



Elektrische Eigenschaften / Electrical properties

Höchstzulässige Werte / Maximum rated values

| | | | | | |
|--|---|----------------------------------|--------|------------------|---|
| Periodische Vorwärts- und Rückwärts-Spitzensperrspannung repetitive peak forward off-state and reverse voltages | $T_{vj} = -40^{\circ}\text{C} \dots T_{vj\text{max}}$ | $V_{\text{DRM}}, V_{\text{RRM}}$ | 3200 | 3400 | V |
| | | | 3600 | 3800 | V |
| Vorwärts-Stoßspitzensperrspannung non-repetitive peak forward off-state voltage | $T_{vj} = -40^{\circ}\text{C} \dots T_{vj\text{max}}$ | V_{DSM} | 3200 | 3400 | V |
| | | | 3600 | 3800 | V |
| Rückwärts-Stoßspitzensperrspannung non-repetitive peak reverse voltage | $T_{vj} = +25^{\circ}\text{C} \dots T_{vj\text{max}}$ | V_{RSM} | 3300 | 3500 | V |
| | | | 3700 | 3900 | V |
| Durchlaßstrom-Grenzeffektivwert RMS on-state current | | I_{TRSMMSM} | 750 | A | |
| Dauergrenzstrom average on-state current | $T_{\text{C}} = 85^{\circ}\text{C}$ $T_{\text{C}} = 68^{\circ}\text{C}$ | I_{TAVM} | 380 | A | |
| | | | 480 | 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} | 7200 | A | |
| | | | 6500 | 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 | 259500 | A ² s | |
| | | | 211250 | A ² s | |
| Kritische Stromsteilheit critical rate of rise of on-state current | DIN IEC 747-6 $f=50 \text{ Hz}, v_L = 10 \text{ V}, i_{\text{GM}} = 1 \text{ A}$ $di_{\text{G}}/dt = 1 \text{ A}/\mu\text{s}$ | $(di_{\text{T}}/dt)_{\text{cr}}$ | 100 | A/ μs | |
| Kritische Spannungssteilheit critical rate of rise of off-state voltage | $T_{vj} = T_{vj\text{max}}, v_{\text{D}} = 0,67 V_{\text{DRM}}$ 5.Kennbuchstabe / 5th letter F | $(dv_{\text{D}}/dt)_{\text{cr}}$ | 1000 | V/ μs | |

Charakteristische Werte / Characteristic values

| | | | | | |
|--|---|------------------------------|------|------|---------------|
| Durchlaßspannung on-state voltage | $T_{vj} = T_{vj\text{max}}, I_{\text{T}} = 1200 \text{ A}$ | v_{T} | max. | 2,8 | V |
| Schleusenspannung threshold voltage | $T_{vj} = T_{vj\text{max}}$ | $V_{\text{T(TO)}}$ | | 1,2 | V |
| Ersatzwiderstand slope resistance | $T_{vj} = T_{vj\text{max}}$ | r_{T} | | 1,2 | m Ω |
| Zündstrom gate trigger current | $T_{vj} = 25^{\circ}\text{C}, v_{\text{D}} = 6 \text{ V}$ | I_{GT} | max. | 250 | mA |
| Zündspannung gate trigger voltage | $T_{vj} = 25^{\circ}\text{C}, v_{\text{D}} = 6 \text{ V}$ | V_{GT} | max. | 1,5 | 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 | mA |
| | | | max. | 5 | 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. | 0,25 | mV |
| 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 | $T_{vj} = 25^{\circ}\text{C}, v_{\text{D}} = 6 \text{ V}, R_{\text{GK}} \geq 10 \text{ W}$ $i_{\text{GM}} = 1 \text{ A}, di_{\text{G}}/dt = 1 \text{ A}/\mu\text{s},$ $t_{\text{g}} = 20 \mu\text{s}$ | I_{L} | max. | 1500 | 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. | 100 | 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. | 4,5 | μs |

