


**Netz-Dioden-Modul**  
**Rectifier Diode Modul**
**DD600N12...18K**

DD600N12...18K

DD600N12...18K-A

DD600N12...18K-K

ND600N12...18K

**Elektrische Eigenschaften / Electrical properties**

Höchstzulässige Werte / Maximum rated values

|                                                                      |                                                                                                   |             |              |                    |                                      |
|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------|--------------|--------------------|--------------------------------------|
| Periodische Spitzensperrspannung<br>repetitive peak reverse voltages | $T_{vj} = -40^{\circ}\text{C} \dots T_{vj \max}$                                                  | $V_{RRM}$   | 1200<br>1600 | 1400<br>1800       | V<br>V                               |
| Stoßspitzensperrspannung<br>non-repetitive peak reverse voltage      | $T_{vj} = +25^{\circ}\text{C} \dots T_{vj \max}$                                                  | $V_{RSM}$   | 1300<br>1700 | 1500<br>1900       | V<br>V                               |
| Durchlaßstrom-Grenzeffektivwert<br>maximum RMS on-state current      |                                                                                                   | $I_{FRMSM}$ |              | 950                | A                                    |
| Dauergrenzstrom<br>average on-state current                          | $T_C = 100^{\circ}\text{C}$                                                                       | $I_{FAVM}$  |              | 600                | A                                    |
| Stoßstrom-Grenzwert<br>surge current                                 | $T_{vj} = 25^{\circ}\text{C}, t_p = 10 \text{ ms}$<br>$T_{vj} = T_{vj \max}, t_p = 10 \text{ ms}$ | $I_{FSM}$   |              | 22000<br>19000     | A<br>A                               |
| Grenzlastintegral<br>$I^2t$ -value                                   | $T_{vj} = 25^{\circ}\text{C}, t_p = 10 \text{ ms}$<br>$T_{vj} = T_{vj \max}, t_p = 10 \text{ ms}$ | $I^2t$      |              | 2420000<br>1800000 | A <sup>2</sup> s<br>A <sup>2</sup> s |

**Charakteristische Werte / Characteristic values**

|                                                    |                                                                                            |            |      |            |          |
|----------------------------------------------------|--------------------------------------------------------------------------------------------|------------|------|------------|----------|
| Durchlaßspannung<br>on-state voltage               | $T_{vj} = T_{vj \max}, I_F = 1800 \text{ A}$                                               | $V_F$      | max. | 1,32       | V        |
| Schleusenspannung<br>threshold voltage             | $T_{vj} = T_{vj \max}$                                                                     | $V_{(TO)}$ |      | 0,75       | V        |
| Ersatzwiderstand<br>slope resistance               | $T_{vj} = T_{vj \max}$                                                                     | $r_T$      |      | 0,215      | mΩ       |
| Sperrstrom<br>reverse current                      | $T_{vj} = T_{vj \max}, V_R = V_{RRM}$                                                      | $I_R$      | max. | 40         | mA       |
| Isolations-Prüfspannung<br>insulation test voltage | RMS, $f = 50 \text{ Hz}, t = 1 \text{ sec}$<br>RMS, $f = 50 \text{ Hz}, t = 1 \text{ min}$ | $V_{ISOL}$ |      | 3,6<br>3,0 | kV<br>kV |

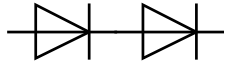
**Thermische Eigenschaften / Thermal properties**

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

|              |             |                      |          |
|--------------|-------------|----------------------|----------|
| prepared by: | C. Drilling | date of publication: | 25.06.01 |
| approved by: | L.Kleber    | revision:            | 1        |

