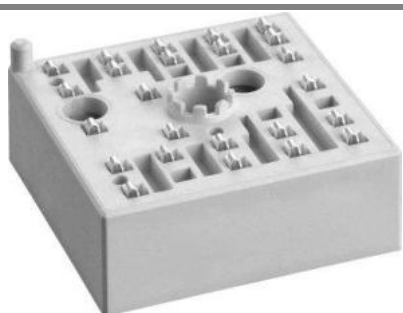




MiniSKiiP® 1

## 3-phase bridge inverter

### SKiiP 13AC126V1

#### 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\*

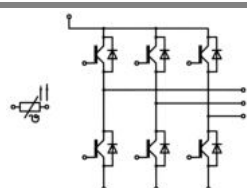
- Inverter up to 16 kVA
- Typical motor power 7.5 kW

#### Remarks

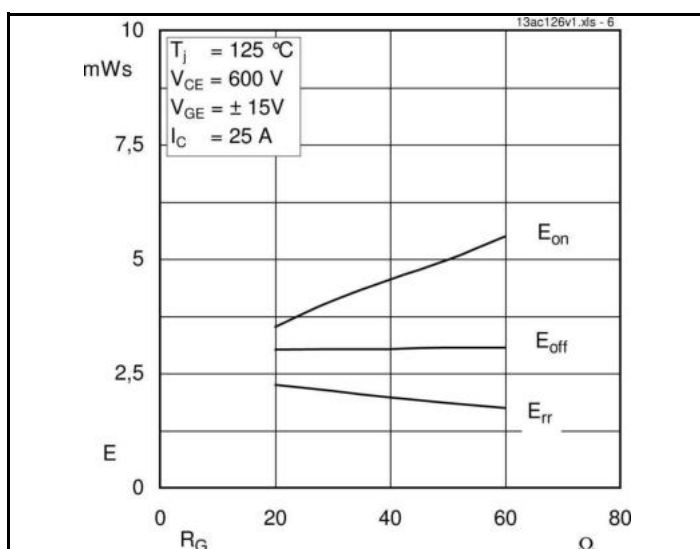
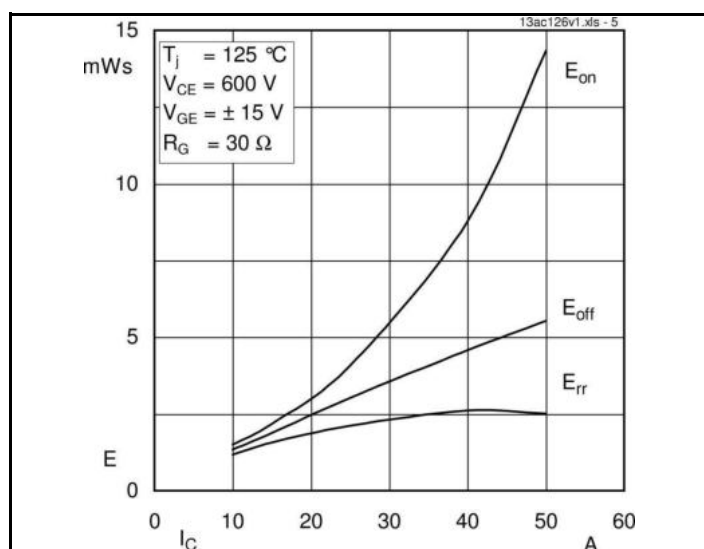
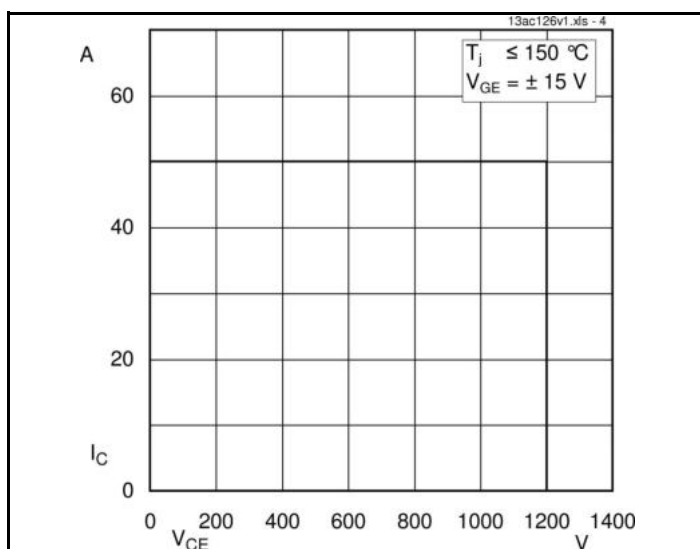
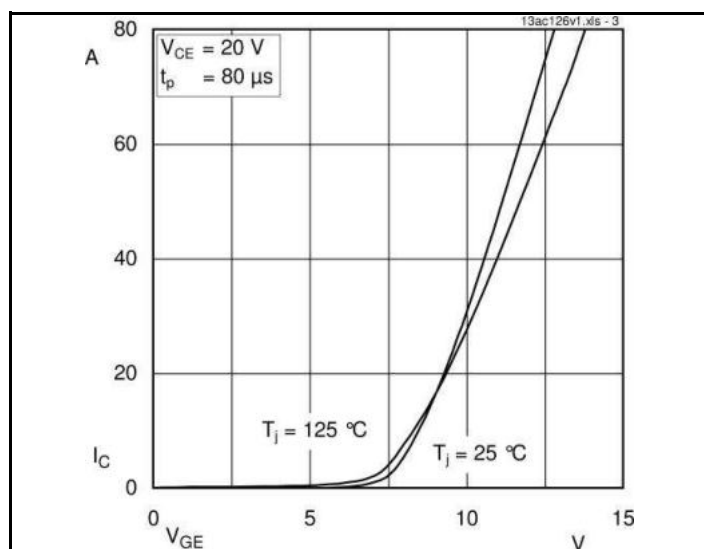
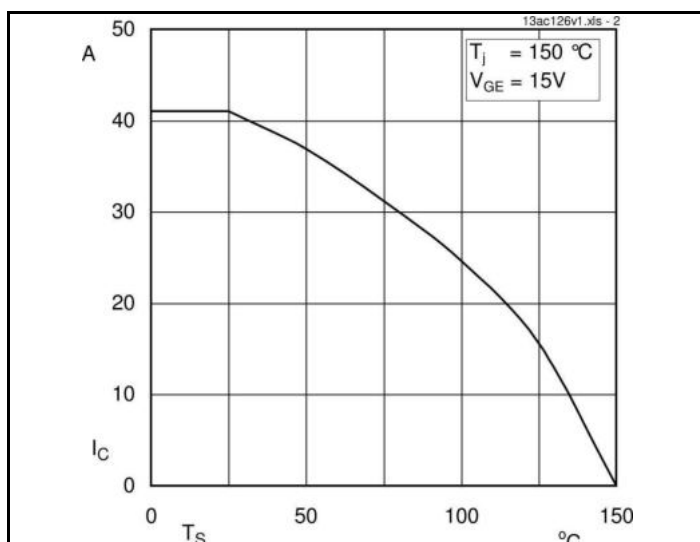
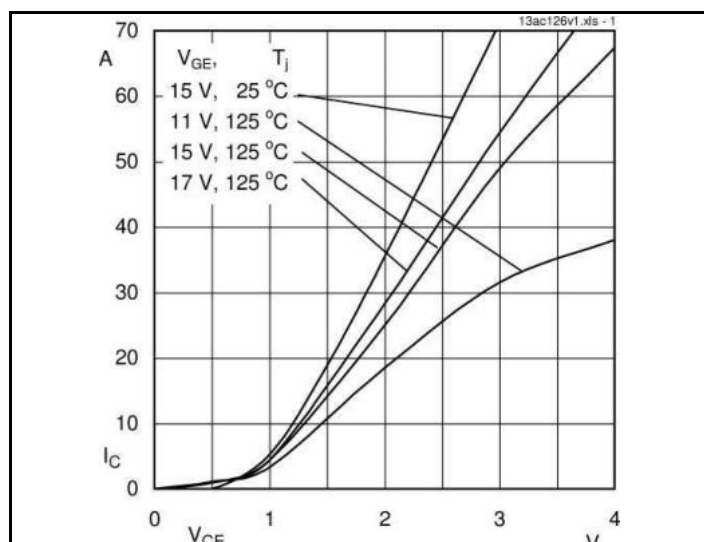
- $V_{CEsat}$ ,  $V_F$  = chip level value

