	Technische Information / technical information	
Netz-Dioden-Modul Rectifier Diode Module	**DZ1070N18K**	Infineon Technologies Bipolar GmbH & Co. KG

Key Parameters

V_{DRM} / V_{RRM}	1800 V
I_{FAVM}	1100 A (T_C=100°C)
I_{FSM}	41000 A
v_{T0}	0,75 V
r_T	0,073 mΩ
R_{thJC}	0,0466 K/W
Baseplate	70 mm
Weight	1950 g

For type designation please refer to actual shortform catalog

http://www.ifbip.com/catalog

Merkmale

- Druckkontakt- Technologie für hohe Verlässlichkeit
- Industrie-Standard-Gehäuse
- Elektrisch isolierte Grundplatte
- Advanced medium power technology

Features

- Pressure contact technology for high reliability
- Industial standard package
- Electrically insulated baseplate
- Advanced medium power technology

Typische Anwendungen

- Gleichrichter für Antriebsapplikationen
- Gleichricher 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
serial number	1..7	7
SP material number	8..16	9
datecode (production day)	17..18	2
datecode (production year)	19..20	2
datecode (production month)	21..22	2
vT class	23..26	4
QR class	27..30	4

DZ

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DZ1070N18K

Elektrische Eigenschaften / Electrical properties

Höchstzulässige Werte / Maximum rated values

Periodische Spitzensperrspannung repetitive peak reverse voltages	T_{vj} = -40°C... $T_{vj\,max}$	V_{RRM}	1800	V
Stoßspitzensperrspannung non-repetitive peak reverse voltage	T_{vj} = +25°C... $T_{vj\,max}$	V_{RSM}	1900	V
Durchlaßstrom-Grenzeffektivwert maximum RMS on-state current		I_{FRMSM}	1700	A
Dauergrenzstrom average on-state current	T_C = 100 °C	I_{FAVM}	1100	A
Stoßstrom-Grenzwert surge current	T_{vj} = 25°C, t_P = 10ms T_{vj} = $T_{vj\,max}$, t_P = 10ms	I_{FSM}	41.000 35.000	A A
Grenzlastintegral I^2t-value	T_{vj} = 25°C, t_P = 10ms T_{vj} = $T_{vj\,max}$, t_P = 10ms	I^2t	8.405.000 6.125.000	A^2s A^2s

Charakteristische Werte / Characteristic values

Durchlaßspannung on-state voltage	T_{vj} = $T_{vj\,max}$, i_F = 3000A	v_F	max.	1,11	V
Schleusenspannung threshold voltage	T_{vj} = $T_{vj\,max}$	$V_{(TO)}$	max.	0,75	V
Ersatzwiderstand slope resistance	T_{vj} = $T_{vj\,max}$	r_T	max.	0,073	mΩ
Sperrstrom reverse current	T_{vj} = $T_{vj\,max}$, v_R = V_{RRM}	i_R	max.	150	mA
Isolations-Prüfspannung insulation test voltage	RMS, f = 50Hz, t = 1 sec RMS, f = 50Hz, t = 1 min	V_{ISOL}		3,6 3,0	kV kV

