# Technische Information / technical information

IGBT-Module
IGBT-modules

# FP75R12KT4_B11

EconoPIM™3 Modul PressFIT mit Trench/Feldstopp IGBT4 und EmCon4 Diode
EconoPIM™3 module PressFIT with trench/fieldstop IGBT4 and EmCon4 diode

## IGBT-Wechselrichter / IGBT-inverter

**Vorläufige Daten / preliminary data**

### Höchstzulässige Werte / maximum rated values

| | | | | |
|---|---|---|---|---|
| Kollektor-Emitter-Sperrspannung<br>collector-emitter voltage | $T_{vj}$ = 25°C | $V_{CES}$ | 1200 | V |
| Kollektor-Dauergleichstrom<br>DC-collector current | $T_C$ = 95°C, $T_{vj}$ = 175°C | $I_{C\ nom}$ | 75 | A |
| Periodischer Kollektor Spitzenstrom<br>repetitive peak collector current | $t_P$ = 1 ms | $I_{CRM}$ | 150 | A |
| Gesamt-Verlustleistung<br>total power dissipation | $T_C$ = 25°C, $T_{vj}$ = 175°C | $P_{tot}$ | 385 | W |
| Gate-Emitter-Spitzenspannung<br>gate-emitter peak voltage | | $V_{GES}$ | +/-20 | V |

### Charakteristische Werte / characteristic values

| | | | min. | typ. | max. | |
|---|---|---|---|---|---|---|
| Kollektor-Emitter Sättigungsspannung<br>collector-emitter saturation voltage | $I_C$ = 75 A, $V_{GE}$ = 15 V<br>$I_C$ = 75 A, $V_{GE}$ = 15 V<br>$I_C$ = 75 A, $V_{GE}$ = 15 V | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $V_{CE\ sat}$ | 1,85<br>2,15<br>2,25 | 2,25 | V<br>V<br>V |
| Gate-Schwellenspannung<br>gate threshold voltage | $I_C$ = 2,40 mA, $V_{CE}$ = $V_{GE}$, $T_{vj}$ = 25°C | | $V_{GEth}$ | 5,2 | 5,8 | 6,4 | V |
| Gateladung<br>gate charge | $V_{GE}$ = -15 V ... +15 V | | $Q_G$ | | 0,57 | | µC |
| Interner Gatewiderstand<br>internal gate resistor | $T_{vj}$ = 25°C | | $R_{Gint}$ | | 10 | | Ω |
| Eingangskapazität<br>input capacitance | f = 1 MHz, $T_{vj}$ = 25°C, $V_{CE}$ = 25 V, $V_{GE}$ = 0 V | | $C_{ies}$ | | 4,30 | | nF |
| Rückwirkungskapazität<br>reverse transfer capacitance | f = 1 MHz, $T_{vj}$ = 25°C, $V_{CE}$ = 25 V, $V_{GE}$ = 0 V | | $C_{res}$ | | 0,16 | | nF |
| Kollektor-Emitter Reststrom<br>collector-emitter cut-off current | $V_{CE}$ = 1200 V, $V_{GE}$ = 0 V, $T_{vj}$ = 25°C | | $I_{CES}$ | | | 1,0 | mA |
| Gate-Emitter Reststrom<br>gate-emitter leakage current | $V_{CE}$ = 0 V, $V_{GE}$ = 20 V, $T_{vj}$ = 25°C | | $I_{GES}$ | | | 100 | nA |
| Einschaltverzögerungszeit (ind. Last)<br>turn-on delay time (inductive load) | $I_C$ = 75 A, $V_{CE}$ = 600 V<br>$V_{GE}$ = ±15 V<br>$R_{Gon}$ = 2,2 Ω | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $t_{d\ on}$ | | 0,16<br>0,17<br>0,17 | | µs<br>µs<br>µs |
| Anstiegszeit (induktive Last)<br>rise time (inductive load) | $I_C$ = 75 A, $V_{CE}$ = 600 V<br>$V_{GE}$ = ±15 V<br>$R_{Gon}$ = 2,2 Ω | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $t_r$ | | 0,03<br>0,04<br>0,04 | | µs<br>µs<br>µs |
| Abschaltverzögerungszeit (ind. Last)<br>turn-off delay time (inductive load) | $I_C$ = 75 A, $V_{CE}$ = 600 V<br>$V_{GE}$ = ±15 V<br>$R_{Goff}$ = 2,2 Ω | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $t_{d\ off}$ | | 0,34<br>0,43<br>0,45 | | µs<br>µs<br>µs |
| Fallzeit (induktive Last)<br>fall time (inductive load) | $I_C$ = 75 A, $V_{CE}$ = 600 V<br>$V_{GE}$ = ±15 V<br>$R_{Goff}$ = 2,2 Ω | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $t_f$ | | 0,08<br>0,15<br>0,17 | | µs<br>µs<br>µs |
| Einschaltverlustenergie pro Puls<br>turn-on energy loss per pulse | $I_C$ = 75 A, $V_{CE}$ = 600 V, $L_S$ = 40 nH<br>$V_{GE}$ = ±15 V, di/dt = 1900 A/µs ($T_{vj}$=150°C)<br>$R_{Gon}$ = 2,2 Ω | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $E_{on}$ | | 3,40<br>7,30<br>8,50 | | mJ<br>mJ<br>mJ |
| Abschaltverlustenergie pro Puls<br>turn-off energy loss per pulse | $I_C$ = 75 A, $V_{CE}$ = 600 V, $L_S$ = 40 nH<br>$V_{GE}$ = ±15 V, du/dt = 3600 V/µs ($T_{vj}$=150°C)<br>$R_{Goff}$ = 2,2 Ω | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $E_{off}$ | | 4,20<br>6,40<br>7,20 | | mJ<br>mJ<br>mJ |
| Kurzschlussverhalten<br>SC data | $V_{GE}$ ≤ 15 V, $V_{CC}$ = 900 V<br>$V_{CEmax}$ = $V_{CES}$ -$L_{sCE}$ ·di/dt | $t_P$ ≤ 10 µs, $T_{vj}$ = 150°C | $I_{SC}$ | | 270 | | A |
| Innerer Wärmewiderstand<br>thermal resistance, junction to case | pro IGBT / per IGBT | | $R_{thJC}$ | | | 0,39 | K/W |
| Übergangs-Wärmewiderstand<br>thermal resistance, case to heatsink | pro IGBT / per IGBT<br>$\lambda_{Paste}$ = 1 W/(m·K) / $\lambda_{grease}$ = 1 W/(m·K) | | $R_{thCH}$ | | 0,13 | | K/W |

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**Vorläufige Daten**
**preliminary data**

