

### 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 $\Omega$
$R_{thJC}$	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

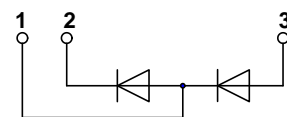
### Typische Anwendungen

- Gleichrichter für Antriebsapplikationen
- Gleichrichter für UPS
- Batterieladegleichrichter

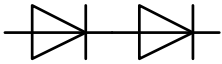
### Typical Applications

- 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 <sup>2</sup> s

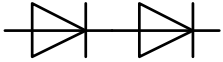
### Charakteristische Werte / Characteristic values

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




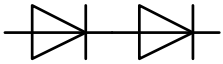
**Netz-Dioden-Modul**  
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### Mechanische Eigenschaften / Mechanical properties

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 <sup>2</sup>
	file-No.		E 83335	



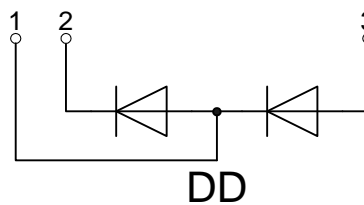
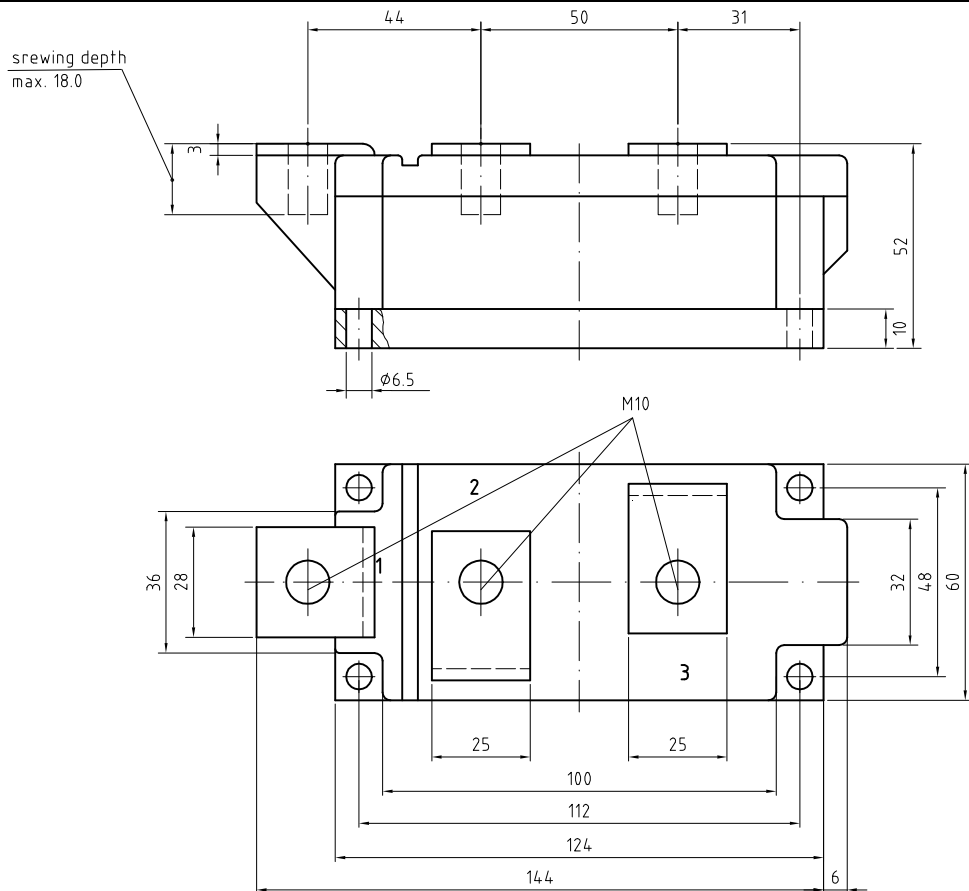
# Datenblatt / Data sheet