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Phase Control Thyristor

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N



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Charakteristische Werte / Characteristic values

| | | | | | |
|---|--|-------|------|-----|---------|
| Freiwerdezeit circuit commutated turn-off time | $T_{vj} = T_{vj\ max}$, $i_{TM} = I_{TAVM}$ $V_{RM} = 100V$, $V_{DM} = 0,67 V_{DRM}$ $dv_p/dt = 20 V/\mu s$, $-di_T/dt = 10 A/\mu s$ 4. Kennbuchstabe / 4th letter O | t_q | typ. | 350 | μs |
|---|--|-------|------|-----|---------|

Thermische Eigenschaften / Thermal properties

| | | | | | |
|---|---|---------------|------|-----------|--------------|
| Innerer Wärmewiderstand thermal resistance, junction to case | Kühlfläche / cooling surface beidseitig / two-sided, $\checkmark = 180^\circ \sin$ beidseitig / two-sided, DC Anode / anode, $\checkmark = 180^\circ \sin$ Anode / anode, DC Kathode / cathode, $\checkmark = 180^\circ \sin$ Kathode / cathode, DC | R_{thJC} | max. | 0,0450 | $^\circ C/W$ |
| | | | max. | 0,0410 | $^\circ C/W$ |
| | | | max. | 0,0690 | $^\circ C/W$ |
| | | | max. | 0,0650 | $^\circ C/W$ |
| | | | max. | 0,1140 | $^\circ C/W$ |
| | | | max. | 0,1100 | $^\circ C/W$ |
| Übergangs- Wärmewiderstand thermal resistance, case to heatsink | Kühlfläche / cooling surface beidseitig / two-sided einseitig / single-sided | R_{thCK} | max. | 0,0050 | $^\circ C/W$ |
| | | | max. | 0,0100 | $^\circ C/W$ |
| Höchstzulässige Sperrschichttemperatur max. junction temperature | | $T_{vj\ max}$ | | 125 | $^\circ C$ |
| Betriebstemperatur operating temperature | | $T_{c\ op}$ | | -40...125 | $^\circ C$ |
| Lagertemperatur storage temperature | | T_{stg} | | -40...150 | $^\circ C$ |

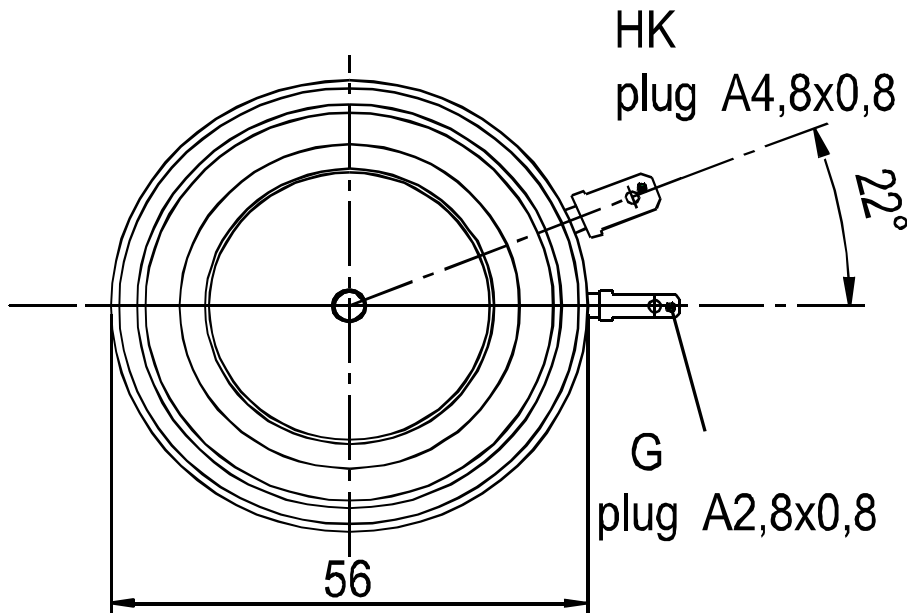
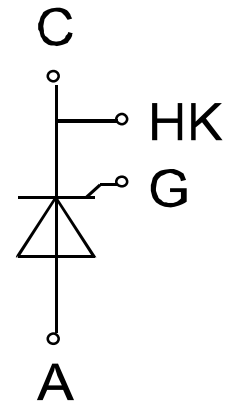
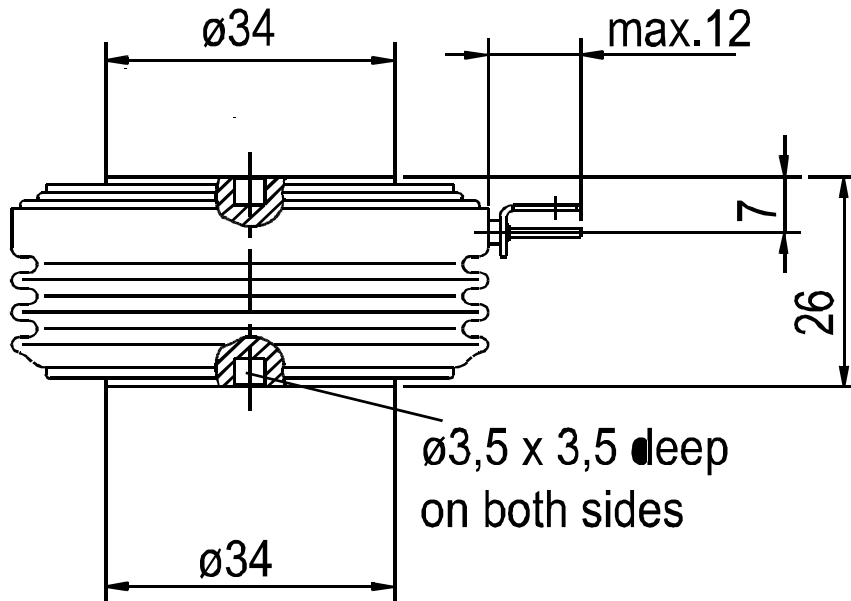
Mechanische Eigenschaften / Mechanical properties

