

MiniSKiiP® 2

## 3-phase bridge inverter

### SKiiP 25AC125V10

#### Target Data

#### Features

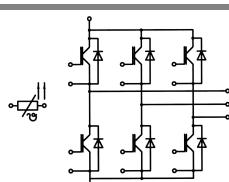
- Ultrafast NPT IGBTs
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

#### Typical Applications

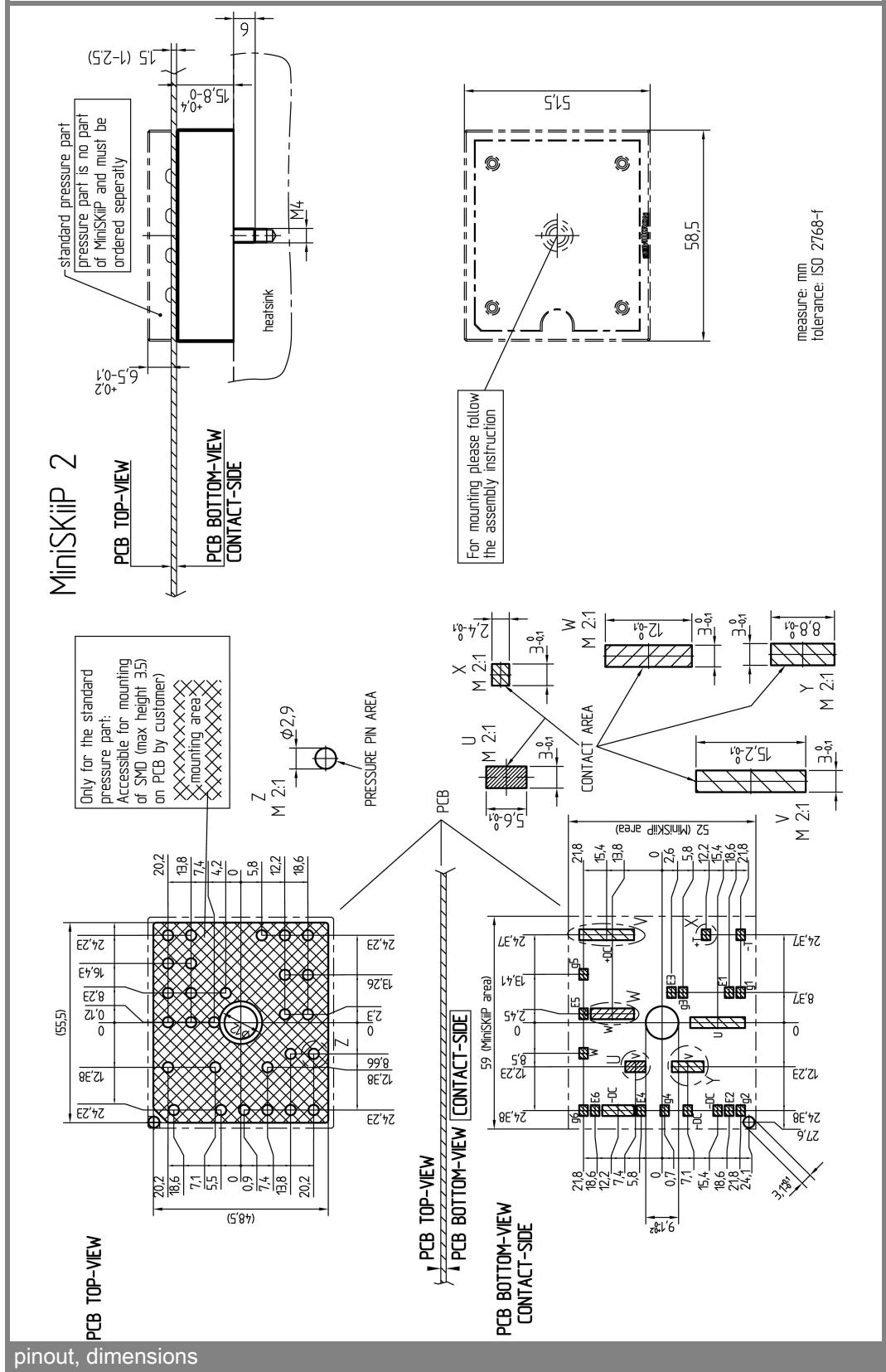
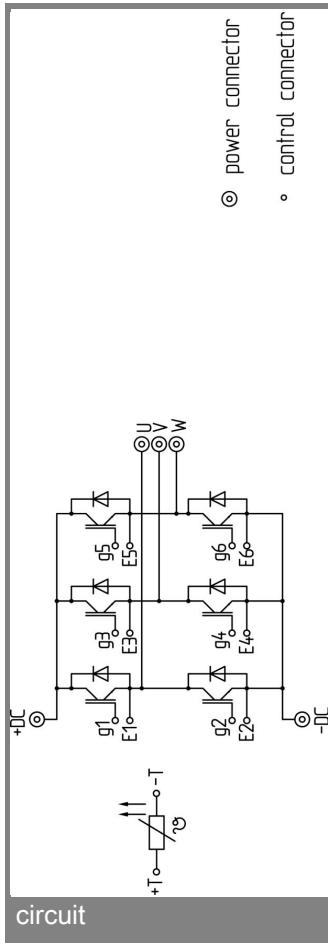
- Inverter up to 20 kVA
- Typical motor power 11 kW

