

**Key Parameters**

|                     |                               |
|---------------------|-------------------------------|
| $V_{DRM} / V_{RRM}$ | 1600 V                        |
| $I_{FAVM}$          | 130 A ( $T_C=100\text{ °C}$ ) |
| $I_{FSM}$           | 2500 A                        |
| $V_{T0}$            | 0,87 V                        |
| $r_T$               | 2,54 mΩ                       |
| $R_{thJC}$          | 0,19 K/W                      |
| Base plate          | 20 mm                         |
| Weight              | 75 g                          |



For type designation please refer to actual short form catalog

<http://www.ifbip.com/catalog>

**Merkmale**

- Löt-Löt Technologie
- Industrie-Standard-Gehäuse
- Elektrisch isolierte Bodenplatte

**Features**

- Solder-Solder Technology
- Industrial standard package
- Electrically insulated base plate

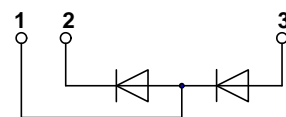
**Typische Anwendungen**

- Gleichrichter für Antriebsapplikationen
- Gleichrichter für UPS
- Batterieladegleichrichter

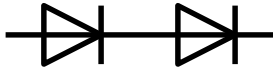
**Typical Applications**

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

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



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[support@infineon-bip.com](mailto:support@infineon-bip.com)



## Technische Information / technical information



**Netz-Dioden-Modul**  
**Rectifier Diode Module**

# DD100N16S

Infineon Technologies Bipolar  
GmbH & Co. KG

### DD100N16S

#### Elektrische Eigenschaften / Electrical properties

Höchstzulässige Werte / Maximum rated values

|  |  |             |                |                                      |
|--|--|-------------|----------------|--------------------------------------|
| Periodische Spitzensperrspannung<br>repetitive peak reverse voltages | $T_{vj} = -40^{\circ}\text{C} \dots T_{vj\text{max}}$  | $V_{RRM}$   | 1600           | V                                    |
| Stoßspitzensperrspannung<br>non-repetitive peak reverse voltage      | $T_{vj} = +25^{\circ}\text{C} \dots T_{vj\text{max}}$  | $V_{RSM}$   | 1700           | V                                    |
| Durchlaßstrom-Grenzeffektivwert<br>maximum RMS on-state current      |  | $I_{FRMSM}$ | 210            | A                                    |
| Dauergrenzstrom<br>average on-state current                          | $T_C = 100^{\circ}\text{C}$  | $I_{FAVM}$  | 134            | A                                    |
| Stoßstrom-Grenzwert<br>surge current                                 | $T_{vj} = 25^{\circ}\text{C}, t_p = 10\text{ms}$<br>$T_{vj} = T_{vj\text{max}}, t_p = 10\text{ms}$ | $I_{FSM}$   | 2500<br>2000   | A<br>A                               |
| Grenzlastintegral<br>I <sup>2</sup> t-value                          | $T_{vj} = 25^{\circ}\text{C}, t_p = 10\text{ms}$<br>$T_{vj} = T_{vj\text{max}}, t_p = 10\text{ms}$ | $I^2t$      | 31250<br>20000 | A <sup>2</sup> s<br>A <sup>2</sup> s |

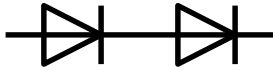
#### Charakteristische Werte / Characteristic values

|  |   |            |            |          |
|--|---|------------|------------|----------|
| Durchlaßspannung<br>on-state voltage               | $T_{vj} = 25^{\circ}\text{C} \quad i_F = 300\text{A}$ | $V_F$      | max. 1,6   | V        |
| Schleusenspannung<br>threshold voltage             | $T_{vj} = T_{vj\text{max}}$                           | $V_{(TO)}$ | max. 0,87  | V        |
| Ersatzwiderstand<br>slope resistance               | $T_{vj} = T_{vj\text{max}}$                           | $r_T$      | max. 2,45  | mΩ       |
| Sperrstrom<br>reverse current                      | $T_{vj} = T_{vj\text{max}}, V_R = V_{RRM}$            | $i_R$      | max. 3     | mA       |
| Isolations-Prüfspannung<br>insulation test voltage | RMS, f = 50Hz, t = 1 sec<br>RMS, f = 50Hz, t = 1 min  | $V_{ISOL}$ | 3,6<br>3,0 | kV<br>kV |