| | | | | | |
|--|-----------|---|------|-------------------|------------------|
| Gehäuse, siehe Anlage case, see appendix | | | | Seite 3 page 3 | |
| Si-Element mit Druckkontakt Si-pellet with pressure contact | | | | | |
| Anpreßkraft clamping force | | F | | 7,5...17,5 | kN |
| Gewicht weight | | G | typ. | 250 | g |
| Kriechstrecke creepage distance | | | | 30 | mm |
| Feuchteklasse humidity classification | DIN 40040 | | | C | |
| Schwingfestigkeit vibration resistance | f = 50Hz | | | 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.

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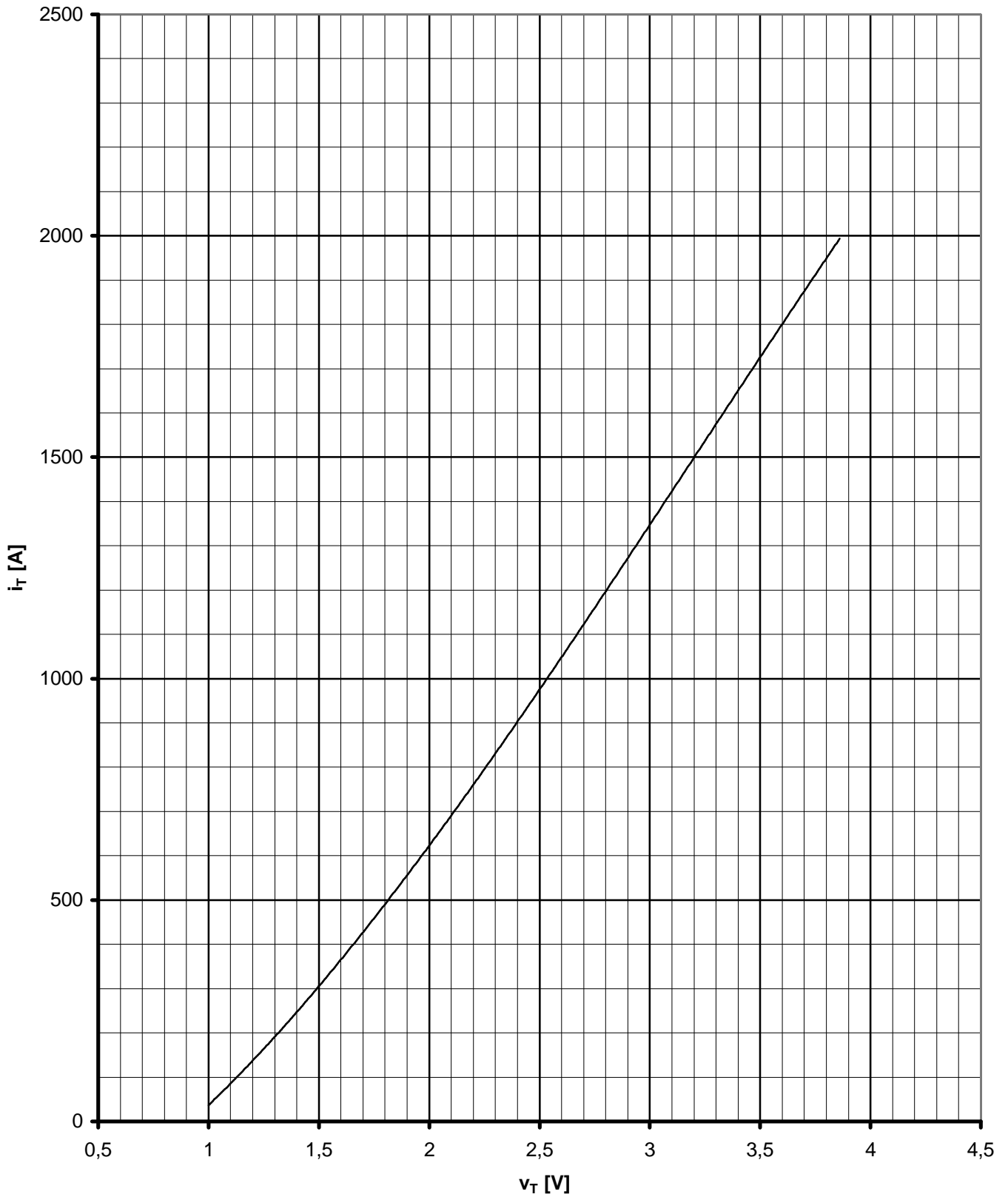


| | | | | | | | | |
|---------------------------------|--|---------|---------|---------|--------|--------|---|---|
| Kühlung cooling | Analytische Elemente des transienten Wärmewiderstandes Z_{thJC} für DC Analytical elements of transient thermal impedance Z_{thJC} for DC | | | | | | | |
| | Pos.n | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| beidseitig two-sided | R_{thn} [°C/W] | 0,00043 | 0,00557 | 0,019 | 0,016 | | | |
| | τ_n [s] | 0,00027 | 0,00221 | 0,085 | 0,36 | | | |
| anodenseitig anode-sided | R_{thn} [°C/W] | 0,00034 | 0,00541 | 0,00486 | 0,0234 | 0,036 | | |
| | τ_n [s] | 0,00024 | 0,0021 | 0,0376 | 0,158 | 2,47 | | |
| kathodenseitig cathode-sided | R_{thn} [°C/W] | 0,00026 | 0,00524 | 0,0132 | 0,0346 | 0,0468 | | |
| | τ_n [s] | 0,00019 | 0,00192 | 0,0562 | 0,65 | 2,91 | | |