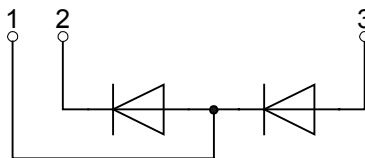
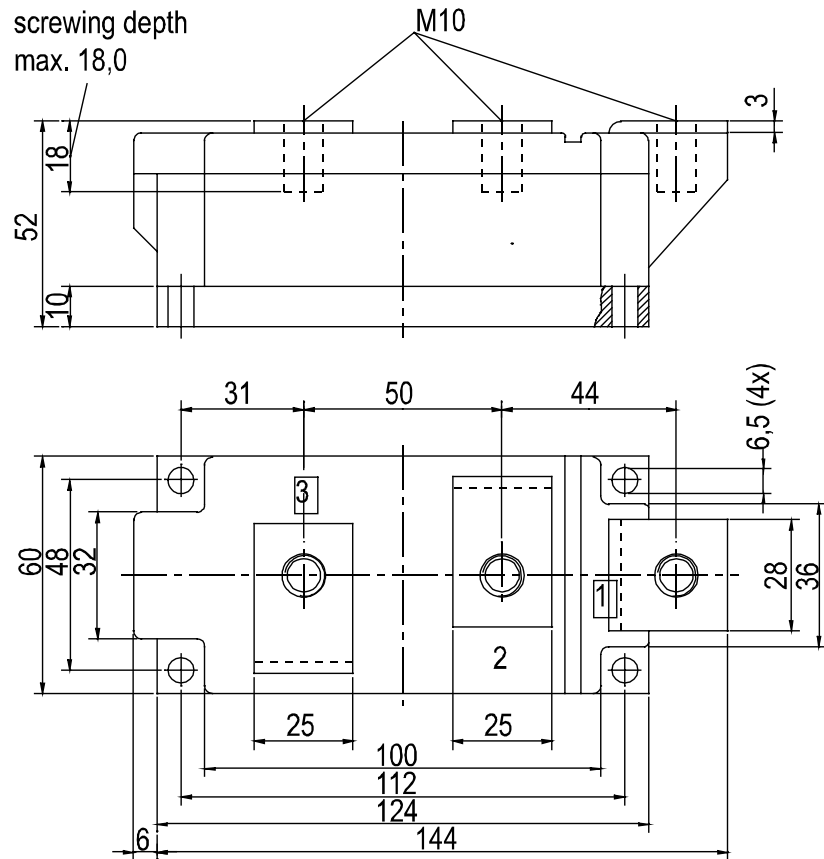
**N****Datenblatt / Data sheet****eupec**
**Netz-Dioden-Modul**  
**Rectifier Diode Modul**
**DD600N12...18K****Mechanische Eigenschaften / Mechanical properties**

|                                                                           |                       |    |                   |                  |
|---------------------------------------------------------------------------|-----------------------|----|-------------------|------------------|
| Gehäuse, siehe Anlage<br>case, see annex                                  |                       |    | Seite 3<br>page 3 |                  |
| Si-Element mit Druckkontakt<br>Si-pellet with pressure contact            |                       |    |                   |                  |
| Innere Isolation<br>internal insulation                                   |                       |    | AIN               |                  |
| Anzugsdrehmoment für mechanische Anschlüsse<br>mounting torque            | Toleranz $\pm 15\%$   | M1 | 6                 | Nm               |
| Anzugsdrehmoment für elektrische Anschlüsse<br>terminal connection torque | Toleranz $+5\%/-10\%$ | M2 | 12                | Nm               |
| Gewicht<br>weight                                                         |                       | G  | typ. 1500         | g                |
| Kriechstrecke<br>creepage distance                                        |                       |    | 19                | mm               |
| Schwingfestigkeit<br>vibration resistance                                 | f = 50 Hz             |    | 50                | m/s <sup>2</sup> |
| UL-gelistet<br>UL listed                                                  | file-No.              |    | E 83336           |                  |

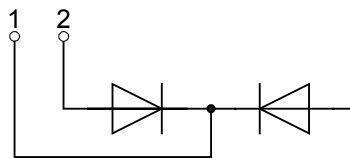


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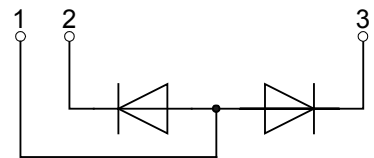
**DD600N12...18K**