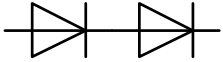


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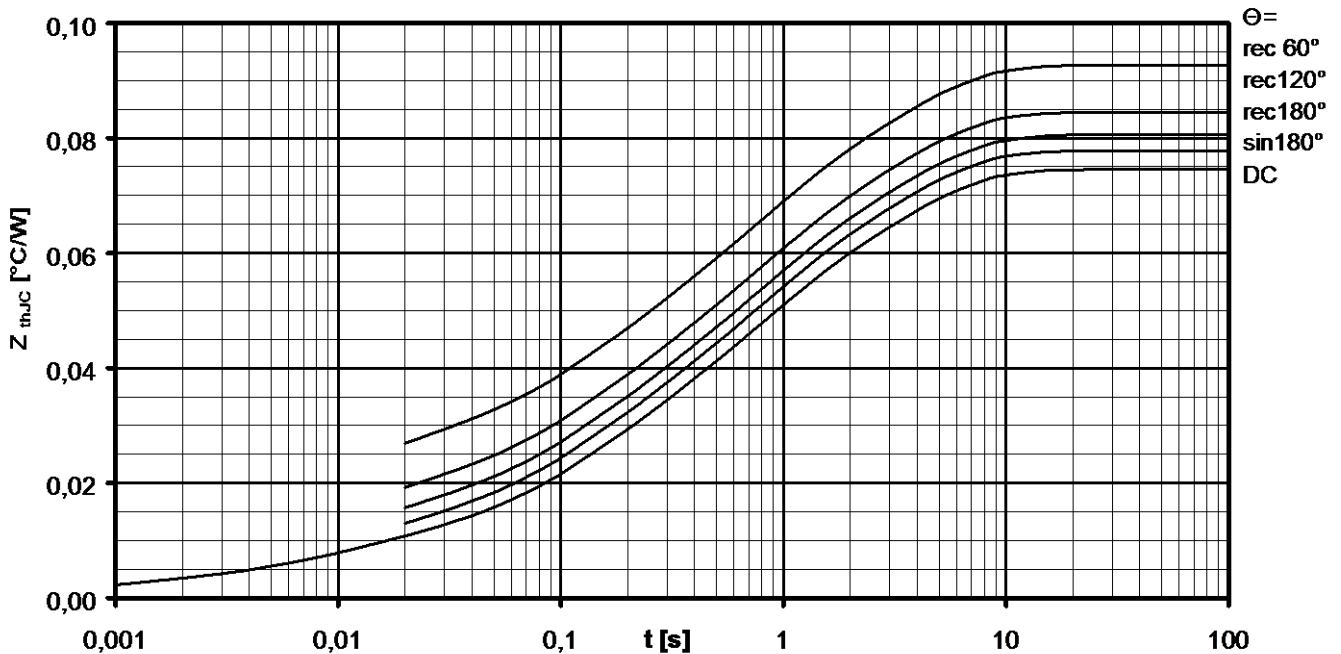




**Analytische Elemente des transienten Wärmewiderstandes  $Z_{thJC}$  für DC**  
**Analytical elements of transient thermal impedance  $Z_{thJC}$  for DC**

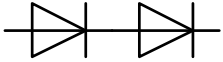
Pos. n	1	2	3	4	5	6	7
$R_{thn}$ [°C/W]	0,00194	0,00584	0,01465	0,0254	0,0267		
$T_n$ [s]	0,000732	0,00824	0,108	0,57	3		

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  $\Theta$  / Current conduction angle  $\Theta$



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				

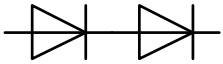
Verstärkte Kühlung / Forced cooling  
1 Modul pro Kühler / 1 module per heatsink  
Kühler / Heatsink type: KM17 (Papst 4650)