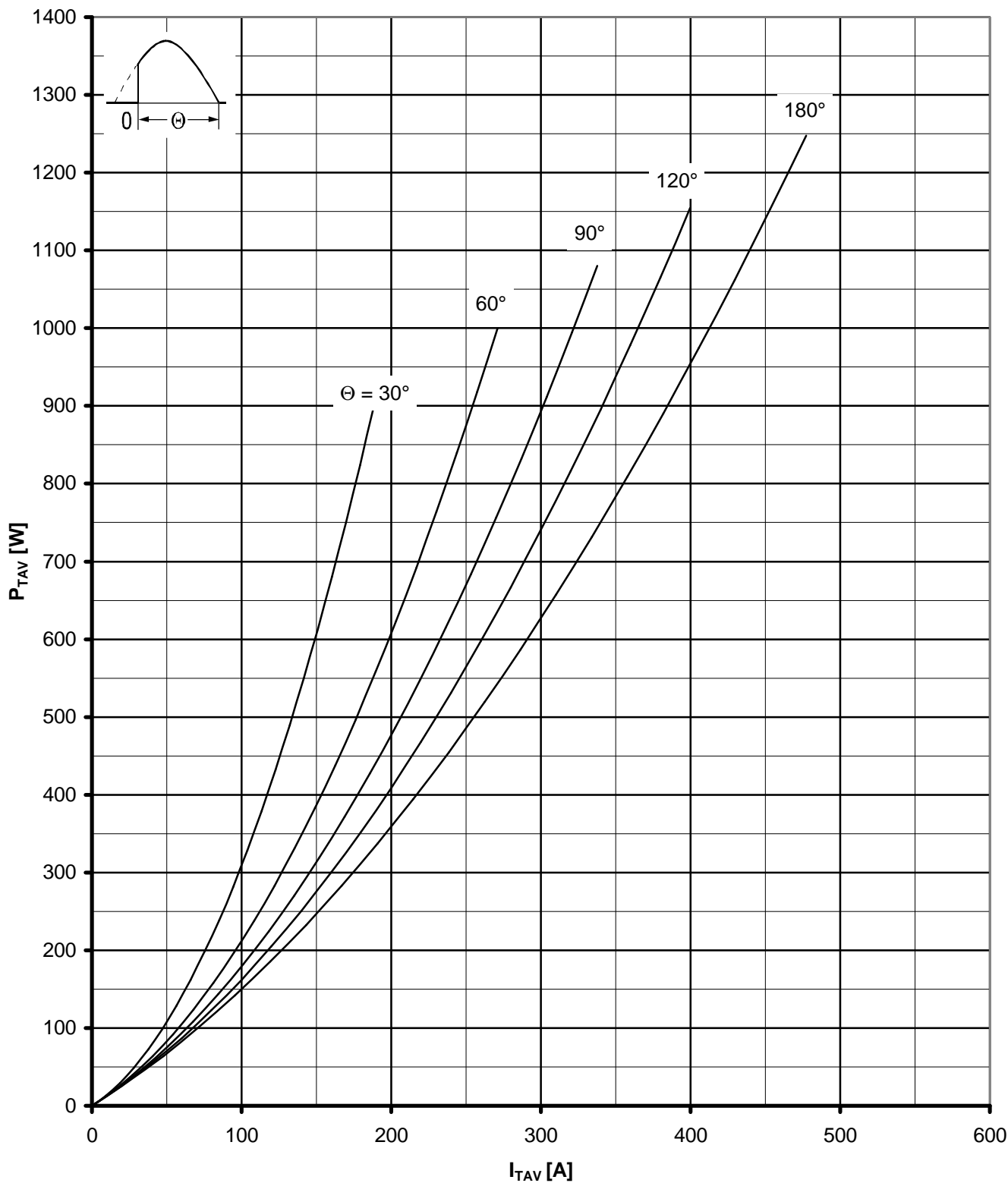
Analytische Funktion / analytical function : $Z_{thJC} = \sum_{n=1}^{n_{max}} R_{thn} (1 - EXP (- t / \tau_n))$

