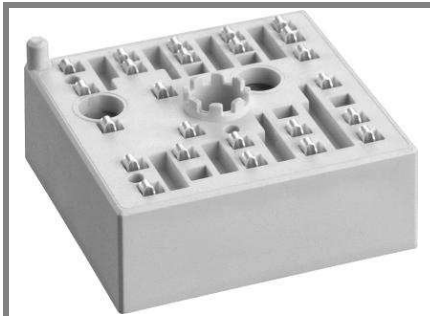


# SKiiP 28AC066V1



MiniSKiiP<sup>®</sup>2

## 3-phase bridge inverter

SKiiP 28AC066V1

### Features

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

### Typical Applications\*

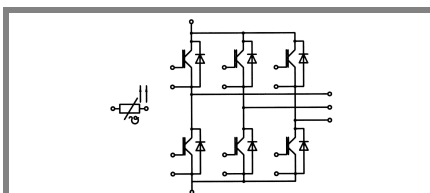
- Inverter up to 22 kVA
- Typical motor power 11kW

### Remarks

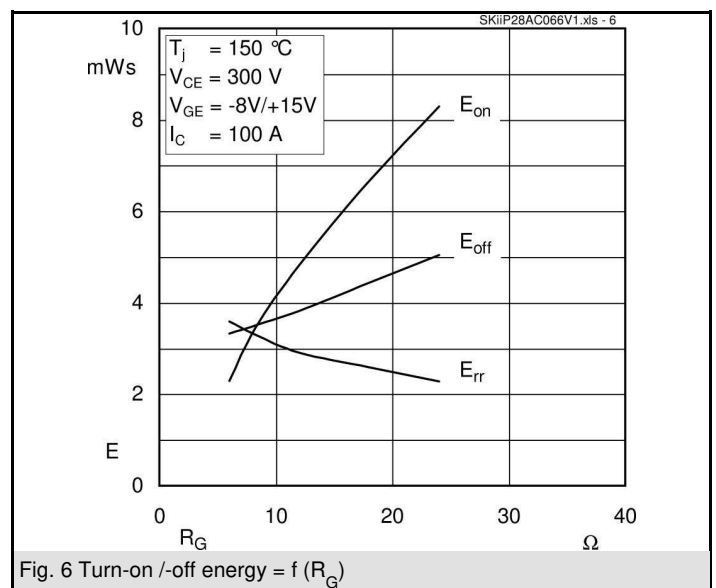
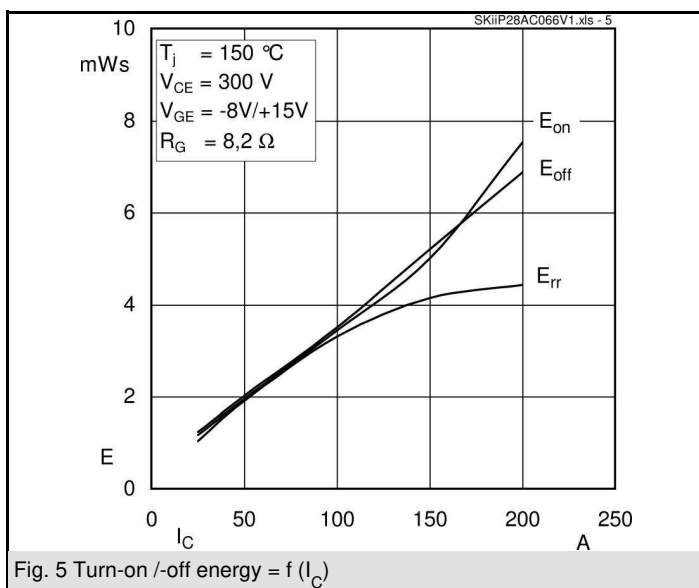
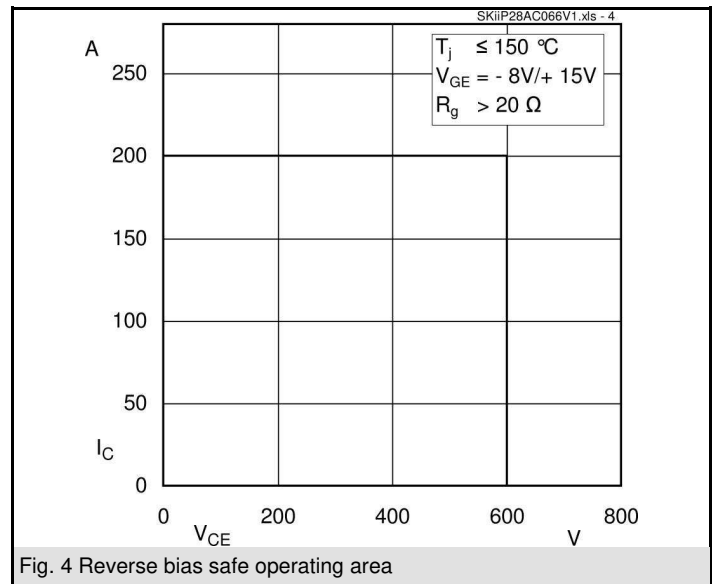