| Absolute Maximum Ratings |   | $T_s = 25^\circ\text{C}$ , unless otherwise specified |  |                  |
|--------------------------|---|---|--|------------------|
| Symbol                   | Conditions  | Values  |  | Units            |
| <b>IGBT - Inverter</b>   |   |   |  |                  |
| $V_{CES}$                |   | 1200  |  | V                |
| $I_C$                    | $T_s = 25 (70)^\circ\text{C}$                       | 52 (39)   |  | A                |
| $I_{CRM}$                | $T_s = 25 (70)^\circ\text{C}, t_p \leq 1\text{ ms}$ | 104 (78)  |  | A                |
| $V_{GES}$                |   | $\pm 20$  |  | V                |
| $T_j$                    |   | - 40 ... + 150  |  | $^\circ\text{C}$ |
| <b>Diode - Inverter</b>  |   |   |  |                  |
| $I_F$                    | $T_s = 25 (70)^\circ\text{C}$                       | 67 (50)   |  | A                |
| $I_{FRM}$                | $T_s = 25 (70)^\circ\text{C}, t_p \leq 1\text{ ms}$ | 134 (100)   |  | A                |
| $T_j$                    |   | - 40 ... + 150  |  | $^\circ\text{C}$ |
| $I_{tRMS}$               | per power terminal (20 A / spring)                  | 100   |  | A                |
| $T_{stg}$                | $T_{op} \leq T_{stg}$                               | - 40 ... + 125  |  | $^\circ\text{C}$ |
| $V_{isol}$               | AC, 1 min.  | 2500  |  | V                |

| Characteristics           |  | $T_s = 25^\circ\text{C}$ , unless otherwise specified |            |               |
|---------------------------|--|---|------------|---------------|
| Symbol                    | Conditions   | min.  | typ.       | max.          |
| <b>IGBT - Inverter</b>    |  |   |            |               |
| $V_{CEsat}$               | $I_C = 50\text{ A}, T_j = 25 (125)^\circ\text{C}$                                      |   | 3,5 (4,1)  | 3,9 (4,5)     |
| $V_{GE(th)}$              | $V_{GE} = V_{CE}, I_C = 2\text{ mA}$   | 4,5   | 5,5        | 6,5           |
| $V_{CE(TO)}$              | $T_j = 25 (125)^\circ\text{C}$   |   | 1,5 (1,8)  | 1,7 (2)       |
| $r_T$                     | $T_j = 25 (125)^\circ\text{C}$   |   | 40 (46)    | 44 (50)       |
| $C_{ies}$                 | $V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$                          |   | 3,1        | nF            |
| $C_{oes}$                 | $V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$                          |   | 0,4        | nF            |
| $C_{res}$                 | $V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$                          |   | 0,4        | nF            |
| $R_{th(j-s)}$             | per IGBT   |   | 0,5        | K/W           |
| $t_{d(on)}$               | under following conditions   |   | 100        | ns            |
| $t_r$                     | $V_{CC} = 600\text{ V}, V_{GE} = \pm 15\text{ V}$                                      |   | 60         | ns            |
| $t_{d(off)}$              | $I_C = 50\text{ A}, T_j = 125^\circ\text{C}$   |   | 400        | ns            |
| $t_f$                     | $R_{Gon} = R_{Goff} = 12\Omega$  |   | 20         | ns            |
| $E_{on}$                  | inductive load   |   | 5,9        | mJ            |
| $E_{off}$                 |  |   | 3,1        | mJ            |
| <b>Diode - Inverter</b>   |  |   |            |               |
| $V_F = V_{EC}$            | $I_F = 50\text{ A}, T_j = 25 (125)^\circ\text{C}$                                      |   | 2 (1,8)    | 2,5 (2,3)     |
| $V_{(TO)}$                | $T_j = 25 (125)^\circ\text{C}$   |   | 1,3 (1)    | 1,5 (1,2)     |
| $r_T$                     | $T_j = 25 (125)^\circ\text{C}$   |   | 14 (16)    | 20 (22)       |
| $R_{th(j-s)}$             | per diode  |   | 0,7        | K/W           |
| $I_{RRM}$                 | under following conditions   |   | 40         | A             |
| $Q_{rr}$                  | $I_F = 50\text{ A}, V_R = 600\text{ V}$  |   | 8          | $\mu\text{C}$ |
| $E_{rr}$                  | $V_{GE} = 0\text{ V}, T_j = 125^\circ\text{C}$<br>$di_F/dt = 800\text{ A}/\mu\text{s}$ |   | 2          | mJ            |
| <b>Temperature Sensor</b> |  |   |            |               |
| $R_{ts}$                  | 3 %, $T_r = 25 (100)^\circ\text{C}$  |   | 1000(1670) | $\Omega$      |
| <b>Mechanical Data</b>    |  |   |            |               |
| $m$                       |  | 65  |            | g             |
| $M_s$                     | Mounting torque  | 2   | 2,5        | Nm            |



AC



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

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