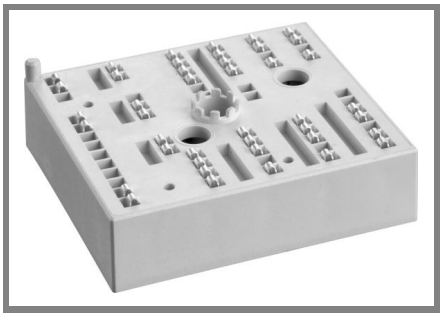
# SKiiP 23AC126V1



**MiniSKiiP®2**

## 3-phase bridge inverter

**SKiiP 23AC126V1**

Preliminary Data

### Features

- Fast Trench IGBTs
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

### Typical Applications

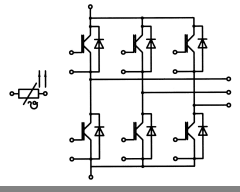
- Inverter up to 16 kVA
- Typical motor power 7,5 kW

### Remarks

- $V_{CEsat}$ , $V_F$ = chip level value

| Absolute Maximum Ratings | $T_S$ = 25 °C, unless otherwise specified | | |
|---|---|---|---|
| **Symbol** | **Conditions** | **Values** | **Units** |
| **IGBT - Inverter** | | | |
| $V_{CES}$ | | 1200 | V |
| $I_C$ | $T_s$ = 25 (70) °C | 41 (31) | A |
| $I_{CRM}$ | $t_p \leq$ 1 ms | 50 | A |
| $V_{GES}$ | | ± 20 | V |
| $T_j$ | | -40...+150 | °C |
| **Diode - Inverter** | | | |
| $I_F$ | $T_s$ = 25 (70) °C | 30 (22) | A |
| $I_{FRM}$ | $t_p \leq$ 1 ms | 50 | A |
| $T_j$ | | -40...+150 | °C |
| $I_{tRMS}$ | per power terminal (20 A / spring) | 100 | A |
| $T_{stg}$ | $T_{op} \leq T_{stg}$ | -40...+125 | °C |
| $V_{isol}$ | AC, 1 min. | 2500 | V |

| Characteristics | $T_S$ = 25 °C, unless otherwise specified | | | | |
|---|---|---|---|---|---|
| **Symbol** | **Conditions** | **min.** | **typ.** | **max.** | **Units** |
| **IGBT - Inverter** | | | | | |
| $V_{CEsat}$ | $I_{Cnom}$ = 25 A, $T_j$ = 25 (125) °C | | 1,7 (2) | 2,1 (2,4) | V |
| $V_{GE(th)}$ | $V_{GE} = V_{CE}$, $I_C$ = 1 mA | 5 | 5,8 | 6,5 | V |
| $V_{CE(TO)}$ | $T_j$ = 25 (125) °C | | 1 (0,9) | 1,2 (1,1) | V |
| $r_T$ | $T_j$ = 25 (125) °C | | 28 (44) | 36 (52) | mΩ |
| $C_{ies}$ | $V_{CE}$ = 25 V, $V_{GE}$ = 0 V, f = 1 MHz | | 1,8 | | nF |
| $C_{oes}$ | $V_{CE}$ = 25 V, $V_{GE}$ = 0 V, f = 1 MHz | | 0,3 | | nF |
| $C_{res}$ | $V_{CE}$ = 25 V, $V_{GE}$ = 0 V, f = 1 MHz | | 0,2 | | nF |
| $R_{th(j-s)}$ | per IGBT | | 0,9 | | K/W |
| $t_{d(on)}$ | under following conditions | | 80 | | ns |
| $t_r$ | $V_{CC}$ = 600 V, $V_{GE}$ = ± 15 V | | 30 | | ns |
| $t_{d(off)}$ | $I_{Cnom}$ = 25 A, $T_j$ = 125 °C | | 480 | | ns |
| $t_f$ | $R_{Gon} = R_{Goff}$ = 30 Ω | | 85 | | ns |
| $E_{on}$ | inductive load | | 3,7 | | mJ |
| $E_{off}$ | | | 3,1 | | mJ |
| **Diode - Inverter** | | | | | |
| $V_F = V_{EC}$ | $I_{Fnom}$ = 25 A, $T_j$ = 25 (125) °C | | 1,8 (1,8) | 2,1 (2,2) | V |
| $V_{(TO)}$ | $T_j$ = 25 (125) °C | | 1 (0,8) | 1,1 (0,9) | V |
| $r_T$ | $T_j$ = 25 (125) °C | | 32 (40) | 40 (52) | mΩ |
| $R_{th(j-s)}$ | per diode | | 1,7 | | K/W |
| $I_{RRM}$ | under following conditions | | 35 | | A |
| $Q_{rr}$ | $I_{Fnom}$ = 25 A, $V_R$ = 600 V | | 6 | | µC |
| $E_{rr}$ | $V_{GE}$ = 0 V, $T_j$ = 125 °C | | 2,6 | | mJ |
| | $di_F/dt$ = 1000 A/µs | | | | |
| **Temperature Sensor** | | | | | |
| $R_{ts}$ | 3 %, $T_r$ = 25 (100) °C | | 1000(1670) | | Ω |
| **Mechanical Data** | | | | | |
| m | | | 65 | | g |
| $M_s$ | Mounting torque | 2 | | 2,5 | Nm |