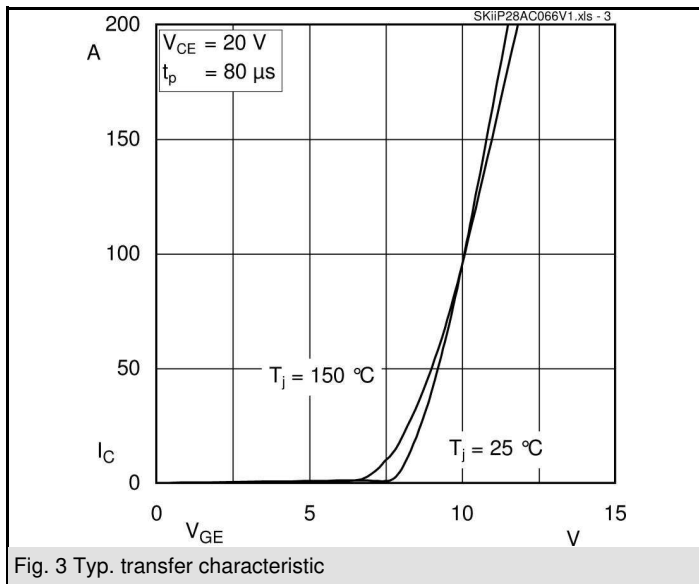
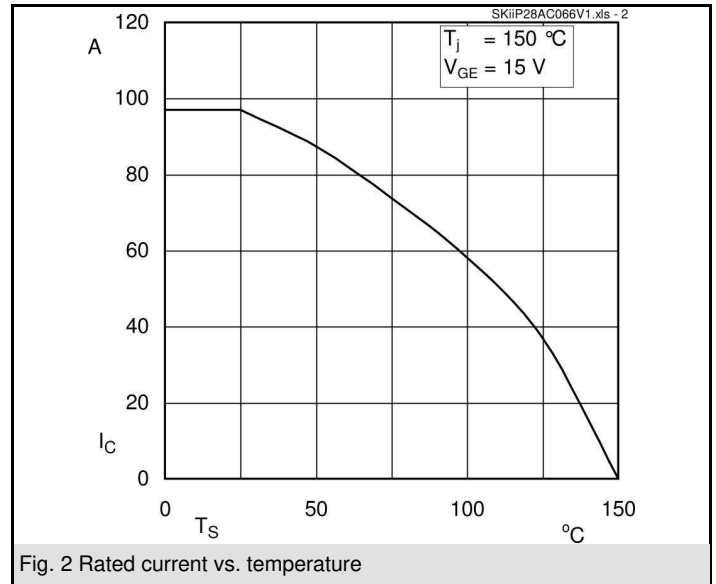
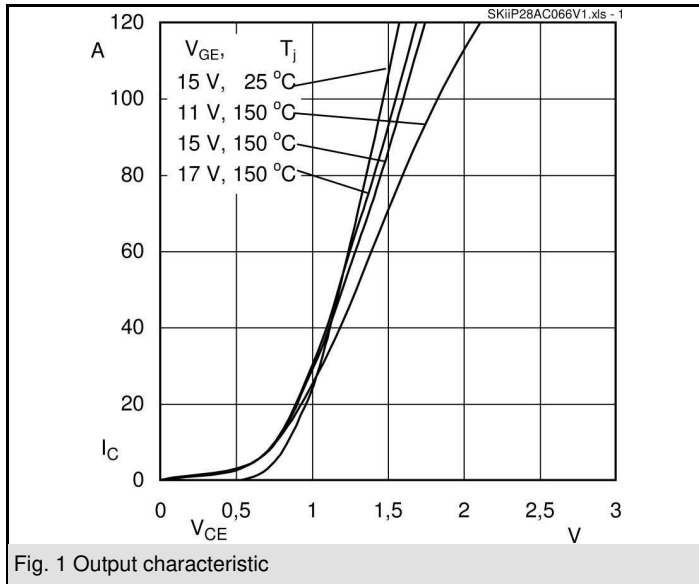
- Case temperature limited to  $T_C = 125^\circ\text{C}$  max.
- Product reliability results are valid for  $T_j = 150^\circ\text{C}$
- SC data:  $t_p \leq 6 \text{ s}$ ;  $V_{GE} \leq 15 \text{ V}$ ;  $T_j = 150^\circ\text{C}$ ;  $V_{CC} = 360 \text{ V}$
- $V_{CEsat}$ ,  $V_F$  = chip level value