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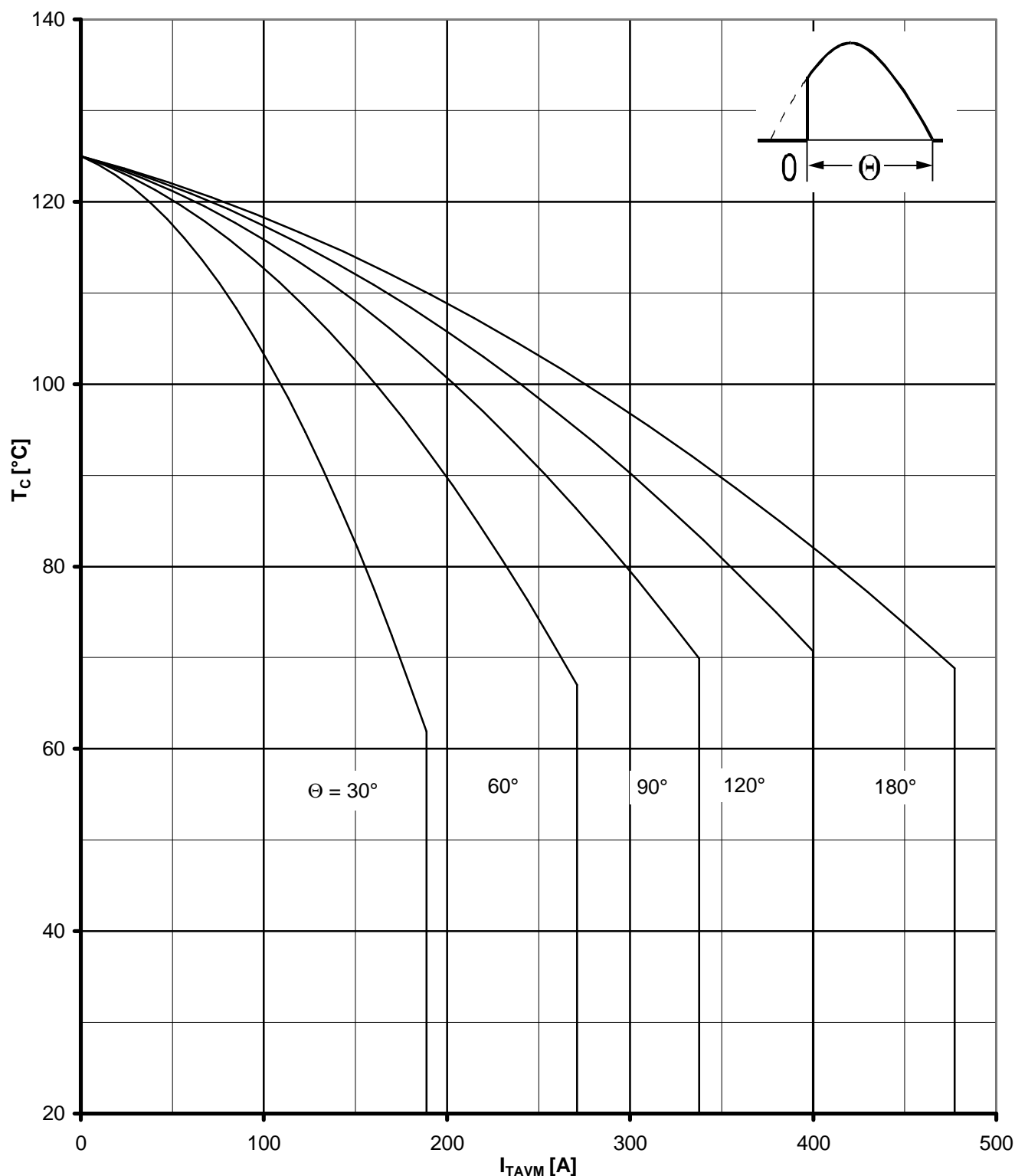
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Grenzdurchlaßkennlinie / Limiting On-state characteristic $i_T=f(v_T)$
T_{vj} = T_{vj} max



Durchlaßverlustleistung / On-state power loss $P_{TAV}=f(I_{TAV})$
Parameter: Stromflußwinkel θ / current conduction angle θ



