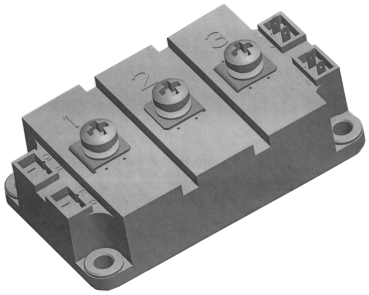
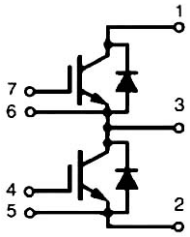
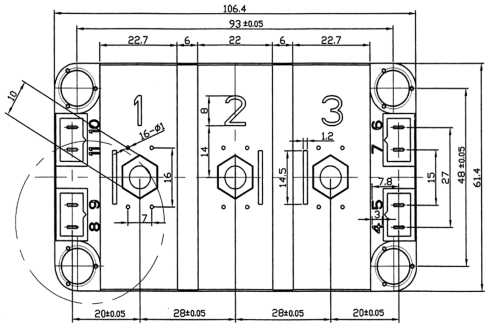
# SII200N06

## NPT IGBT Modules

Dimensions in mm (1mm = 0.0394")






**Absolute Maximum Ratings** $T_C$ = 25°C, unless otherwise specified

| Symbol | Conditions | Values | Units |
|---|---|---|---|
| **IGBT Wechselrichter/ IGBT Inverter** | | | |
| $V_{CES}$ | | 600 | V |
| $I_C$ | $T_C$= 25(50)°C | 230(200) | A |
| $I_{CRM}$ | $T_C$= 50°C, $t_P$ =1ms | 400 | A |
| $P_{tot}$ | $T_C$= 25°C, $T_{vj}$= 150°C | 730 | W |
| $V_{GES}$ | | ±20 | V |
| **Diode Wechselrichter/ Diode Inverter** | | | |
| $I_F$ | | 200 | A |
| $I_{FRM}$ | $t_P$ =1ms | 400 | A |
| $I^2t$ | $V_R$=0V, $t_P$ =10ms; $T_{vj}$=125°C | 4.05 | $A^2s$ |
| **Module Isolation/ Module Isolation** | | | |
| $V_{ISOL}$ | RMS, f=50Hz, t=1min, NTC connect to Baseplate | 2500 | V |

Sirectifier®

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**Characteristics** $T_C = 25^oC$, unless otherwise specified

| Symbol | Conditions | min. | typ. | max. | Units |
|---|---|---|---|---|---|
| **IGBT Wechselrichter/ IGBT Inverter** | | | | | |
| $V_{GEth}$ | $V_{GE} = V_{CE}$, $I_C = 4.0mA$ | 4.5 | 5.5 | 6.5 | V |
| $I_{CES}$ | $V_{GE} = 0$; $V_{CE} = 600V$, $T_j = 25(125)^oC$ | | 1(1000) | 500 | uA |
| $I_{GES}$ | $V_{CE} = 0$; $V_{GE}=20V$ | | | 400 | nA |
| $V_{CE(sat)}$ | $I_C =200A$; $V_{GE} = 15V$; $T_j = 25(125)^oC$ | | 1.95(2.2) | 2.45(-) | V |
| $C_{ies}$ | under following conditions | | 6.5 | | nF |
| $C_{res}$ | $V_{GE} = 0$, $V_{CE} = 25V$, f = 1MHz | | 0.6 | | |
| $L_{CE}$ | | | 40 | | nH |
| $I_{sc}$ | $t_P \leqslant 10uS$, $V_{GE} \leqslant 15V$, Tvj = 125 $^oC$ , Vcc = 360V | | 900 | | A |
| | under following conditions: | | | | |
| $t_{d(on)}$ | $V_{CC} = 300V$, $I_C = 200A$ | | 163(180) | | ns |
| $t_r$ | $R_{Gon} = R_{Goff} =1.5\Omega$, , $T_j = 25(125)^oC$ | | 43(49) | | ns |
| $t_{d(off)}$ | $V_{GE} = \pm 15V$ | | 253(285) | | ns |
| $t_f$ | | | 33(41) | | ns |
| $E_{on}(E_{off})$ | $T_j = 25(125)^oC$, $L_S = 15nH$ | | 4.6(6.3) | | mJ |
| $R_{CC'+EE'}$ | | | 0.9 | | $m\Omega$ |
| $R_{thJC}$ | | | | 0.17 | K/W |
| **Diode Wechselrichter/ Diode Inverter** | | | | | |
| $V_F$ | under following condition | | | | |
| | $I_F = 200A$; $V_{GE} = 0V$; $T_j = 25(125)^oC$ | | 1.25(1.2) | 1.6(-) | V |
| $I_{RM}$ | $I_F = 200A$; $T_j = 25(125)^oC$ | | 154(188) | | A |
| $Q_r$ | -di/dt = 4000A/us | | 12.1(19.7) | | uC |
| $E_{rec}$ | $V_{GE} = -10V$, $V_R=300V$ | | -(4.1) | | mJ |
| $R_{thJC}$ | | | | 0.29 | K/W |
| $R_{thCK}$ | | | 0.02 | | |
| $T_{VJ}$ | | | -40...+125 | | $^oC$ |
| $T_{VJM}$ | | | 150 | | |
| $T_{stg}$ | | | -40...+125 | | |
| **Mechanical Data** | | | | | |
| $M_s$ | to heatsink M6 | 3 | | 5 | Nm |
| $M_t$ | to terminals M5 | 2.5 | | 5 | Nm |
| w | | | | 325 | g |

