
Netz-Thyristor
Phase Control Thyristor
T680N

 Infineon Technologies Bipolar
 GmbH & Co. KG

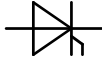
Elektrische Eigenschaften / Electrical properties
 Höchstzulässige Werte / Maximum rated values

| | | | |
|--|---|--------------------|--|
| Periodische Vorwärts- und Rückwärts-Spitzensperrspannung repetitive peak forward off-state and reverse voltages | $T_{vj} = -40^{\circ}\text{C} \dots T_{vj \max}$ | V_{DRM}, V_{RRM} | 1200 V 1400 V |
| Vorwärts-Stosspitzensperrspannung non-repetitive peak forward off-state voltage | $T_{vj} = -40^{\circ}\text{C} \dots T_{vj \max}$ | V_{DSM} | 1200 V 1400 V |
| Rückwärts-Stosspitzensperrspannung non-repetitive peak reverse voltage | $T_{vj} = +25^{\circ}\text{C} \dots T_{vj \max}$ | V_{RSM} | 1300 V 1500 V |
| Durchlassstrom-Grenzeffektivwert maximum RMS on-state current | | I_{TRMSM} | 1250 A |
| Dauergrenzstrom average on-state current | $T_C = 85^{\circ}\text{C}$ | I_{TAVM} | 681 A |
| Dauergrenzstrom average on-state current | $T_C = 55^{\circ}\text{C}, \theta = 180^{\circ}\sin, t_p = 10 \text{ ms}$ | I_{TAVM} | 990 A |
| Durchlaßstrom-Effektivwert RMS on-state current | | I_{TRMS} | 1550 A |
| Stossstrom-Grenzwert surge current | $T_{vj} = 25^{\circ}\text{C}, t_p = 10 \text{ ms}$ $T_{vj} = T_{vj \max}, t_p = 10 \text{ ms}$ | I_{TSM} | 11000 A 9500 A |
| Grenzlastintegral I^2t -value | $T_{vj} = 25^{\circ}\text{C}, t_p = 10 \text{ ms}$ $T_{vj} = T_{vj \max}, t_p = 10 \text{ ms}$ | I^2t | 605 $10^3 \text{ A}^2\text{s}$ 451 $10^3 \text{ A}^2\text{s}$ |
| Kritische Stromsteilheit critical rate of rise of on-state current | DIN IEC 60747-6 $f = 50 \text{ Hz}, i_{GM} = 1 \text{ A}, di_G/dt = 1 \text{ A}/\mu\text{s}$ | $(di_T/dt)_{cr}$ | 200 $\text{A}/\mu\text{s}$ |
| Kritische Spannungssteilheit critical rate of rise of off-state voltage | $T_{vj} = T_{vj \max}, v_D = 0,67 V_{DRM}$ 5.Kennbuchstabe / 5 th letter F | $(dv_D/dt)_{cr}$ | 1000 $\text{V}/\mu\text{s}$ |

Charakteristische Werte / Characteristic values

| | | | |
|---|---|----------------------|---|
| Durchlassspannung on-state voltage | $T_{vj} = T_{vj \max}, i_T = 2000 \text{ A}$ $T_{vj} = T_{vj \max}, i_T = 600 \text{ A}$ | v_T | max. 1,75 V max. 1,09 V |
| Schleusenspannung threshold voltage | $T_{vj} = T_{vj \max}$ | $V_{(TO)}$ | 0,8 V |
| Ersatzwiderstand slope resistance | $T_{vj} = T_{vj \max}$ | r_T | 0,42 $\text{m}\Omega$ |
| Durchlasskennlinie on-state characteristic | $200 \text{ A} \leq i_T \leq 3400 \text{ A}$ | A= B= C= D= | 1,054E+00 1,605E-04 -1,180E-01 2,836E-02 |
| Zündstrom gate trigger current | $T_{vj} = 25^{\circ}\text{C}, v_D = 12 \text{ V}$ | I_{GT} | max. 250 mA |
| Zündspannung gate trigger voltage | $T_{vj} = 25^{\circ}\text{C}, v_D = 12 \text{ V}$ | V_{GT} | max. 2,2 V |
| Nicht zündender Steuerstrom gate non-trigger current | $T_{vj} = T_{vj \max}, v_D = 12 \text{ V}$ $T_{vj} = T_{vj \max}, v_D = 0,5 V_{DRM}$ | I_{GD} | max. 10 mA max. 5 mA |
| Nicht zündende Steuerspannung gate non-trigger voltage | $T_{vj} = T_{vj \max}, v_D = 0,5 V_{DRM}$ | V_{GD} | max. 0,25 V |
| Haltestrom holding current | $T_{vj} = 25^{\circ}\text{C}, v_D = 12 \text{ V}$ | I_H | max. 300 mA |
| Einraststrom latching current | $T_{vj} = 25^{\circ}\text{C}, v_D = 12 \text{ V}, R_{GK} \geq 10 \Omega$ $i_{GM} = 1 \text{ A}, di_G/dt = 1 \text{ A}/\mu\text{s}, t_g = 20 \mu\text{s}$ | I_L | max. 1200 mA |
| Vorwärts- und Rückwärts-Sperrstrom forward off-state and reverse current | $T_{vj} = T_{vj \max}$ $v_D = V_{DRM}, v_R = V_{RRM}$ | i_D, i_R | max. 50 mA |
| Zündverzug gate controlled delay time | DIN IEC 60747-6 $T_{vj} = 25^{\circ}\text{C}, i_{GM} = 1 \text{ A}, di_G/dt = 1 \text{ A}/\mu\text{s}$ | t_{gd} | max. 4 μs |