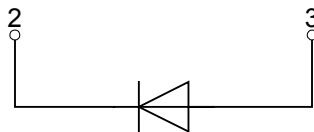
DD



DD-K



DD-A



ND



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Rectifier Diode Modul

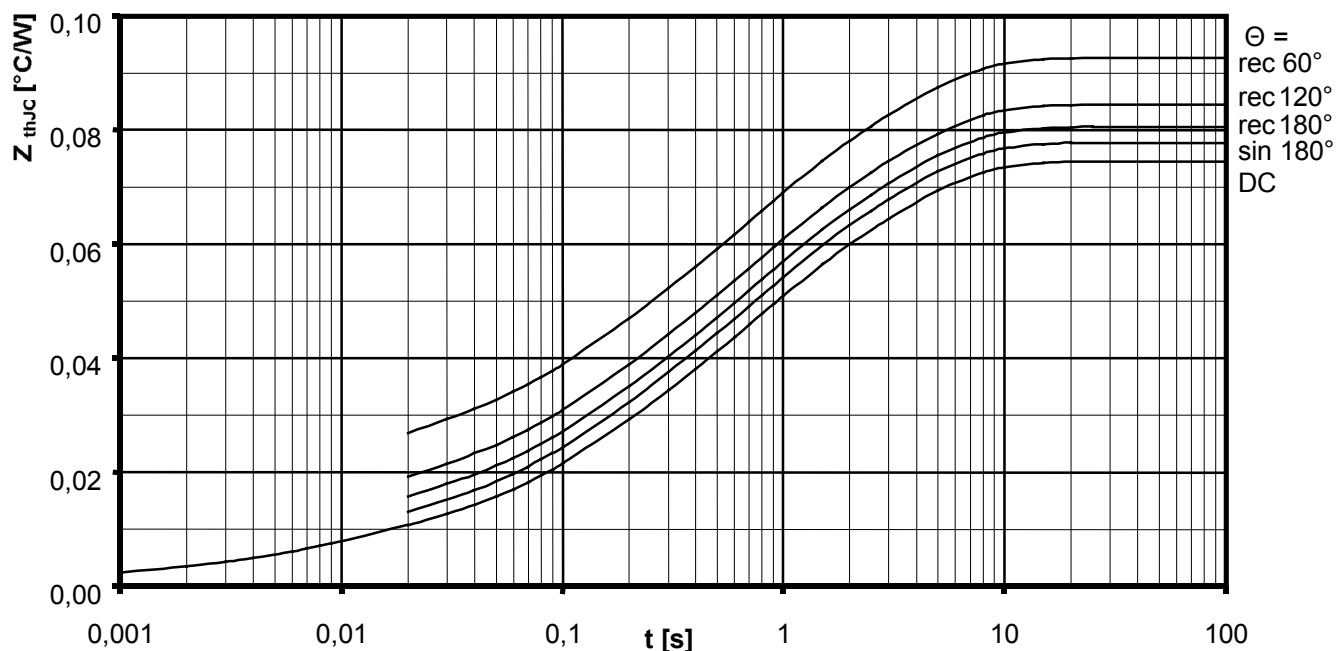
**DD600N12...18K**

**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 |
|-------------------------|----------|---------|---------|--------|--------|---|---|
| $R_{thn} [^{\circ}C/W]$ | 0,00194  | 0,00584 | 0,01465 | 0,0254 | 0,0267 |   |   |
| $\tau_n [s]$            | 0,000732 | 0,00824 | 0,108   | 0,57   | 3,0    |   |   |

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  $\Theta$



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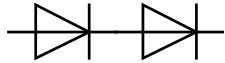
Verstärkte Kühlung / Forced cooling  
x Module pro Kühler / x modules per heatsink  
Kühler / Heatsink type: KM 22 / Pabst 4658N

**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] | 0,000486 | 0,05399 | 0,0786 | 0,1109  |   |   |   |
| $\tau_n$ [s]     | 8,73569  | 43,7373 | 240,45 | 769,655 |   |   |   |