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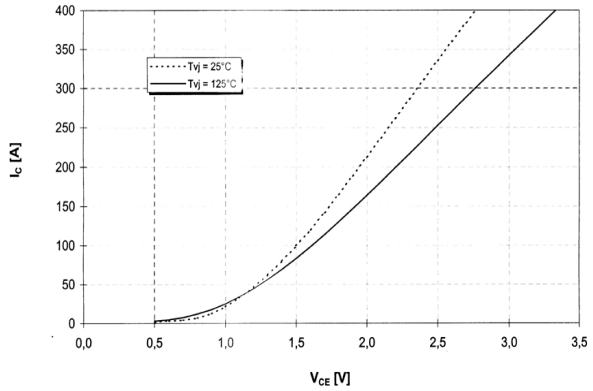
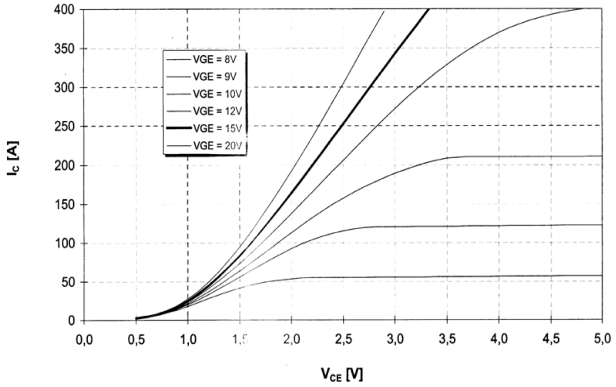
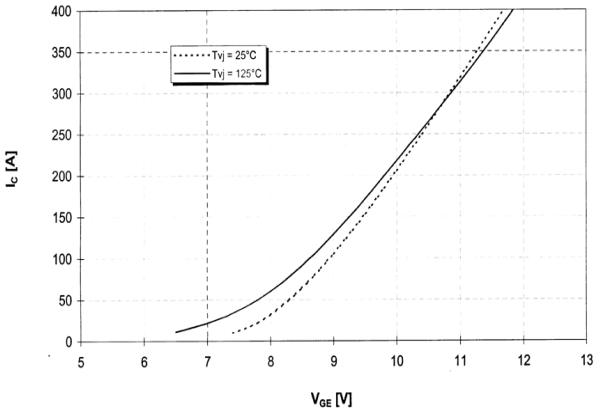
**Ausgangskennlinie** (typisch) $I_C = f(V_{CE})$
**Output characteristic** (typical) $V_{GE} = 15V$