**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:

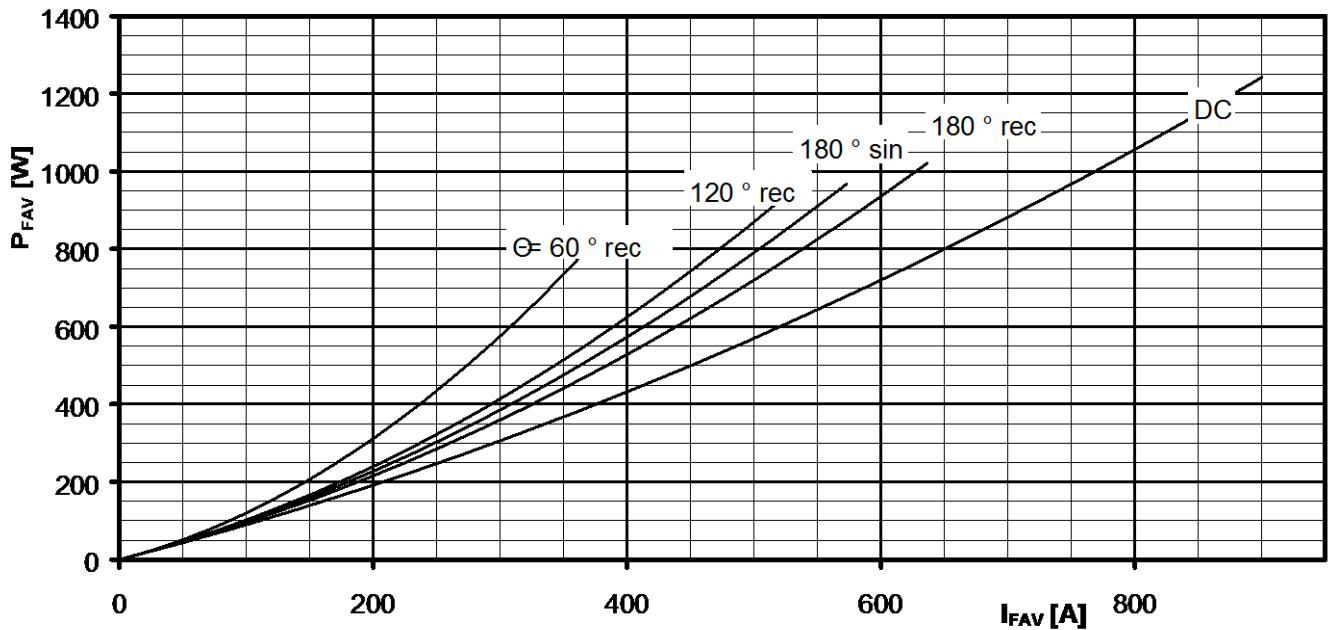
$$Z_{thCA} = \sum_{n=1}^{n_{max}} R_{thn} \left( 1 - e^{-\frac{t}{T_n}} \right)$$



