

Elektrische Eigenschaften / Electrical properties

Höchstzulässige Werte / Maximum rated values

| | | | | |
|--|---|----------------------------------|--------------------|--|
| Periodische Vorwärts- und Rückwärts-Spitzensperrspannung repetitive peak forward off-state and reverse voltages | $T_{vj} = -40^{\circ}\text{C} \dots T_{vj \text{ max}}$ | $V_{\text{DRM}}, V_{\text{RRM}}$ | 1200, 1400 1600 | V V |
| Vorwärts-Stoßspitzensperrspannung non-repetitive peak forward off-state voltage | $T_{vj} = -40^{\circ}\text{C} \dots T_{vj \text{ max}}$ | V_{DSM} | 1200, 1400 1600 | V V |
| Rückwärts-Stoßspitzensperrspannung non-repetitive peak reverse voltage | $T_{vj} = +25^{\circ}\text{C} \dots T_{vj \text{ max}}$ | V_{RSM} | 1300, 1500 1700 | V V |
| Durchlaßstrom-Grenzeffektivwert RMS on-state current | | I_{TRMSM} | 520 | A |
| Dauergrenzstrom average on-state current | $T_{\text{C}} = 85^{\circ}\text{C}$ | I_{TAVM} | 330 | 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_{TSM} | 9100 8000 | 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 | 414000 320000 | A^2s A^2s |
| Kritische Stromsteilheit critical rate of rise of on-state current | DIN IEC 747-6 $f = 50\text{Hz}, I_{\text{GM}} = 1\text{A}, di_{\text{G}}/dt = 1\text{A}/\mu\text{s}$ | $(di_{\text{T}}/dt)_{\text{cr}}$ | 250 | $\text{A}/\mu\text{s}$ |
| Kritische Spannungssteilheit critical rate of rise of off-state voltage | $T_{vj} = T_{vj \text{ max}}, v_{\text{D}} = 0,67 V_{\text{DRM}}$ 6. Kennbuchstabe / 6th letter F | $(dv_{\text{D}}/dt)_{\text{cr}}$ | 1000 | $\text{V}/\mu\text{s}$ |

Charakteristische Werte / Characteristic values

| | | | | |
|--|--|------------------------------|-------------------|---------------|
| Durchlaßspannung on-state voltage | $T_{vj} = T_{vj \text{ max}}, i_{\text{T}} = 800\text{A}$ | v_{T} | max. 1,44 | V |
| Schleusenspannung threshold voltage | $T_{vj} = T_{vj \text{ max}}$ | $V_{(\text{TO})}$ | 0,8 | V |
| Ersatzwiderstand slope resistance | $T_{vj} = T_{vj \text{ max}}$ | r_{T} | 0,6 | mW |
| Zündstrom gate trigger current | $T_{vj} = 25^{\circ}\text{C}, v_{\text{D}} = 6\text{V}$ | I_{GT} | max. 200 | mA |
| Zündspannung gate trigger voltage | $T_{vj} = 25^{\circ}\text{C}, v_{\text{D}} = 6\text{V}$ | V_{GT} | max. 2,0 | V |
| Nicht zündender Steuerstrom gate non-trigger current | $T_{vj} = T_{vj \text{ max}}, v_{\text{D}} = 6\text{V}$ $T_{vj} = T_{vj \text{ max}}, v_{\text{D}} = 0,5 V_{\text{DRM}}$ | I_{GD} | max. 10 max. 5 | mA mA |
| Nicht zündende Steuerspannung gate non-trigger voltage | $T_{vj} = T_{vj \text{ max}}, v_{\text{D}} = 0,5 V_{\text{DRM}}$ | V_{GD} | max. 0,2 | V |
| Haltestrom holding current | $T_{vj} = 25^{\circ}\text{C}, v_{\text{D}} = 6\text{V}, R_{\text{A}} = 5\text{W}$ | I_{H} | max. 300 | mA |
| Einraststrom latching current | $T_{vj} = 25^{\circ}\text{C}, v_{\text{D}} = 6\text{V}, R_{\text{GK}} \approx 10\text{W}$ $i_{\text{GM}} = 1\text{A}, di_{\text{G}}/dt = 1\text{A}/\mu\text{s}, t_{\text{G}} = 20\mu\text{s}$ | I_{L} | max. 1200 | mA |
| Vorwärts- und Rückwärts-Sperrstrom forward off-state and reverse currents | $T_{vj} = T_{vj \text{ max}}$ $v_{\text{D}} = V_{\text{DRM}}, v_{\text{R}} = V_{\text{RRM}}$ | $i_{\text{D}}, i_{\text{R}}$ | max. 70 | mA |
| Zündverzögerung gate controlled delay time | DIN IEC 747-6 $T_{vj} = 25^{\circ}\text{C}, i_{\text{GM}} = 1\text{A}, di_{\text{G}}/dt = 1\text{A}/\mu\text{s}$ | t_{gd} | max. 3,0 | μs |
| Freiwerdezeit circuit commutated turn-off time | $T_{vj} = T_{vj \text{ max}}, i_{\text{TM}} = 350\text{A}$ $v_{\text{RM}} = 100\text{V}, v_{\text{DM}} = 0,67 V_{\text{DRM}}$ $dv_{\text{D}}/dt = 20\text{V}/\mu\text{s}, -di_{\text{T}}/dt = 10\text{A}/\mu\text{s}$ 5. Kennbuchstabe / 5th letter O | t_{q} | typ. 250 | μs |
| Isolations-Prüfspannung insulation test voltage | RMS, $f = 50\text{Hz}, t = 1\text{min}$ RMS, $f = 50\text{Hz}, t = 1\text{sec}$ | V_{ISOL} | 3,0 3,6 | kV kV |