#### Thermische Eigenschaften / Thermal properties

|  |  |                    |             |     |
|--|--|--------------------|-------------|-----|
| Innerer Wärmewiderstand<br>thermal resistance, junction to case        | pro Modul / per Module, $\Theta = 180^{\circ}$ sin | $R_{thJC}$         | max. 0,100  | K/W |
|  | pro Zweig / per arm, $\Theta = 180^{\circ}$ sin    |                    | max. 0,200  | K/W |
|  | pro Modul / per Module, DC                         | max. 0,095         | max. 0,190  | K/W |
|  | pro Zweig / per arm, DC                            |                    |             |     |
| Übergangs-Wärmewiderstand<br>thermal resistance, case to heatsink      | pro Modul / per Module                             | $R_{thCH}$         | max. 0,11   | K/W |
|  | pro Zweig / per arm                                |                    | max. 0,22   | K/W |
| Höchstzulässige Sperrschichttemperatur<br>maximum junction temperature |  | $T_{vj\text{max}}$ | 130         | °C  |
| Betriebstemperatur<br>operating temperature                            |  | $T_{c\text{op}}$   | - 40...+125 | °C  |
| Lagertemperatur<br>storage temperature                                 |  | $T_{stg}$          | - 40...+125 | °C  |

|                 |  |                                 |
|-----------------|--|---------------------------------|
| prepared by: AG |  | date of publication: 2017-08-25 |
| approved by: MS |  | revision: 3.3                   |



Technische Information /  
technical information




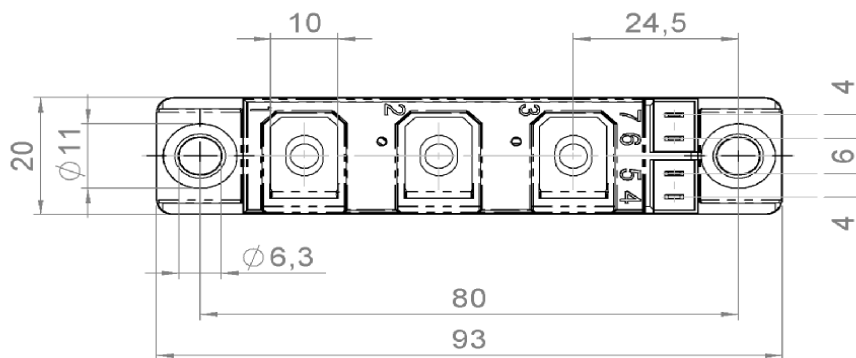
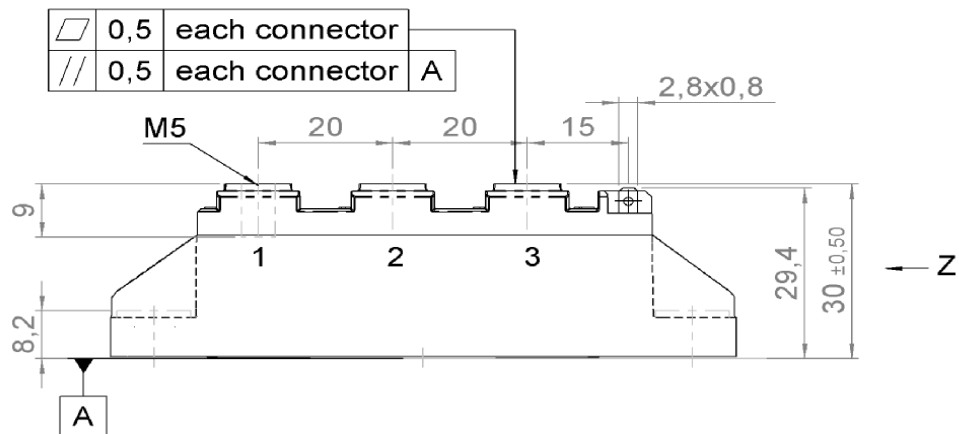
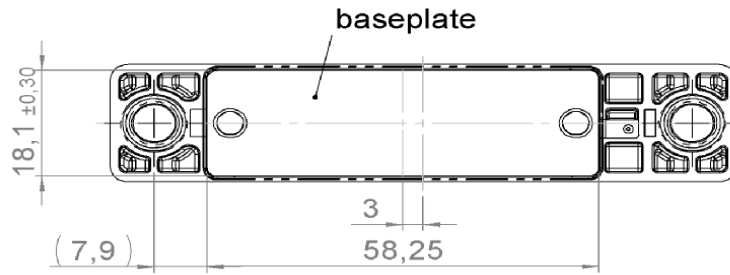
Netz-Dioden-Modul  
Rectifier Diode Module