| Absolute Maximum Ratings |  | $T_S = 25^\circ\text{C}$ , unless otherwise specified |                  |
|--------------------------|--|---|------------------|
| Symbol                   | Conditions   | Values  | Units            |
| <b>IGBT - Inverter</b>   |  |   |                  |
| $V_{CES}$                |  | 600   | V                |
| $I_C$                    | $T_S = 25 (70)^\circ\text{C}, T_j = 150^\circ\text{C}$ | 101 (68)  | A                |
| $I_C$                    | $T_S = 25 (70)^\circ\text{C}, T_j = 175^\circ\text{C}$ | 112 (83)  | A                |
| $I_{CRM}$                | $t_p = 1 \text{ ms}$                                   | 200   | A                |
| $V_{GES}$                |  | $\pm 20$  | V                |
| $T_j$                    |  | -40...+175  | $^\circ\text{C}$ |
| <b>Diode - Inverter</b>  |  |   |                  |
| $I_F$                    | $T_S = 25 (70)^\circ\text{C}, T_j = 150^\circ\text{C}$ | 103 (67)  | A                |
| $I_F$                    | $T_S = 25 (70)^\circ\text{C}, T_j = 175^\circ\text{C}$ | 112 (81)  | A                |
| $I_{FRM}$                | $t_p = 1 \text{ ms}$                                   | 200   | A                |
| $T_j$                    |  | -40...+175  | $^\circ\text{C}$ |
| $I_{RMS}$                | 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           |  | $T_C = 25^\circ\text{C}$ , unless otherwise specified |             |             |            |
|---------------------------|--|---|-------------|-------------|------------|
| Symbol                    | Conditions   | min.  | typ.        | max.        | Units      |
| <b>IGBT - Inverter</b>    |  |   |             |             |            |
| $V_{CEsat}$               | $I_{Cnom} = 100 \text{ A}, T_j = 25 (150)^\circ\text{C}$         | 1,05  | 1,45 (1,65) | 1,85 (2,05) | V          |
| $V_{GE(th)}$              | $V_{GE} = V_{CE}, I_C = 2 \text{ mA}$                            |   | 5,8         |             | V          |
| $V_{CE(TO)}$              | $T_j = 25 (150)^\circ\text{C}$                                   |   | 0,9 (0,8)   | 1,1 (1)     | V          |
| $r_T$                     | $T_j = 25 (150)^\circ\text{C}$                                   |   | 5,5 (8,5)   | 7,5 (10,5)  | m $\Omega$ |
| $C_{ies}$                 | $V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$ |   | 6,15        |             | nF         |
| $C_{oes}$                 | $V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$ |   | 1,12        |             | nF         |
| $C_{res}$                 | $V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$ |   | 0,9         |             | nF         |
| $R_{CC'+EE'}$             | spring contact-chip $T_S = 25 (150)^\circ\text{C}$               |   |             |             | m $\Omega$ |
| $R_{th(j-s)}$             | per IGBT   |   | 0,6         |             | K/W        |
| $t_{d(on)}$               | under following conditions                                       |   | 40          |             | ns         |
| $t_r$                     | $V_{CC} = 300 \text{ V}, V_{GE} = -8\text{V}/+15\text{V}$        |   | 40          |             | ns         |
| $t_{d(off)}$              | $I_{Cnom} = 100 \text{ A}, T_j = 150^\circ\text{C}$              |   | 410         |             | ns         |
| $t_f$                     | $R_{Gon} = R_{Goff} = 8,2 \Omega$                                |   | 50          |             | ns         |
| $E_{on}(E_{off})$         | inductive load   |   | 3,4 (3,5)   |             | mJ         |
| <b>Diode - Inverter</b>   |  |   |             |             |            |
| $V_F = V_{EC}$            | $I_{Fnom} = 100 \text{ A}, T_j = 25 (150)^\circ\text{C}$         |   | 1,3 (1,3)   | 1,5 (1,5)   | V          |
| $V_{(TO)}$                | $T_j = 25 (150)^\circ\text{C}$                                   |   | 0,9 (0,8)   | 1 (0,9)     | V          |
| $r_T$                     | $T_j = 25 (150)^\circ\text{C}$                                   |   | 4 (5)       |             | m $\Omega$ |
| $R_{th(j-s)}$             | per diode  |   | 0,8         |             | K/W        |
| $I_{RRM}$                 | under following conditions                                       |   | 102         |             | A          |
| $Q_{rr}$                  | $I_{Fnom} = 100 \text{ A}, V_R = 300 \text{ V}$                  |   | 15,5        |             | C          |
| $E_{rr}$                  | $V_{GE} = 0 \text{ V}, T_j = 150^\circ\text{C}$                  |   | 3,3         |             | mJ         |
|                           | $di_F/dt = 2560 \text{ A/s}$                                     |   |             |             |            |
| <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



