

Key Parameters

| | |
|---------------------|------------------------------------|
| V_{DRM} / V_{RRM} | 2800 V |
| I_{FAVM} | 1070 A ($T_C=100^\circ\text{C}$) |
| I_{FSM} | 41000 A |
| V_{T0} | 0,8 V |
| r_T | 0,17 m Ω |
| R_{thJC} | 0,0435 K/W |
| Baseplate | 70 mm |
| Weight | 2750 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
- Industrial standard package
- Electrically insulated baseplate
- Advanced medium power technology

Typische Anwendungen

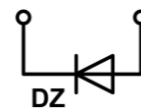
- Gleichrichter für Antriebsapplikationen
- Gleichrichter für UPS
- Batterieladegleichrichter

Typical Applications

- Rectifier for Drives Applications
- Rectifiers for UPS
- Battery chargers



| content of customer DMX code | DMX code digit | DMX code digit quantity |
|------------------------------|----------------|-------------------------|
| 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 |



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Technische Information / technical information



Netz-Dioden-Modul
Rectifier Diode Module

DZ1070N28K

Infineon Technologies Bipolar
GmbH & Co. KG

DZ1070N28K

Elektrische Eigenschaften / Electrical properties

Höchstzulässige Werte / Maximum rated values

| | | | | |
|--|--|-------------|------------------------|--|
| Periodische Spitzensperrspannung repetitive peak reverse voltages | $T_{vj} = -40^{\circ}\text{C} \dots T_{vj\text{max}}$ | V_{RRM} | 2800 | V |
| Stoßspitzensperrspannung non-repetitive peak reverse voltage | $T_{vj} = +25^{\circ}\text{C} \dots T_{vj\text{max}}$ | V_{RSM} | 2900 | V |
| Durchlaßstrom-Grenzeffektivwert maximum RMS on-state current | | I_{FRMSM} | 1700 | A |
| Dauergrenzstrom average on-state current | $T_C = 100^{\circ}\text{C}$ | I_{FAVM} | 1070 | 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} | 41.000 35.000 | A 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 | 8.405.000 6.12.5000 | A^2s A^2s |

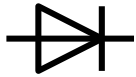
Charakteristische Werte / Characteristic values

| | | | | |
|--|--|------------|-----------|------------------|
| Durchlaßspannung on-state voltage | $T_{vj} = T_{vj\text{max}}, i_F = 3400\text{A}$ | V_F | max. 1,52 | V |
| Schleusenspannung threshold voltage | $T_{vj} = T_{vj\text{max}}$ | $V_{(TO)}$ | max. 0,8 | V |
| Ersatzwiderstand slope resistance | $T_{vj} = T_{vj\text{max}}$ | r_T | max. 0,17 | $\text{m}\Omega$ |
| Sperrstrom reverse current | $T_{vj} = T_{vj\text{max}}, V_R = V_{RRM}$ | i_R | max. 150 | 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 | kV kV |

Thermische Eigenschaften / Thermal properties

| | | | | |
|--|--|--------------------|---------------------------|--------------------|
| Innerer Wärmewiderstand thermal resistance, junction to case | pro Modul / per Module, $\Theta = 180^{\circ}$ sin pro Modul / per Module, DC | R_{thJC} | max. 0,045 max. 0,0435 | K/W K/W |
| Übergangs-Wärmewiderstand thermal resistance, case to heatsink | pro Modul / per Module | R_{thCH} | max. 0,01 | K/W |
| Höchstzulässige Sperrschichttemperatur maximum junction temperature | | $T_{vj\text{max}}$ | 160 | $^{\circ}\text{C}$ |
| Betriebstemperatur operating temperature | | $T_{c\text{op}}$ | - 40...+150 | $^{\circ}\text{C}$ |
| Lagertemperatur storage temperature | | T_{stg} | - 40...+150 | $^{\circ}\text{C}$ |

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|-----------------|--|---------------------------------|
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technical information