**DD100N16S**

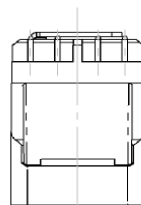
Infineon Technologies Bipolar  
GmbH & Co. KG

**Mechanische Eigenschaften / Mechanical properties**

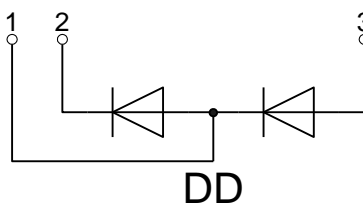
|   |   |    |                                |                  |
|---|---|----|--------------------------------|------------------|
| Gehäuse, siehe Anlage<br>case, see annex  |   |    | Seite 4<br>page 4              |                  |
| Innere Isolation<br>internal insulation   | Basisisolierung (Schutzklasse 1, EN 61140)<br>Basic insulation (class 1, IEC 61140) |    | Al <sub>2</sub> O <sub>3</sub> |                  |
| Anzugsdrehmoment für mechanische Anschlüsse<br>mounting torque                    | Toleranz ±15%   | M1 | 5                              | Nm               |
| Anzugsdrehmoment für elektrische Anschlüsse<br>terminal connection torque         | Toleranz ±15%   | M2 | 3                              | Nm               |
| Gewicht<br>weight   |   | G  | typ. 75                        | g                |
| Kriechstrecke<br>creepage distance  |   |    |                                | mm               |
| Schwingfestigkeit<br>vibration resistance   | f = 50Hz  |    | 50                             | m/s <sup>2</sup> |
|  | file-No.  |    | E 83336                        |                  |