Netz-Dioden-Modul  
Rectifier Diode Module

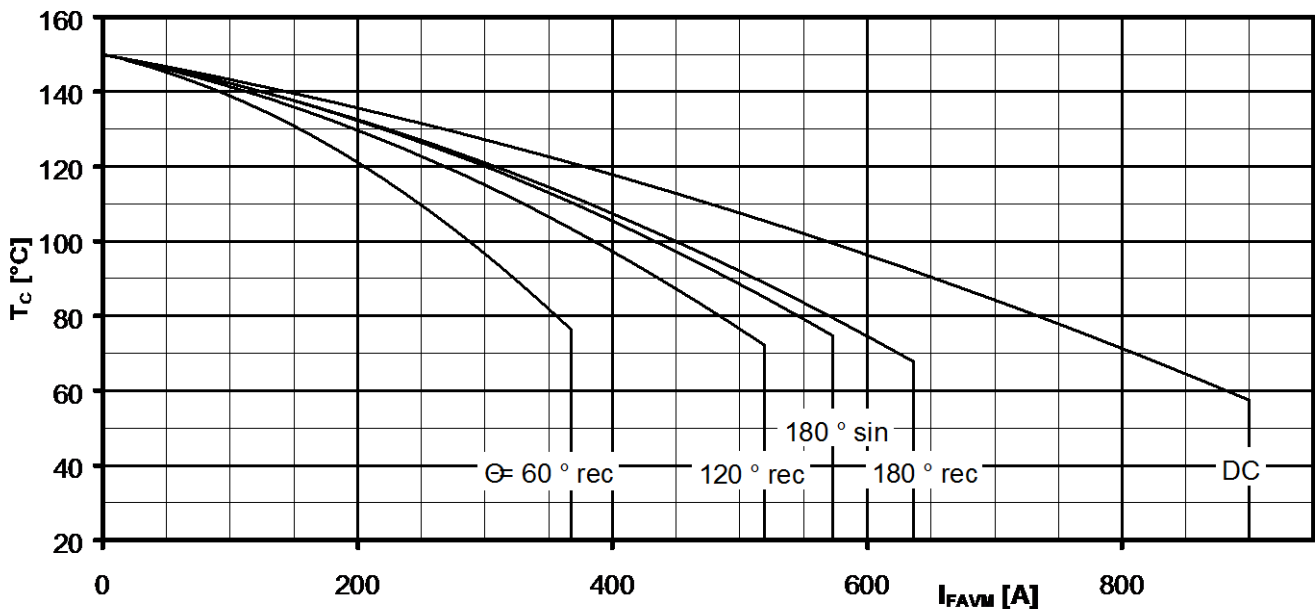
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Durchlassverlustleistung je Zweig / On-state power loss per arm  $P_{FAV} = f(I_{FAV})$

Parameter: Stromflußwinkel / Current conduction angle  $\Theta$

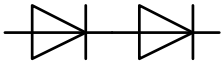


Höchstzulässige Gehäusetemperatur / Maximum allowable case temperature  $T_C = f(I_{FAVM})$

Strombelastung je Zweig / Current load per arm

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

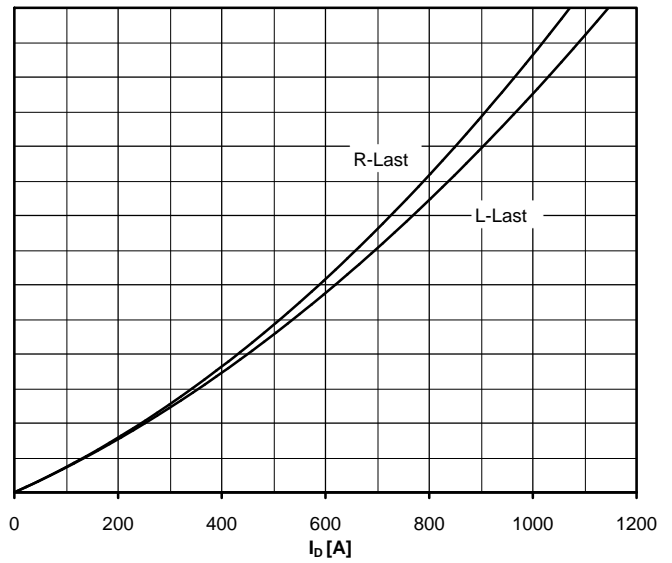
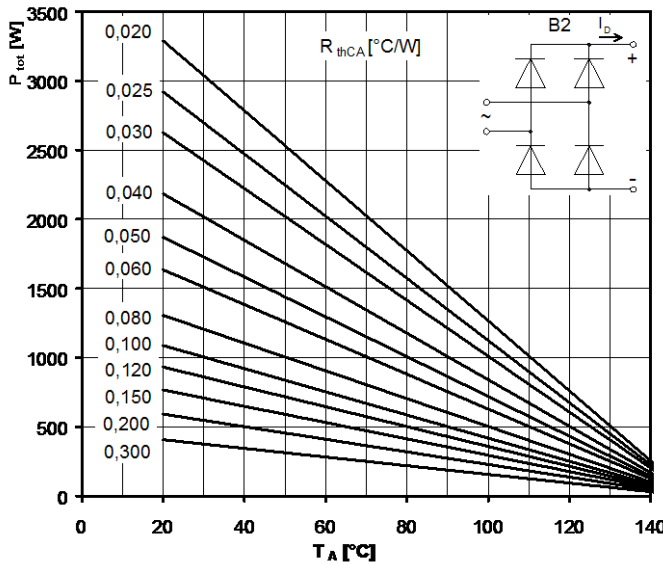
Parameter: Stromflußwinkel  $\Theta$  / Current conduction angle  $\Theta$



