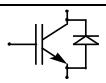


## Elektrische Eigenschaften / Electrical properties

### Höchstzulässige Werte / Maximum rated values

**Diode Gleichrichter/ Diode Rectifier**

| | | | | |
|---|---|---|---|---|
| Periodische Rückw. Spitzensperrspannung<br>repetitive peak reverse voltage | | $V_{RRM}$ | 1600 | V |
| Durchlaßstrom Grenzeffektivwert<br>RMS forward current per chip | | $I_{FRMSM}$ | 40 | A |
| Dauergleichstrom<br>DC forward current | $T_C$ = 80°C | $I_d$ | 30 | A |
| Stoßstrom Grenzwert<br>surge forward current | $t_P$ = 10 ms, $T_{vj}$ = 25°C<br>$t_P$ = 10 ms, $T_{vj}$ = 150°C | $I_{FSM}$ | 300<br>230 | A<br>A |
| Grenzlastintegral<br>$I^2t$ - value | $t_P$ = 10 ms, $T_{vj}$ = 25°C<br>$t_P$ = 10 ms, $T_{vj}$ = 150°C | $I^2t$ | 450<br>260 | $A^2s$<br>$A^2s$ |

**Transistor Wechselrichter/ Transistor Inverter**

| | | | | |
|---|---|---|---|---|
| Kollektor-Emitter-Sperrspannung<br>collector-emitter voltage | | $V_{CES}$ | 600 | V |
| Kollektor-Dauergleichstrom<br>DC-collector current | Tc = 80 °C<br>$T_C$ = 25 °C | $I_{C,nom.}$<br>$I_C$ | 30<br>50 | A<br>A |
| Periodischer Kollektor Spitzenstrom<br>repetitive peak collector current | $t_P$ = 1 ms, $T_C$ = 80 °C | $I_{CRM}$ | 60 | A |
| Gesamt-Verlustleistung<br>total power dissipation | $T_C$ = 25°C | $P_{tot}$ | 180 | W |
| Gate-Emitter-Spitzenspannung<br>gate-emitter peak voltage | | $V_{GES}$ | +/- 20V | V |

**Diode Wechselrichter/ Diode Inverter**

| | | | | |
|---|---|---|---|---|
| Dauergleichstrom<br>DC forward current | Tc = 80 °C | $I_F$ | 30 | A |
| Periodischer Spitzenstrom<br>repetitive peak forw. current | $t_P$ = 1 ms | $I_{FRM}$ | 60 | A |
| Grenzlastintegral<br>$I^2t$ - value | $V_R$ = 0V, $t_p$ = 10ms, $T_{vj}$ = 125°C | $I^2t$ | 240 | $A^2s$ |

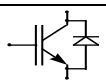
**Transistor Brems-Chopper/ Transistor Brake-Chopper**

| | | | | |
|---|---|---|---|---|
| Kollektor-Emitter-Sperrspannung<br>collector-emitter voltage | | $V_{CES}$ | 600 | V |
| Kollektor-Dauergleichstrom<br>DC-collector current | $T_C$ = 80 °C<br>$T_C$ = 25 °C | $I_{C,nom.}$<br>$I_C$ | 15<br>25 | A<br>A |
| Periodischer Kollektor Spitzenstrom<br>repetitive peak collector current | $t_P$ = 1 ms, $T_C$ = 80°C | $I_{CRM}$ | 30 | A |
| Gesamt-Verlustleistung<br>total power dissipation | $T_C$ = 25°C | $P_{tot}$ | 100 | W |
| Gate-Emitter-Spitzenspannung<br>gate-emitter peak voltage | | $V_{GES}$ | +/- 20V | V |

**Diode Brems-Chopper/ Diode Brake-Chopper**

| | | | | |
|---|---|---|---|---|
| Dauergleichstrom<br>DC forward current | Tc = 80 °C | $I_F$ | 10 | A |
| Periodischer Spitzenstrom<br>repetitive peak forw. current | $t_P$ = 1 ms | $I_{FRM}$ | 20 | A |

| | |
|---|---|
| prepared by: Andreas Schulz | date of publication:17.09.1999 |
| approved by: M.Hierholzer | revision: 4 |



**Modul Isolation/ Module Isolation**

| | | | | | |
|---|---|---|---|---|---|
| Isolations-Prüfspannung<br>insulation test voltage | RMS, f = 50 Hz, t = 1 min.<br>NTC connected to Baseplate | $V_{ISOL}$ | | 2,5 | kV |

## Elektrische Eigenschaften / Electrical properties

### Charakteristische Werte / Characteristic values

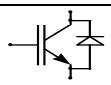
| **Diode Gleichrichter/ Diode Rectifier** | | | **min.** | **typ.** | **max.** | |
|---|---|---|---|---|---|---|
| Durchlaßspannung<br>forward voltage | $T_{vj}$ = 150°C, $I_F$ = 30 A | $V_F$ | - | 1,1 | 1,15 | V |
| Schleusenspannung<br>threshold voltage | $T_{vj}$ = 150°C | $V_{(TO)}$ | - | - | 0,8 | V |
| Ersatzwiderstand<br>slope resistance | $T_{vj}$ = 150°C | $r_T$ | - | - | 10,5 | mΩ |
| Sperrstrom<br>reverse current | $T_{vj}$ = 150°C, $V_R$ = 1600 V | $I_R$ | - | 2 | - | mA |
| Modul Leitungswiderstand, Anschlüsse-Chip<br>lead resistance, terminals-chip | $T_C$ = 25°C | $R_{AA'+CC'}$ | - | 8 | - | mΩ |