## Diode-Wechselrichter / diode-inverter

### Höchstzulässige Werte / maximum rated values

| | | | | | |
|---|---|---|---|---|---|
| Periodische Spitzensperrspannung<br>repetitive peak reverse voltage | $T_{vj}$ = 25°C | | $V_{RRM}$ | 1200 | V |
| Dauergleichstrom<br>DC forward current | | | $I_F$ | 75 | A |
| Periodischer Spitzenstrom<br>repetitive peak forward current | $t_P$ = 1 ms | | $I_{FRM}$ | 150 | A |
| Grenzlastintegral<br>I²t - value | $V_R$ = 0 V, $t_P$ = 10 ms, $T_{vj}$ = 125°C | | I²t | 960 | A²s |

### Charakteristische Werte / characteristic values

| | | | | min. | typ. | max. | |
|---|---|---|---|---|---|---|---|
| Durchlassspannung<br>forward voltage | $I_F$ = 75 A, $V_{GE}$ = 0 V<br>$I_F$ = 75 A, $V_{GE}$ = 0 V<br>$I_F$ = 75 A, $V_{GE}$ = 0 V | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $V_F$ | | 1,70<br>1,65<br>1,65 | 2,15 | V<br>V<br>V |
| Rückstromspitze<br>peak reverse recovery current | $I_F$ = 75 A, - $di_F/dt$ = 1900 A/µs ($T_{vj}$=150°C)<br>$V_R$ = 600 V<br>$V_{GE}$ = -15 V | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $I_{RM}$ | | 88,0<br>89,0<br>90,0 | | A<br>A<br>A |
| Sperrverzögerungsladung<br>recovered charge | $I_F$ = 75 A, - $di_F/dt$ = 1900 A/µs ($T_{vj}$=150°C)<br>$V_R$ = 600 V<br>$V_{GE}$ = -15 V | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $Q_r$ | | 7,30<br>13,0<br>14,5 | | µC<br>µC<br>µC |
| Abschaltenergie pro Puls<br>reverse recovery energy | $I_F$ = 75 A, - $di_F/dt$ = 1900 A/µs ($T_{vj}$=150°C)<br>$V_R$ = 600 V<br>$V_{GE}$ = -15 V | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $E_{rec}$ | | 2,60<br>4,50<br>5,50 | | mJ<br>mJ<br>mJ |
| Innerer Wärmewiderstand<br>thermal resistance, junction to case | pro Diode / per diode | | $R_{thJC}$ | | | 0,62 | K/W |
| Übergangs-Wärmewiderstand<br>thermal resistance, case to heatsink | pro Diode / per diode<br>$\lambda_{Paste}$ = 1 W/(m·K) / $\lambda_{grease}$ = 1 W/(m·K) | | $R_{thCH}$ | | 0,205 | | K/W |

## Diode-Gleichrichter / diode-rectifier

### Höchstzulässige Werte / maximum rated values

| | | | | | |
|---|---|---|---|---|---|
| Periodische Rückw. Spitzensperrspannung<br>repetitive peak reverse voltage | $T_{vj}$ = 25°C | | $V_{RRM}$ | 1600 | V |
| Durchlassstrom Grenzeffektivwert pro Dio.<br>forward current RMS maximum per diode | $T_C$ = 80°C | | $I_{FRMSM}$ | 80 | A |
| Gleichrichter Ausgang Grenzeffektivstrom<br>maximum RMS current at Rectifier output | $T_C$ = 80°C | | $I_{RMSM}$ | 140 | A |
| Stoßstrom Grenzwert<br>surge forward current | $t_p$ = 10 ms, $T_{vj}$ = 25°C<br>$t_p$ = 10 ms, $T_{vj}$ = 150°C | | $I_{FSM}$ | 600<br>470 | A<br>A |
| Grenzlastintegral<br>I²t - value | $t_p$ = 10 ms, $T_{vj}$ = 25°C<br>$t_p$ = 10 ms, $T_{vj}$ = 150°C | | I²t | 1800<br>1100 | A²s<br>A²s |

### Charakteristische Werte / characteristic values

| | | | min. | typ. | max. | |
|---|---|---|---|---|---|---|
| Durchlassspannung<br>forward voltage | $T_{vj}$ = 150°C, $I_F$ = 75 A | $V_F$ | | 1,15 | | V |
| Sperrstrom<br>reverse current | $T_{vj}$ = 150°C, $V_R$ = 1600 V | $I_R$ | | 1,00 | | mA |
| Innerer Wärmewiderstand<br>thermal resistance, junction to case | pro Diode<br>per diode | $R_{thJC}$ | | | 0,65 | K/W |
| Übergangs-Wärmewiderstand<br>thermal resistance, case to heatsink | pro Diode / per diode<br>$\lambda_{Paste}$ = 1 W/(m·K) / $\lambda_{grease}$ = 1 W/(m·K) | $R_{thCH}$ | | 0,215 | | K/W |



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**Vorläufige Daten**
**preliminary data**

## IGBT-Brems-Chopper / IGBT-brake-chopper

### Höchstzulässige Werte / maximum rated values

| | | | | |
|---|---|---|---|---|
| Kollektor-Emitter-Sperrspannung<br>collector-emitter voltage | $T_{vj}$ = 25°C | $V_{CES}$ | 1200 | V |
| Kollektor-Dauergleichstrom<br>DC-collector current | $T_C$ = 95°C, $T_{vj}$ = 175°C | $I_{Cnom}$ | 50 | A |
| Periodischer Kollektor Spitzenstrom<br>repetitive peak collector current | $t_P$ = 1 ms | $I_{CRM}$ | 100 | A |
| Gesamt-Verlustleistung<br>total power dissipation | $T_C$ = 25°C, $T_{vj}$ = 175°C | $P_{tot}$ | 280 | W |
| Gate-Emitter-Spitzenspannung<br>gate-emitter peak voltage | | $V_{GES}$ | +/-20 | V |

