

MiniSKiiP® 3

3-phase bridge inverter

SKiiP 39AC126V2

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*

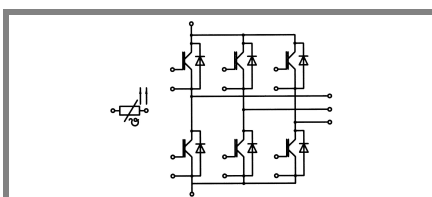
- Inverter up to 45 kVA
- Typical motor power 30 kW

Remarks

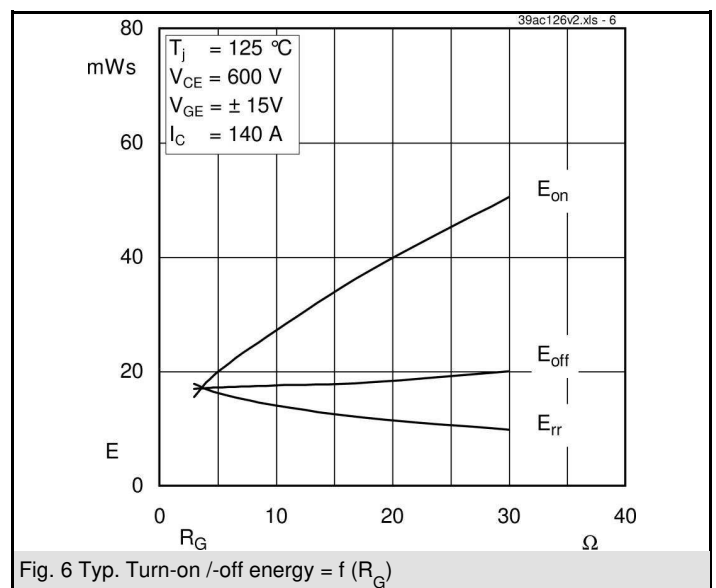