**AC**

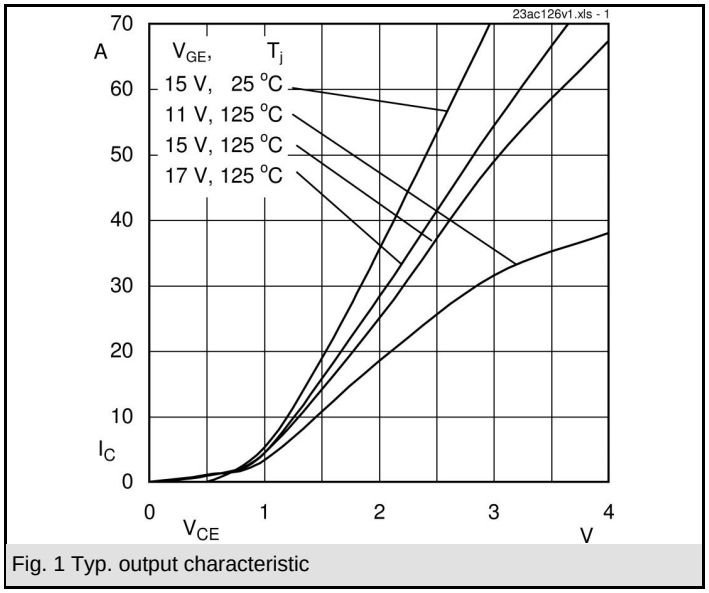



Fig. 1 Typ. output characteristic

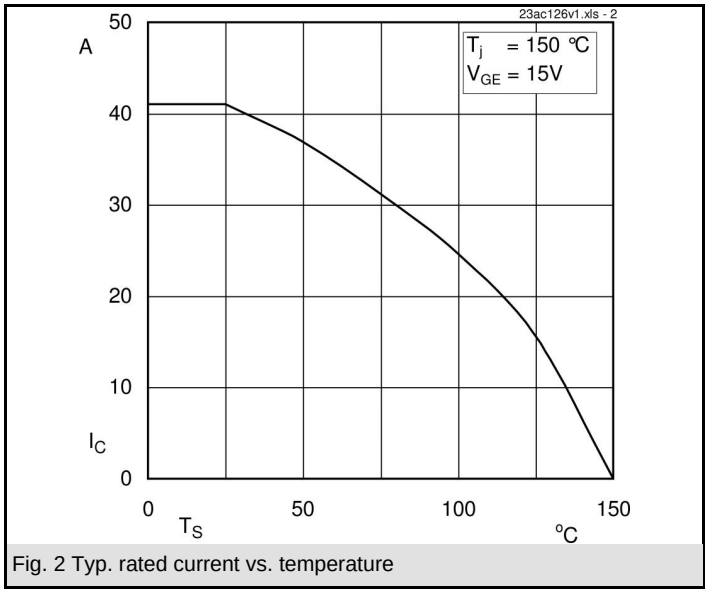



Fig. 2 Typ. rated current vs. temperature

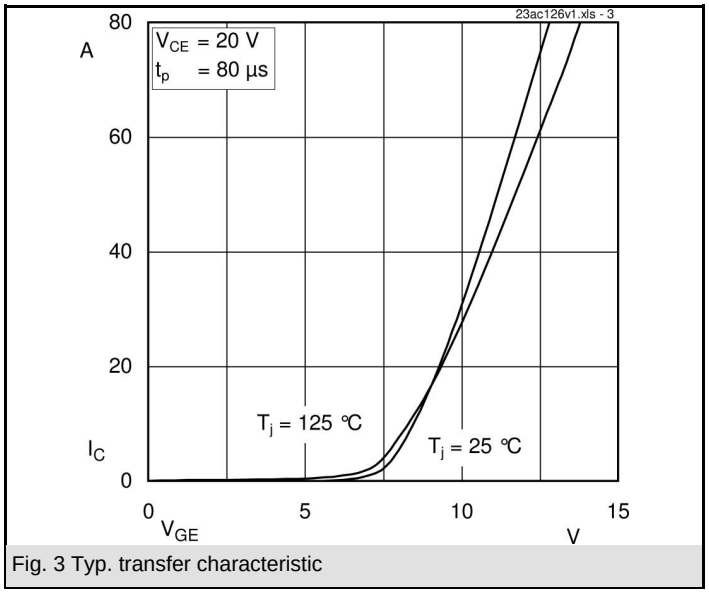



Fig. 3 Typ. transfer characteristic