### Charakteristische Werte / characteristic values

| | | | min. | typ. | max. | |
|---|---|---|---|---|---|---|
| Kollektor-Emitter Sättigungsspannung<br>collector-emitter saturation voltage | $I_C$ = 50 A, $V_{GE}$ = 15 V<br>$I_C$ = 50 A, $V_{GE}$ = 15 V<br>$I_C$ = 50 A, $V_{GE}$ = 15 V | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $V_{CE\ sat}$ | 1,85<br>2,15<br>2,25 | 2,25 | V<br>V<br>V |
| Gate-Schwellenspannung<br>gate threshold voltage | $I_C$ = 1,60 mA, $V_{CE}$ = $V_{GE}$, $T_{vj}$ = 25°C | | $V_{GEth}$ | 5,2 | 5,8 | 6,4 | V |
| Gateladung<br>gate charge | $V_{GE}$ = -15 V ... +15 V | | $Q_G$ | | 0,38 | | µC |
| Interner Gatewiderstand<br>internal gate resistor | $T_{vj}$ = 25°C | | $R_{Gint}$ | | 4,00 | | Ω |
| Eingangskapazität<br>input capacitance | f = 1 MHz, $T_{vj}$ = 25°C, $V_{CE}$ = 25 V, $V_{GE}$ = 0 V | | $C_{ies}$ | | 2,80 | | nF |
| Rückwirkungskapazität<br>reverse transfer capacitance | f = 1 MHz, $T_{vj}$ = 25°C, $V_{CE}$ = 25 V, $V_{GE}$ = 0 V | | $C_{res}$ | | 0,10 | | nF |
| Kollektor-Emitter Reststrom<br>collector-emitter cut-off current | $V_{CE}$ = 1200 V, $V_{GE}$ = 0 V, $T_{vj}$ = 25°C | | $I_{CES}$ | | | 1,0 | mA |
| Gate-Emitter Reststrom<br>gate-emitter leakage current | $V_{CE}$ = 0 V, $V_{GE}$ = 20 V, $T_{vj}$ = 25°C | | $I_{GES}$ | | | 100 | nA |
| Einschaltverzögerungszeit (ind. Last)<br>turn-on delay time (inductive load) | $I_C$ = 50 A, $V_{CE}$ = 600 V<br>$V_{GE}$ = ±15 V<br>$R_{Gon}$ = 15 Ω | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $t_{d\ on}$ | | 0,16<br>0,17<br>0,17 | | µs<br>µs<br>µs |
| Anstiegszeit (induktive Last)<br>rise time (inductive load) | $I_C$ = 50 A, $V_{CE}$ = 600 V<br>$V_{GE}$ = ±15 V<br>$R_{Gon}$ = 15 Ω | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $t_r$ | | 0,03<br>0,04<br>0,04 | | µs<br>µs<br>µs |
| Abschaltverzögerungszeit (ind. Last)<br>turn-off delay time (inductive load) | $I_C$ = 50 A, $V_{CE}$ = 600 V<br>$V_{GE}$ = ±15 V<br>$R_{Goff}$ = 15 Ω | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $t_{d\ off}$ | | 0,33<br>0,43<br>0,45 | | µs<br>µs<br>µs |
| Fallzeit (induktive Last)<br>fall time (inductive load) | $I_C$ = 50 A, $V_{CE}$ = 600 V<br>$V_{GE}$ = ±15 V<br>$R_{Goff}$ = 15 Ω | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $t_f$ | | 0,08<br>0,15<br>0,17 | | µs<br>µs<br>µs |
| Einschaltverlustenergie pro Puls<br>turn-on energy loss per pulse | $I_C$ = 50 A, $V_{CE}$ = 600 V<br>$V_{GE}$ = ±15 V<br>$R_{Gon}$ = 15 Ω | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $E_{on}$ | | 5,70<br>7,70<br>8,40 | | mJ<br>mJ<br>mJ |
| Abschaltverlustenergie pro Puls<br>turn-off energy loss per pulse | $I_C$ = 50 A, $V_{CE}$ = 600 V<br>$V_{GE}$ = ±15 V<br>$R_{Goff}$ = 15 Ω | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $E_{off}$ | | 2,80<br>4,30<br>4,80 | | mJ<br>mJ<br>mJ |
| Kurzschlussverhalten<br>SC data | $V_{GE}$ ≤ 15 V, $V_{CC}$ = 900 V<br>$V_{CEmax}$ = $V_{CES}$ -$L_{sCE}$ · di/dt | $t_P$ ≤ 10 µs, $T_{vj}$ = 125°C | $I_{SC}$ | | 180 | | A |
| Innerer Wärmewiderstand<br>thermal resistance, junction to case | pro IGBT<br>per IGBT | | $R_{thJC}$ | | | 0,54 | K/W |
| Übergangs-Wärmewiderstand<br>thermal resistance, case to heatsink | pro IGBT / per IGBT<br>$\lambda_{Paste}$ = 1 W/(m·K) / $\lambda_{grease}$ = 1 W/(m·K) | | $R_{thCH}$ | | 0,245 | | K/W |

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**Vorläufige Daten**
**preliminary data**

## Diode-Brems-Chopper / Diode-brake-chopper

### Höchstzulässige Werte / maximum rated values

| | | | | |
|---|---|---|---|---|
| Periodische Spitzensperrspannung<br>repetitive peak reverse voltage | $T_{vj}$ = 25°C | $V_{RRM}$ | 1200 | V |
| Dauergleichstrom<br>DC forward current | | $I_F$ | 25 | A |
| Periodischer Spitzenstrom<br>repetitive peak forw. current | $t_p$ = 1 ms | $I_{FRM}$ | 50 | A |
| Grenzlastintegral<br>I²t - value | $V_R$ = 0 V, $t_P$ = 10 ms, $T_{vj}$ = 125°C<br>$V_R$ = 0 V, $t_P$ = 10 ms, $T_{vj}$ = 150°C | I²t | 90,0<br>80,0 | A²s<br>A²s |

### Charakteristische Werte / characteristic values

| | | | min. | typ. | max. | |
|---|---|---|---|---|---|---|
| Durchlassspannung<br>forward voltage | $I_F$ = 25 A, $V_{GE}$ = 0 V<br>$I_F$ = 25 A, $V_{GE}$ = 0 V<br>$I_F$ = 25 A, $V_{GE}$ = 0 V | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $V_F$ | | 1,75<br>1,75<br>1,75 | 2,25 | V<br>V<br>V |
| Rückstromspitze<br>peak reverse recovery current | $I_F$ = 25 A, - $di_F/dt$ = 1200 A/µs ($T_{vj}$=150°C)<br>$V_R$ = 600 V<br>$V_{GE}$ = -15 V | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $I_{RM}$ | | 39,0<br>40,0<br>41,0 | | A<br>A<br>A |
| Sperrverzögerungsladung<br>recovered charge | $I_F$ = 25 A, - $di_F/dt$ = 1200 A/µs ($T_{vj}$=150°C)<br>$V_R$ = 600 V<br>$V_{GE}$ = -15 V | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $Q_r$ | | 2,40<br>4,10<br>4,40 | | µC<br>µC<br>µC |
| Abschaltenergie pro Puls<br>reverse recovery energy | $I_F$ = 25 A, - $di_F/dt$ = 1200 A/µs ($T_{vj}$=150°C)<br>$V_R$ = 600 V<br>$V_{GE}$ = -15 V | $T_{vj}$ = 25°C<br>$T_{vj}$ = 125°C<br>$T_{vj}$ = 150°C | $E_{rec}$ | | 0,90<br>1,50<br>1,70 | | mJ<br>mJ<br>mJ |
| Innerer Wärmewiderstand<br>thermal resistance, junction to case | pro Diode<br>per diode | | $R_{thJC}$ | | | 1,35 | K/W |
| Übergangs-Wärmewiderstand<br>thermal resistance, case to heatsink | pro Diode / per diode<br>$\lambda_{Paste}$ = 1 W/(m·K) / $\lambda_{grease}$ = 1 W/(m·K) | | $R_{thCH}$ | | 0,61 | | K/W |