| **Transistor Wechselrichter/ Transistor Inverter** | | | **min.** | **typ.** | **max.** | |
|---|---|---|---|---|---|---|
| Kollektor-Emitter Sättigungsspannung<br>collector-emitter saturation voltage | $V_{GE}$ = 15V, $T_{vj}$ = 25°C, $I_C$ = 30 A<br>$V_{GE}$ = 15V, $T_{vj}$ = 125°C, $I_C$ = 30 A | $V_{CE\ sat}$ | -<br>- | 1,95<br>2,2 | 2,45<br>- | V<br>V |
| Gate-Schwellenspannung<br>gate threshold voltage | $V_{CE} = V_{GE}$, $T_{vj}$ = 25°C, $I_C$ = 0,7 mA | $V_{GE(TO)}$ | 4,5 | 5,5 | 6,5 | V |
| Eingangskapazität<br>input capacitance | f = 1MHz, $T_{vj}$ = 25°C<br>$V_{CE}$ = 25 V, $V_{GE}$ = 0 V | $C_{ies}$ | - | 1,6 | - | nF |
| Kollektor-Emitter Reststrom<br>collector-emitter cut-off current | $V_{GE}$ = 0V, $T_{vj}$ = 25°C, $V_{CE}$ = 600 V<br>$V_{GE}$ = 0V, $T_{vj}$ =125°C, $V_{CE}$ = 600 V | $I_{CES}$ | -<br>- | 1,0<br>1,2 | 500<br>- | µA<br>mA |
| Gate-Emitter Reststrom<br>gate-emitter leakage current | $V_{CE}$ = 0V, $V_{GE}$ =20V, $T_{vj}$ =25°C | $I_{GES}$ | - | - | 300 | nA |
| Einschaltverzögerungszeit (ind. Last)<br>turn on delay time (inductive load) | $I_C = I_{Nenn}$, $V_{CC}$ = 300 V<br>$V_{GE}$ = ±15V, $T_{vj}$ = 25°C, $R_G$ = 33 Ohm<br>$V_{GE}$ = ±15V, $T_{vj}$ = 125°C, $R_G$ = 33 Ohm | $t_{d,on}$ | -<br>- | 50<br>50 | -<br>- | ns<br>ns |
| Anstiegszeit (induktive Last)<br>rise time (inductive load) | $I_C = I_{Nenn}$, $V_{CC}$ = 300 V<br>$V_{GE}$ = ±15V, $T_{vj}$ = 25°C, $R_G$ = 33 Ohm<br>$V_{GE}$ = ±15V, $T_{vj}$ = 125°C, $R_G$ = 33 Ohm | $t_r$ | -<br>- | 50<br>50 | -<br>- | ns<br>ns |
| Abschaltverzögerungszeit (ind. Last)<br>turn off delay time (inductive load) | $I_C = I_{Nenn}$, $V_{CC}$ = 300 V<br>$V_{GE}$ = ±15V, $T_{vj}$ = 25°C, $R_G$ = 33 Ohm<br>$V_{GE}$ = ±15V, $T_{vj}$ = 125°C, $R_G$ = 33 Ohm | $t_{d,off}$ | -<br>- | 250<br>270 | -<br>- | ns<br>ns |
| Fallzeit (induktive Last)<br>fall time (inductive load) | $I_C = I_{Nenn}$, $V_{CC}$ = 300 V<br>$V_{GE}$ = ±15V, $T_{vj}$ = 25°C, $R_G$ = 33 Ohm<br>$V_{GE}$ = ±15V, $T_{vj}$ = 125°C, $R_G$ = 33 Ohm | $t_f$ | -<br>- | 30<br>40 | -<br>- | ns<br>ns |
| Einschaltverlustenergie pro Puls<br>turn-on energy loss per pulse | $I_C = I_{Nenn}$, $V_{CC}$ = 300 V<br>$V_{GE}$ = ±15V, $T_{vj}$ = 125°C, $R_G$ = 33 Ohm<br>$L_S$ = 75 nH | $E_{on}$ | - | 1,4 | - | mWs |
| Abschaltverlustenergie pro Puls<br>turn-off energy loss per pulse | $I_C = I_{Nenn}$, $V_{CC}$ = 300 V<br>$V_{GE}$ = ±15V, $T_{vj}$ = 125°C, $R_G$ = 33 Ohm<br>$L_S$ = 75 nH | $E_{off}$ | - | 1 | - | mWs |
| Kurzschlußverhalten<br>SC Data | $t_P \leq 10\mu s$, $V_{GE} \leq 15V$, $R_G$ = 33 Ohm<br>$T_{vj} \leq 125°C$, $V_{CC}$ = 360 V<br>dI/dt = 1800 A/µs | $I_{SC}$ | - | 120 | - | A |

## Elektrische Eigenschaften / Electrical properties

### Charakteristische Werte / Characteristic values

| | | | min. | typ. | max. | |
|---|---|---|---|---|---|---|
| Modulinduktivität<br>stray inductance module | | $L_{\sigma CE}$ | - | - | 100 | nH |
| Modul Leitungswiderstand, Anschlüsse-Chip<br>lead resistance, terminals-chip | $T_C$ = 25°C | $R_{CC'+EE'}$ | - | 11 | - | mΩ |
| **Diode Wechselrichter/ Diode Inverter** | | | **min.** | **typ.** | **max.** | |
| Durchlaßspannung<br>forward voltage | $V_{GE}$ = 0V, $T_{vj}$ = 25°C, $I_F$ = 30 A | $V_F$ | - | 1,25 | 1,7 | V |
| | $V_{GE}$ = 0V, $T_{vj}$ = 125°C, $I_F$ = 30 A | | - | 1,2 | - | V |
| Rückstromspitze<br>peak reverse recovery current | $I_F$=$I_{Nenn}$, - $di_F/dt$ = 900A/µs | | | | | |
| | $V_{GE}$ = -10V, $T_{vj}$ = 25°C, $V_R$ = 300 V | $I_{RM}$ | - | 26 | - | A |
| | $V_{GE}$ = -10V, $T_{vj}$ = 125°C, $V_R$ = 300 V | | - | 34 | - | A |
| Sperrverzögerungsladung<br>recovered charge | $I_F$=$I_{Nenn}$, - $di_F/dt$ = 900A/µs | | | | | |
| | $V_{GE}$ = -10V, $T_{vj}$ = 25°C, $V_R$ = 300 V | $Q_r$ | - | 2,5 | - | µAs |
| | $V_{GE}$ = -10V, $T_{vj}$ = 125°C, $V_R$ = 300 V | | - | 4 | - | µAs |
| Abschaltenergie pro Puls<br>reverse recovery energy | $I_F$=$I_{Nenn}$, - $di_F/dt$ = 900A/µs | | | | | |
| | $V_{GE}$ = -10V, $T_{vj}$ = 25°C, $V_R$ = 300 V | $E_{RQ}$ | - | 0,5 | - | mWs |
| | $V_{GE}$ = -10V, $T_{vj}$ = 125°C, $V_R$ = 300 V | | - | 0,8 | - | mWs |
| **Transistor Brems-Chopper/ Transistor Brake-Chopper** | | | **min.** | **typ.** | **max.** | |
| Kollektor-Emitter Sättigungsspannung<br>collector-emitter saturation voltage | $V_{GE}$ = 15V, $T_{vj}$ = 25°C, $I_C$ = 15,0 A | $V_{CE\ sat}$ | - | 1,95 | 2,45 | V |
| | $V_{GE}$ = 15V, $T_{vj}$ = 125°C, $I_C$ = 15,0 A | | - | 2,2 | - | V |
| Gate-Schwellenspannung<br>gate threshold voltage | $V_{CE}$ = $V_{GE}$, $T_{vj}$ = 25°C, $I_C$ = 0,4 mA | $V_{GE(TO)}$ | 4,5 | 5,5 | 6,5 | V |
| Eingangskapazität<br>input capacitance | f = 1MHz, $T_{vj}$ = 25°C<br>$V_{CE}$ = 25 V, $V_{GE}$ = 0 V | $C_{ies}$ | - | 0,8 | - | nF |
| Kollektor-Emitter Reststrom<br>collector-emitter cut-off current | $V_{GE}$ = 0V, $T_{vj}$ = 25°C, $V_{CE}$ = 600 V | $I_{CES}$ | - | 0,5 | 500 | µA |
| | $V_{GE}$ = 0V, $T_{vj}$ = 125°C, $V_{CE}$ = 600 V | | - | 0,8 | - | mA |
| Gate-Emitter Reststrom<br>gate-emitter leakage current | $V_{CE}$ = 0V, $V_{GE}$ = 20V, $T_{vj}$ = 25°C | $I_{GES}$ | - | - | 300 | nA |
| **Diode Brems-Chopper/ Diode Brake-Chopper** | | | **min.** | **typ.** | **max.** | |
| Durchlaßspannung<br>forward voltage | $T_{vj}$ = 25°C, $I_F$ = 15,0 A | $V_F$ | - | 1,4 | 1,95 | V |
| | $T_{vj}$ = 125°C, $I_F$ = 15,0 A | | - | 1,35 | - | V |
| **NTC-Widerstand/ NTC-Thermistor** | | | **min.** | **typ.** | **max.** | |
| Nennwiderstand<br>rated resistance | $T_C$ = 25°C | $R_{25}$ | - | 5 | - | kΩ |
| Abweichung von $R_{100}$<br>deviation of $R_{100}$ | $T_C$ = 100°C, $R_{100}$ = 493 Ω | ΔR/R | -5 | | 5 | % |
| Verlustleistung<br>power dissipation | $T_C$ = 25°C | $P_{25}$ | | | 20 | mW |
| B-Wert<br>B-value | $R_2 = R_1 \exp [B(1/T_2 - 1/T_1)]$ | $B_{25/50}$ | | 3375 | | K |