general tolerance  
ISO 286 T1 / IT12



Z, M1:1



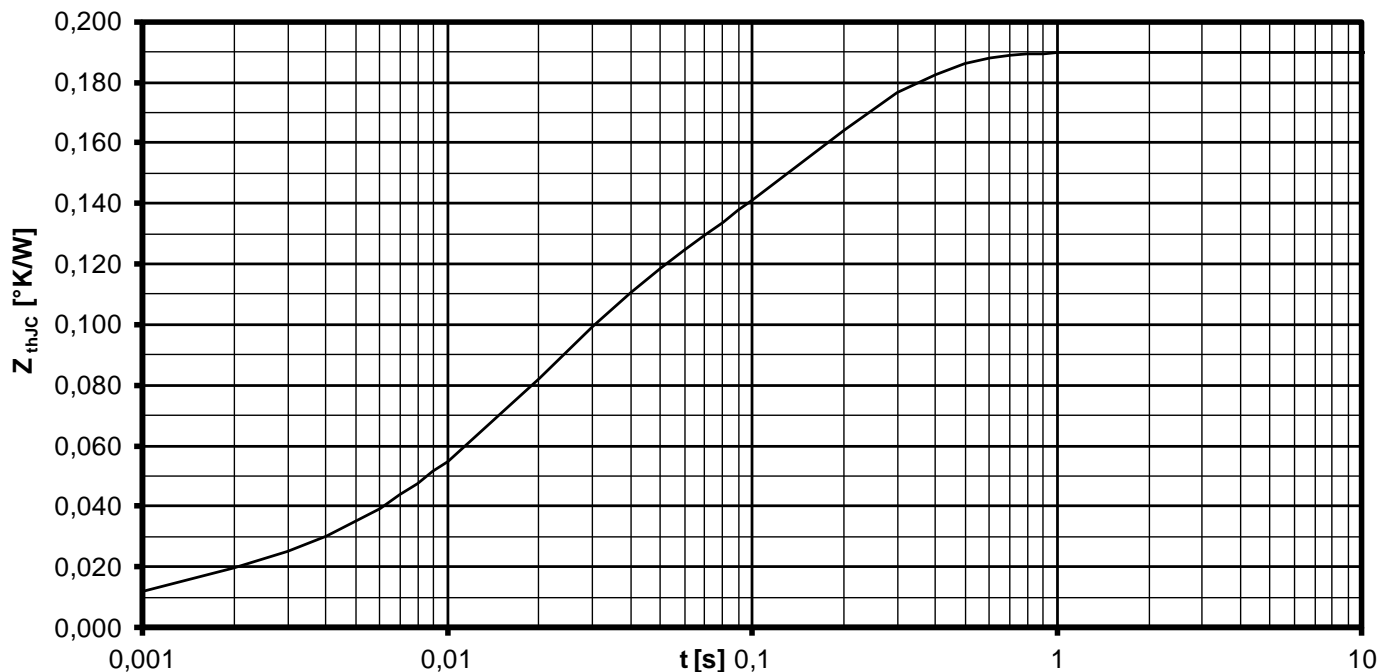


**Analytische Elemente des transienten Wärmewiderstandes  $Z_{thJC}$  für DC**  
**Analytical elements of transient thermal impedance  $Z_{thJC}$  for DC**

| Pos. n          | 1      | 2       | 3         | 4 | 5 | 6 | 7 |
|-----------------|--------|---------|-----------|---|---|---|---|
| $R_{thn}$ [K/W] | 0,0925 | 0,08835 | 0,008973  | 0 | 0 | 0 | 0 |
| $\tau_n$ [s]    | 0,1552 | 0,01647 | 0,0008308 | 1 | 1 | 1 | 1 |

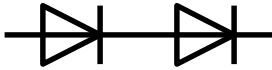
Analytische Funktion / Analytical function:

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



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

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



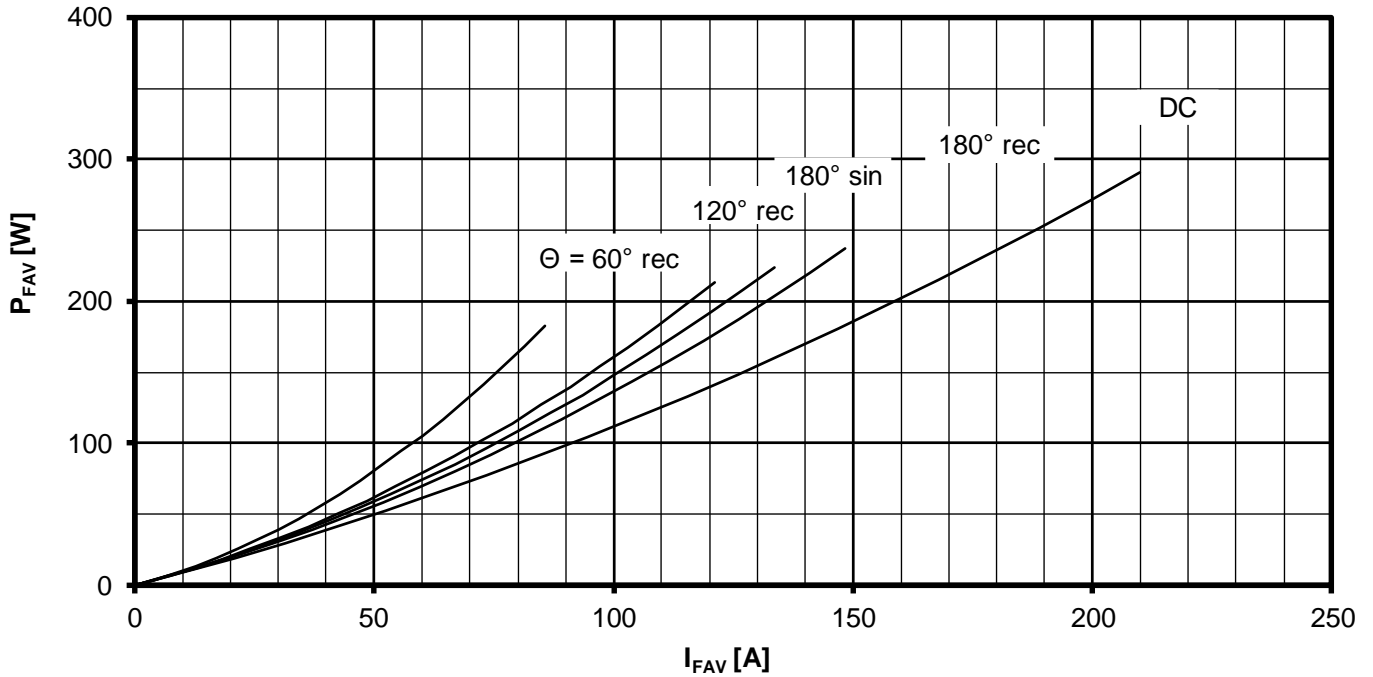
**Erhöhung des  $Z_{th DC}$  bei Sinus und Rechteckströmen mit unterschiedlichen Stromflusswinkeln  $\Theta$**   
**Rise of  $Z_{th DC}$  for sinewave and rectangular current with different current conduction angles  $\Theta$**