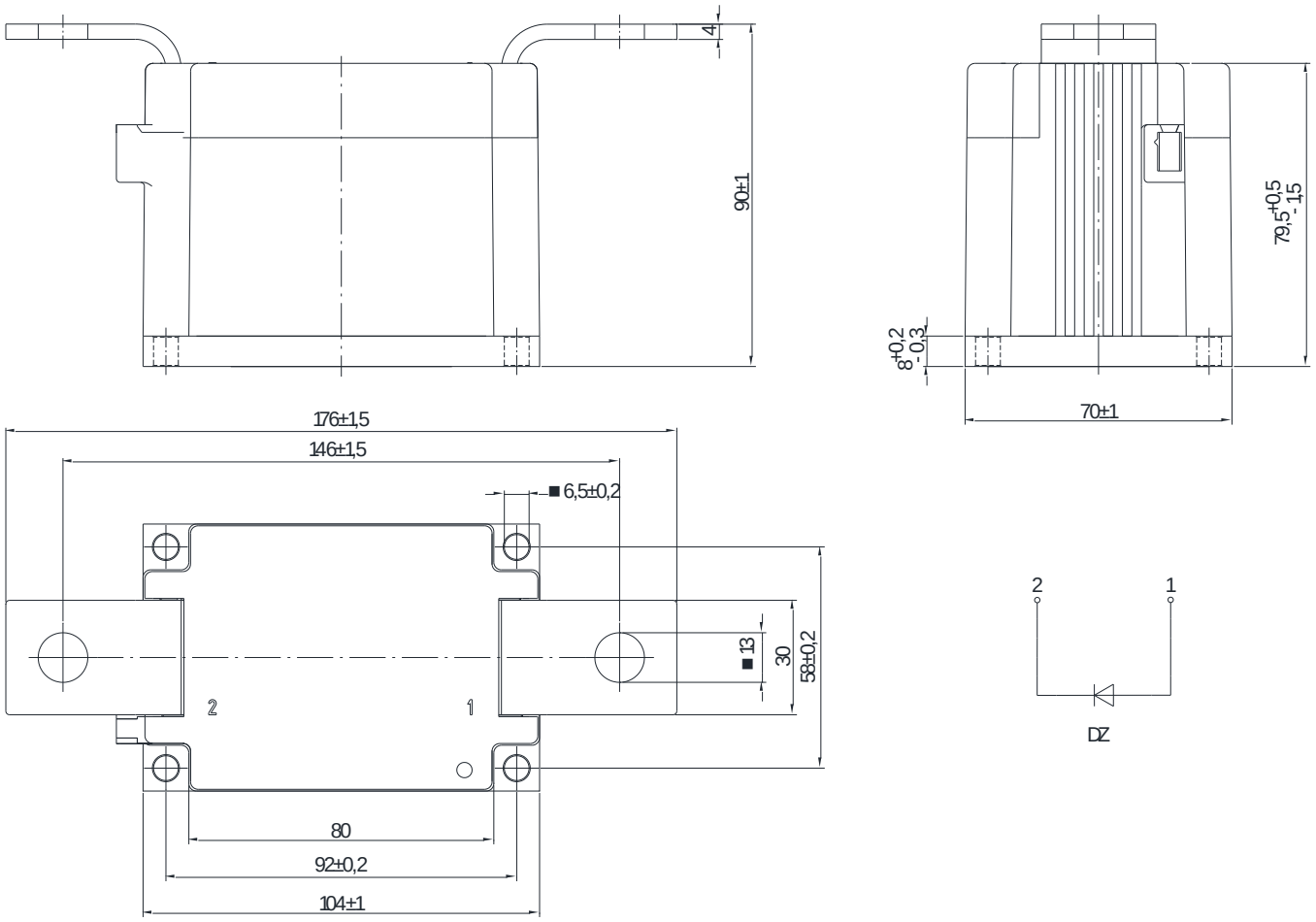
Thermische Eigenschaften / Thermal properties

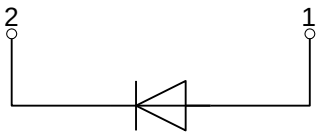
Innerer Wärmewiderstand thermal resistance, junction to case	pro Modul / per Module, Θ = 180° sin pro Modul / per Module, DC	R_{thJC}	max. max.	0,048 0,0466	K/W K/W
Übergangs-Wärmewiderstand thermal resistance, case to heatsink	pro Modul / per Module	R_{thCH}	max.	0,015	K/W
Höchstzulässige Sperrschichttemperatur 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:	CD		date of publication:	2014-04-17
approved by:	ML		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	Basisisolierung (Schutzklasse 1, EN 61140) Basic insulation (class 1, IEC 61140)		AlN	
Anzugsdrehmoment für mechanische Anschlüsse mounting torque	Toleranz ±15%	M1	6	Nm
Anzugsdrehmoment für elektrische Anschlüsse terminal connection torque	Toleranz ±10%	M2	18	Nm
Gewicht weight		G	typ. 1950	g
Kriechstrecke creepage distance			64	mm
Schwingfestigkeit vibration resistance	f = 50Hz		50	m/s²
	file-No.		E 83335	