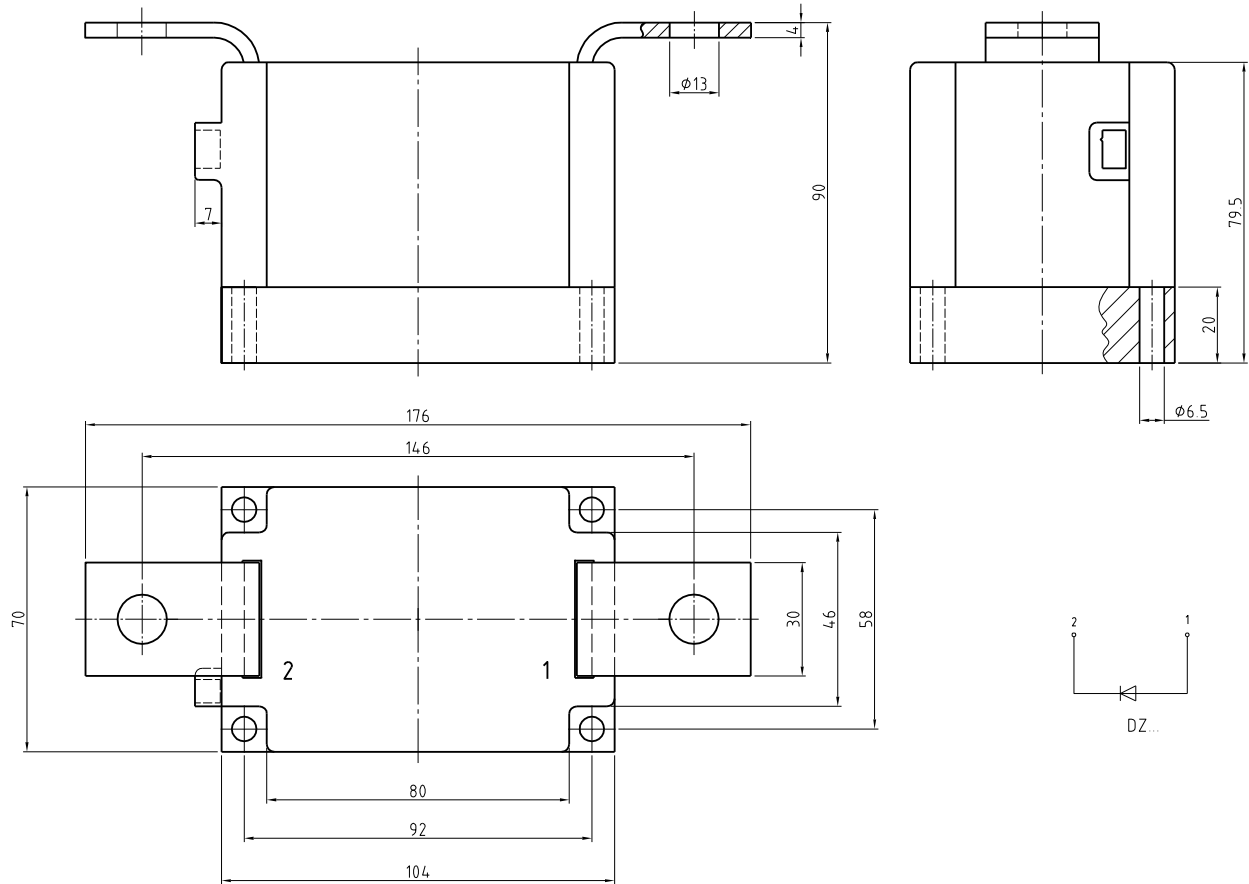
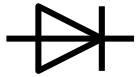
Netz-Dioden-Modul
Rectifier Diode Module

DZ1070N28K

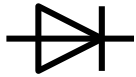
Infineon Technologies Bipolar
GmbH & Co. KG