## Thermische Eigenschaften / Thermal properties

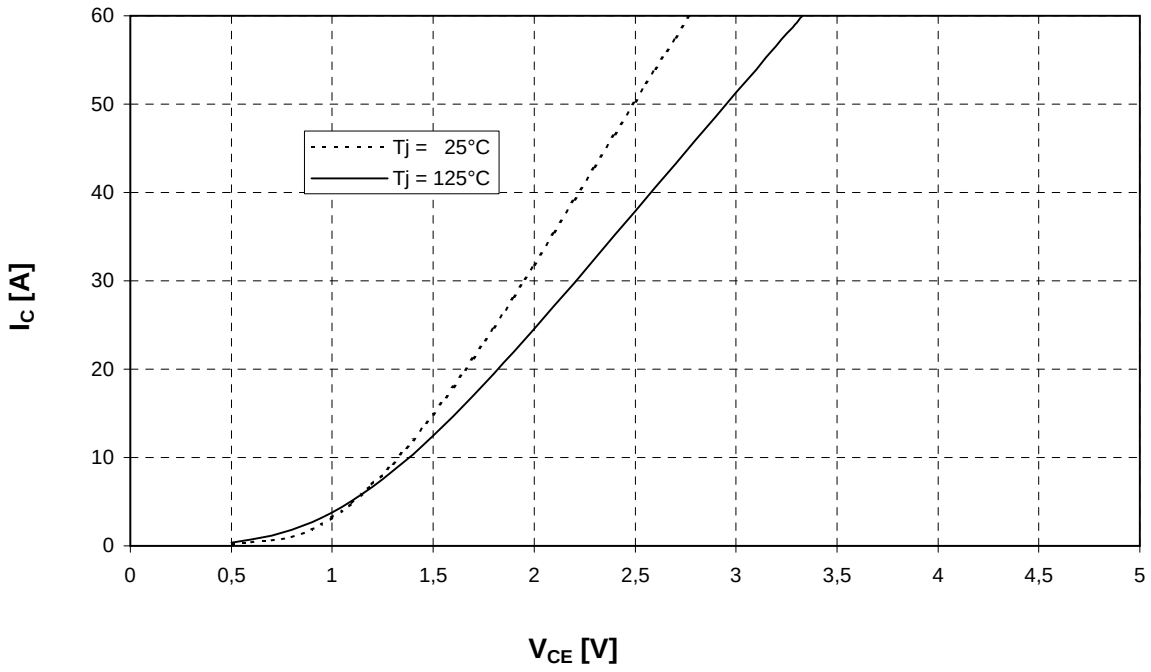
| | | | | min. | typ. | max. | |
|---|---|---|---|---|---|---|---|
| Innerer Wärmewiderstand<br>thermal resistance, junction to case | Gleichr. Diode/ Rectif. Diode | | $R_{thJC}$ | - | - | 1 | K/W |
| | Trans. Wechsr./ Trans. Inverter | | | - | - | 0,7 | K/W |
| | Diode Wechsr./ Diode Inverter | | | - | - | 1,2 | K/W |
| | Trans. Bremse/ Trans. Brake | | | - | - | 1,3 | K/W |
| | Diode Bremse/ Diode Brake | | | - | - | 2,3 | K/W |
| Übergangs-Wärmewiderstand<br>thermal resistance, case to heatsink | Gleichr. Diode/ Rectif. Diode | $\lambda_{Paste}$=1W/m*K | $R_{thCK}$ | - | 0,08 | - | K/W |
| | Trans. Wechsr./ Trans. Inverter | $\lambda_{grease}$=1W/m*K | | - | 0,04 | - | K/W |
| | Diode Wechsr./ Diode Inverter | | | - | 0,08 | - | K/W |
| Höchstzulässige Sperrschichttemperatur<br>maximum junction temperature | | | $T_{vj}$ | - | - | 150 | °C |
| Betriebstemperatur<br>operation temperature | | | $T_{op}$ | -40 | - | 125 | °C |
| Lagertemperatur<br>storage temperature | | | $T_{stg}$ | -40 | - | 125 | °C |

## Mechanische Eigenschaften / Mechanical properties

| | | | | | |
|---|---|---|---|---|---|
| Innere Isolation<br>internal insulation | | | $Al_2O_3$ | | |
| CTI<br>comperative tracking index | | | 225 | | |
| Anzugsdrehmoment f. mech. Befestigung<br>mounting torque | | M | 3<br>±10% | | Nm |
| Gewicht<br>weight | | G | 180 | | g |