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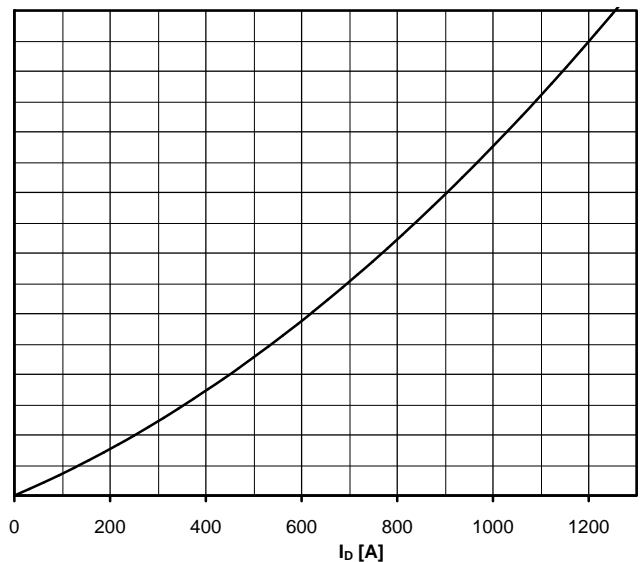
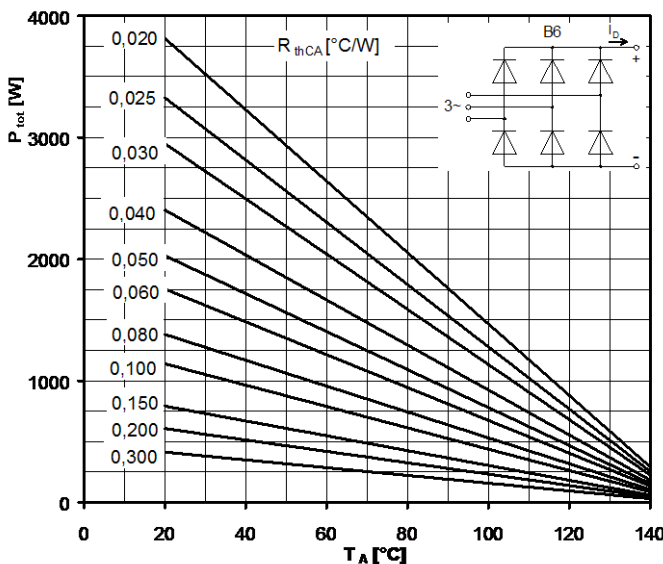
### Höchstzulässiger Ausgangsstrom / Maximum rated output current $I_D$