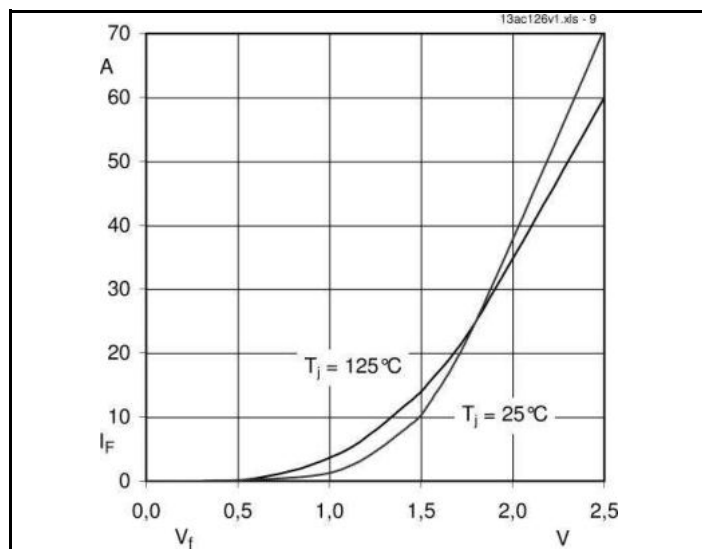
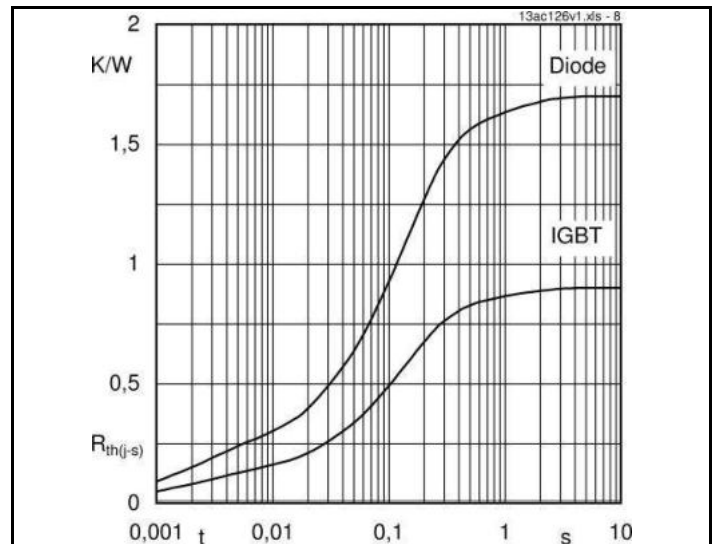
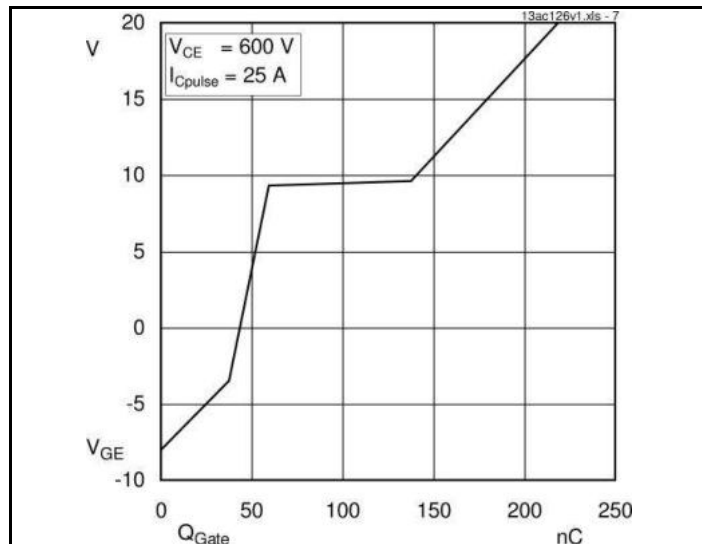
| Absolute Maximum Ratings |                                                     | $T_s = 25\text{ °C}$ , unless otherwise specified |       |
|--------------------------|-----------------------------------------------------|---------------------------------------------------|-------|
| Symbol                   | Conditions                                          | Values                                            | Units |
| <b>IGBT - Inverter</b>   |                                                     |                                                   |       |
| $V_{CES}$                | $T_s = 25\text{ (70) °C}$<br>$t_p \leq 1\text{ ms}$ | 1200                                              | V     |
| $I_C$                    |                                                     | 41 (31)                                           | A     |
| $I_{CRM}$                |                                                     | 50                                                | A     |
| $V_{GES}$                |                                                     | $\pm 20$                                          | V     |
| $T_j$                    |                                                     | - 40 ... + 150                                    | °C    |
| <b>Diode - Inverter</b>  |                                                     |                                                   |       |
| $I_F$                    | $T_s = 25\text{ (70) °C}$<br>$t_p \leq 1\text{ ms}$ | 30 (22)                                           | A     |
| $I_{FRM}$                |                                                     | 50                                                | A     |
| $T_j$                    |                                                     | - 40 ... + 150                                    | °C    |
| $I_{tRMS}$               | per power terminal (20 A / spring)                  | 40                                                | 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 |
| <b>IGBT - Inverter</b>    |                                                                               |                                                   |            |           |       |
| $V_{CEsat}$               | $I_{Cnom} = 25\text{ A}$ , $T_j = 25\text{ (125) °C}$                         |                                                   | 1,7 (2)    | 2,1 (2,4) | V     |
| $V_{GE(th)}$              | $V_{GE} = V_{CE}$ , $I_C = 1\text{ mA}$                                       | 5                                                 | 5,8        | 6,5       | V     |
| $V_{CE(TO)}$              | $T_j = 25\text{ (125) °C}$                                                    |                                                   | 1 (0,9)    | 1,2 (1,1) | V     |
| $r_T$                     | $T_j = 25\text{ (125) °C}$                                                    |                                                   | 28 (44)    | 36 (52)   | mΩ    |
| $C_{ies}$                 | $V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$ , $f = 1\text{ MHz}$           |                                                   | 1,8        |           | nF    |
| $C_{oes}$                 | $V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$ , $f = 1\text{ MHz}$           |                                                   | 0,3        |           | nF    |
| $C_{res}$                 | $V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$ , $f = 1\text{ MHz}$           |                                                   | 0,2        |           | nF    |
| $R_{th(j-s)}$             | per IGBT                                                                      |                                                   | 0,9        |           | K/W   |