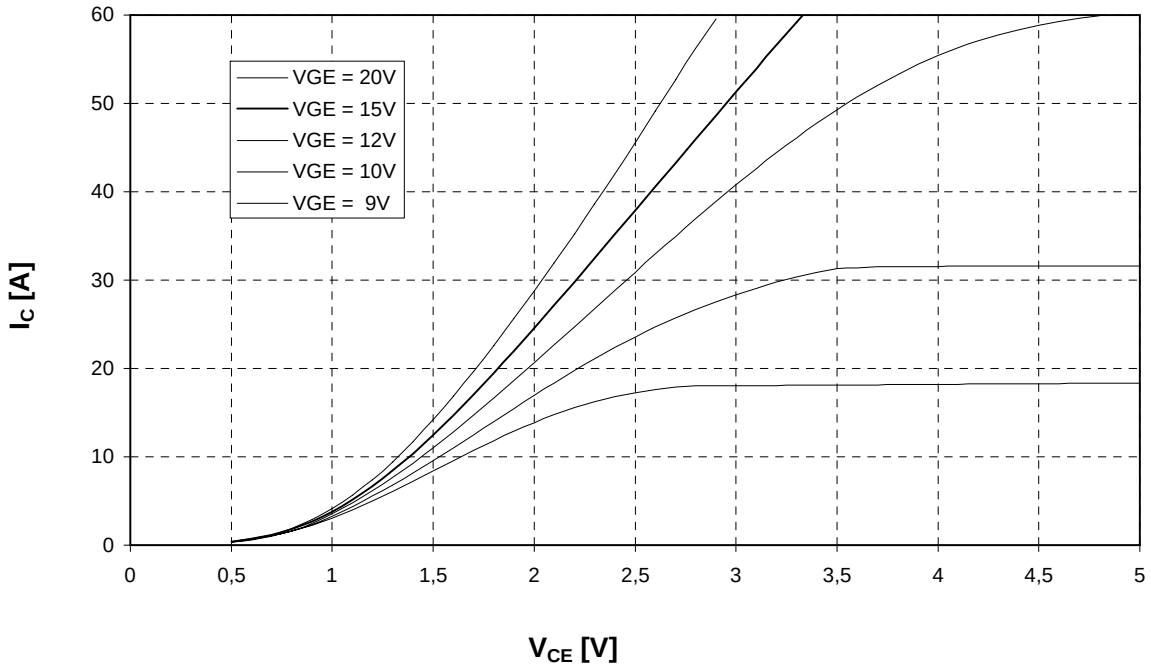
**Ausgangskennlinienfeld Wechselr. (typisch)** $I_C = f(V_{CE})$

**Output characteristic Inverter (typical)** $V_{GE} = 15\ V$



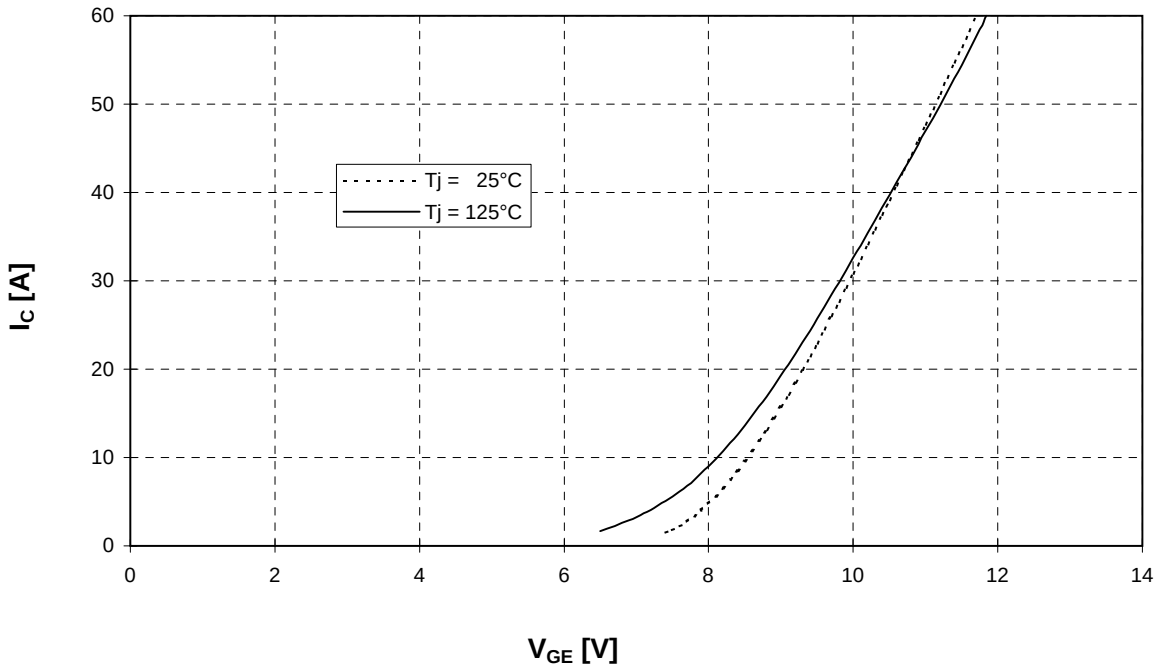

**Ausgangskennlinienfeld Wechselr. (typisch)** $I_C = f(V_{CE})$

**Output characteristic Inverter (typical)** $T_{vj} = 125°C$



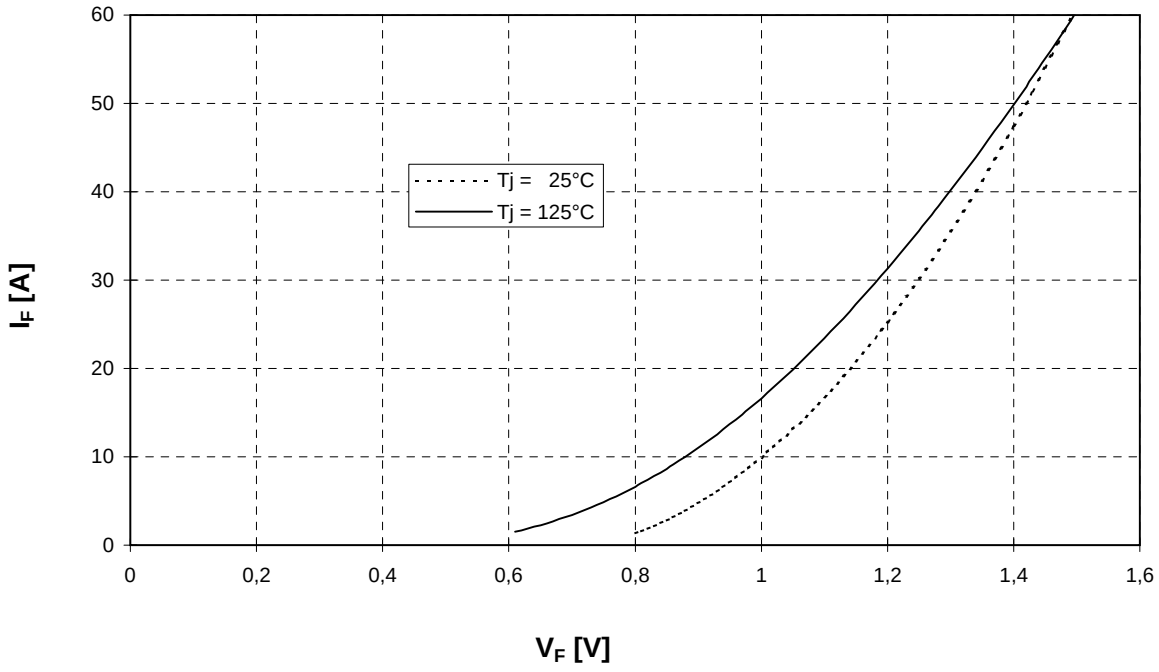
**Übertragungscharakteristik Wechselr. (typisch)** $I_C = f(V_{GE})$