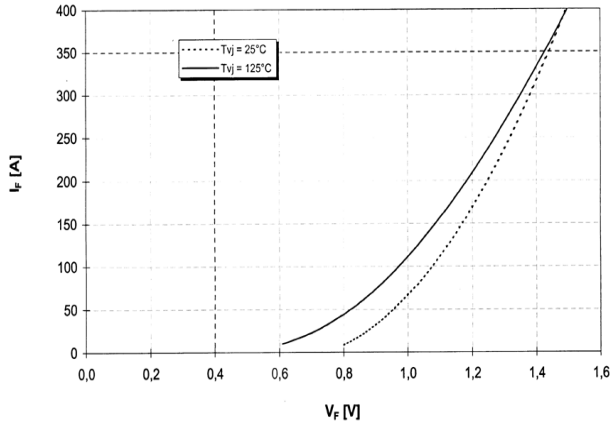

**Ausgangskennlinienfeld** (typisch) $I_C = f(V_{CE})$
**Output characteristic** (typical) $T_{vj} = 125°C$



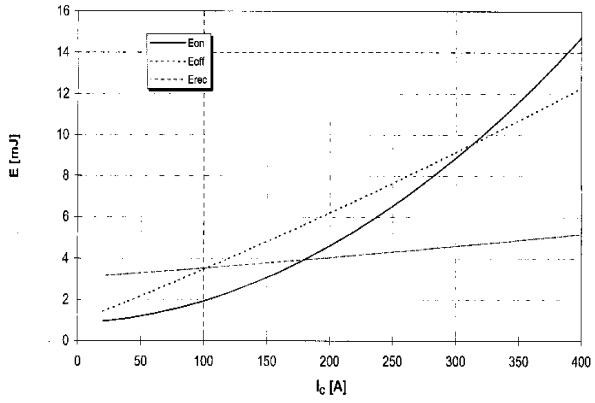

**Übertragungscharakteristik** (typisch) $I_C = f(V_{GE})$
**Transfer characteristic** (typical) $V_{CE} = 20V$



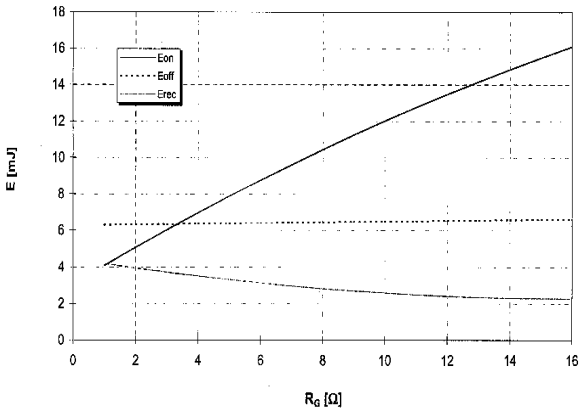

**Durchlaßkennlinie** der Inversdiode (typisch) $I_F = f(V_F)$
**Forward characteristic** of inverse diode (typical)




**Schaltverluste** (typisch) $E_{on} = f(I_C), E_{off} = f(I_C), E_{rec} = f(I_C)$
**Switching losses** (typical) $R_{G,on} = 1,5\Omega, R_{G,off} = 1,5\Omega, V_{CC} = 300V, T_{vj} = 125°C$




**Schaltverluste** (typisch) $E_{on} = f(R_G), E_{off} = f(R_G), E_{rec} = f(R_G)$
**Switching losses** (typical) $I_C = 200A, V_{CC} = 300V, T_{vj} = 125°C$



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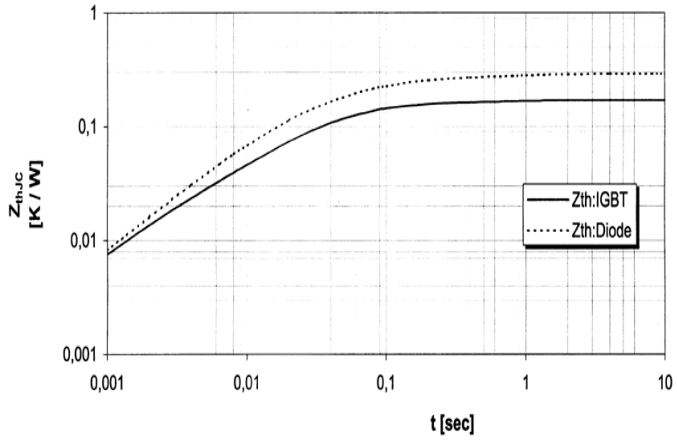
## NPT IGBT Modules

**Transienter Wärmewiderstand** $Z_{thJC} = f(t)$
**Transient thermal impedance**




| i | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| $r_i$ [K/kW] : IGBT | 7,2 | 89,1 | 59,9 | 13,8 |
| $\tau_i$ [sec] : IGBT | 0,0018 | 0,0240 | 0,0651 | 0,6626 |
| $r_i$ [K/kW] : Diode | 102,2 | 98,0 | 61,6 | 28,2 |
| $\tau_i$ [sec] : Diode | 0,0487 | 0,0169 | 0,1069 | 0,9115 |

**Sicherer Arbeitsbereich (RBSOA)**
**Reverse bias safe operation area (RBSOA)** $V_{GE}$= +15V, $R_{G,off}$= 1,5Ω, $T_{vj}$= 125°C