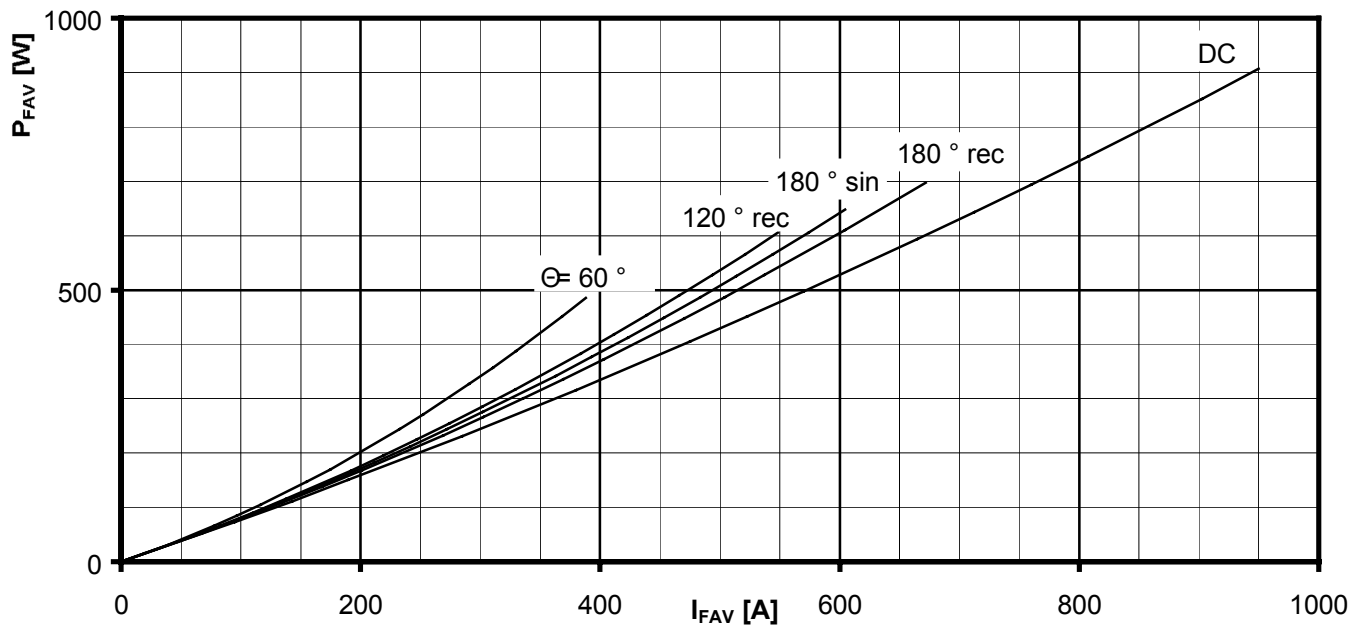
Analytische Funktion / Analytical function:

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



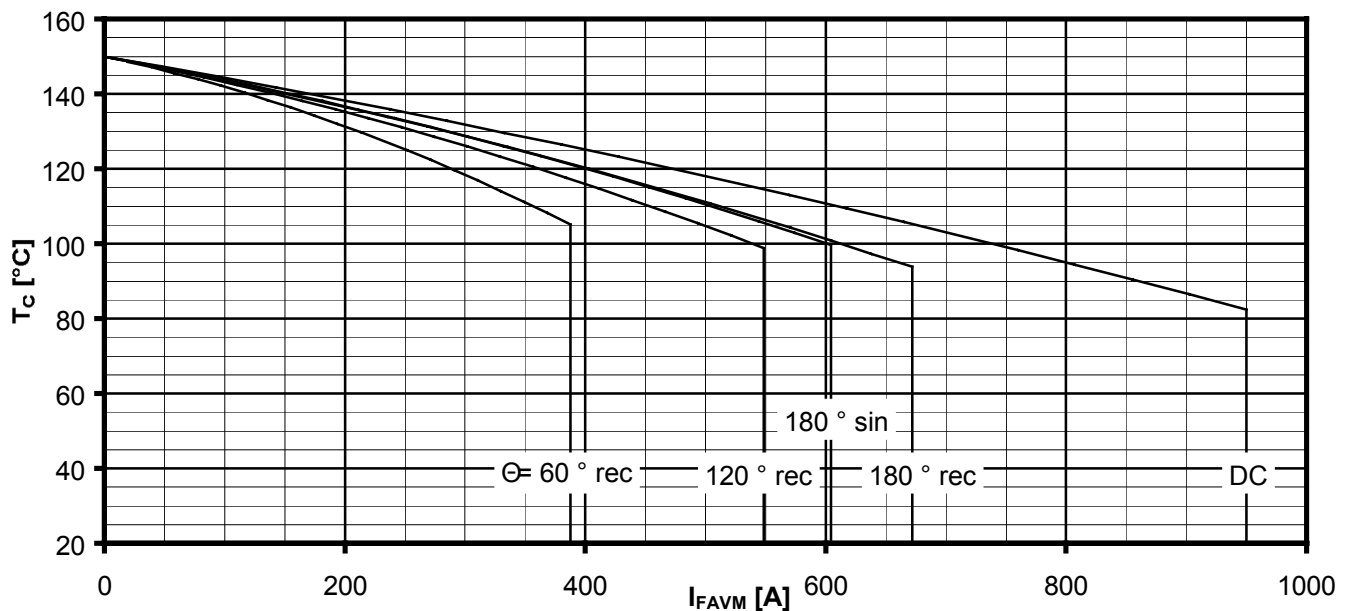
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Durchlassverlustleistung je Zweig / On-state power loss per arm  $P_{FAV} = f(I_{FAV})$