**Transfer characteristic Inverter (typical)** $V_{CE} = 20\ V$



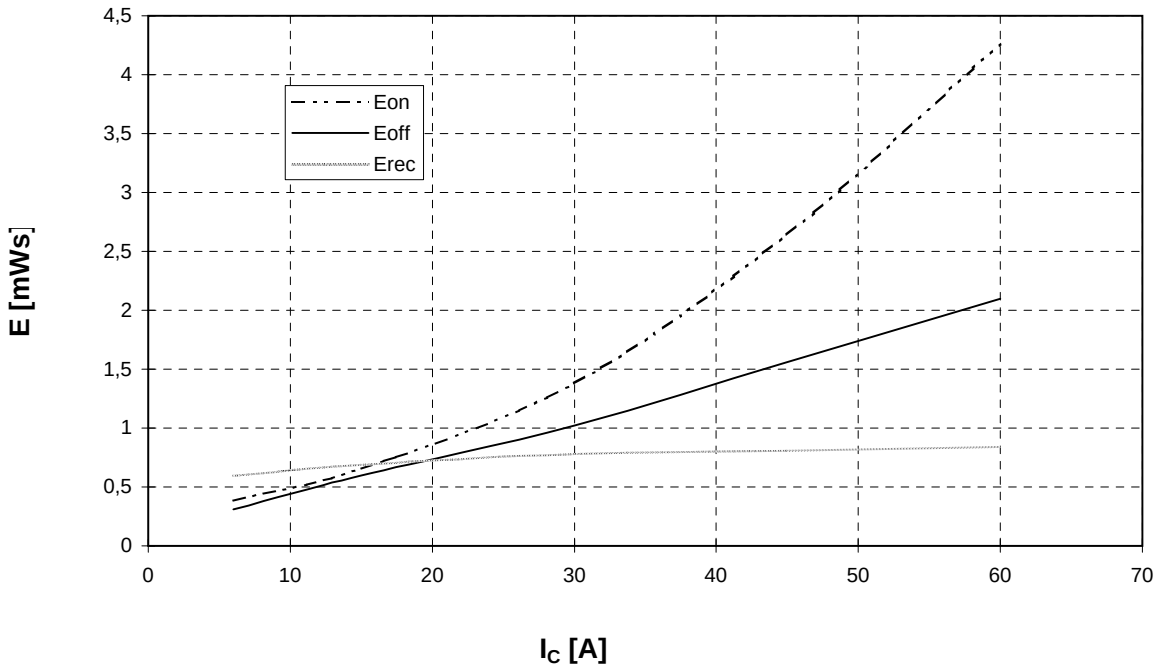

**Durchlaßkennlinie der Freilaufdiode Wechselr. (typisch)** $I_F = f(V_F)$

**Forward characteristic of FWD Inverter (typical)**



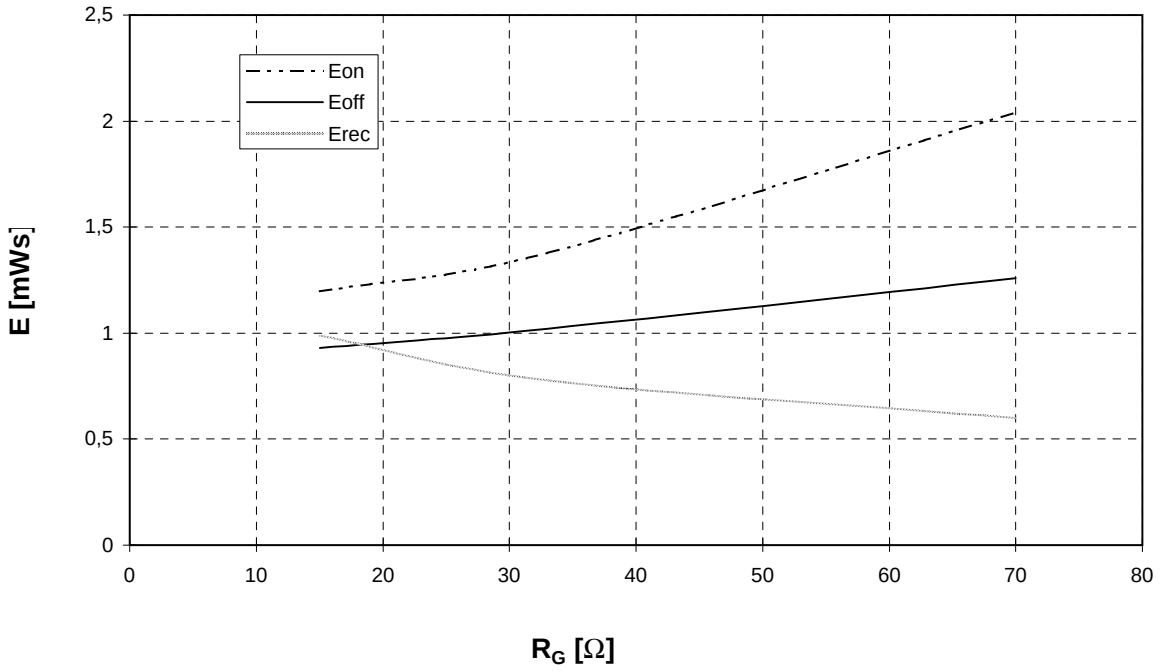
**Schaltverluste Wechselr. (typisch)** $E_{on} = f(I_C)$, $E_{off} = f(I_C)$, $E_{rec} = f(I_C)$ $V_{CC}$ = **300 V**