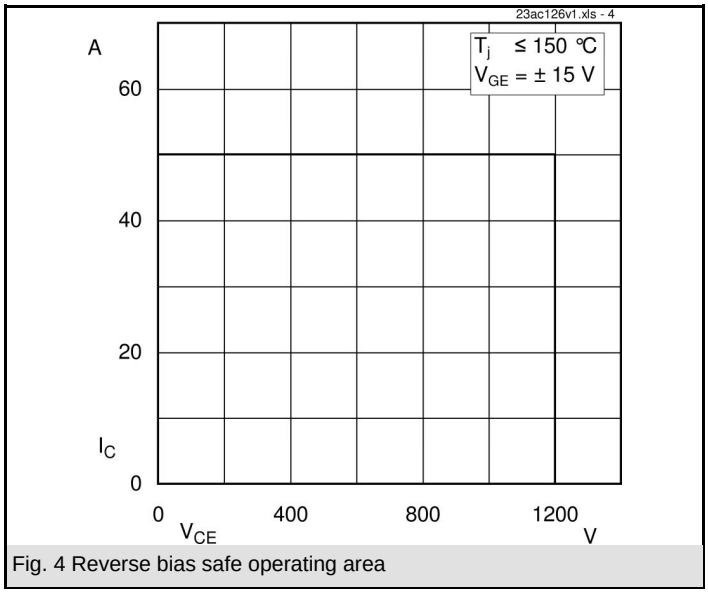



Fig. 4 Reverse bias safe operating area

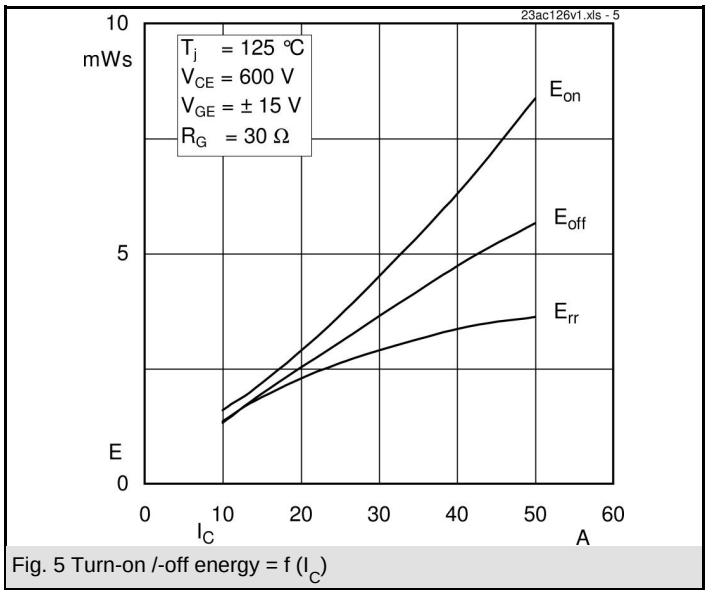



Fig. 5 Turn-on /-off energy = f ($I_C$)

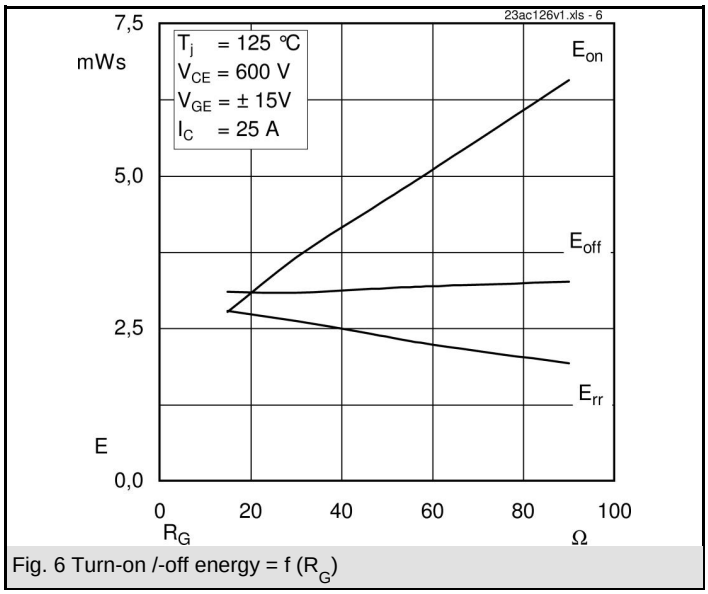



Fig. 6 Turn-on /-off energy = f ($R_G$)