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 $I_D$

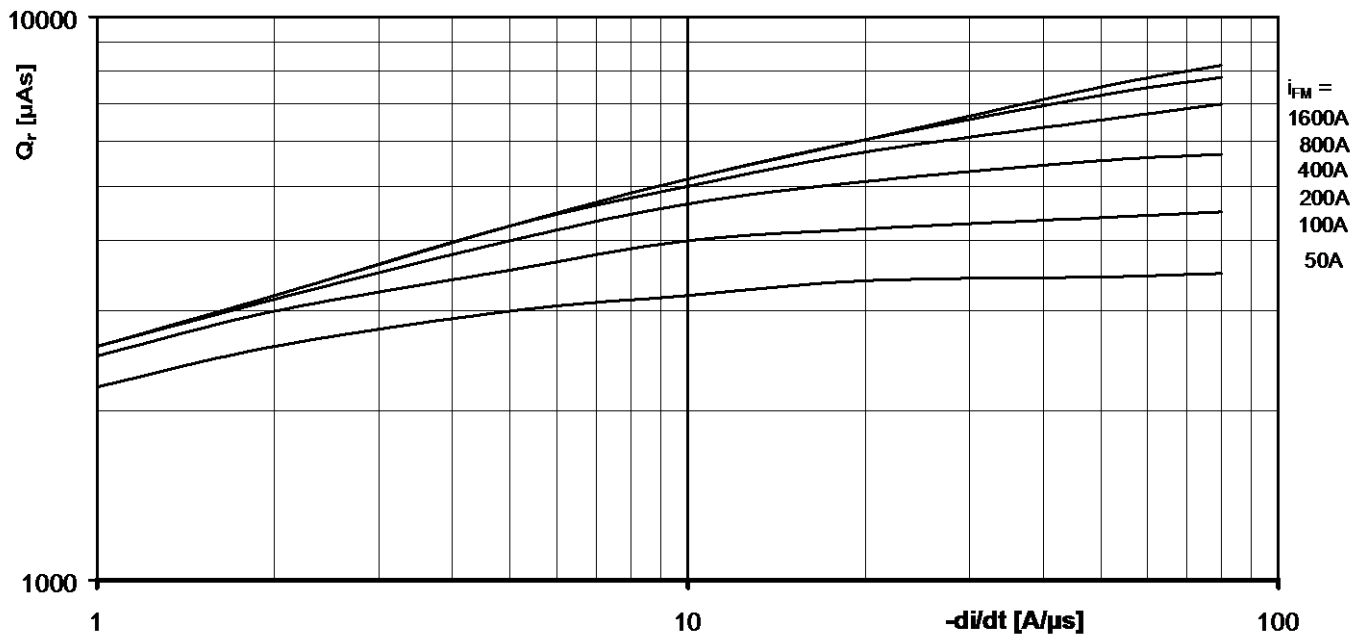
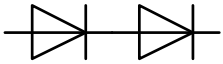
B6- Sechspuls-Brückenschaltung / Six-pulse bridge circuit

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

Parameter:

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

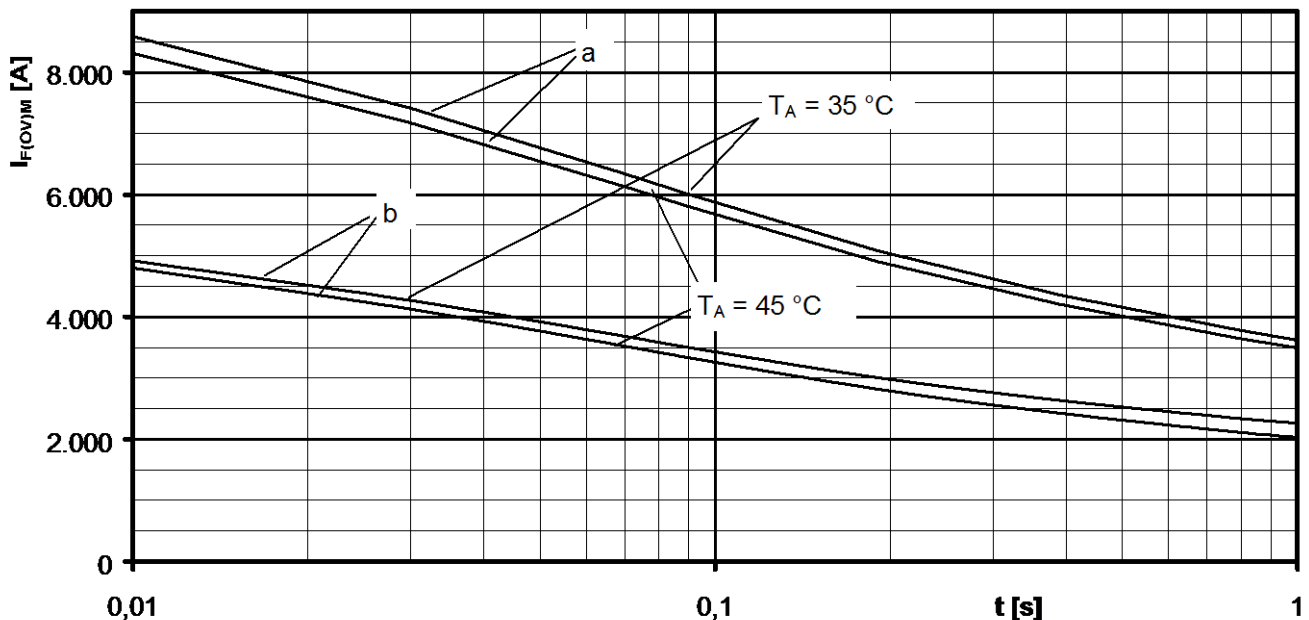




Sperrverzögerungsladung / Recovered charge  $Q_r = f(-di/dt)$

$$T_{vj} = T_{vjmax}, V_R \leq 0,5 V_{RRM}, V_{RM} = 0,8 V_{RRM}$$

Parameter: Durchlaßstrom / On-state current  $i_{FM}$



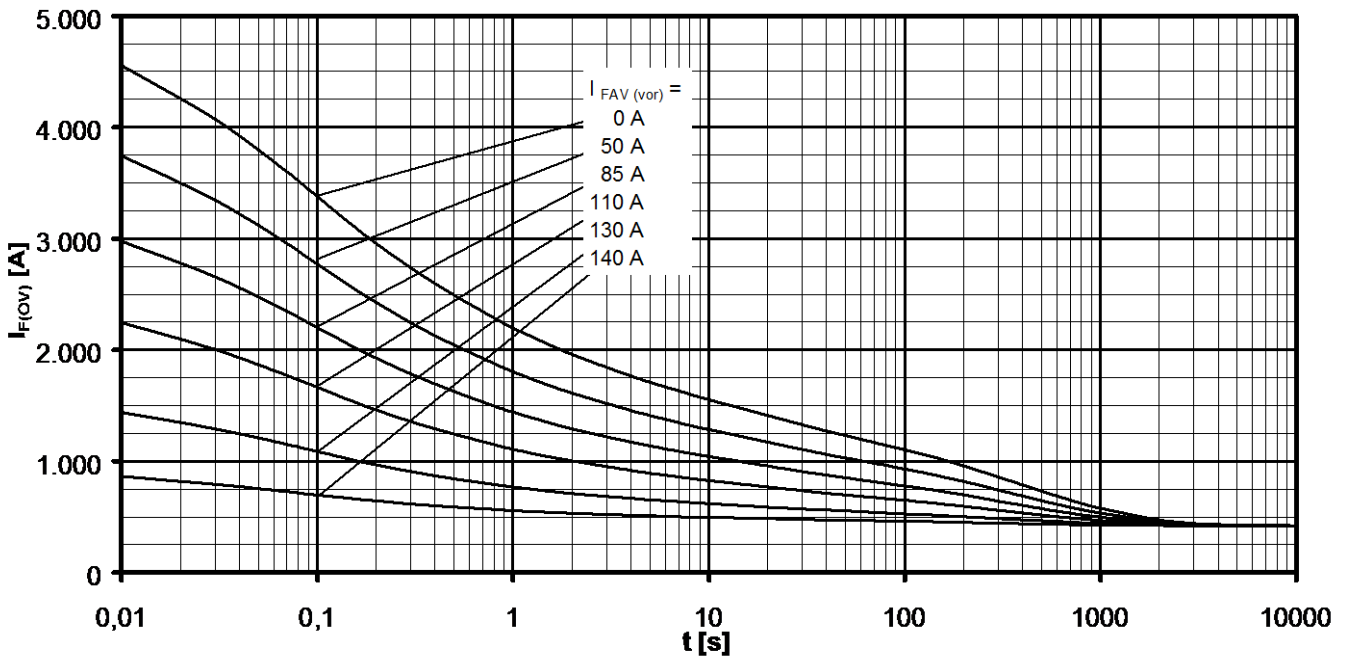
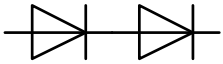
Grenzstrom je Zweig / Maximum overload on-state current per arm  $I_{F(OV)M} = f(t), V_{RM} = 0,8 V_{RRM}$

