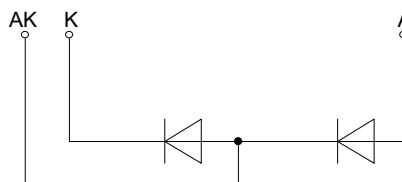
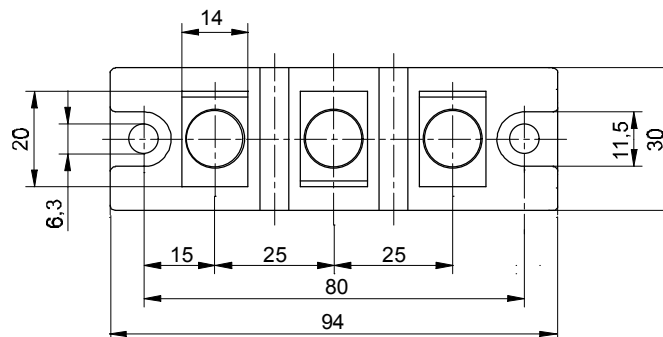
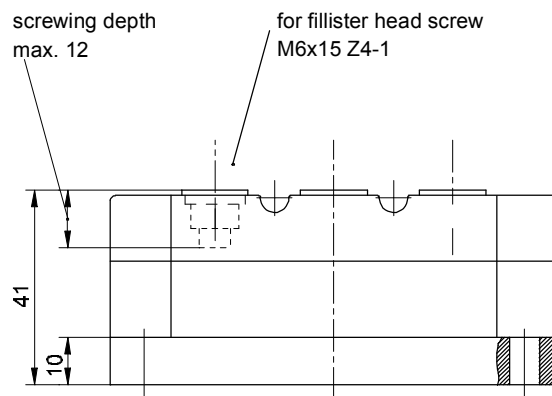