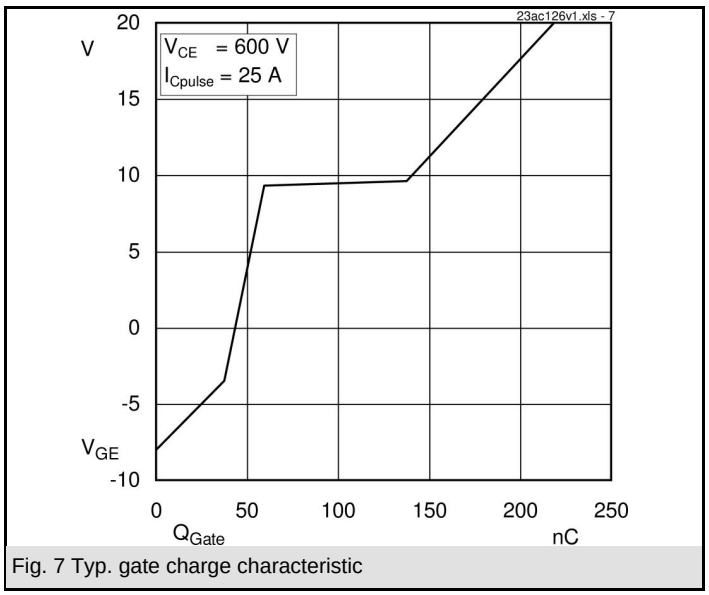



Fig. 7 Typ. gate charge characteristic

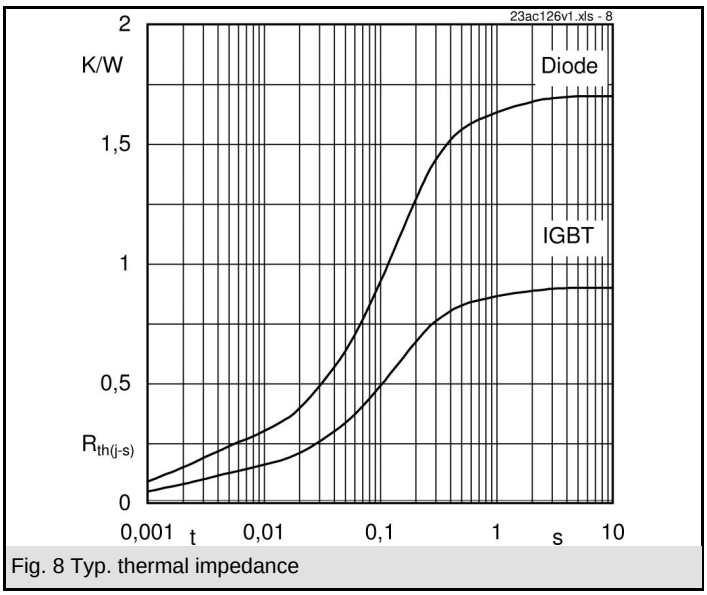



Fig. 8 Typ. thermal impedance