## NTC-Widerstand / NTC-thermistor

### Charakteristische Werte / characteristic values

| | | | min. | typ. | max. | |
|---|---|---|---|---|---|---|
| Nennwiderstand<br>rated resistance | $T_C$ = 25°C | $R_{25}$ | | 5,00 | | 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 | $P_{25}$ | | | 20,0 | mW |
| B-Wert<br>B-value | $R_2 = R_{25} \exp [B_{25/50}(1/T_2 - 1/(298,15\ K))]$ | $B_{25/50}$ | | 3375 | | K |
| B-Wert<br>B-value | $R_2 = R_{25} \exp [B_{25/80}(1/T_2 - 1/(298,15\ K))]$ | $B_{25/80}$ | | 3411 | | K |
| B-Wert<br>B-value | $R_2 = R_{25} \exp [B_{25/100}(1/T_2 - 1/(298,15\ K))]$ | $B_{25/100}$ | | 3433 | | K |

Angaben gemäß gültiger Application Note.
Specification according to the valid application note.

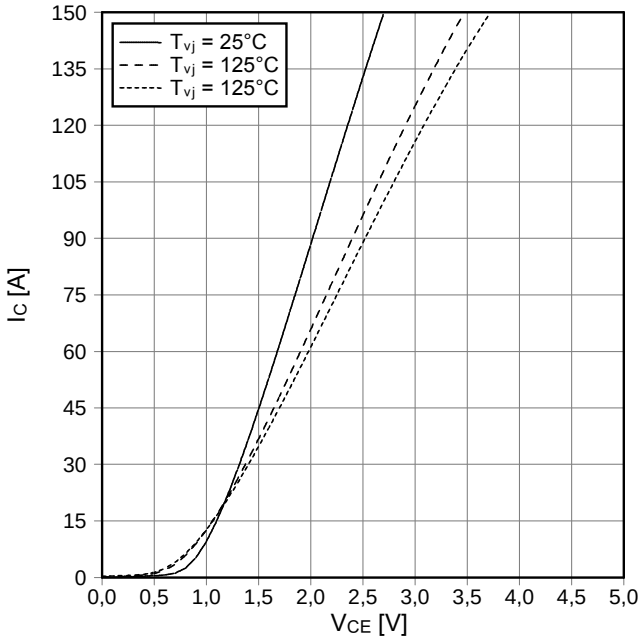
**Vorläufige Daten**
**preliminary data**

## Modul / module

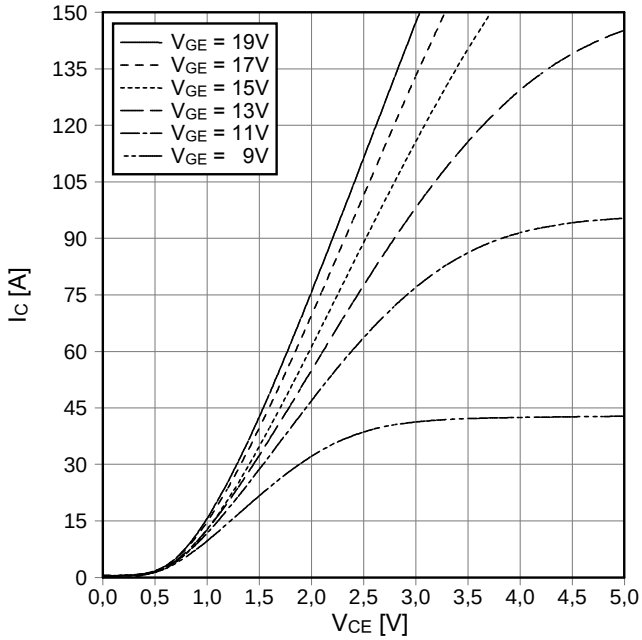
| | | | | | | |
|---|---|---|---|---|---|---|
| Isolations-Prüfspannung<br>insulation test voltage | RMS, f = 50 Hz, t = 1 min. | $V_{ISOL}$ | | 2,5 | | kV |
| Material Modulgrundplatte<br>material of module baseplate | | | | Cu | | |
| Material für innere Isolation<br>material for internal insulation | | | | $Al_2O_3$ | | |
| Kriechstrecke<br>creepage distance | Kontakt - Kühlkörper / terminal to heatsink<br>Kontakt - Kontakt / terminal to terminal | | | 10,0 | | mm |
| Luftstrecke<br>clearance distance | Kontakt - Kühlkörper / terminal to heatsink<br>Kontakt - Kontakt / terminal to terminal | | | 7,5 | | mm |
| Vergleichszahl der Kriechwegbildung<br>comparative tracking index | | CTI | | > 200 | | |
| | | | min. | typ. | max. | |
| Übergangs-Wärmewiderstand<br>thermal resistance, case to heatsink | pro Modul / per module<br>$\lambda_{Paste}$ = 1 W/(m·K) / $\lambda_{grease}$ = 1 W/(m·K) | $R_{thCH}$ | | 0,009 | | K/W |
| Modulinduktivität<br>stray inductance module | | $L_{sCE}$ | | 40 | | nH |
| Höchstzulässige Sperrschichttemperatur<br>maximum junction temperature | Wechselrichter, Brems-Chopper / Inverter, Brake-Chopper<br>Gleichrichter / rectifier | $T_{vj\ max}$ | | | 175<br>150 | °C<br>°C |
| Temperatur im Schaltbetrieb<br>temperature under switching conditions | Wechselrichter, Brems-Chopper / Inverter, Brake-Chopper<br>Gleichrichter / rectifier | $T_{vj\ op}$ | -40<br>-40 | | 150<br>150 | °C<br>°C |
| Lagertemperatur<br>storage temperature | | $T_{stg}$ | -40 | | 125 | °C |
| Anzugsdrehmoment f. mech. Befestigung<br>mounting torque | Schraube M5 - Montage gem. gültiger Applikation Note<br>screw M5 - mounting according to valid application note | M | 3,00 | - | 6,00 | Nm |
| Gewicht<br>weight | | G | | 300 | | g |