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) | | AIN | |
| 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. 2750 | g |
| Kriechstrecke creepage distance | | | 64 | mm |
| Schwingfestigkeit vibration resistance | f = 50Hz | | 50 | m/s ² |
|  | file-No. | | E 83335 | |



| | | |
|--|-----------|--|
| | <p>DZ</p> | |
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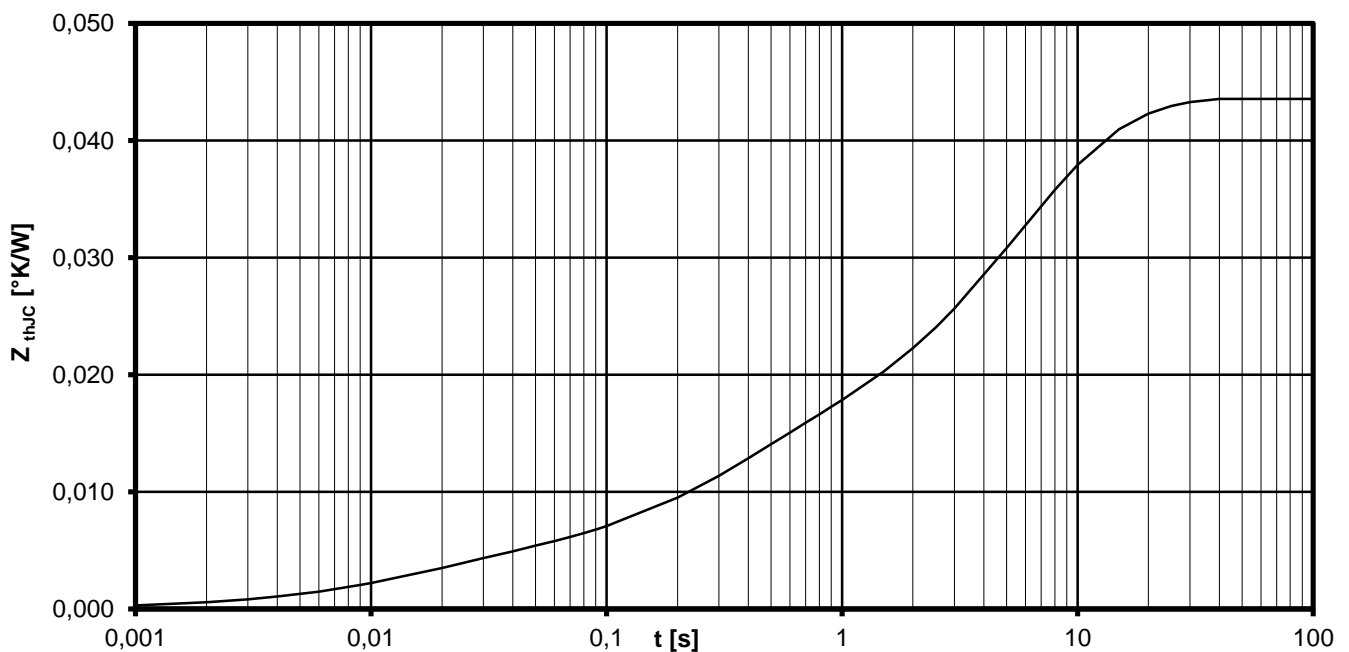


Analytische Elemente des transienten Wärmewiderstandes Z_{thJC} für DC
Analytical elements of transient thermal impedance Z_{thJC} for DC

| Pos. n | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-----------------|--------|--------|--------|--------|--------|---|---|
| R_{thn} [K/W] | 0,0072 | 0,0232 | 0,0094 | 0,0028 | 0,0011 | | |
| τ_n [s] | 9,98 | 4,994 | 0,3035 | 0,0188 | 0,01 | | |

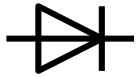
Analytische Funktion / Analytical function:

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



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

Parameter: Stromflußwinkel Θ / Current conduction angle Θ



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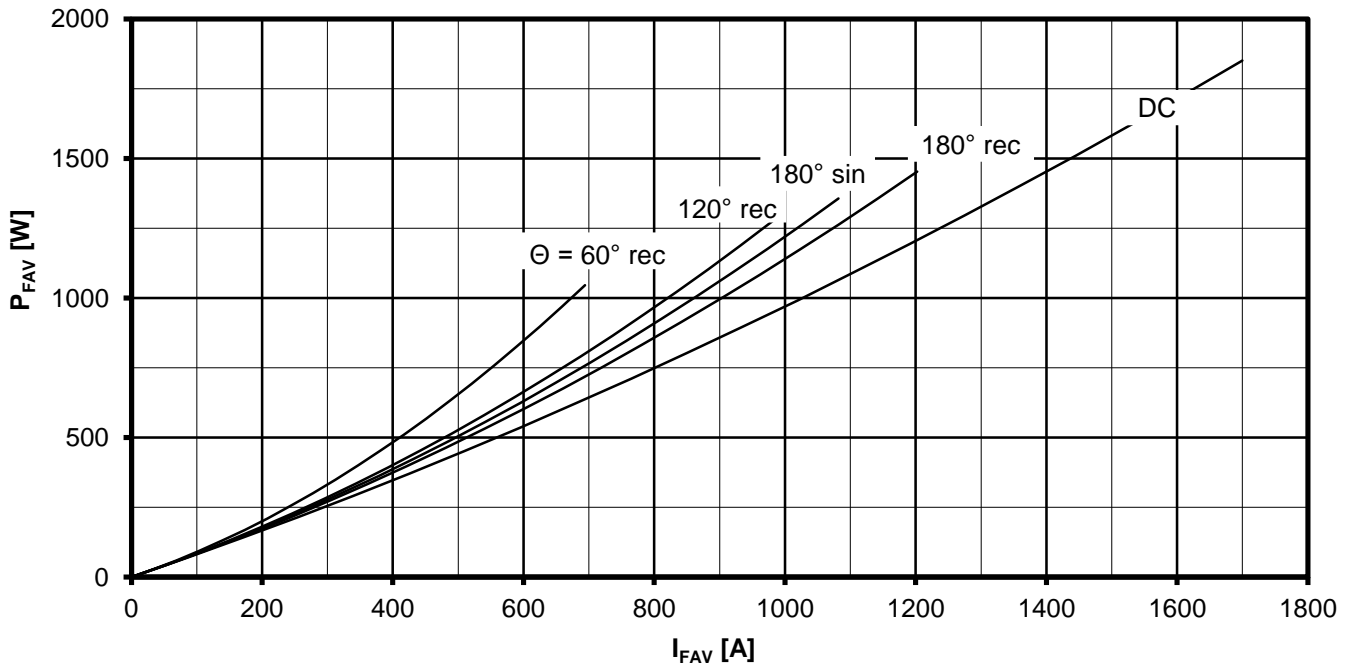
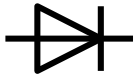
Erhöhung des $Z_{th DC}$ bei Sinus und Rechteckströmen mit unterschiedlichen Stromflusswinkeln Θ
Rise of $Z_{th DC}$ for sinewave and rectangular current with different current conduction angles Θ

$\Delta Z_{th \Theta rec} / \Delta Z_{th \Theta sin}$

| | $\Theta = 180^\circ$ | $\Theta = 120^\circ$ | $\Theta = 90^\circ$ | $\Theta = 60^\circ$ | $\Theta = 30^\circ$ |
|-------------------------------------|----------------------|----------------------|---------------------|---------------------|---------------------|
| $\Delta Z_{th \Theta rec}$ [K/W] | 0,00128 | 0,00766 | 0,00223 | 0,00260 | 0,00300 |
| $\Delta Z_{th \Theta sin}$ [K/W] | 0,00137 | 0,00129 | 0,00236 | 0,00278 | 0,00304 |