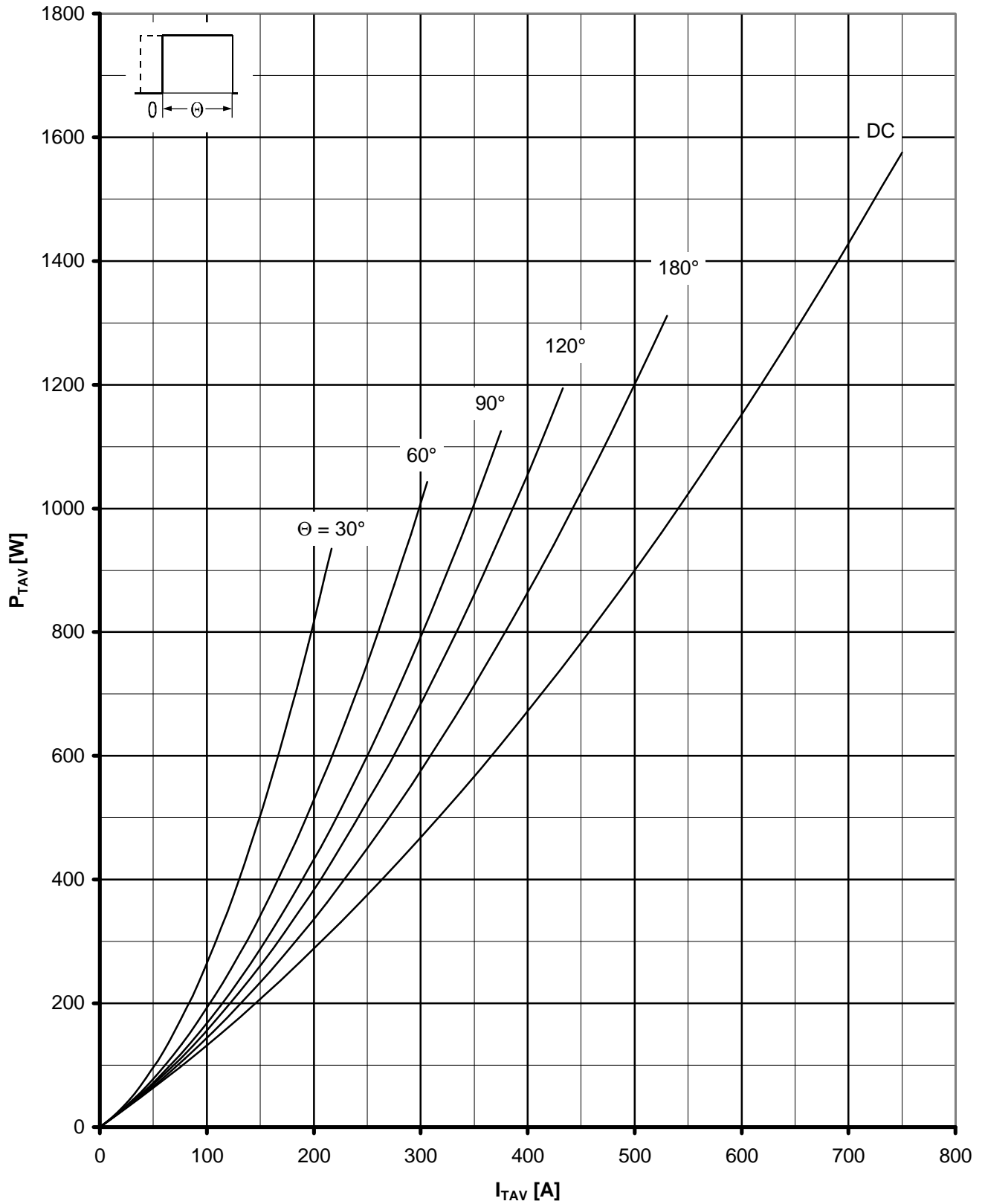
Höchstzulässige Gehäusetemperatur / Maximum allowable case temperature $T_c=f(I_{TAVM})$