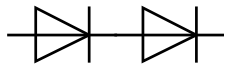
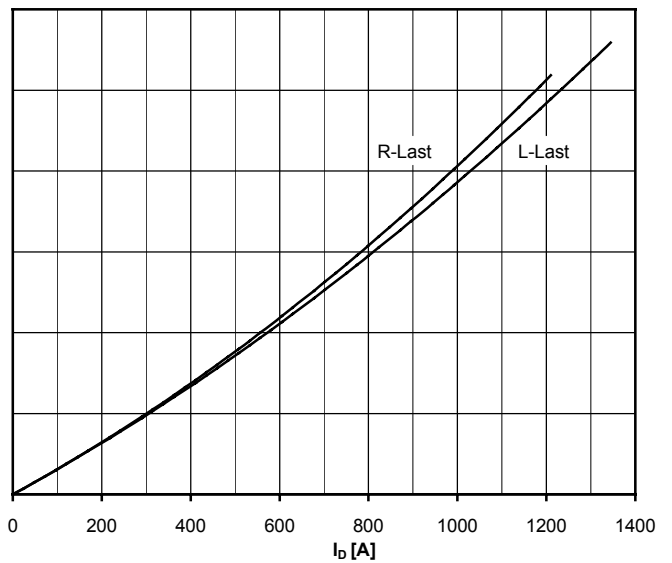
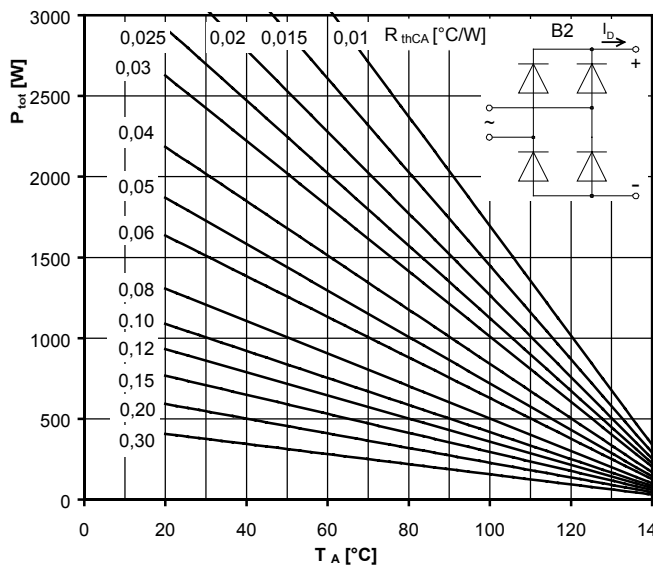
Parameter: Stromflußwinkel / Current conduction angle  $\Theta$



