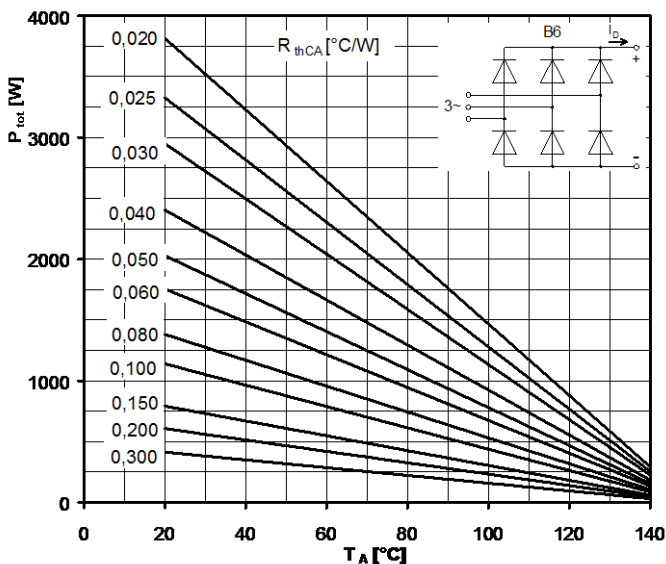
Höchstzulässiger Ausgangsstrom / Maximum rated output current I_D

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}



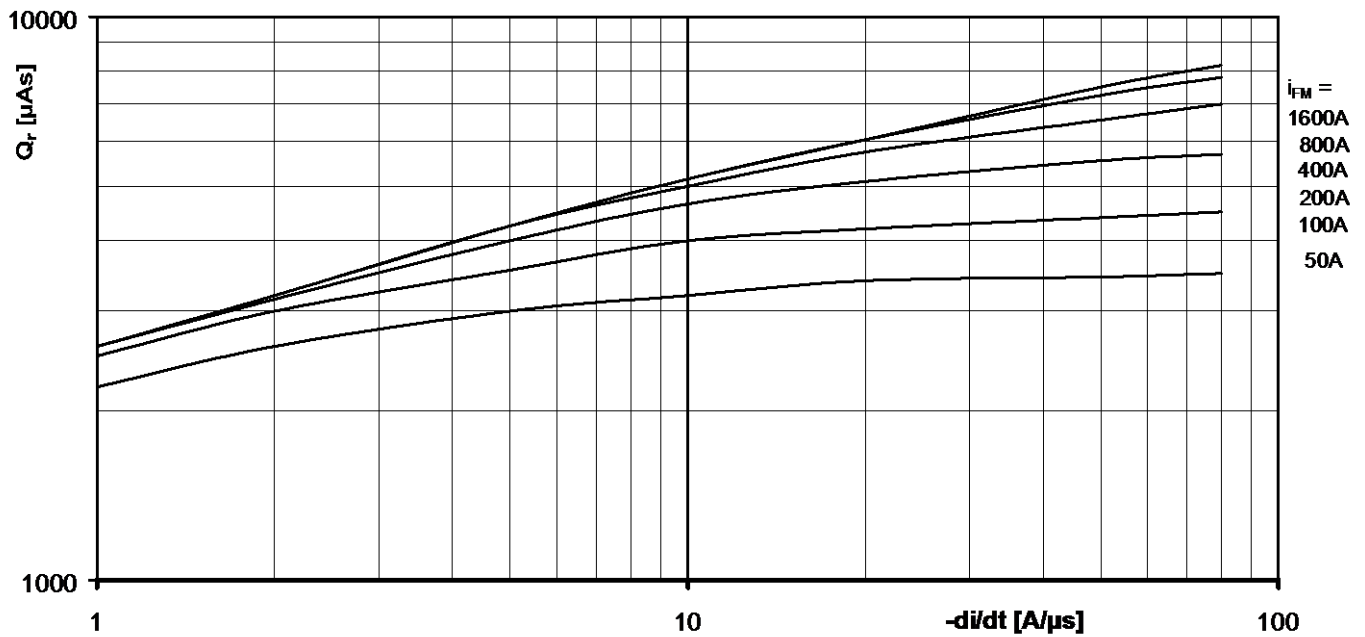
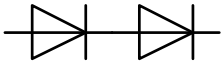
Höchstzulässiger Ausgangsstrom / Maximum rated output current I_D

B6- Sechspuls-Brückenschaltung / Six-pulse bridge circuit

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

Parameter:

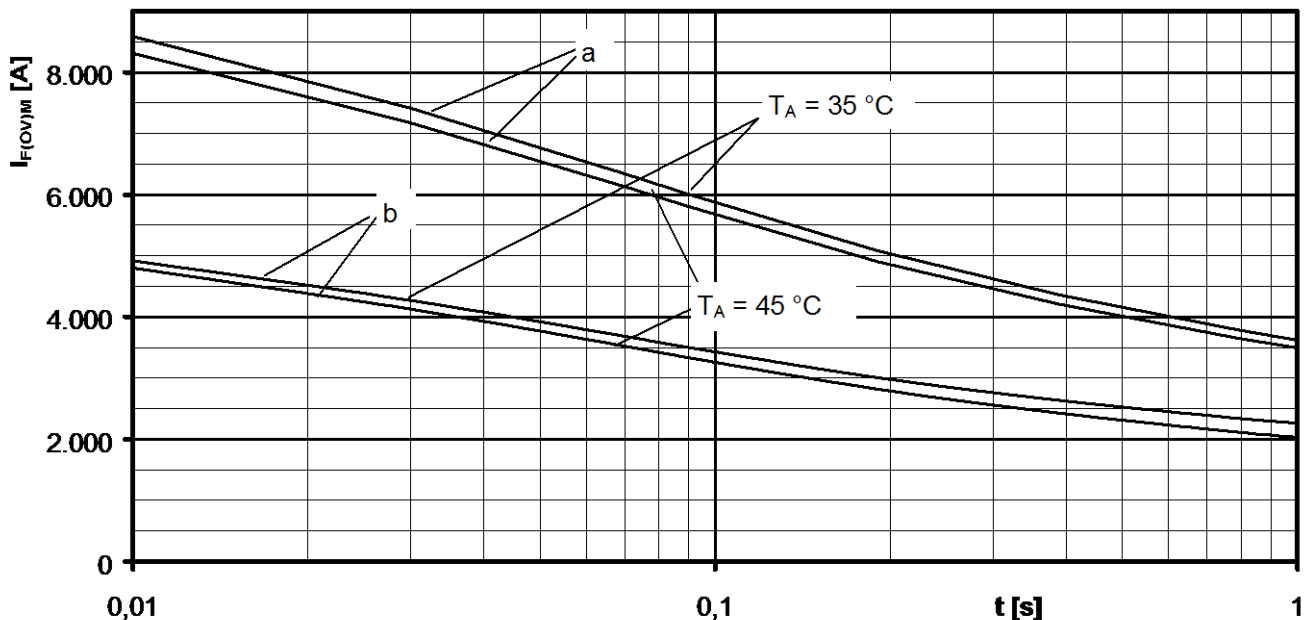
Wärmewiderstand zwischen den Gehäusen und Umgebung / Thermal resistance cases to ambient R_{thCA}



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}



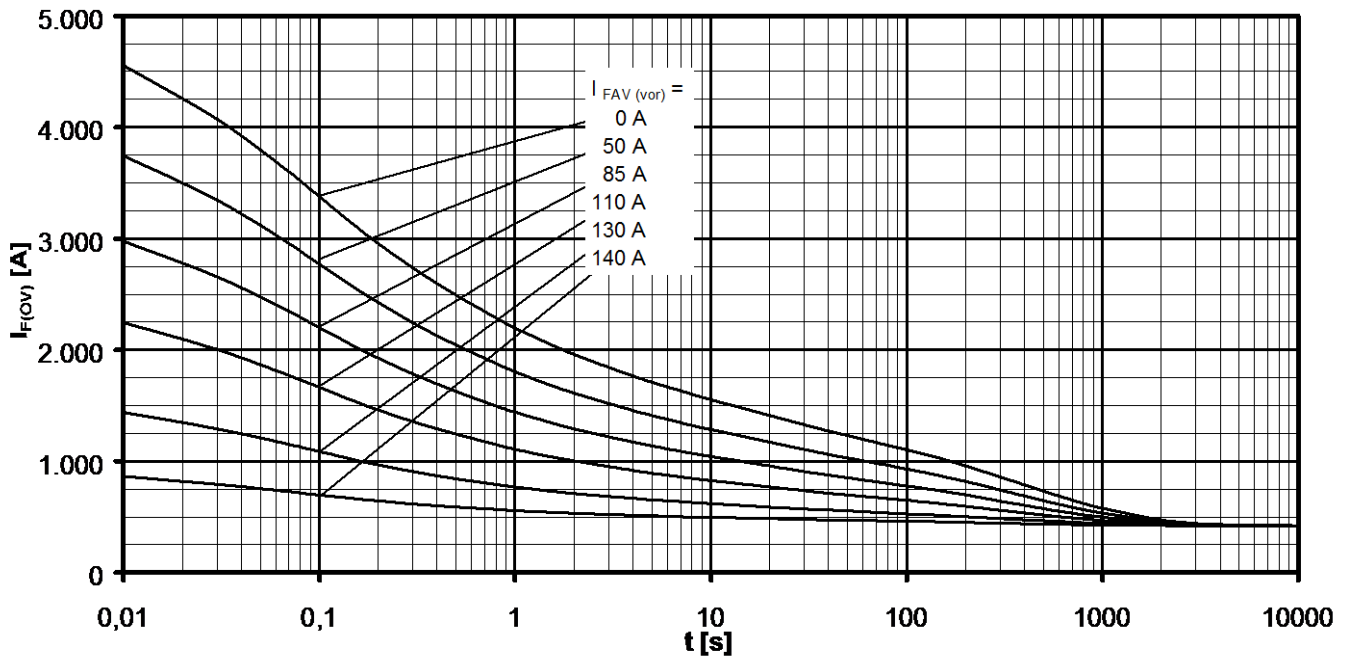
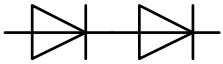
Grenzstrom je Zweig / Maximum overload on-state current per arm $I_{F(OV)M} = f(t), V_{RM} = 0,8 V_{RRM}$