Beidseitige Kühlung / two sided cooling

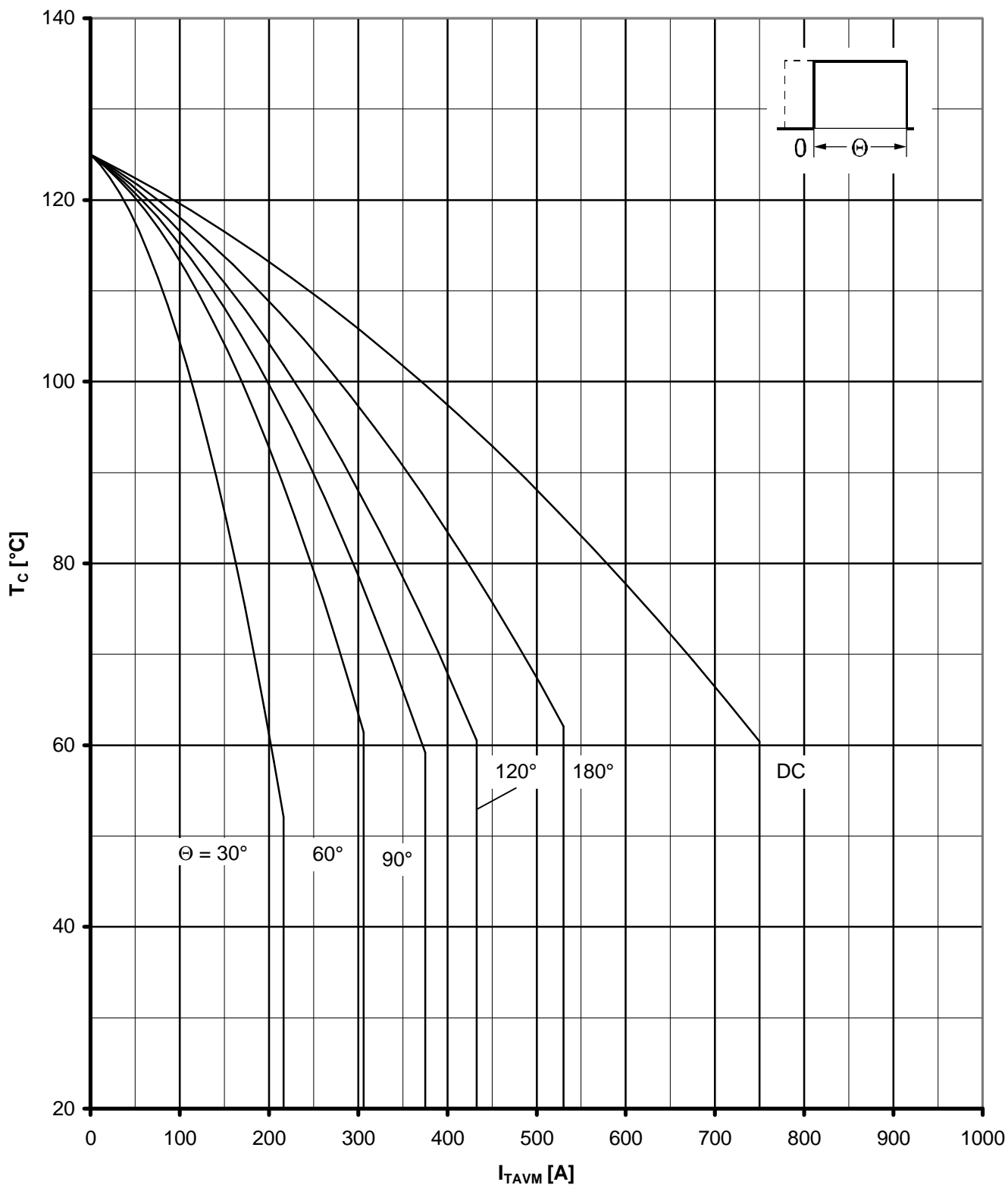
Parameter: Stromflußwinkel θ / current conduction angle θ

Berechnungsgrundlage P_{TAV} (Schaltverluste gesondert berücksichtigen).

Calculation base P_{TAV} (switching losses should be considered separately).



Durchlaßverlustleistung / On-state power loss $P_{TAV}=f(I_{TAV})$
Parameter: Stromflußwinkel θ / current conduction angle θ



Höchstzulässige Gehäusetemperatur / Maximum allowable case temperature $T_c=f(I_{TAVM})$

Beidseitige Kühlung / two sided cooling

Parameter: Stromflußwinkel Θ / current conduction angle Θ

Berechnungsgrundlage P_{TAV} (Schaltverluste gesondert berücksichtigen)

Calculation base P_{TAV} (switching losses should be considered separately)