4
90±1
8+0,2 -0,3
79,5+0,5 -1,5
70±1
176±1,5
146±1,5
6,5±0,2
13
30
58±0,2
2
1
80
92±0,2
104±1
2
1
DZ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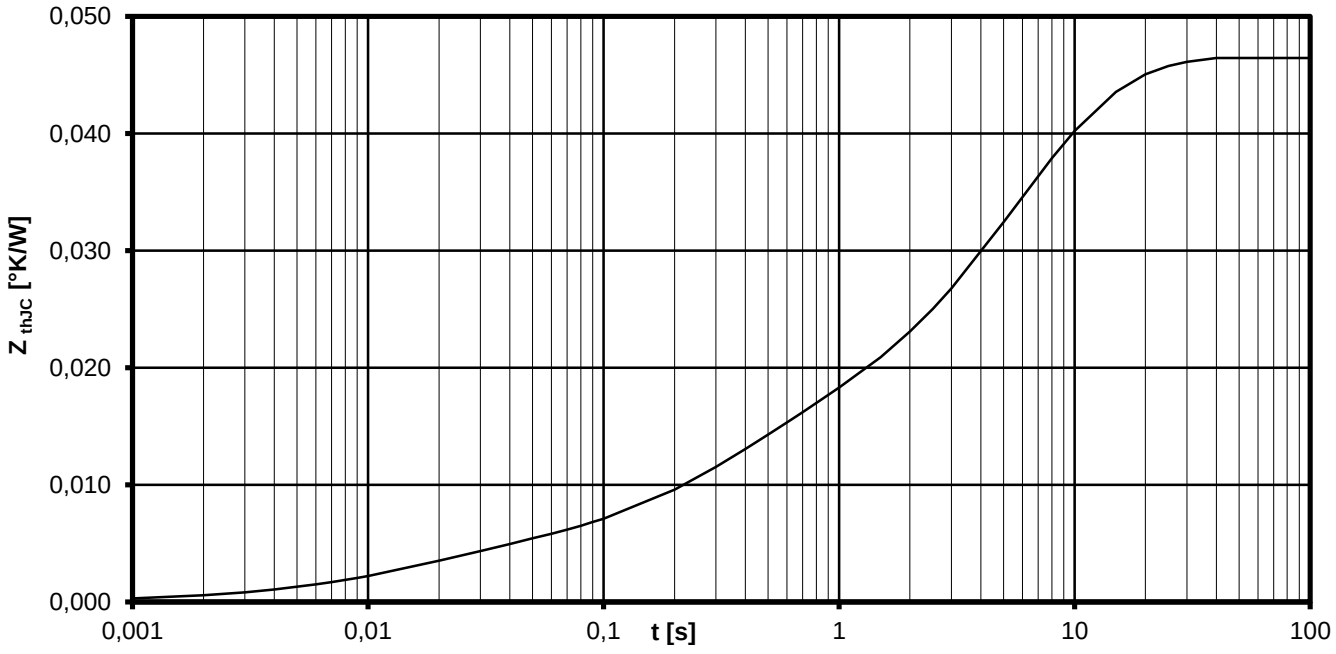
Analytische Elemente des transienten Wärmewiderstandes Z_{thJC} für DC
Analytical elements of transient thermal impedance Z_{thJC} for DC