European Power-Semiconductor and Electronics Company GmbH + Co. KG

# Marketing Information

## DD 122 S



| Elektrische Eigenschaften        | Electrical properties                |  |                     |   |                              |
|----------------------------------|--------------------------------------|--|---------------------|---|------------------------------|
| Höchstzulässige Werte            | Maximum rated values                 |  |                     |   |                              |
| Periodische Spitzenspernspannung | repetitive peak reverse voltage      | $t_{vj} = -40^{\circ}\text{C} \dots t_{vj \max}$   | $V_{RRM}$ DD 122 S: | 400 600 800 1000                                  | V                            |
| Stoßspitzenspannung              | non-repetitive peak reverse voltage  | $t_{vj} = +25^{\circ}\text{C} \dots t_{vj \max}$   | $V_{RSM} = V_{RRM}$ | + 50  | V                            |
| Durchlaßstrom-Grenzeffektivwert  | RMS forward current                  |  | $I_{FRMSM}$         | 200   | A                            |
| Dauergrenzstrom                  | average forward current              | $t_c = 100^{\circ}\text{C}$  | $I_{FAVM}$          | 121   | A                            |
|                                  |                                      | $t_c = 97^{\circ}\text{C}$   |                     | 127   | A                            |
| Stoßstrom-Grenzwert              | surge current                        | $t_{vj} \leq 25^{\circ}\text{C}, t_p = 10 \text{ ms}$  | $I_{FSM}$           | 2500  | A                            |
|                                  |                                      | $t_{vj} = t_{vj \max}, t_p = 10 \text{ ms}$  |                     | 2000  | A                            |
| Grenzlastintegral                | $\int i^2 t$ -value                  | $t_{vj} \leq 25^{\circ}\text{C}, t_p = 10 \text{ ms}$  | $\int i^2 t$        | 31200   | A <sup>2</sup> s             |
|                                  |                                      | $t_{vj} = t_{vj \max}, t_p = 10 \text{ ms}$  |                     | 20000   | A <sup>2</sup> s             |
| <b>Charakteristische Werte</b>   | <b>Characteristic values</b>         |  |                     |   |                              |
| Durchlaßspannung                 | forward voltage                      | $t_{vj} = t_{vj \max}, i_F = 350 \text{ A}$  | $v_F$               | max. 1,65   | V                            |
| Schleusenspannung                | threshold voltage                    |  | $V_{(TO)}$          | 0,95  | V                            |
| Ersatzwiderstand                 | slope resistance                     |  | $r_T$               | 1,7   | mΩ                           |
| Sperrstrom                       | reverse current                      | $t_{vj} = t_{vj \max}, V_R = V_{RRM}$  | $i_R$               | max. 40   | mA                           |
| Nachlaufladung                   | lag charge                           | $t_{vj} = t_{vj \max}, i_{FM} = 100 \text{ A}, \text{DD 121 S:}$<br>$-di_F/dt = 100 \text{ A}/\mu\text{s}, \text{DD 122 S:}$     | $Q_S$               | max. 45   | μAs                          |
|                                  |                                      |  |                     | max. 25   | μAs                          |
| Isolations-Prüfspannung          | insulation test voltage              | RMS, f = 50 Hz, t = 1 min.   | $V_{ISOL}$          | 3   | kV                           |
| <b>Thermische Eigenschaften</b>  | <b>Thermal properties</b>            |  |                     |   |                              |
| Innerer Wärmewiderstand          | thermal resistance, junction to case | $\Theta = 180^{\circ}\text{el. sin: pro Modul/per module}$<br>pro Zweig/per arm<br>DC: pro Modul/per module<br>pro Zweig/per arm | $R_{thJC}$          | max. 0,14<br>max. 0,28<br>max. 0,135<br>max. 0,27 | °C/W<br>°C/W<br>°C/W<br>°C/W |
| Übergangs-Wärmewiderstand        | thermal resistance, case to heatsink | pro Modul/per module<br>pro Zweig/per arm  | $R_{thCK}$          | max. 0,03<br>max. 0,06                            | °C/W<br>°C/W                 |
| Höchstzul.Sperrschichttemperatur | max. junction temperature            |  | $t_{vj \max}$       | 150   | °C                           |
| Betriebstemperatur               | operating temperature                |  | $t_{c \text{ op}}$  | -40...+150  | °C                           |
| Lagertemperatur                  | storage temperature                  |  | $t_{stg}$           | -40...+150  | °C                           |
| <b>Mechanische Eigenschaften</b> | <b>Mechanical properties</b>         |  |                     |   |                              |
| Si-Elemente mit Druckkontakt     | Si-pellets with pressure contact     |  |                     |   | AlN                          |
| Innere Isolation                 | internal insulation                  |  |                     |   |                              |
| Anzugsdrehmomente                | tightening torques                   |  |                     |   |                              |
| mechanische Befestigung          | mounting torque                      | Toleranz/tolerance +/- 15%   | M1                  | 6   | Nm                           |
| elektrische Anschlüsse           | terminal connection torque           | Toleranz/tolerance +5%/-10%  | M2                  | 6   | Nm                           |
| Gewicht                          | weight                               |  | G                   | typ. 430  | g                            |
| Kriechstrecke                    | creepage distance                    |  |                     | 14  | mm                           |
| Schwingfestigkeit                | vibration resistance                 | f = 50 Hz  |                     | 5 · 9,81  | m/s <sup>2</sup>             |
| Maßbild                          | outline                              |  |                     |   | 6                            |

DD 122 S kann auch mit gemeinsamer Anode oder gemeinsamer Kathode geliefert werden.

DD 122 S can also be supplied with common anode or common cathode.

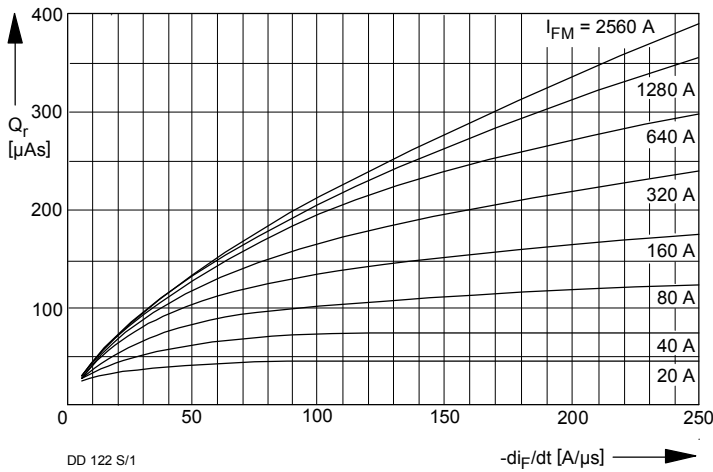


Bild / Fig. 1  
 Sperrverzögerungsladung  $Q_r = f(-di/dt)$ ,  $t_{vj} = t_{vj(max)}$ ,  $v_R \leq 0,5 V_{RRM}$ ,  
 $v_{RM} = 0,8 V_{RRM}$  /  
 Recovered charge  $Q_r = f(-di/dt)$ ,  $t_{vj} = t_{vj(max)}$ ,  $v_R \leq 0,5 V_{RRM}$ ,  
 $v_{RM} = 0,8 V_{RRM}$   
 Parameter: Durchlaßstrom / On-state current  $I_{FM}$