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)

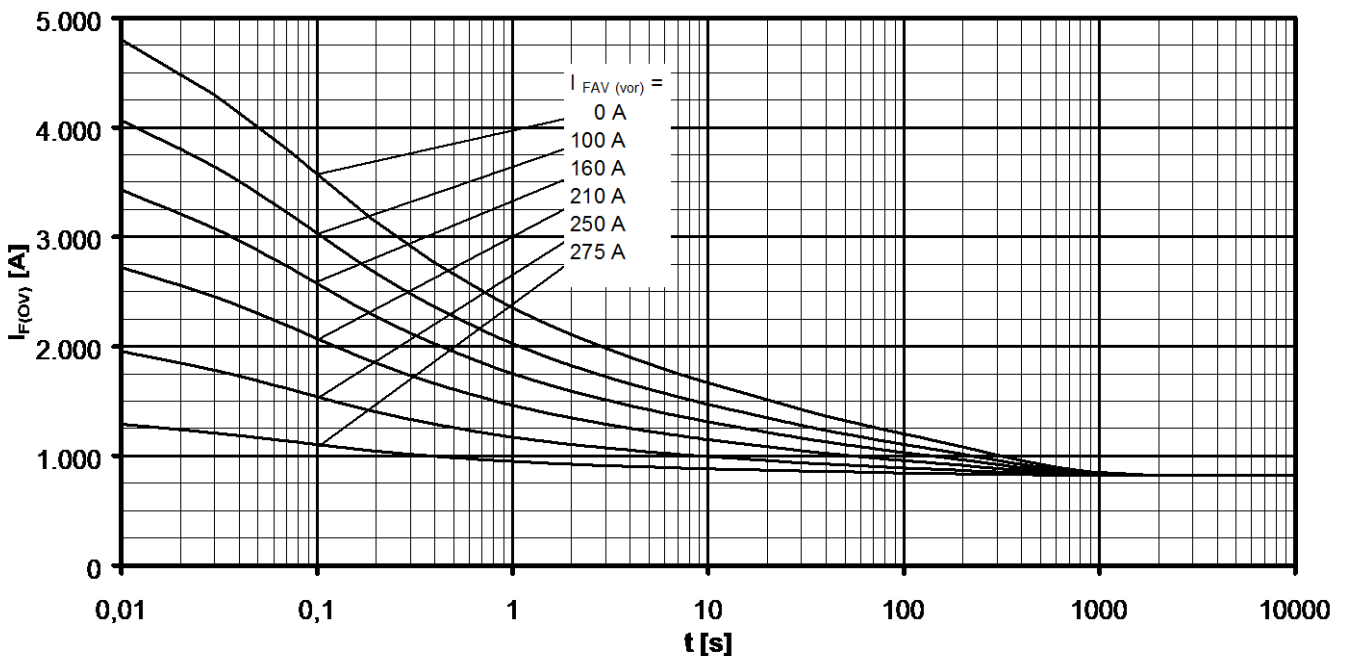


Überstrom je Zweig / Overload on-state current  $I_{F(ov)}$

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  $I_{FAV(vor)}$