**Switching losses Inverter (typical)** $T_j$ = 125°C, $V_{GE}$ = ±15 V, $R_{Gon}$ = $R_{Goff}$ = **33 Ohm**



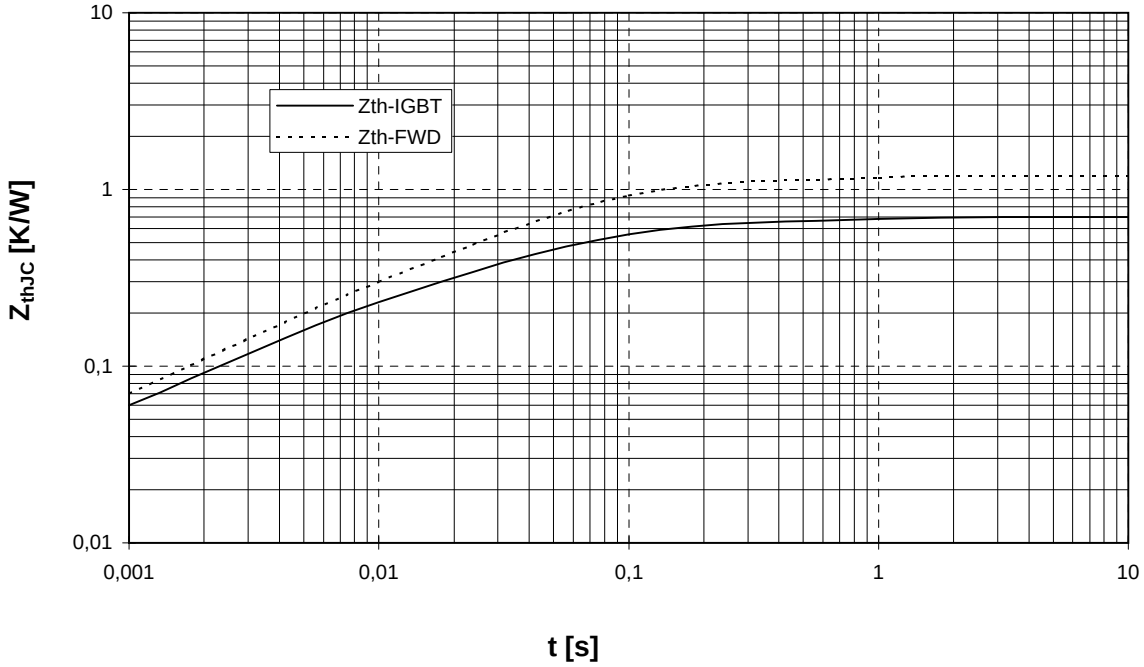

**Schaltverluste Wechselr. (typisch)** $E_{on} = f(R_G)$, $E_{off} = f(R_G)$, $E_{rec} = f(R_G)$

**Switching losses Inverter (typical)** $T_j$ = 125°C, $V_{GE}$ = +-15 V , $I_c = I_{nenn}$ , $V_{CC}$ = **300 V**



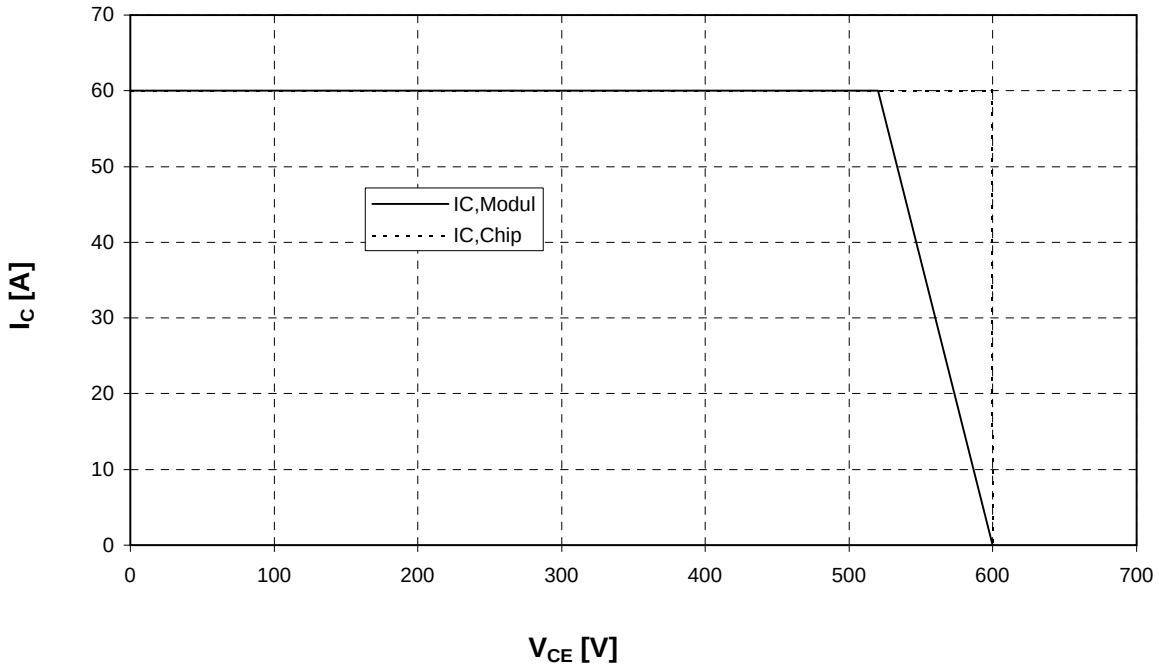
**Transienter Wärmewiderstand Wechselr.** $Z_{thJC} = f(t)$