Pos. n	1	2	3	4	5	6	7
R_{thn} [K/W]	0,0081	0,0252	0,0094	0,0028	0,0011		
τ_n [s]	9,98	4,994	0,3035	0,0188	0,01		

Analytische Funktion / Analytical function:

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



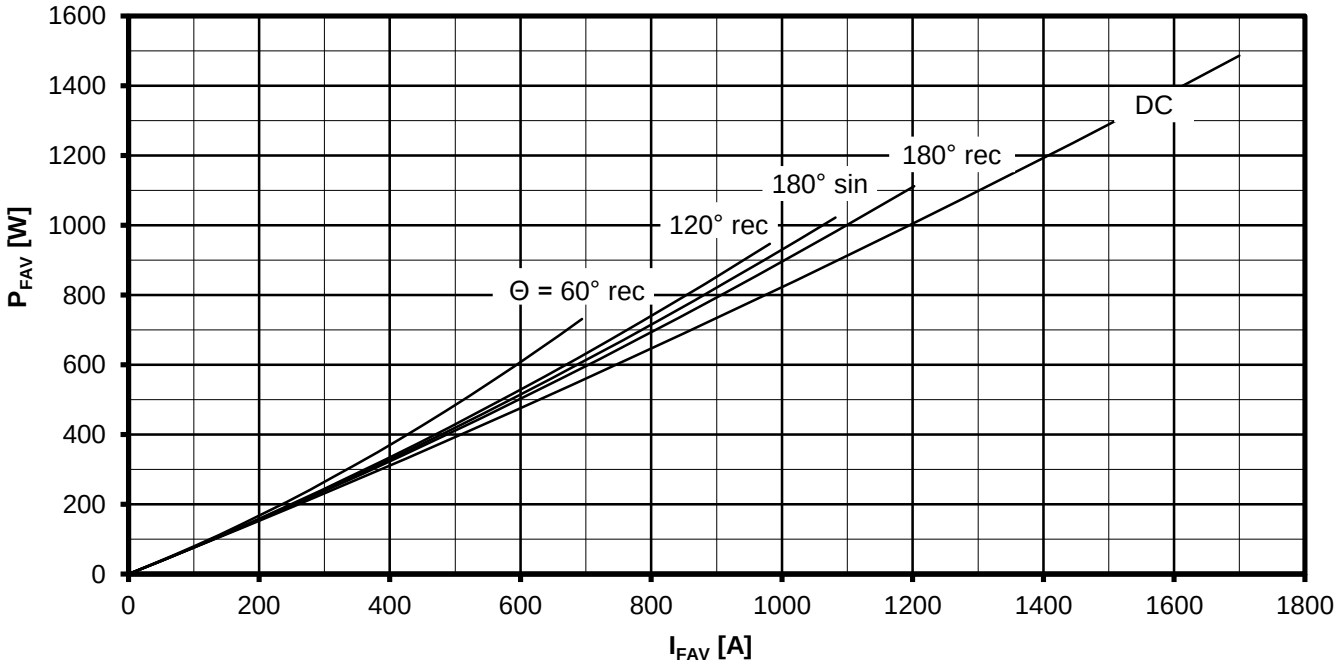
Transienter innerer Wärmewiderstand je Zweig / Transient thermal impedance per arm Z_{thJC} = f(t)

Parameter: Stromflußwinkel Θ / Current conduction angle Θ

Erhöhung des $Z_{th\ DC}$ bei Sinus und Rechteckströmen mit unterschiedlichen Stromflusswinkeln Θ
Rise of $Z_{th\ DC}$ for sinewave and rectangular current with different current conduction angles Θ
$\Delta Z_{th\ \Theta\ rec}$ / $\Delta Z_{th\ \Theta\ sin}$