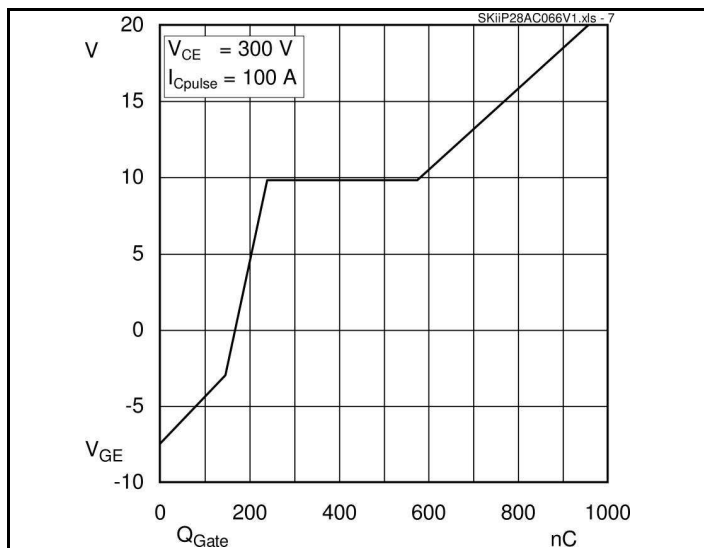


Fig. 7 Typ. Gate charge characteristic

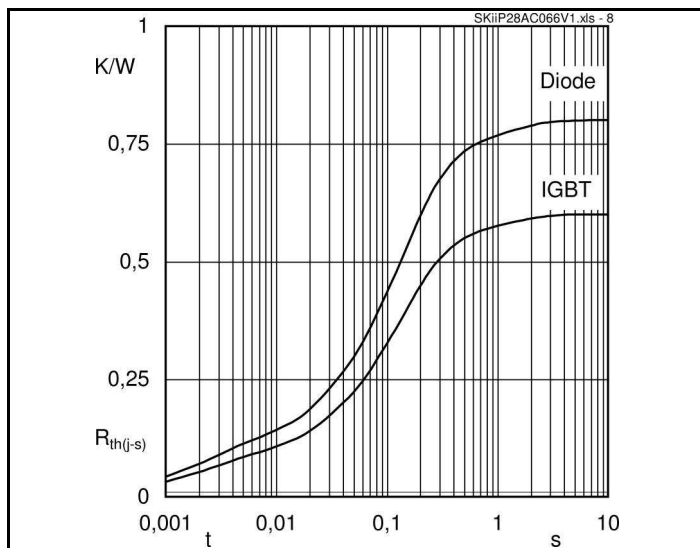


Fig. 8 Thermal impedance

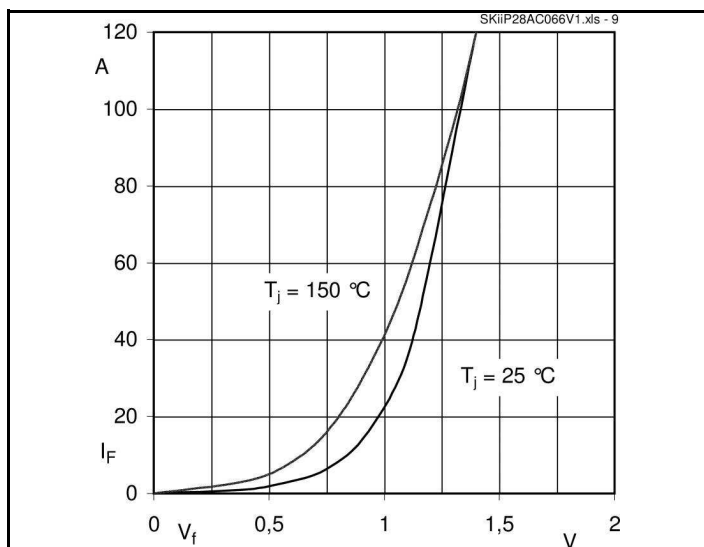


Fig. 9 Freewheeling diode forward characteristic