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

|                                     | $\Theta = 180^\circ$ | $\Theta = 120^\circ$ | $\Theta = 90^\circ$ | $\Theta = 60^\circ$ | $\Theta = 30^\circ$ |
|-------------------------------------|----------------------|----------------------|---------------------|---------------------|---------------------|
| $\Delta Z_{th \Theta rec}$<br>[K/W] | 0,03798              | 0,05913              | 0,07460             | 0,09878             | 0,14660             |
| $\Delta Z_{th \Theta sin}$<br>[K/W] | 0,02615              | 0,0422               | 0,06175             | 0,08781             | 0,13964             |

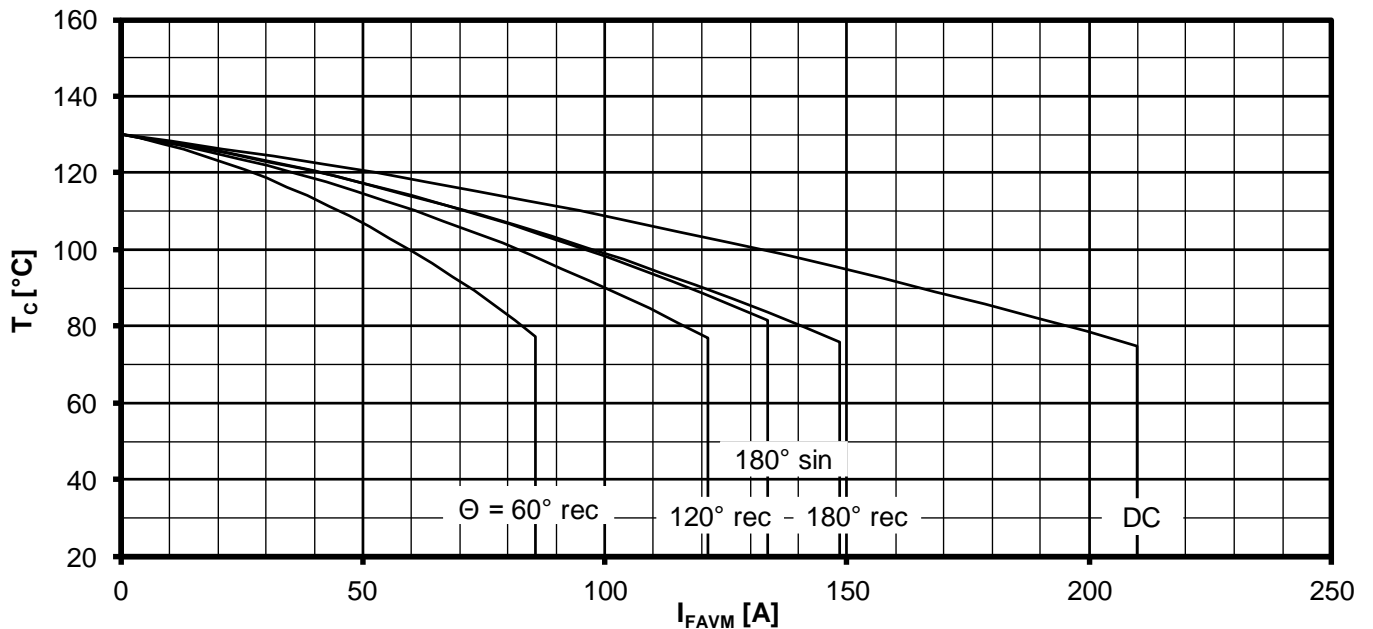
$$Z_{th \Theta rec} = Z_{th DC} + \Delta Z_{th \Theta rec}$$