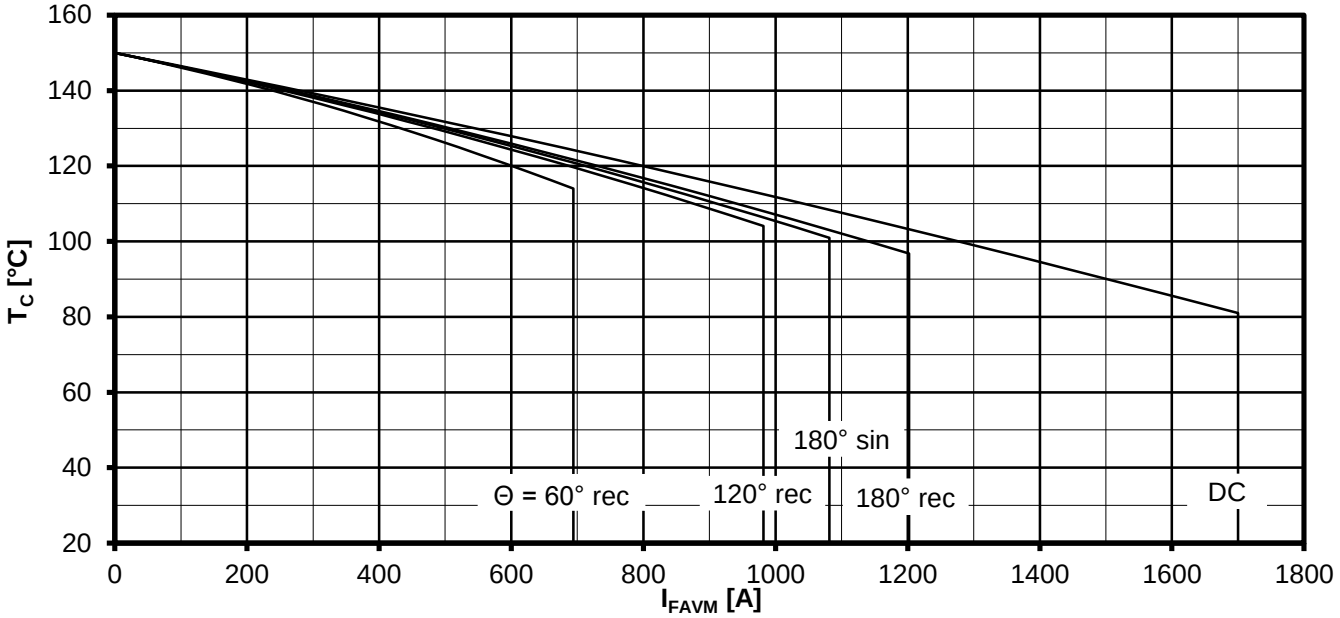
	Θ = 180°	Θ = 120°	Θ = 90°	Θ = 60°	Θ = 30°
$\Delta Z_{th\ \Theta\ rec}$ [K/W]	0,00126	0,00766	0,00222	0,00259	0,00299
$\Delta Z_{th\ \Theta\ sin}$ [K/W]	0,04797	0,04785	0,04896	0,04938	0,04963

$$Z_{th\ \Theta\ rec} = Z_{th\ DC} + \Delta Z_{th\ \Theta\ rec}$$
$$Z_{th\ \Theta\ sin} = Z_{th\ DC} + \Delta Z_{th\ \Theta\ sin}$$