**Vorläufige Daten**
**preliminary data**

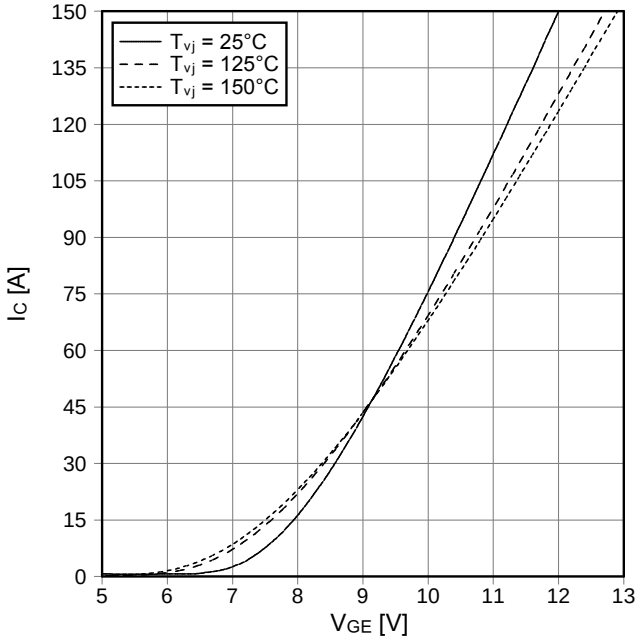
**Ausgangskennlinie IGBT-Wechselr. (typisch)**
**output characteristic IGBT-inverter (typical)**
**$I_C = f(V_{CE})$**
**$V_{GE}$ = 15 V**



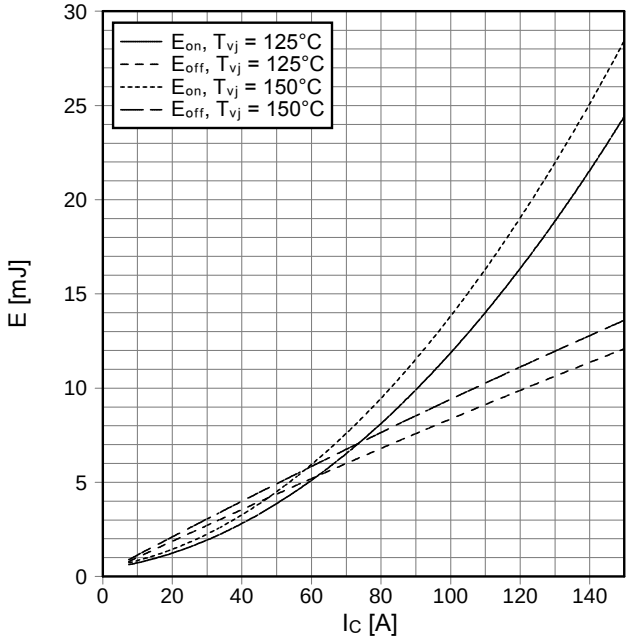

**Ausgangskennlinienfeld IGBT-Wechselr. (typisch)**
**output characteristic IGBT-inverter (typical)**
**$I_C = f(V_{CE})$**
**$T_{vj}$ = 150°C**




**Übertragungscharakteristik IGBT-Wechselr. (typisch)**
**transfer characteristic IGBT-inverter (typical)**
**$I_C = f(V_{GE})$**
**$V_{CE}$ = 20 V**




**Schaltverluste IGBT-Wechselr. (typisch)**
**switching losses IGBT-inverter (typical)**
**$E_{on} = f(I_C)$, $E_{off} = f(I_C)$**
**$V_{GE}$ = ±15 V, $R_{Gon}$ = 2.2 Ω, $R_{Goff}$ = 2.2 Ω, $V_{CE}$ = 600 V**

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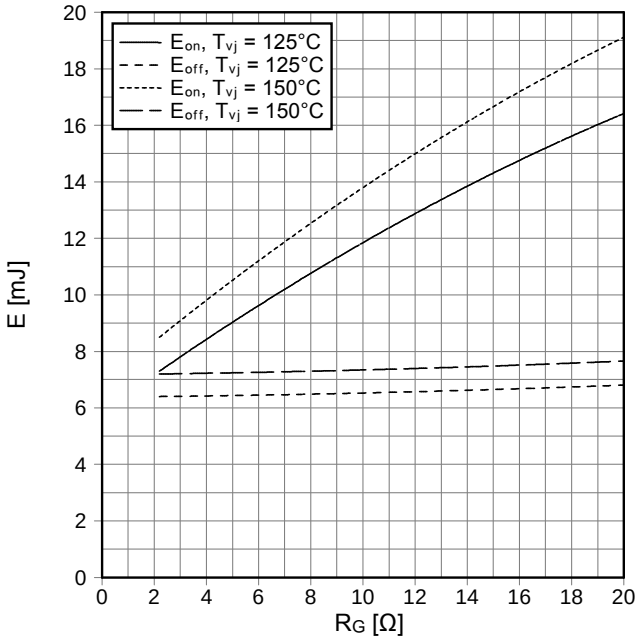
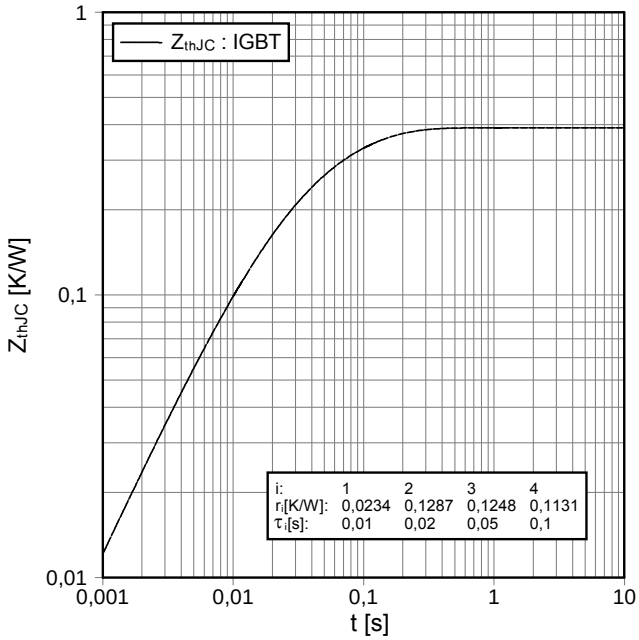
**Vorläufige Daten**
**preliminary data**