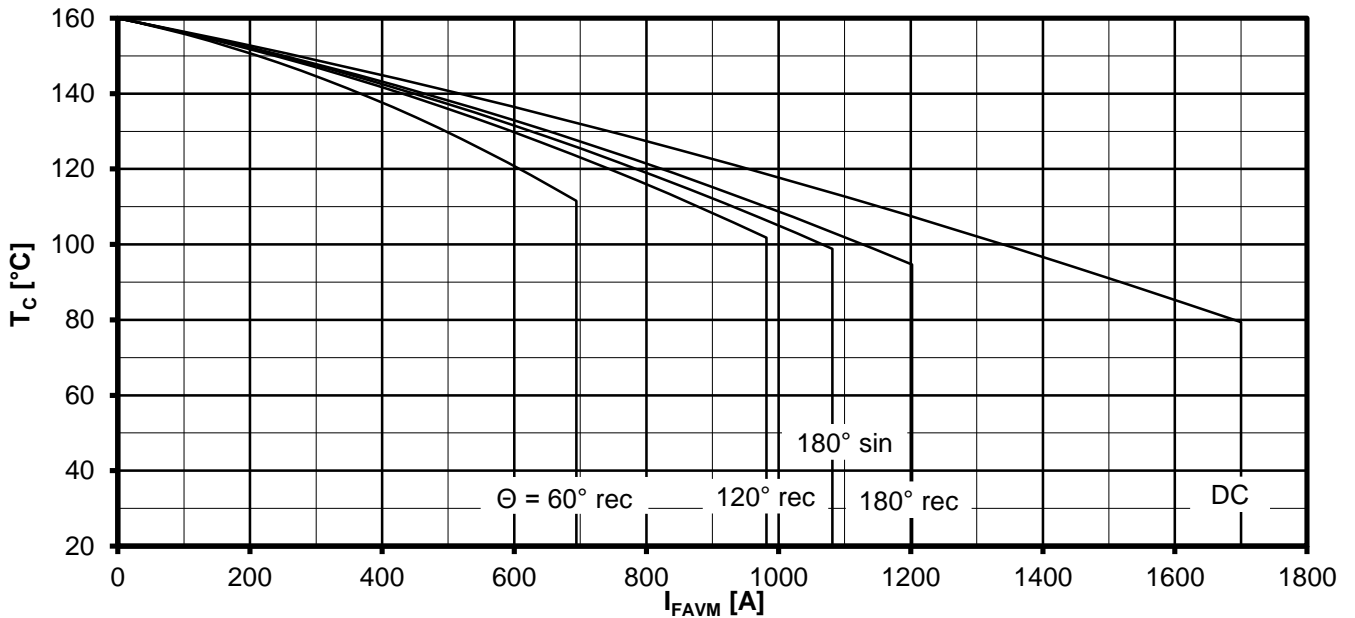
$$Z_{th \Theta rec} = Z_{th DC} + \Delta Z_{th \Theta rec}$$