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

Strombelastung je Zweig / Current load per arm

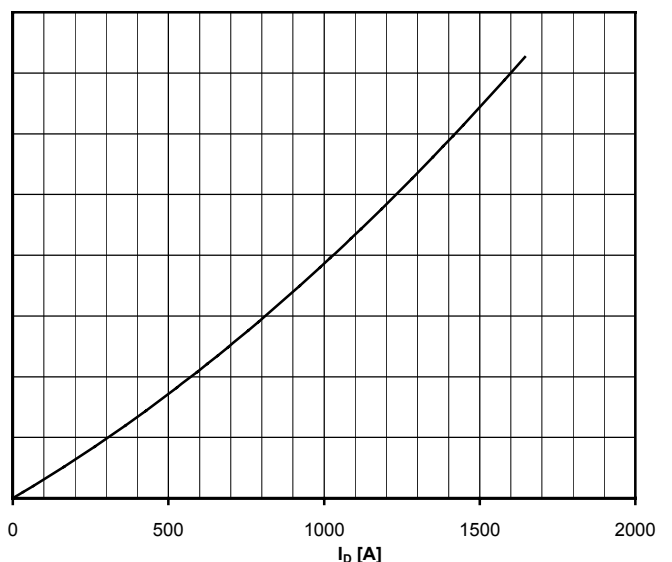
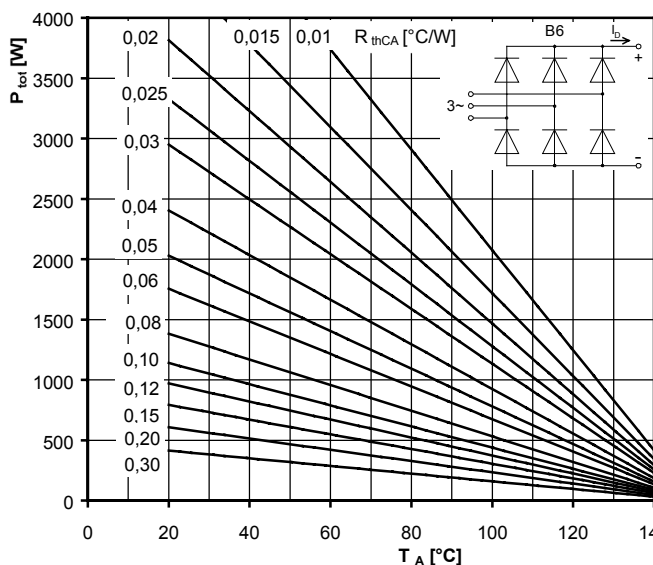
Parameter: Stromflußwinkel  $\Theta$  / Current conduction angle  $\Theta$


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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:

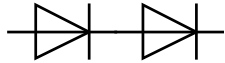
 Wärmewiderstand zwischen den Gehäusen und Umgebung / Thermal resistance cases to ambient  $R_{thCA}$ 