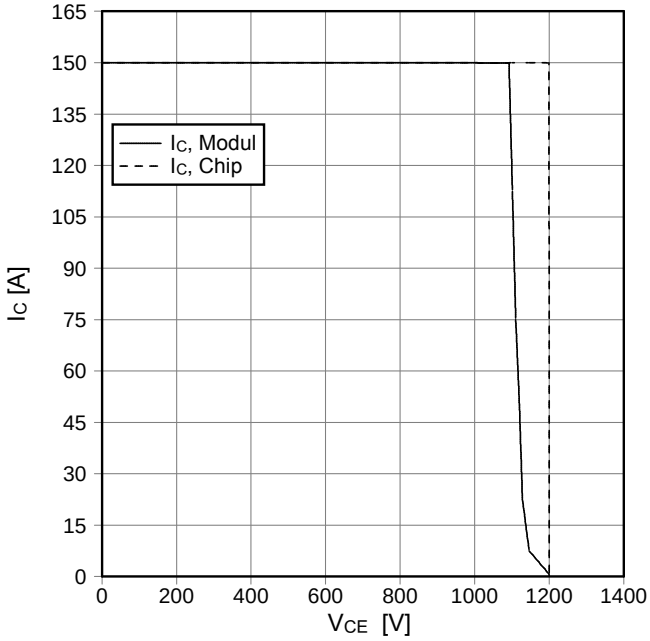
**Schaltverluste IGBT-Wechselr. (typisch)**
**switching losses IGBT-Inverter (typical)**
**$E_{on} = f(R_G)$, $E_{off} = f(R_G)$**
**$V_{GE}$ = ±15 V, $I_C$ = 75 A, $V_{CE}$ = 600 V**



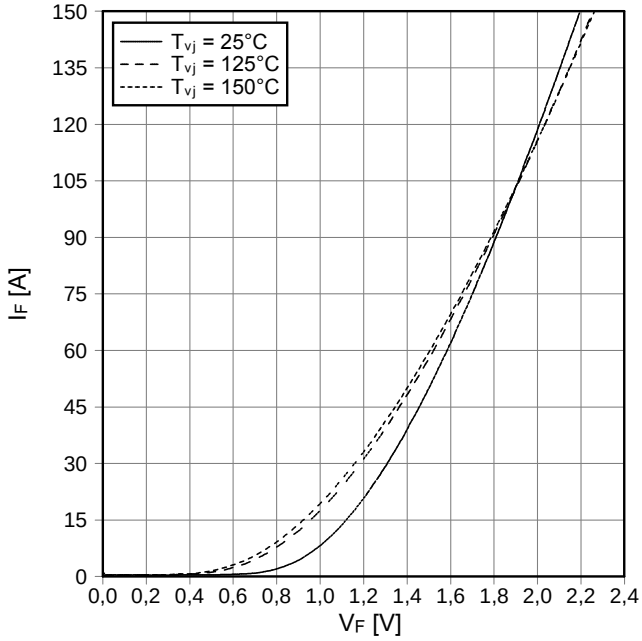

**Transienter Wärmewiderstand IGBT-Wechselr.**
**transient thermal impedance IGBT-inverter**
**$Z_{thJC} = f(t)$**




**Sicherer Rückwärts-Arbeitsbereich IGBT-Wr. (RBSOA)**
**reverse bias safe operating area IGBT-inv. (RBSOA)**
**$I_C = f(V_{CE})$**
**$V_{GE}$ = ±15 V, $R_{Goff}$ = 2.2 Ω, $T_{vj}$ = 150°C**




**Durchlasskennlinie der Diode-Wechselr. (typisch)**
**forward characteristic of diode-inverter (typical)**
**$I_F = f(V_F)$**

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**Vorläufige Daten**
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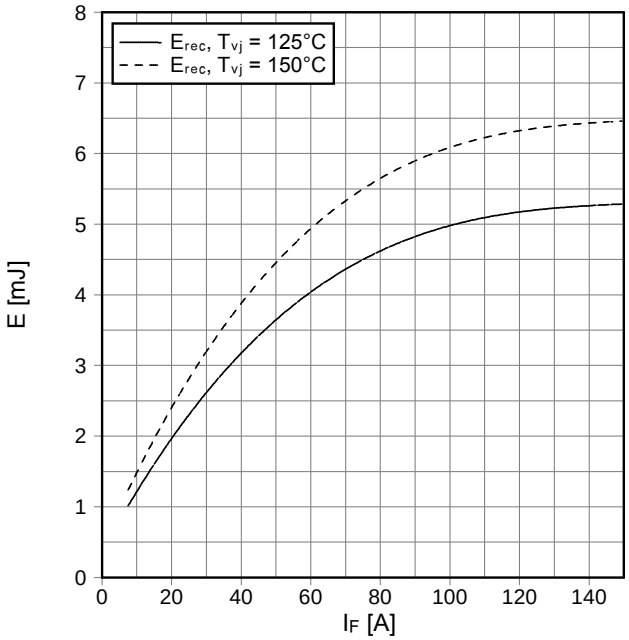
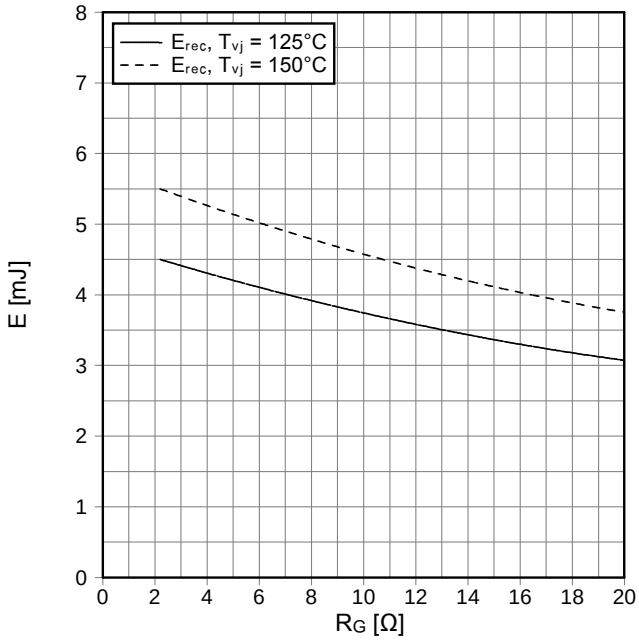
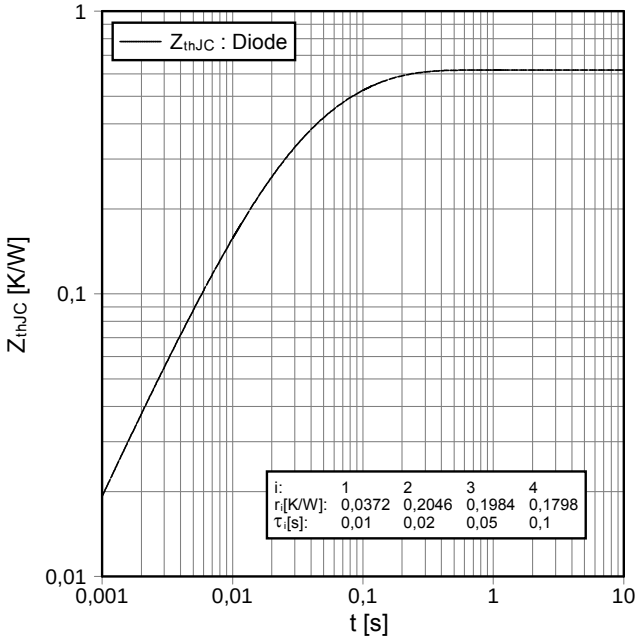
**Schaltverluste Diode-Wechselr. (typisch)**
**switching losses diode-inverter (typical)**
**$E_{rec} = f(I_F)$**
**$R_{Gon} = 2.2\ \Omega$, $V_{CE} = 600$ V**