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



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

Parameter: Stromflußwinkel / Current conduction angle Θ

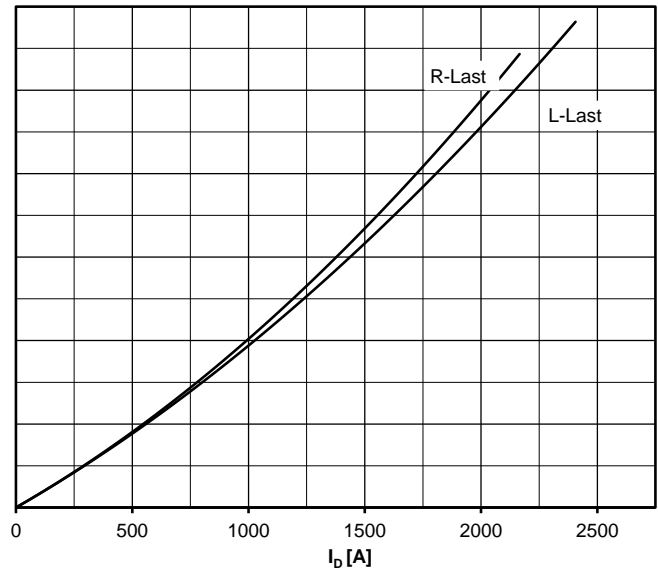
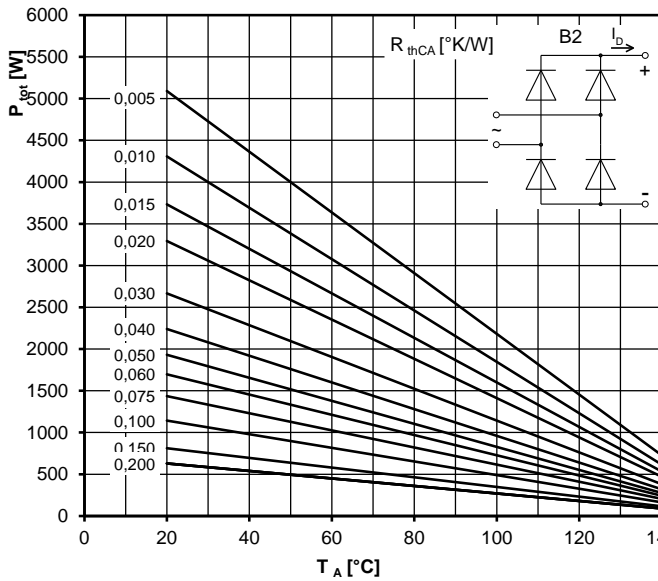
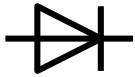


Höchstzulässige Gehäusetemperatur / Maximum allowable case temperature $T_C = f(I_{FAVM})$

Strombelastung je Zweig / Current load per arm

Berechnungsgrundlage P_{TAV}
Calculation base P_{TAV}

Parameter: Stromflußwinkel Θ / Current conduction angle Θ



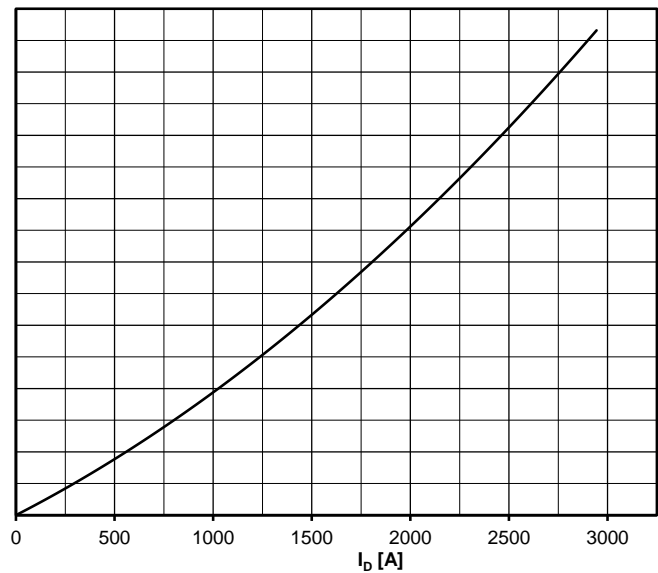
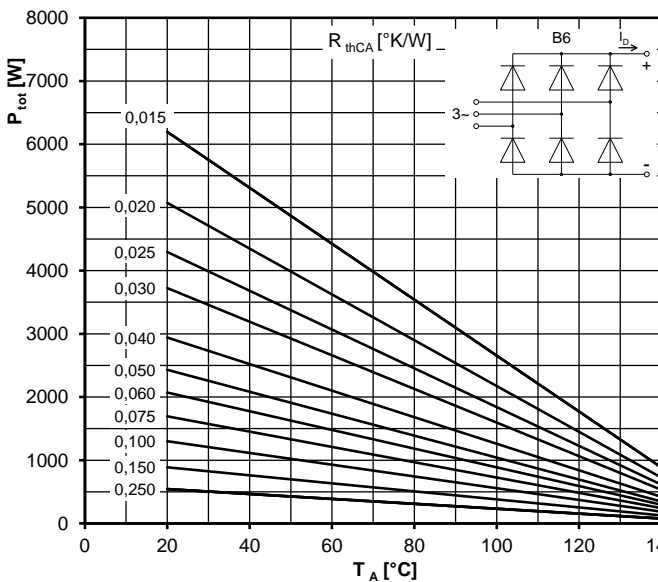
Höchstzulässiger Ausgangsstrom / Maximum rated output current I_b