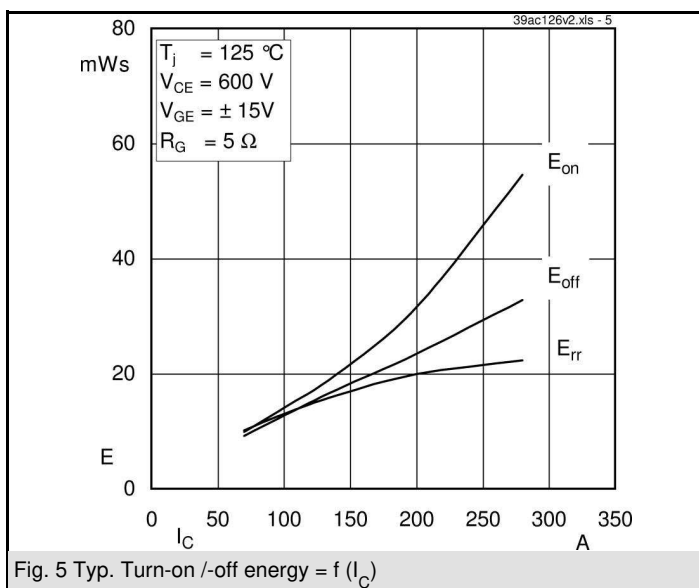
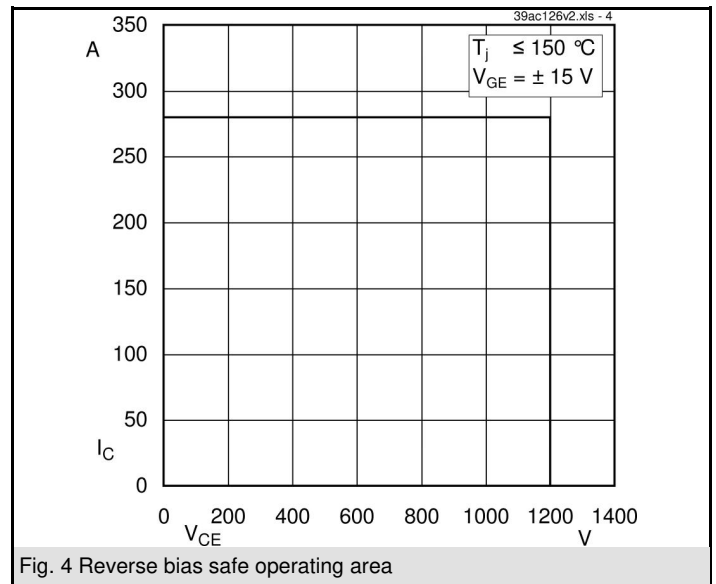
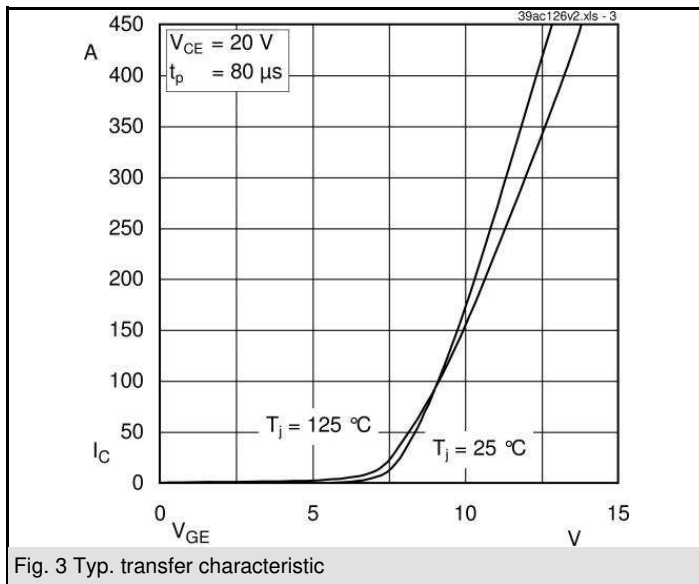
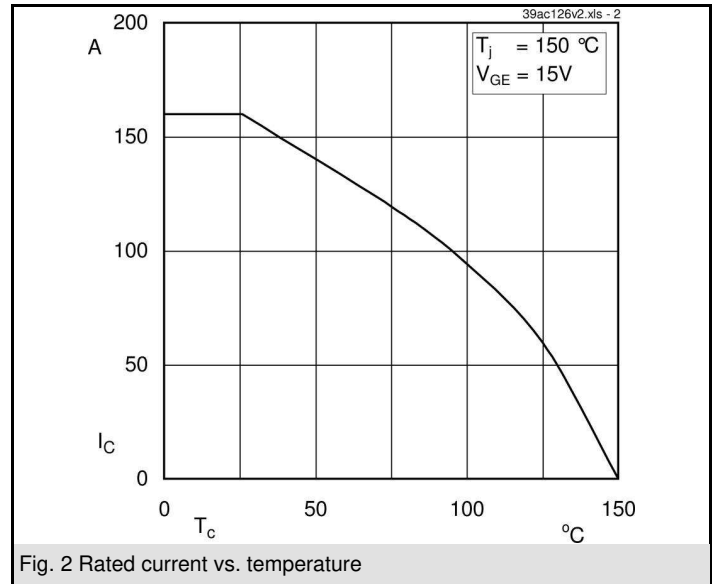
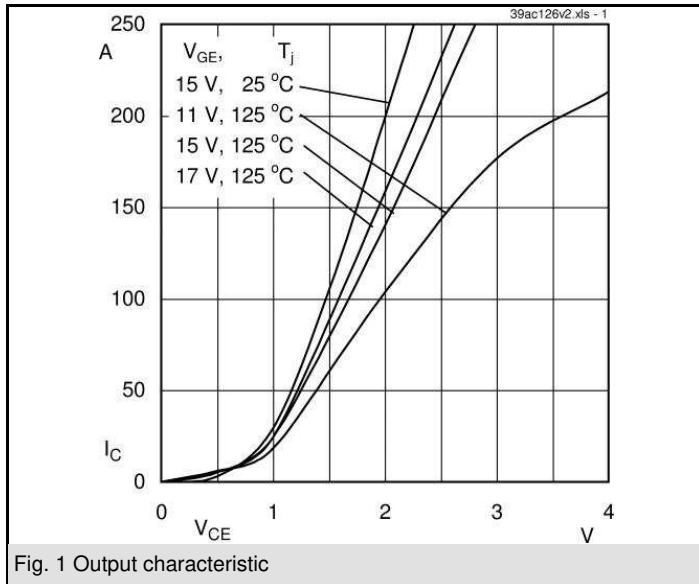
- V_{CEsat} , V_F = chip level value