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

Parameter: Stromflußwinkel / Current conduction angle Θ

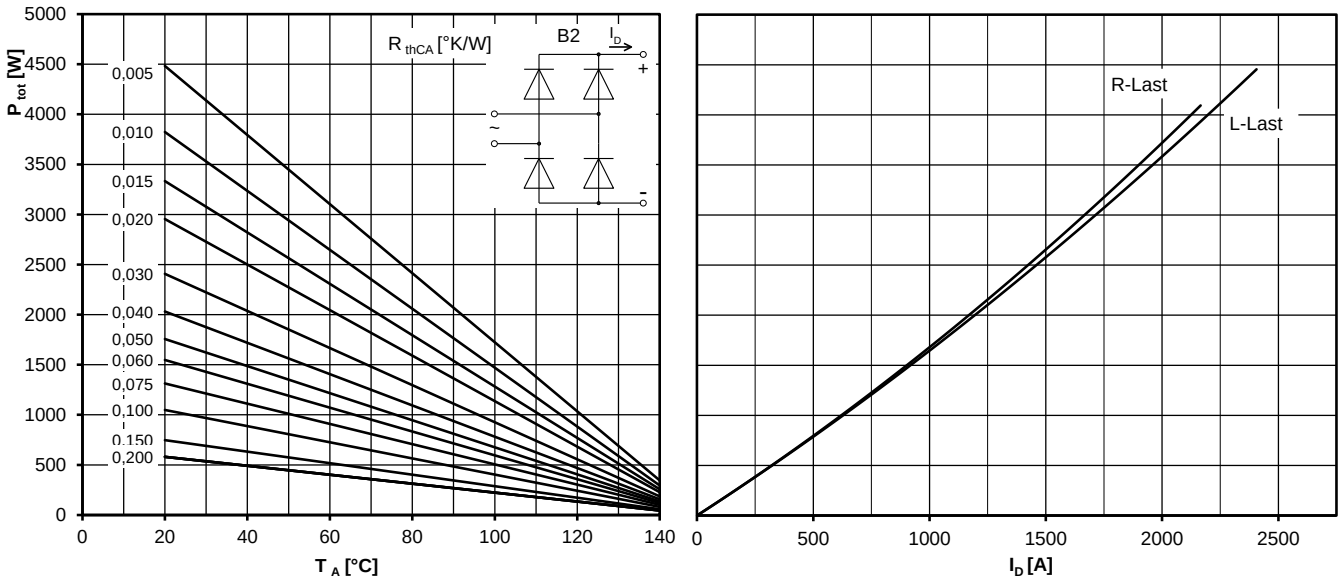


Höchstzulässige Gehäusetemperatur / Maximum allowable case temperature $T_C = f(I_{FAVM})$