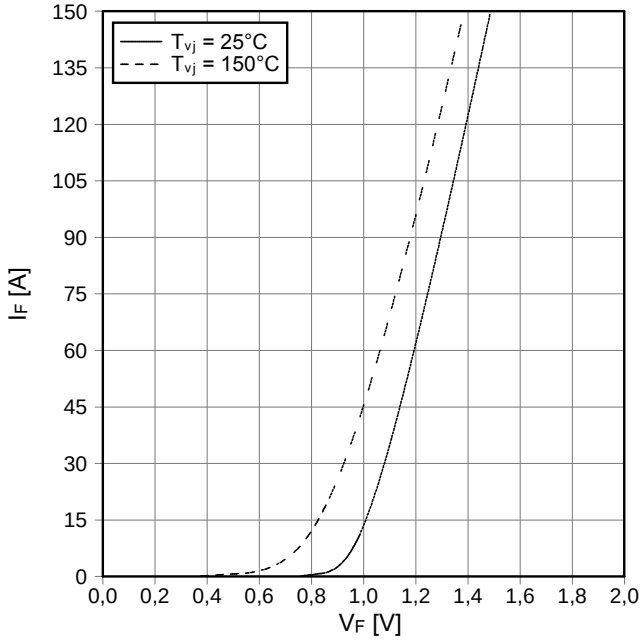

**Schaltverluste Diode-Wechselr. (typisch)**
**switching losses diode-inverter (typical)**
**$E_{rec} = f(R_G)$**
**$I_F = 75$ A, $V_{CE} = 600$ V**




**Transienter Wärmewiderstand Diode-Wechselr.**
**transient thermal impedance diode-inverter**
**$Z_{thJC} = f(t)$**




**Durchlasskennlinie der Diode-Gleichrichter (typisch)**
**forward characteristic of diode-rectifier (typical)**
**$I_F = f(V_F)$**

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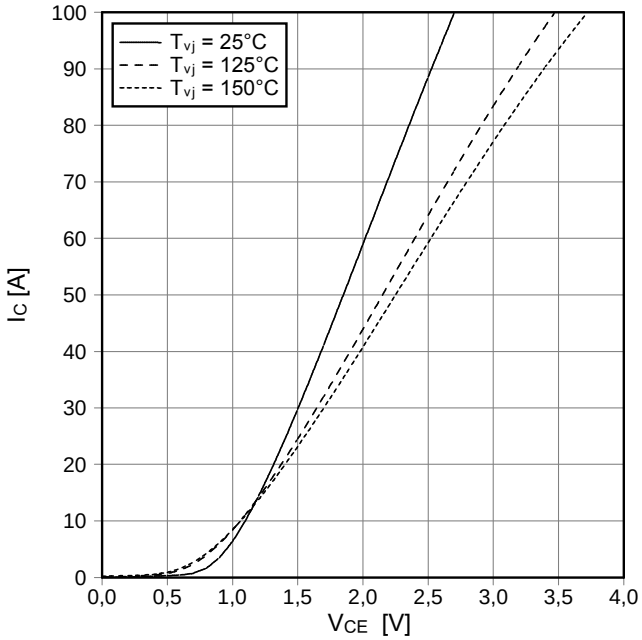
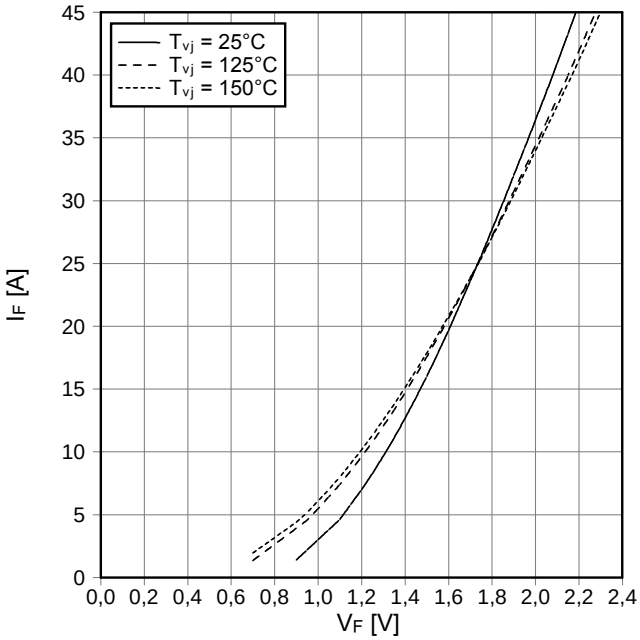
**Vorläufige Daten**
**preliminary data**