**Transient thermal impedance Inverter**



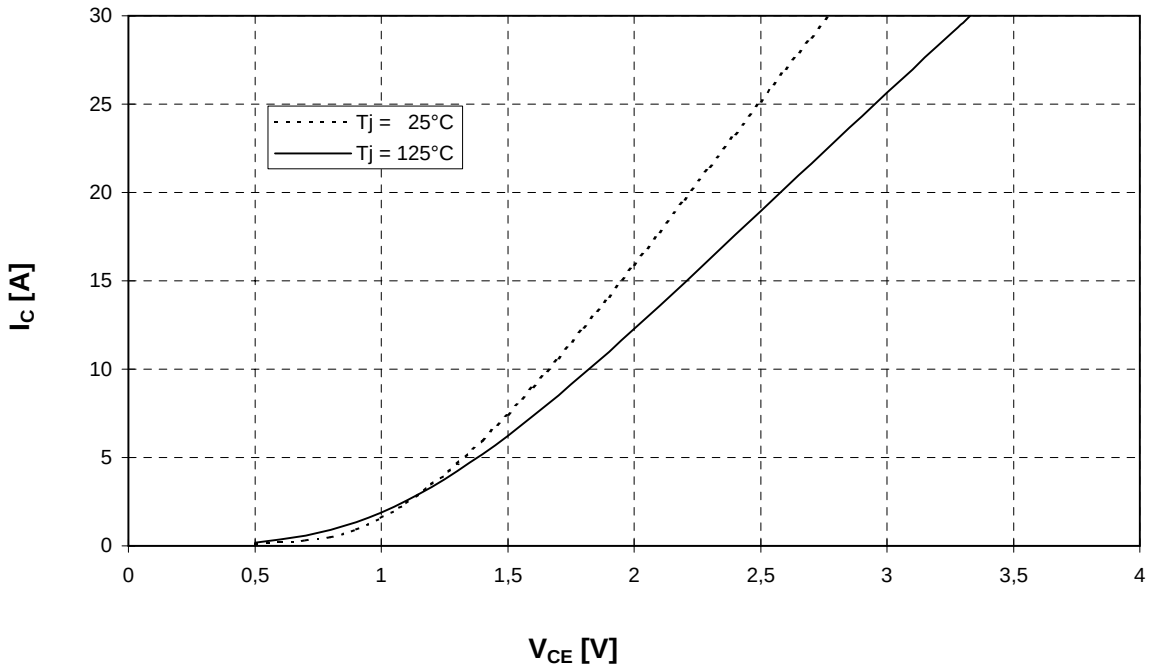

**Sicherer Arbeitsbereich Wechselr. (RBSOA)** $I_C = f(V_{CE})$

**Reverse bias save operating area Inverter (RBSOA)** $T_{vj} = 125°C$, $V_{GE} = \pm 15V$, $R_G =$ **33 Ohm**



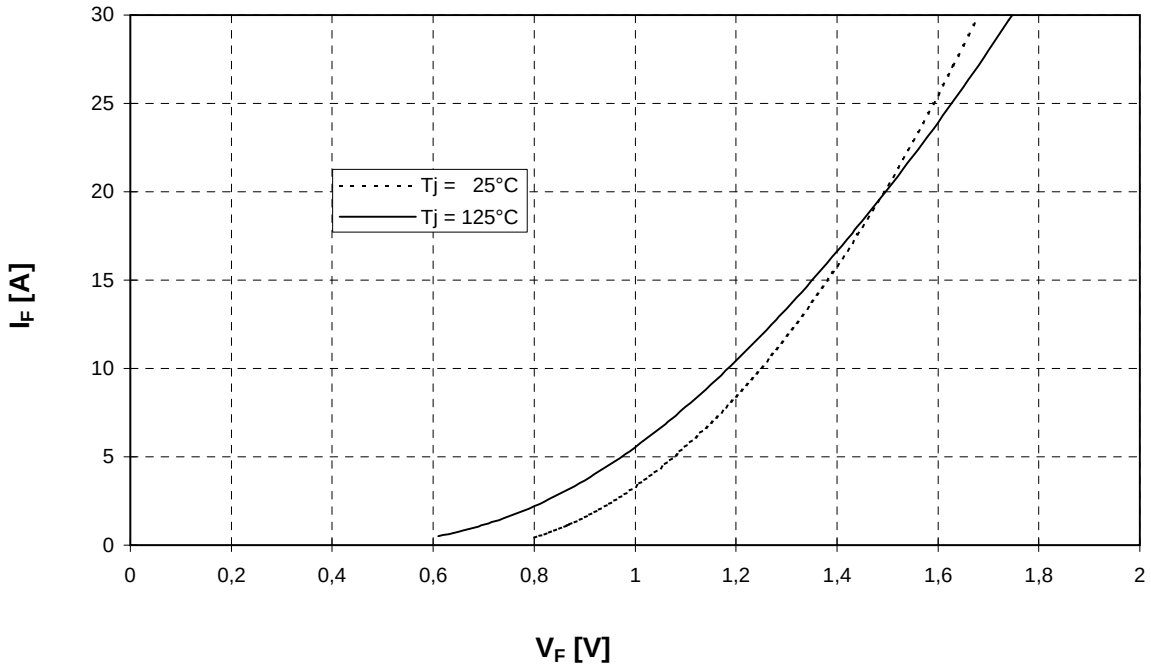
**Ausgangskennlinienfeld Brems-Chopper-IGBT (typisch)** $I_C = f(V_{CE})$

**Output characteristic brake-chopper-IGBT (typical)** $V_{GE} = 15\ V$

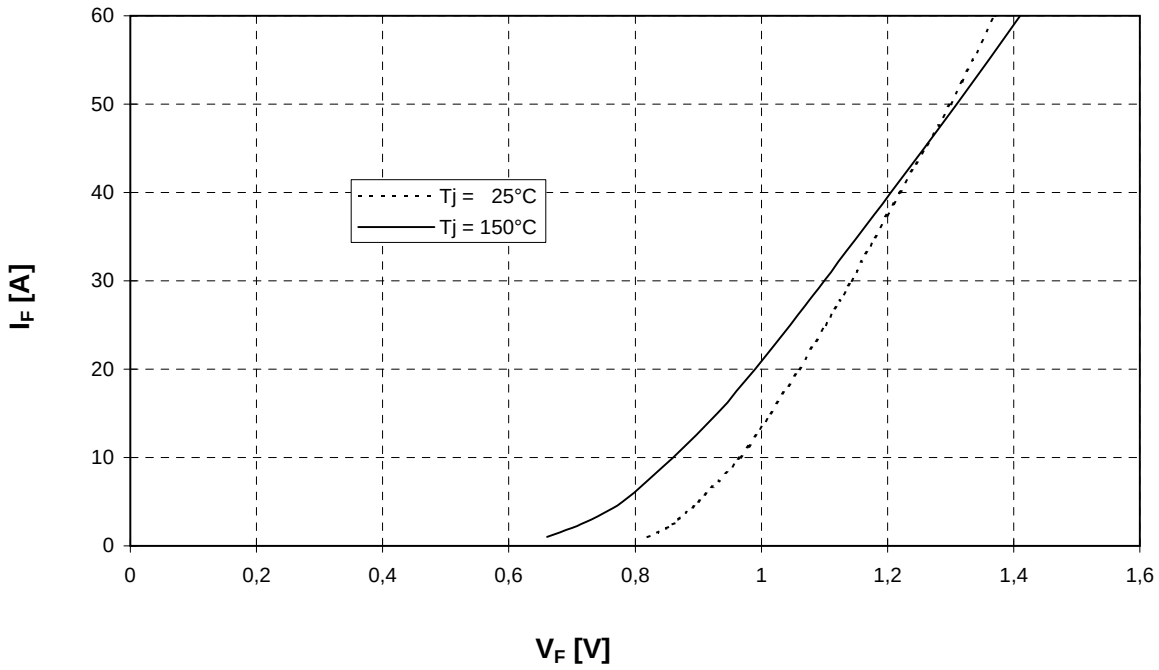



**Durchlaßkennlinie der Brems-Chopper-Diode (typisch)** $I_F = f(V_F)$

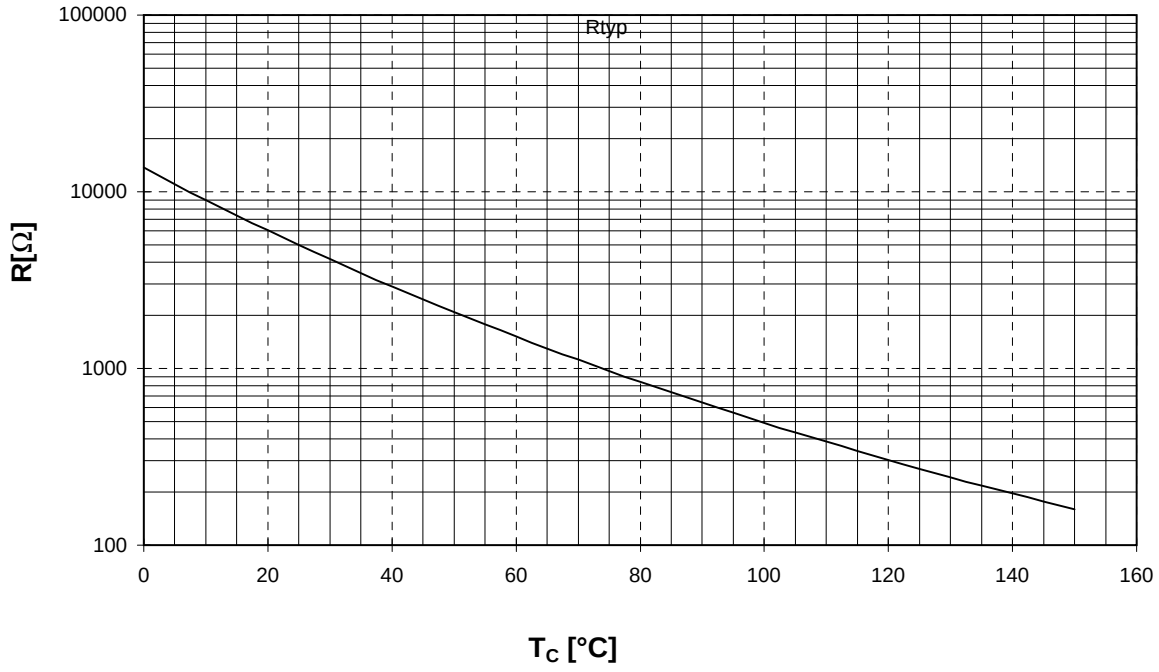
**Forward characteristic of brake-chopper-FWD (typical)**