Strombelastung je Zweig / Current load per arm

Berechungsgrundlage P_{TAV}
Calculation base P_{TAV}

Parameter: Stromflußwinkel Θ / Current conduction angle Θ

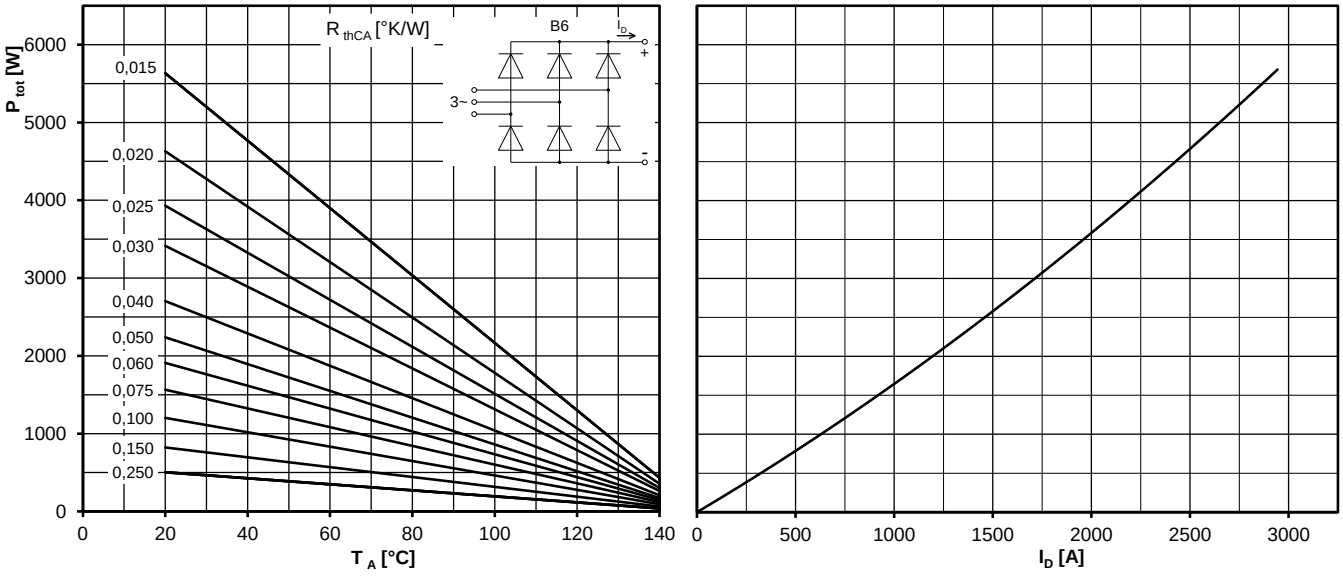


Höchstzulässiger Ausgangsstrom / Maximum rated output current I_D

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

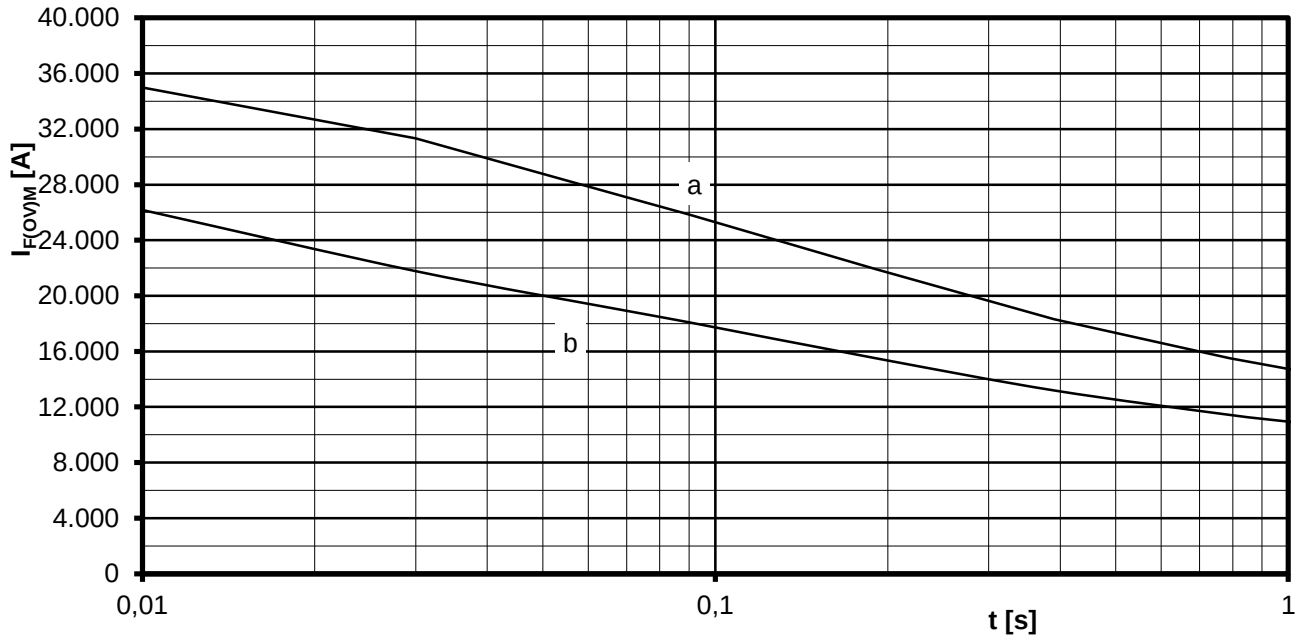
Gesamtverlustleistung der Schaltung / Total power dissipation at circuit P_{tot}

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 = 25°C, Wasserkühlung / water cooling