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

B6- Sechspuls-Brückenschaltung / Six-pulse bridge circuit

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

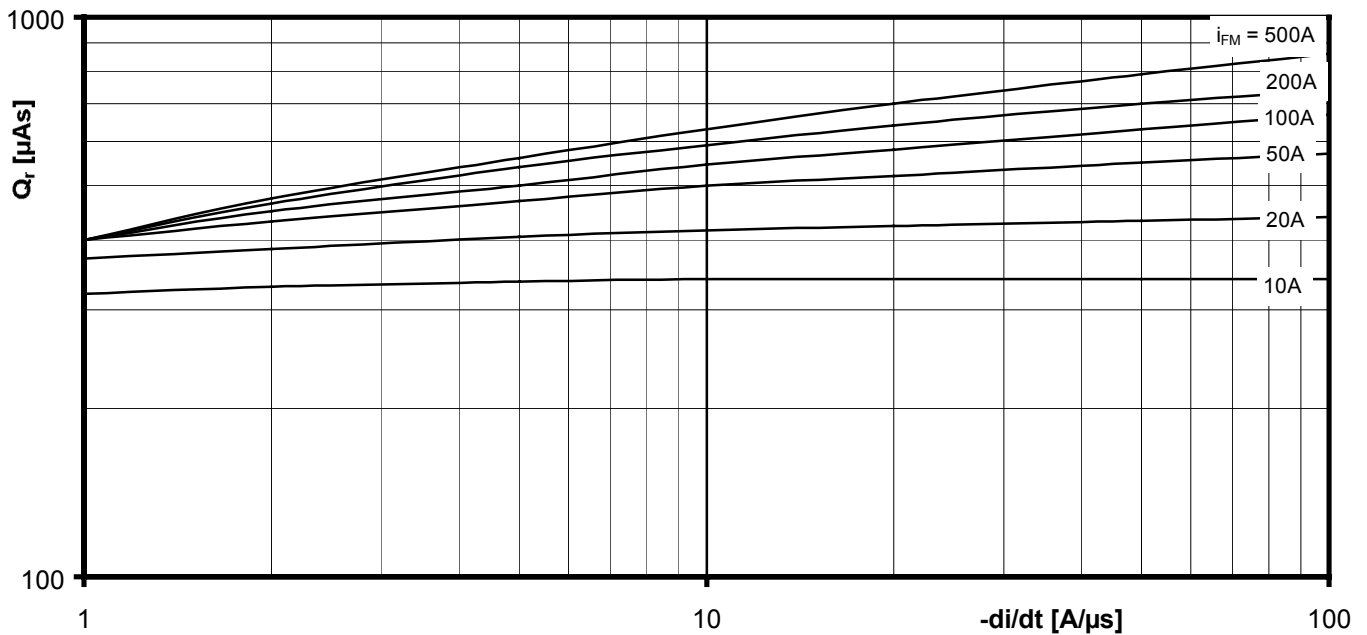
Parameter:

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



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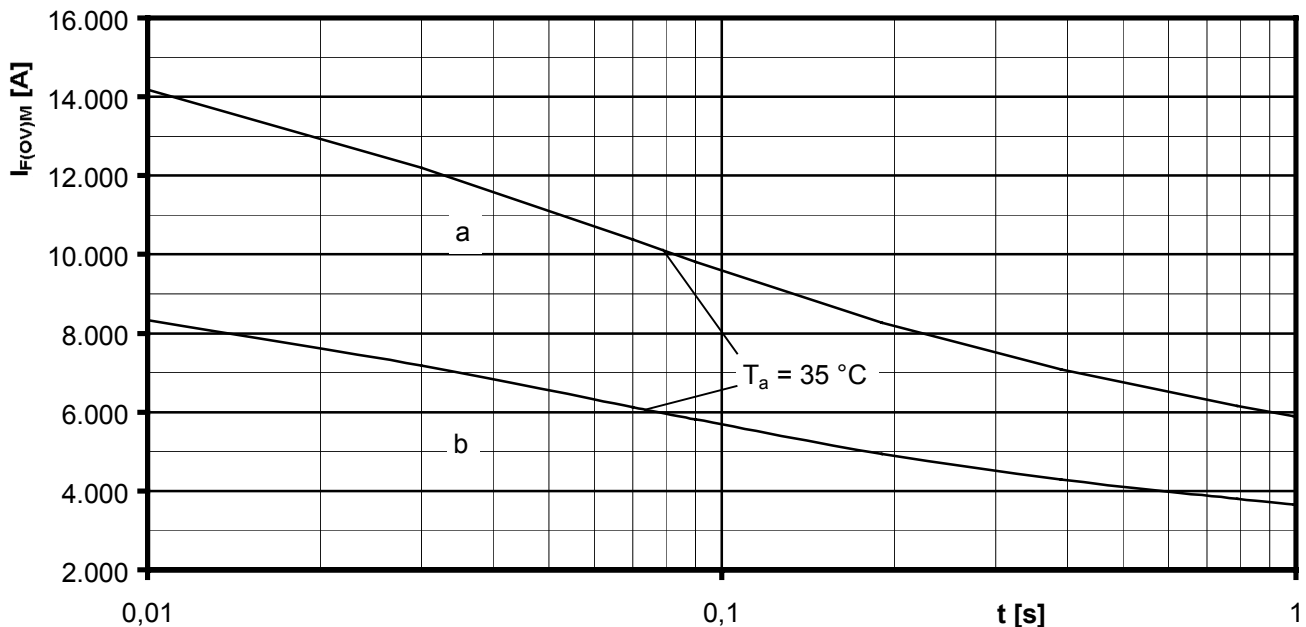
**DD600N12...18K**