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}



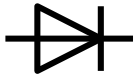
Höchstzulässiger Ausgangsstrom / Maximum rated output current I_b

B6- Sechspuls-Brückenschaltung / Six-pulse bridge circuit

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

Parameter:

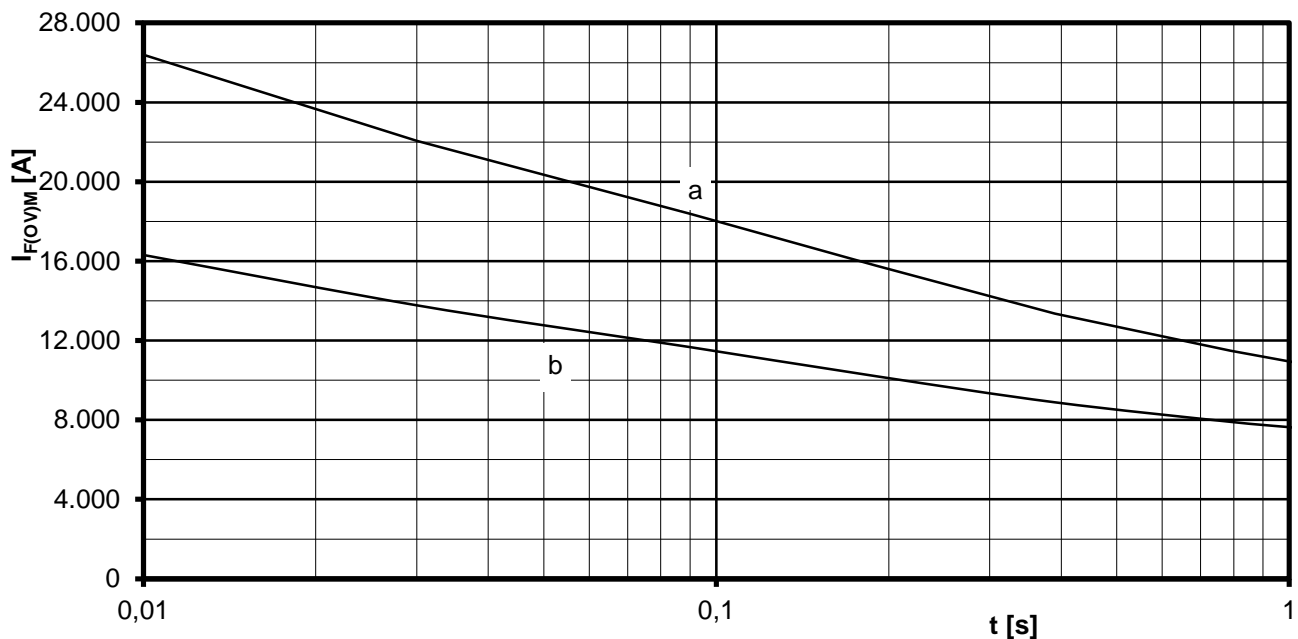
Wärmewiderstand zwischen den Gehäusen und Umgebung / Thermal resistance cases to ambient R_{thCA}



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: KW70 (4 l/min)

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