| Absolute Maximum Ratings | | $T_s = 25\text{ °C}$, unless otherwise specified | |
|--------------------------|---|---|-------|
| Symbol | Conditions | Values | Units |
| IGBT - Inverter | | | |
| V_{CES} | $T_s = 25\text{ (70) °C}$ $t_p \leq 1\text{ ms}$ | 1200 | V |
| I_C | | 157 (118) | A |
| I_{CRM} | | 280 | A |
| V_{GES} | | ± 20 | V |
| T_j | | - 40 ... + 150 | °C |
| Diode - Inverter | | | |
| I_F | $T_s = 25\text{ (70) °C}$ $t_p \leq 1\text{ ms}$ | 167 (124) | A |
| I_{FRM} | | 280 | A |
| T_j | | - 40 ... + 150 | °C |
| I_{tRMS} | per power terminal (20 A / spring) | 160 | A |
| T_{stg} | $T_{op} \leq T_{stg}$ | - 40 ... + 125 | °C |
| V_{isol} | AC, 1 min. | 2500 | V |

| Characteristics | | $T_s = 25\text{ °C}$, unless otherwise specified | | | |
|---------------------------|---|---|------------|-----------|-------|
| Symbol | Conditions | min. | typ. | max. | Units |
| IGBT - Inverter | | | | | |
| V_{CEsat} | $I_{Cnom} = 140\text{ A}$, $T_j = 25\text{ (125) °C}$ | | 1,7 (2) | 2,1 (2,4) | V |
| $V_{GE(th)}$ | $V_{GE} = V_{CE}$, $I_C = 6\text{ mA}$ | 5 | 5,8 | 6,5 | V |
| $V_{CE(TO)}$ | $T_j = 25\text{ (125) °C}$ | | 1 (0,9) | 1,2 (1,1) | V |
| r_T | $T_j = 25\text{ (125) °C}$ | | 5 (7,9) | 6,4 (9,3) | mΩ |
| C_{ies} | $V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$ | | 11,2 | | nF |
| C_{oes} | $V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$ | 1,9 | 1,9 | | nF |
| C_{res} | $V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$ | | 1,5 | | nF |
| $R_{th(j-s)}$ | per IGBT | | 0,3 | | K/W |
| $t_{d(on)}$ | under following conditions | | 80 | | ns |
| t_r | $V_{CC} = 600\text{ V}$, $V_{GE} = \pm 15\text{ V}$ | | 40 | | ns |
| $t_{d(off)}$ | $I_{Cnom} = 140\text{ A}$, $T_j = 125\text{ °C}$ | | 500 | | ns |
| t_f | $R_{Gon} = R_{Goff} = 5\text{ Ω}$ | | 100 | | ns |
| E_{on} | inductive load | | 19,9 | | mJ |
| E_{off} | | | 17,2 | | mJ |
| Diode - Inverter | | | | | |
| $V_F = V_{EC}$ | $I_{Fnom} = 140\text{ A}$, $T_j = 25\text{ (125) °C}$ | | 1,5 (1,5) | 1,7 (1,7) | V |
| $V_{(TO)}$ | $T_j = 25\text{ (125) °C}$ | | 1 (0,8) | 1,1 (0,9) | V |
| r_T | $T_j = 25\text{ (125) °C}$ | | 3,6 (5) | 4,3 (5,7) | mΩ |
| $R_{th(j-s)}$ | per diode | | 0,4 | | K/W |
| I_{RRM} | under following conditions | | 210 | | A |
| Q_{rr} | $I_{Fnom} = 140\text{ A}$, $V_R = 600\text{ V}$ | | 38 | | μC |
| E_{rr} | $V_{GE} = 0\text{ V}$, $T_j = 125\text{ °C}$ $di_F/dt = 4300\text{ A/μs}$ | | 16,2 | | mJ |
| Temperature Sensor | | | | | |
| R_{ts} | 3 %, $T_r = 25\text{ (100) °C}$ | | 1000(1670) | | Ω |
| Mechanical Data | | | | | |
| m | | | 95 | | g |
| M_s | Mounting torque | 2 | | 2,5 | Nm |