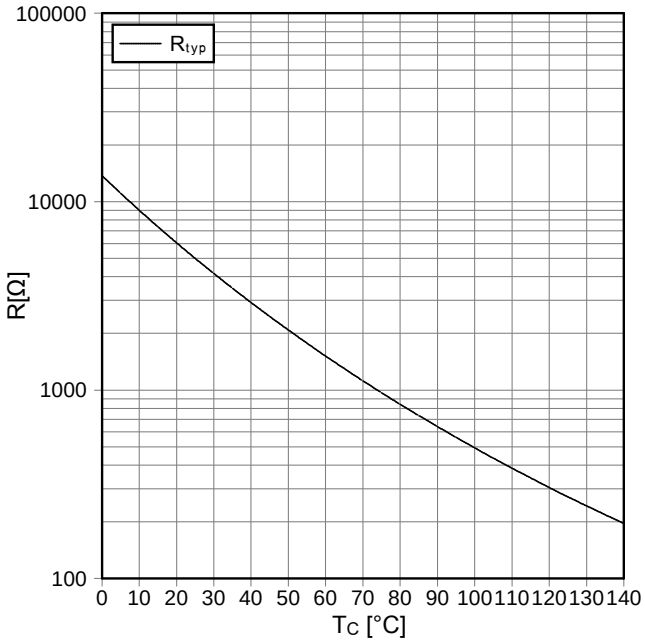
**Ausgangskennlinie IGBT-Brems-Chopper (typisch)**
**output characteristic IGBT-brake-chopper (typical)**
**$I_C = f(V_{CE})$**
**$V_{GE}$ = 15 V**




**Durchlasskennlinie der Diode-Brems-Chopper (typisch)**
**forward characteristic of Diode-brake-chopper (typical)**
**$I_F = f(V_F)$**




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

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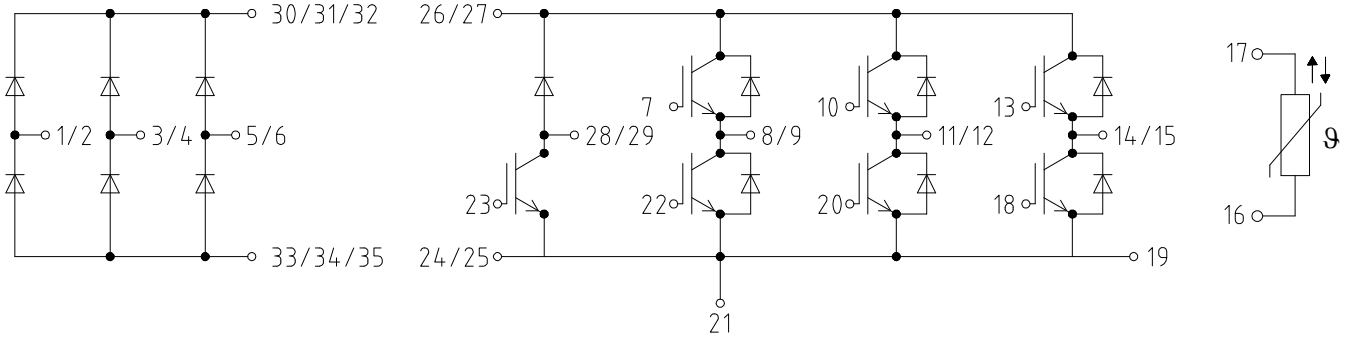
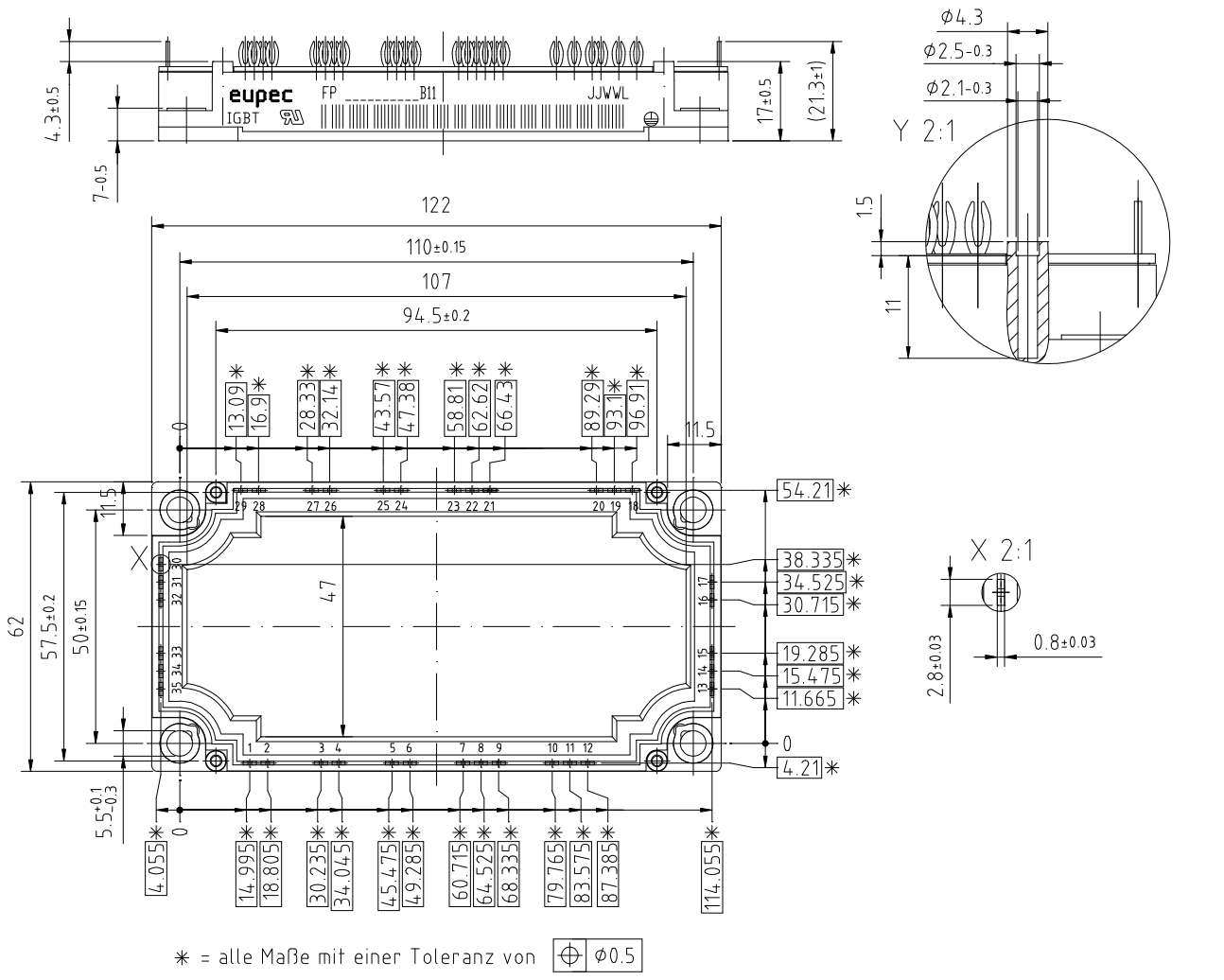
**Vorläufige Daten**
**preliminary data**

## Schaltplan / circuit diagram




## Gehäuseabmessungen / package outlines

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**Vorläufige Daten**
**preliminary data**

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