| $t_{d(on)}$               | under following conditions                                                    |                                                   | 95         |           | ns    |
| $t_r$                     | $V_{CC} = 600\text{ V}$ , $V_{GE} = \pm 15\text{ V}$                          |                                                   | 35         |           | ns    |
| $t_{d(off)}$              | $I_{Cnom} = 25\text{ A}$ , $T_j = 125\text{ °C}$                              |                                                   | 455        |           | ns    |
| $t_f$                     | $R_{Gon} = R_{Goff} = 30\text{ Ω}$                                            |                                                   | 85         |           | ns    |
| $E_{on}$                  | inductive load                                                                |                                                   | 4,1        |           | mJ    |
| $E_{off}$                 |                                                                               |                                                   | 3,1        |           | mJ    |
| <b>Diode - Inverter</b>   |                                                                               |                                                   |            |           |       |
| $V_F = V_{EC}$            | $I_{Fnom} = 25\text{ A}$ , $T_j = 25\text{ (125) °C}$                         |                                                   | 1,8 (1,8)  | 2,1 (2,2) | V     |
| $V_{(TO)}$                | $T_j = 25\text{ (125) °C}$                                                    |                                                   | 1 (0,8)    | 1,1 (0,9) | V     |
| $r_T$                     | $T_j = 25\text{ (125) °C}$                                                    |                                                   | 32 (40)    | 40 (52)   | mΩ    |
| $R_{th(j-s)}$             | per diode                                                                     |                                                   | 1,7        |           | K/W   |
| $I_{RRM}$                 | under following conditions                                                    |                                                   | 25         |           | A     |
| $Q_{rr}$                  | $I_{Fnom} = 25\text{ A}$ , $V_R = 600\text{ V}$                               |                                                   | 5,3        |           | μC    |
| $E_{rr}$                  | $V_{GE} = 0\text{ V}$ , $T_j = 125\text{ °C}$<br>$di_F/dt = 1140\text{ A/μs}$ |                                                   | 2,2        |           | mJ    |
| <b>Temperature Sensor</b> |                                                                               |                                                   |            |           |       |
| $R_{ts}$                  | 3 %, $T_r = 25\text{ (100) °C}$                                               |                                                   | 1000(1670) |           | Ω     |
| <b>Mechanical Data</b>    |                                                                               |                                                   |            |           |       |
| m                         |                                                                               |                                                   | 35         |           | g     |
| $M_s$                     | Mounting torque                                                               | 2                                                 |            | 2,5       | Nm    |



AC







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