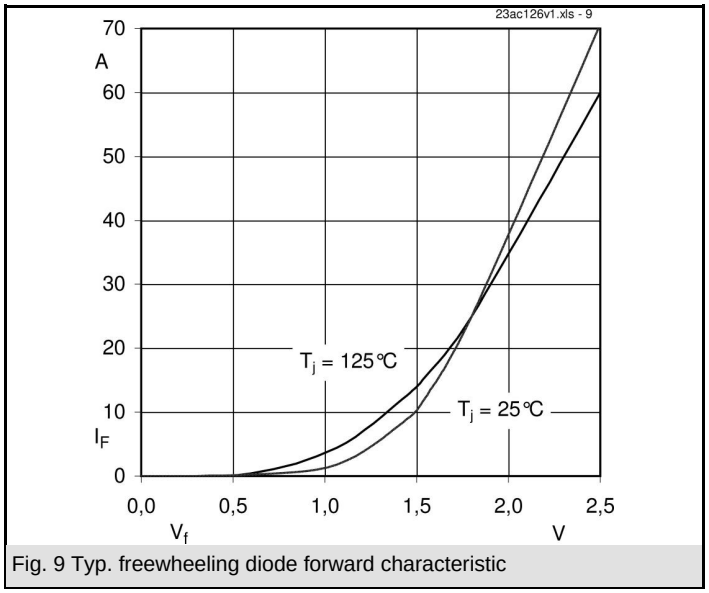
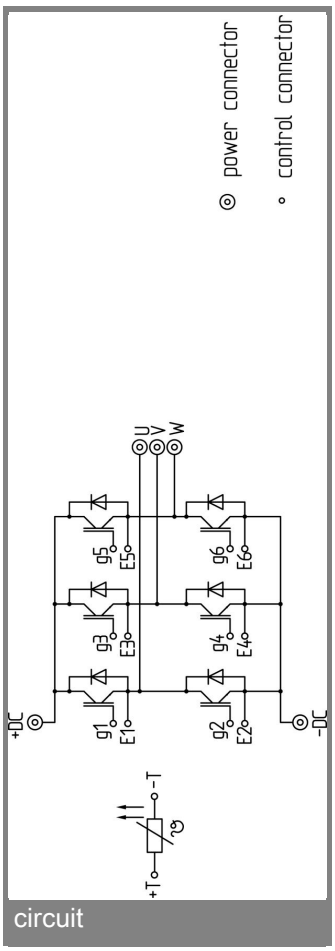
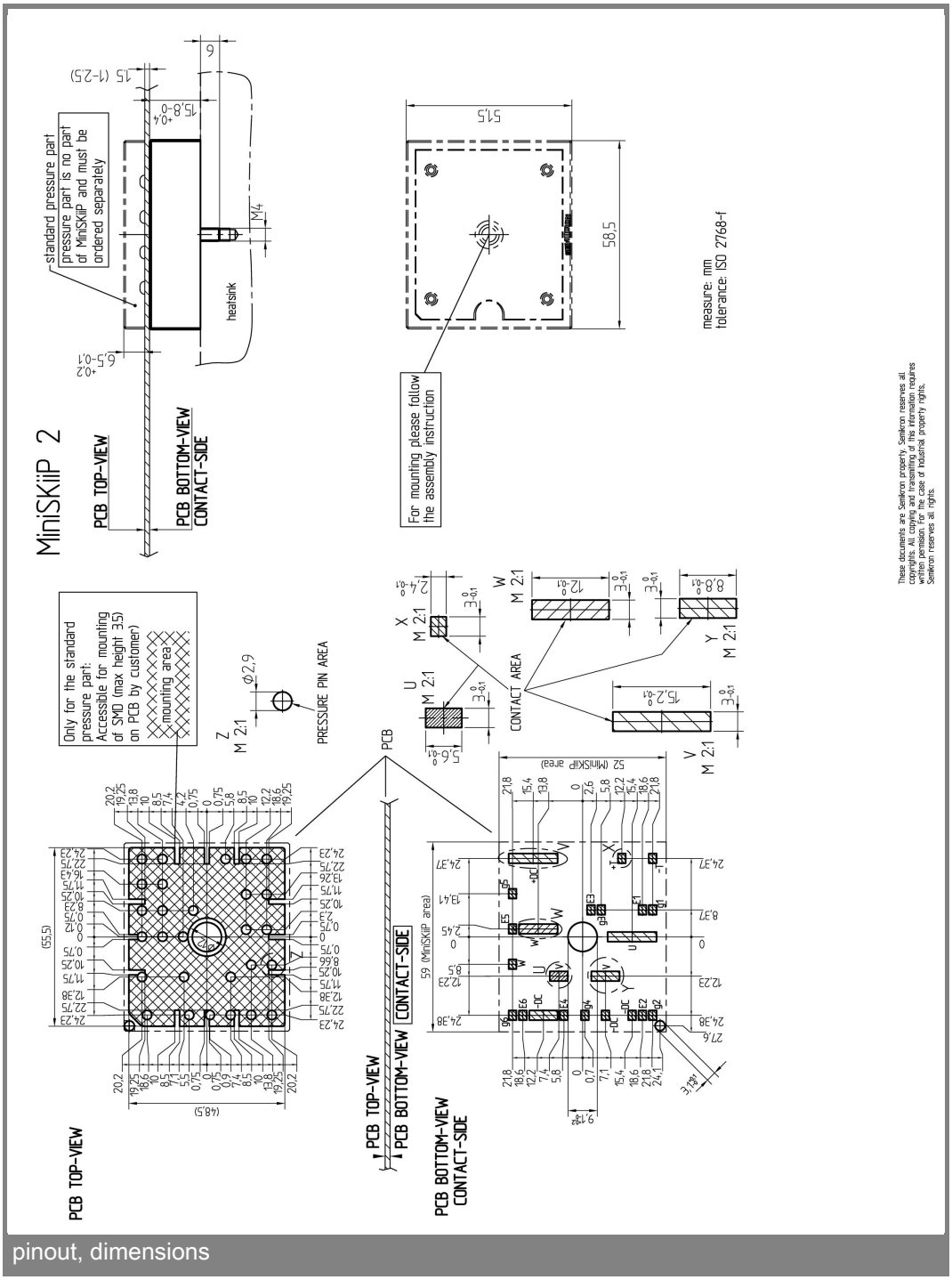



Fig. 9 Typ. freewheeling diode forward characteristic




circuit




pinout, dimensions

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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