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



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

Parameter: Stromflußwinkel / Current conduction angle  $\Theta$

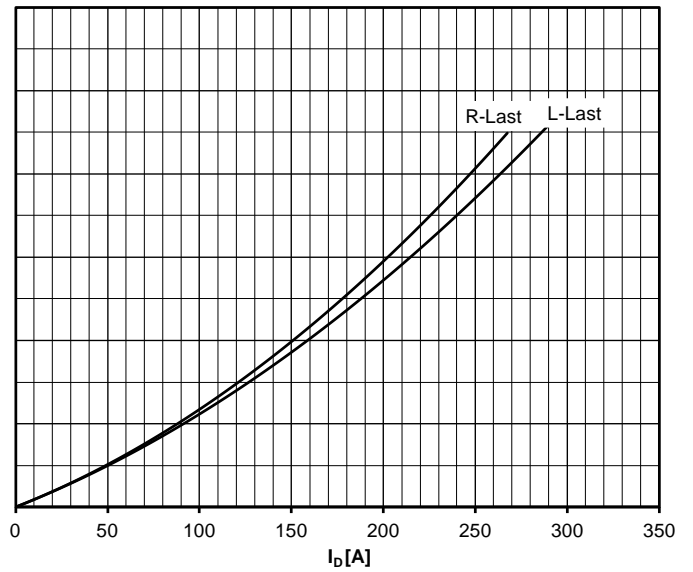
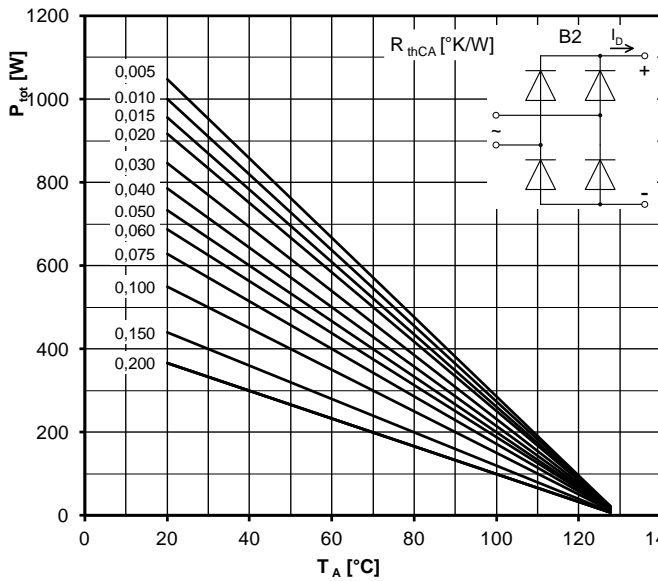


Höchstzulässige Gehäusetemperatur / Maximum allowable case temperature  $T_C = f(I_{FAVM})$