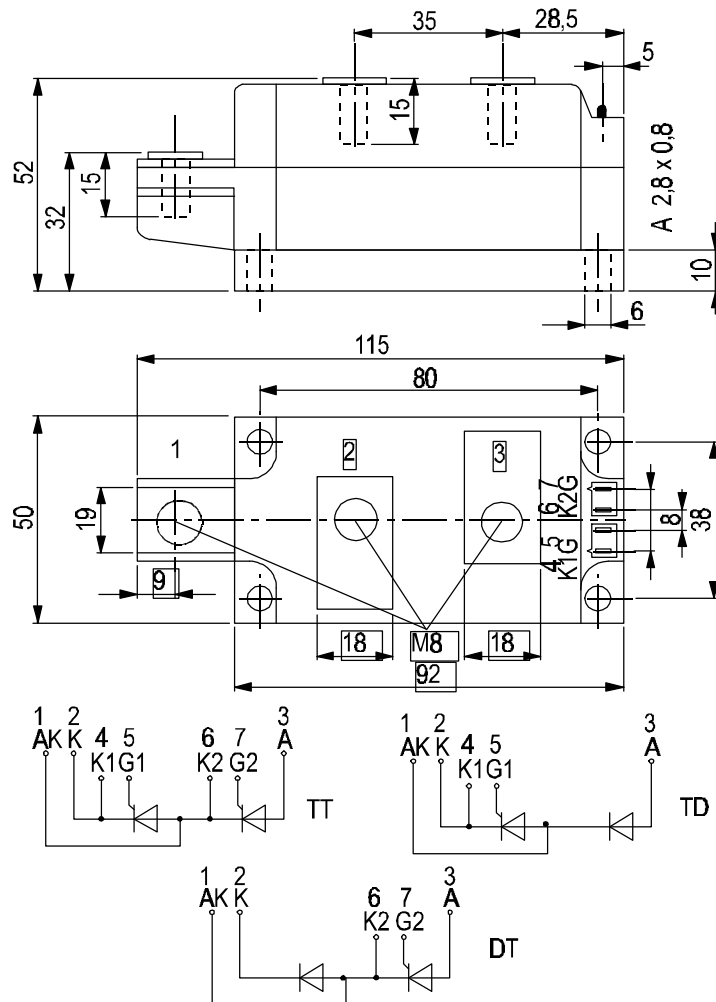
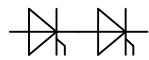
Thermische Eigenschaften / Thermal properties

| | | | |
|---|--|------------------|--|
| Innerer Wärmewiderstand thermal resistance, junction to case | pro Modul / per module, $\Theta = 180^\circ\text{sin}$ pro Zweig / per arm, $\Theta = 180^\circ\text{sin}$ pro Modul / per module, DC pro Zweig / per arm, DC | R_{thJC} | max. 0,059 °C/W max. 0,117 °C/W max. 0,056 °C/W max. 0,111 °C/W |
| Übergangs-Wärmewiderstand thermal resistance, case to heatsink | pro Modul / per module pro Zweig / per arm | R_{thCK} | max. 0,020 °C/W max. 0,040 °C/W |
| Höchstzulässige Sperrschichttemperatur max. junction temperature | | $T_{vj\max}$ | 135 °C |
| Betriebstemperatur operating temperature | | $T_{c\text{op}}$ | - 40...+135 °C |
| Lagertemperatur storage temperature | | T_{stq} | - 40...+140 °C |

Mechanische Eigenschaften / Mechanical properties

| | | | |
|--|-------------------------------------|----|-------------------|
| Gehäuse, siehe Anlage case, see appendix | | | Seite 3 page 3 |
| Si-Elemente mit Druckkontakt, Amplifying-Gate Si-pellets with pressure contact, amplifying-gate | | | |
| Innere Isolation internal insulation | | | AlN |
| Anzugsdrehmoment für mechanische Befestigung mounting torque | Toleranz / tolerance $\pm 15\%$ | M1 | 6 Nm |
| Anzugsdrehmoment für elektrische Anschlüsse terminal connection torque | Toleranz / tolerance $+5\% / -10\%$ | M2 | 12 Nm |
| Gewicht weight | | G | typ. 800 g |
| Kriechstrecke creepage distance | | | 17 mm |
| Schwingfestigkeit vibration resistance | $f = 50\text{Hz}$ | | 50 m/s^2 |

Mit dieser technischen Information werden Halbleiterbauelemente spezifiziert, jedoch keine Eigenschaften zugesichert. Sie gilt in Verbindung mit den zugehörigen Technischen Erläuterungen. / This technical information specifies semiconductor devices but promises no characteristics. It is valid in combination with the belonging technical notes.



also available with common anode
or common cathode
(at fast thyristor/diode-Modules on request)

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 |
|-------------------------|--------|--------|--------|--------|--------|---|---|
| $R_{thn} [^{\circ}C/W]$ | 0,0031 | 0,0097 | 0,0259 | 0,0359 | 0,0366 | | |
| $\tau_n [s]$ | 0,0009 | 0,0080 | 0,1100 | 0,6100 | 3,0600 | | |

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

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