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| prepared by: | H.Sandmann | date of publication: | 2009-12-08 |
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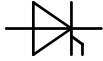
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|---|--|-------|----------|---------|
| Freiwerdezeit circuit commutated turn-off time | $T_{vj} = T_{vj\ max}$, $i_{TM} = I_{TAVM}$ $V_{RM} = 100\ V$, $V_{DM} = 0,67\ V_{DRM}$ $dv_D/dt = 20\ V/\mu s$, $-di_T/dt = 10\ A/\mu s$ 4.Kennbuchstabe / 4 th letter O | t_q | typ. 250 | μs |
|---|--|-------|----------|---------|

Thermische Eigenschaften / Thermal properties

| | | | | |
|--|---|---------------|--|----|
| Innerer Wärmewiderstand thermal resistance, junction to case | <u>Kühlfläche / cooling surface</u> beidseitig / two-sided, $\theta = 180^\circ\text{sin}$ beidseitig / two-sided, DC Anode / anode, $\theta = 180^\circ\text{sin}$ Anode / anode, DC Kathode / cathode, $\theta = 180^\circ\text{sin}$ Kathode / cathode, DC | R_{thJC} | max. 0,039 °C/W max. 0,035 °C/W max. 0,062 °C/W max. 0,058 °C/W max. 0,092 °C/W max. 0,089 °C/W | |
| Übergangs-Wärmewiderstand thermal resistance, case to heatsink | <u>Kühlfläche / cooling surface</u> beidseitig / two-sides einseitig / single-sides | R_{thCH} | max. 0,0075 °C/W max. 0,0150 °C/W | |
| Höchstzulässige Sperrschichttemperatur maximum junction temperature | | $T_{vj\ max}$ | 125 | °C |
| Betriebstemperatur operating temperature | | $T_{c\ op}$ | -40...+125 | °C |
| Lagertemperatur storage temperature | | T_{stg} | -40...+150 | °C |

Mechanische Eigenschaften / Mechanical properties

| | | | | |
|--|--|---|--|------------------|
| Gehäuse, siehe Anlage case, see annex | | | Seite 3 page 3 | |
| Si-Element mit Druckkontakt Si-pellet with pressure contact | | | | |
| Anpresskraft clamping force | | F | 6...12 | kN |
| Steueranschlüsse control terminals | Gate (flat) Gate (round, based on AMP 60598) Kathode / cathode | | A 2,8x0,5 mm $\varnothing 1,5$ mm A 4,8x0,5 mm | |
| Gewicht weight | | G | typ. 110 | g |
| Kriechstrecke creepage distance | | | 6 | mm |
| Schwingfestigkeit vibration resistance | f = 50 Hz | | 50 | m/s ² |

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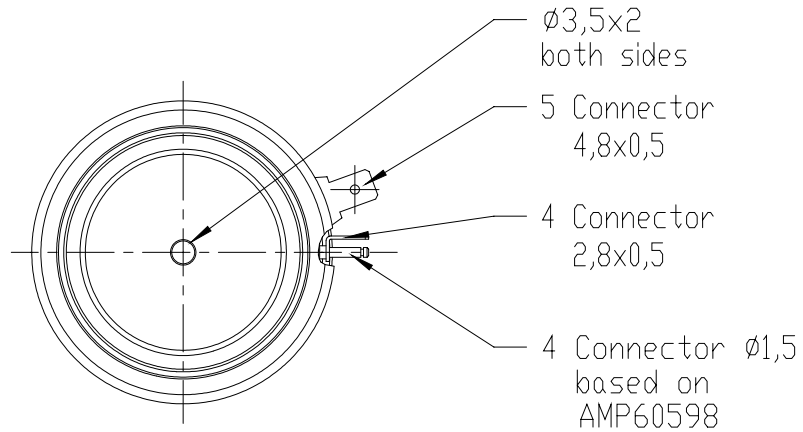
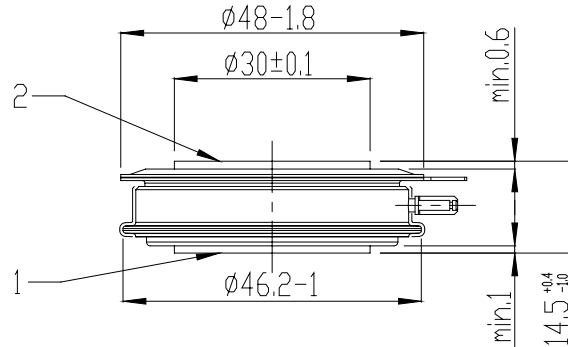
Datenblatt / Data sheet



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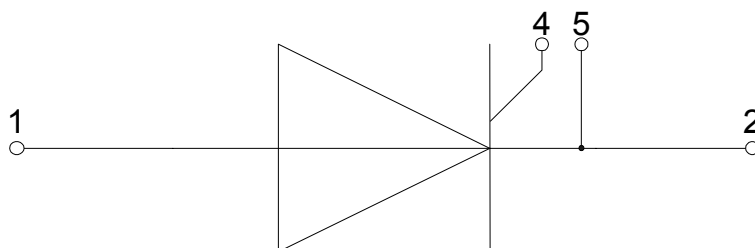
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strike distance: 5,0mm
creepage distance: 6,0mm

overall height based
on contact pressure



- 1: Anode / Anode**
- 2: Kathode / Cathode**
- 4: Gate**
- 5: Hilfskathode/
Auxiliary Cathode**