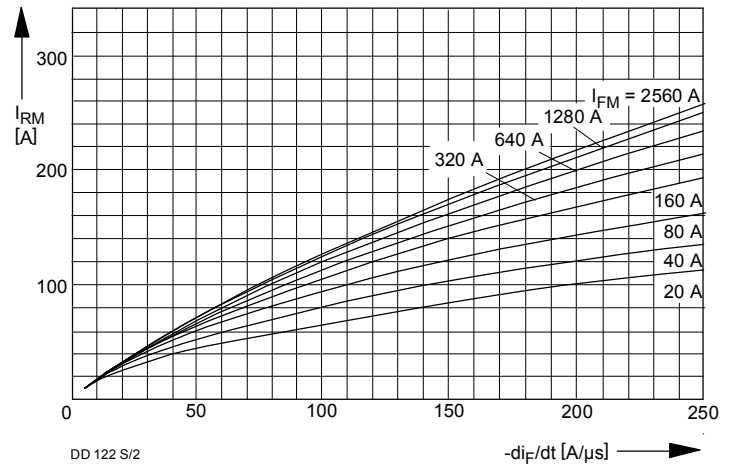


Bild / Fig. 2  
 Rückstromspitze  $I_{RM} = f(-di/dt)$ ,  $t_{vj} = t_{vj(max)}$ ,  $v_R \leq 0,5 V_{RRM}$ ,  $v_{RM} = 0,8 V_{RRM}$   
 Peak reverse recovery current  $I_{RM} = f(-di/dt)$ ,  $t_{vj} = t_{vj(max)}$ ,  $v_R \leq 0,5 V_{RRM}$ ,  
 $v_{RM} = 0,8 V_{RRM}$   
 Parameter: Durchlaßstrom / On-state current  $I_{TM}$

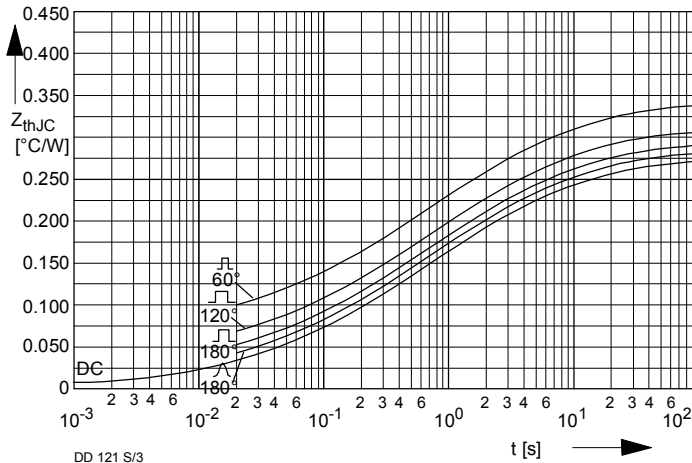


Bild / Fig. 3  
 Transienter innerer Wärmewiderstand  $Z_{thJC}$  für einen Zweig  
 bei sinus- und trapezförmigem Stromverlauf  
 Transient thermal impedance  $Z_{thJC}$ , junction to case per arm  
 at sinusoidal and trapezoidal waveform.

Analytische Elemente des transienten Wärmewiderstandes  $Z_{thJC}$  pro Zweig für DC  
 Analytical elements of transient thermal impedance  $Z_{thJC}$  per arm for DC

| Pos. n           | 1       | 2      | 3      | 4      | 5     | 6 | 7 |
|------------------|---------|--------|--------|--------|-------|---|---|
| $R_{thn} [°C/W]$ | 0,0102  | 0,0329 | 0,0805 | 0,0741 | 0,072 |   |   |
| $\tau_n [s]$     | 0,00112 | 0,0175 | 0,322  | 1,21   | 7,5   |   |   |

Analytische Funktion / Analytical function:

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

## **Terms & Conditions of Usage**

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