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  $i_{FM}$

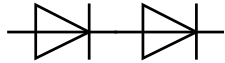


Grenzstrom je Zweig / Maximum overload on-state current per arm  $I_{F(OV)M} = f(t)$ ,  $V_{RM} = 0,8 V_{RRM}$

a: Leerlauf / No-load conditions

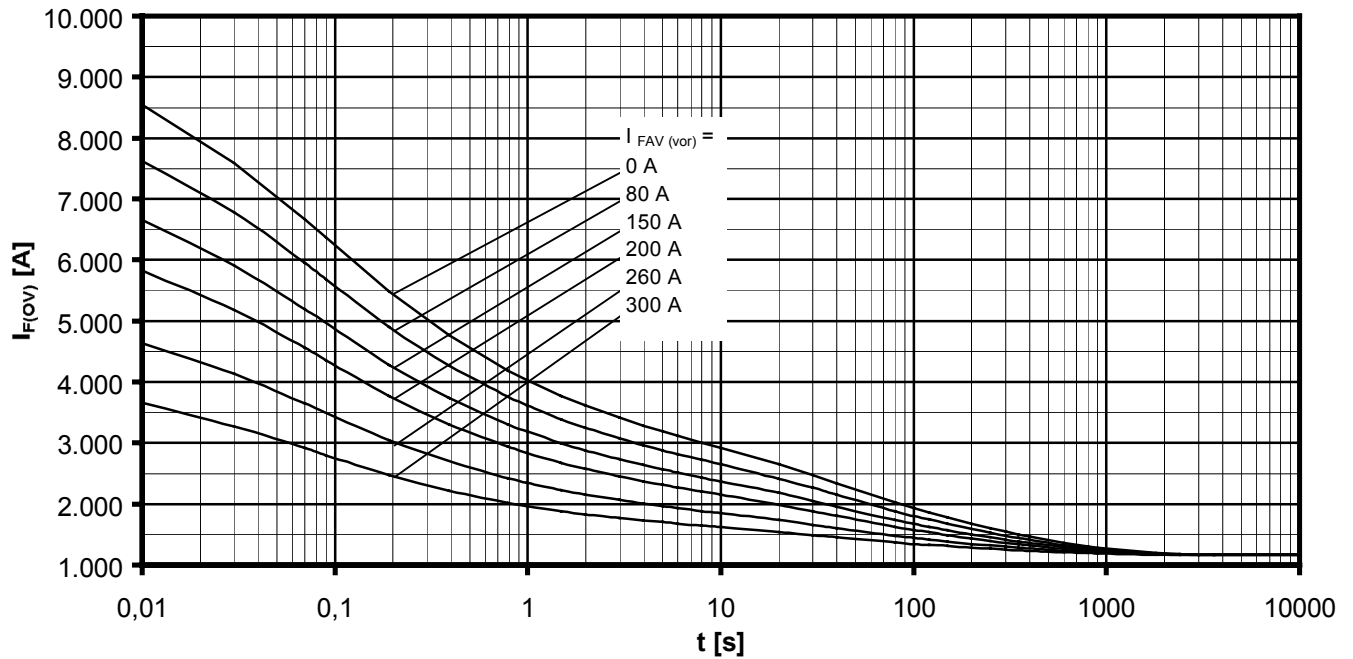
b: Vorlaststrom je Zweig / Pre-load current per arm  $I_{FAV(vor)} = I_{FAVM}$

$T_a = 35^\circ\text{C}$ , verstärkte Luftkühlung / Forced air cooling    Kühlkörper / Heatsink type: KM 22 / Pabst 4658N



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

B6- Sechspuls-Brückenschaltung / Six-pulse bridge circuit

Kühlkörper / Heatsink type KM 22 / Pabst 4658N Verstärkte Kühlung bei / Forced cooling at  $T_A = 35^\circ\text{C}$

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