AC



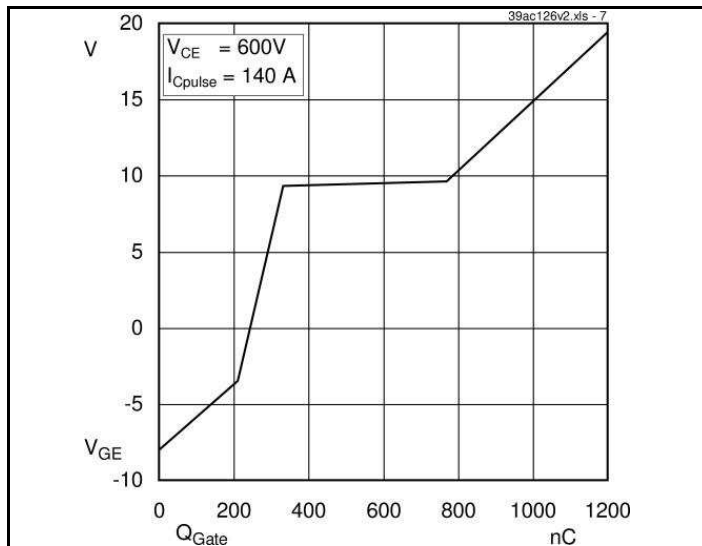


Fig. 7 Typ. gate charge characteristic

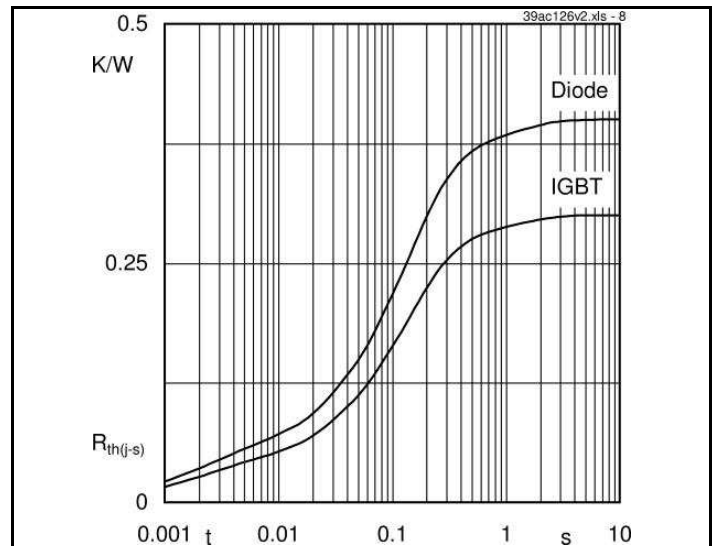


Fig. 8 Typ. thermal impedance

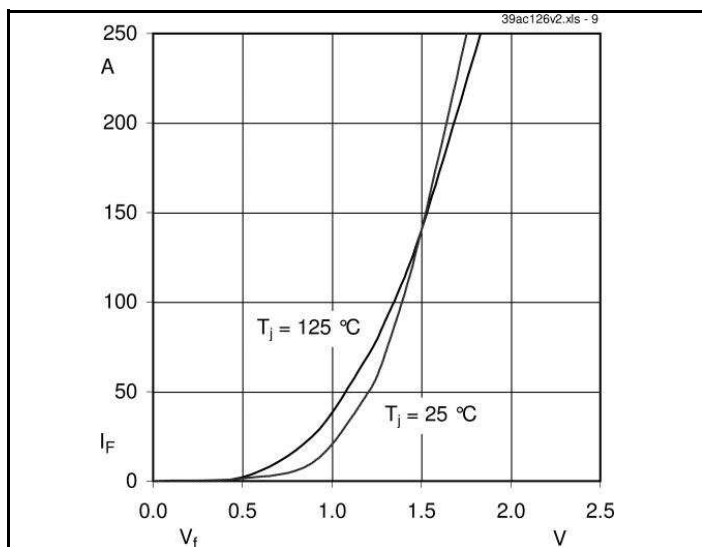


Fig. 9 Typ. freewheeling diode forward characteristic