Strombelastung je Zweig / Current load per arm

Berechnungsgrundlage  $P_{TAV}$   
Calculation base  $P_{TAV}$

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



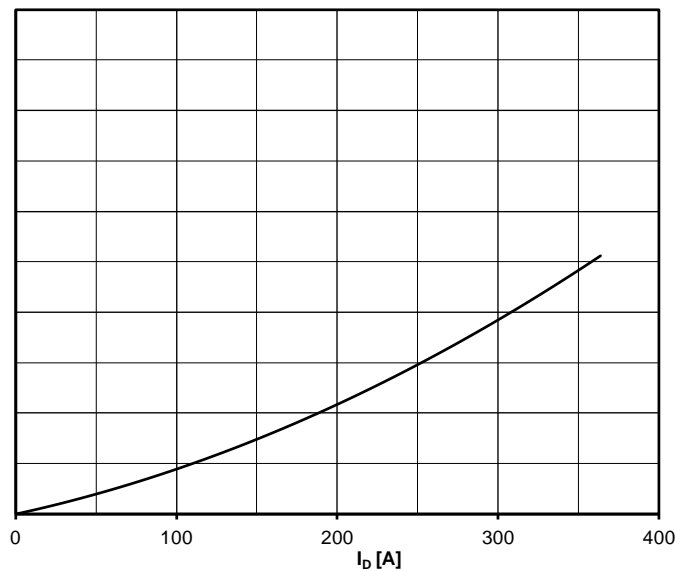
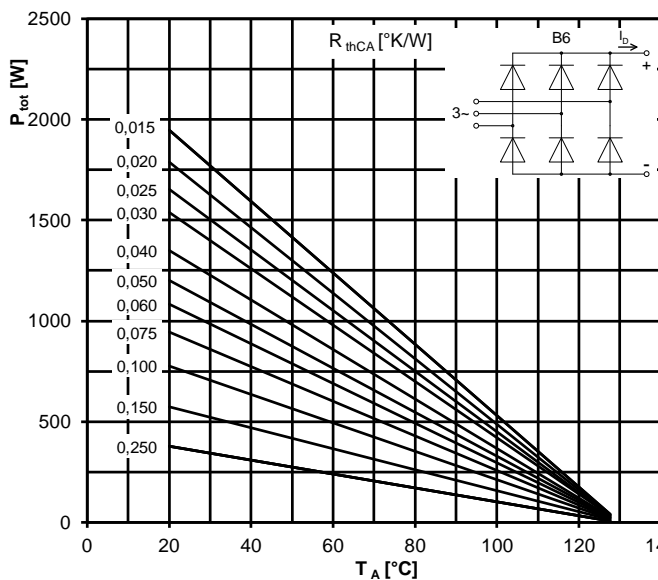
### Höchstzulässiger Ausgangsstrom / Maximum rated output current $I_b$

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 $I_b$

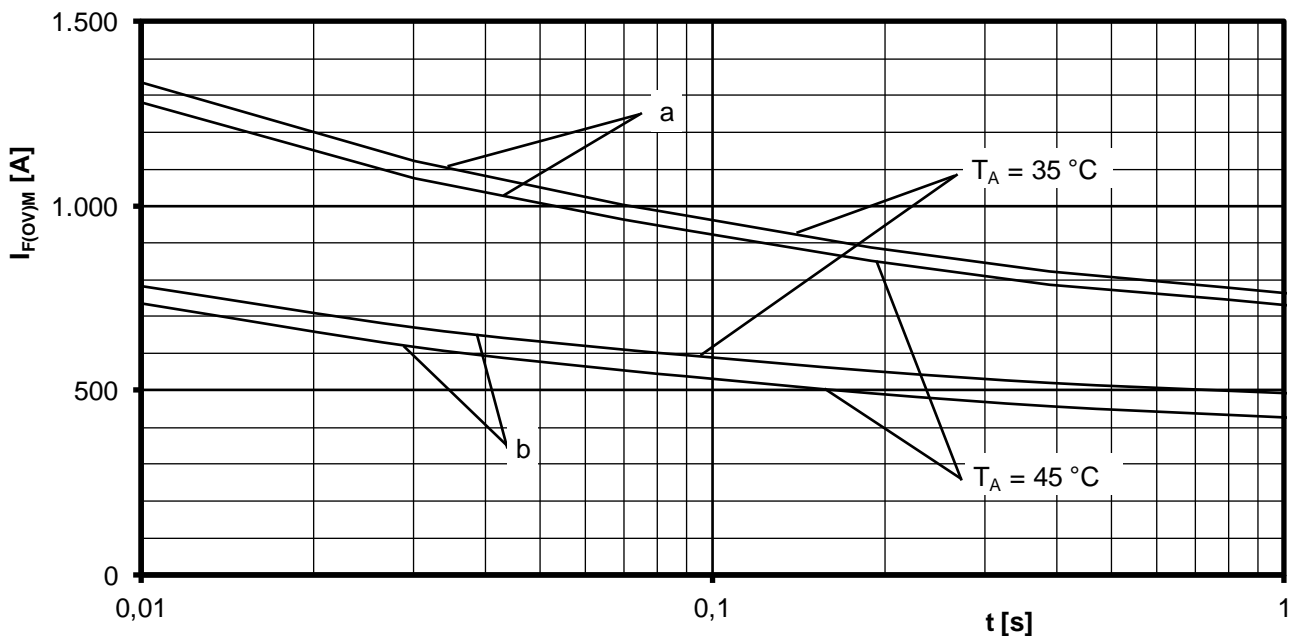
B6- Sechspuls-Brückenschaltung / Six-pulse bridge circuit

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

Parameter:

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





**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: KM14 (Papst 4650)

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