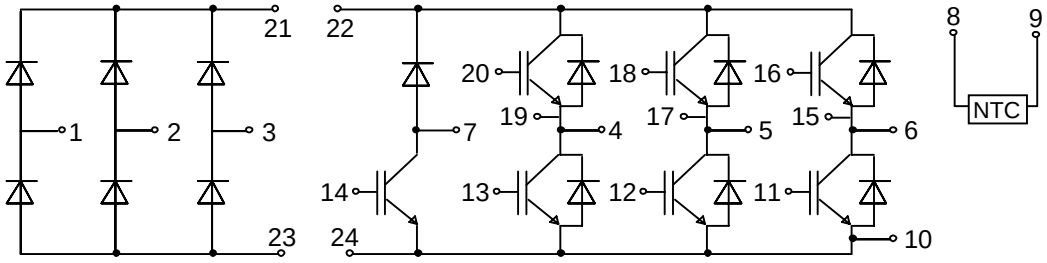
**Durchlaßkennlinie der Gleichrichterdiode (typisch)** $I_F = f(V_F)$
**Forward characteristic of Rectifier Diode (typical)**



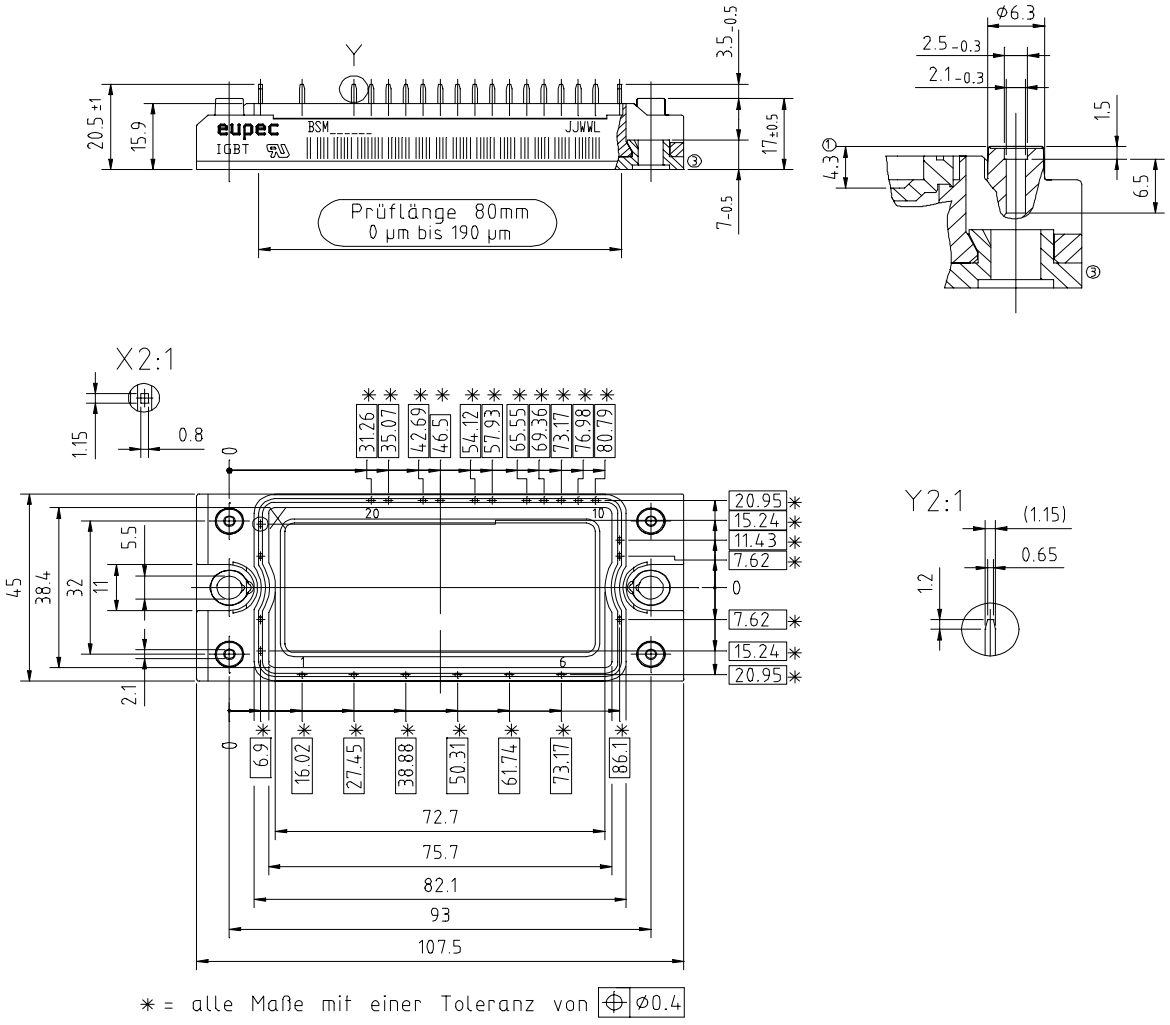

**NTC- Temperaturkennlinie (typisch)** **R = f (T)**
**NTC- temperature characteristic (typical)**



## Schaltplan/ Circuit diagram




## Gehäuseabmessungen/ Package outlines

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# Terms & Conditions of Usage

**Attention**
The present product data is exclusively subscribed to technically experienced staff. This Data Sheet is describing the specification of the products for which a warranty is granted exclusively pursuant the terms and conditions of the supply agreement. There will be no guarantee of any kind for the product and its specifications. Changes to the Data Sheet are reserved.

You and your technical departments will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to such application. Should you require product information in excess of the data given in the Data Sheet, please contact your local Sales Office via "www.eupec.com / sales & contact".

**Warning**
Due to technical requirements the products may contain dangerous substances. For information on the types in question please contact your local Sales Office via "www.eupec.com / sales & contact".

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
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**Данный компонент на территории Российской Федерации**

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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