a: Leerlauf / No-load conditions

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

$T_a = 35^\circ\text{C}$, verstärkte Luftkühlung / Forced air cooling Kühlkörper / Heatsink type: KM17 (Papst 4650)

$T_a = 45^\circ\text{C}$, natürliche Luftkühlung / Natural air cooling Kühlkörper / Heatsink type: KM17 (160W)

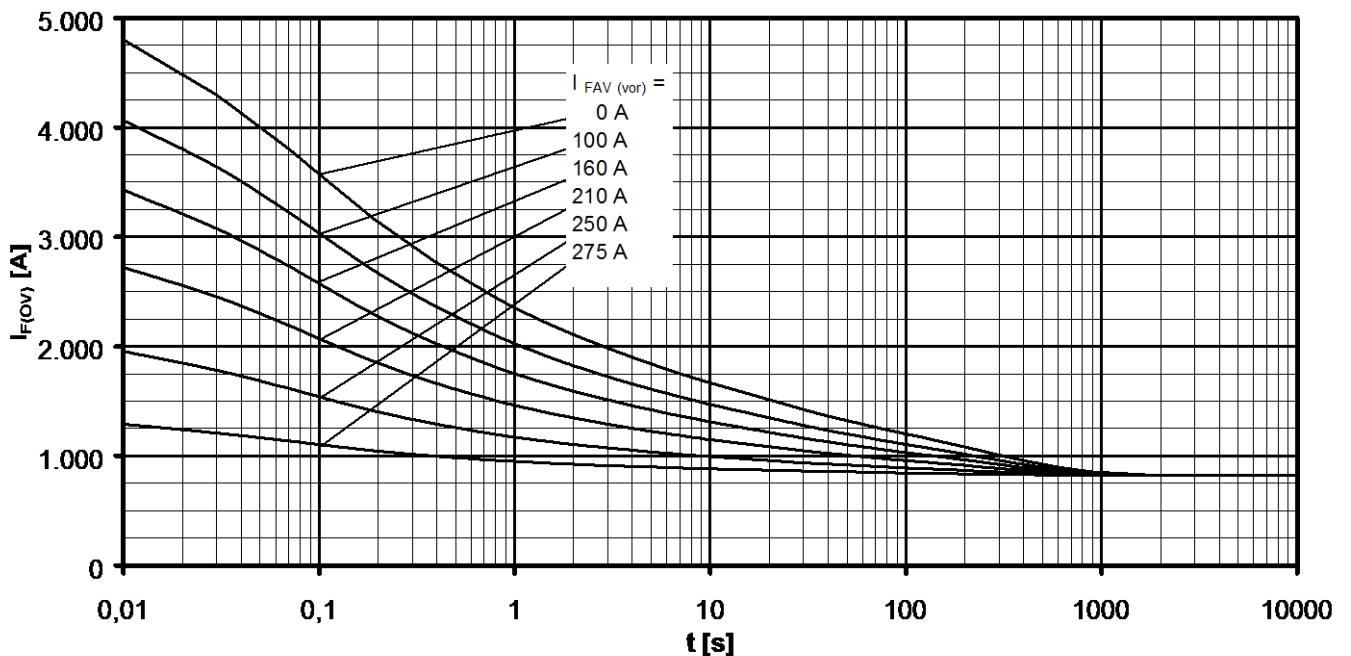


Überstrom je Zweig / Overload on-state current $I_{F(ov)}$

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

Kühlkörper / Heatsink type KM17 (160W) Natürliche Kühlung bei / Natural cooling at $T_A = 45^\circ\text{C}$

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 KM17 (Papst 4650) Verstärkte Kühlung bei / Forced cooling at $T_A = 35^\circ\text{C}$

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