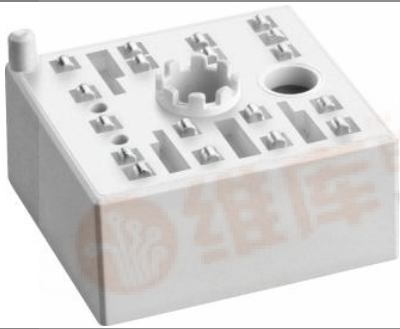


## SKiIP 04ACB066V1



MiniSKiIP® 0

3-phase bridge inverter +  
brake chopper

SKiIP 04ACB066V1

### Features

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

### Typical Applications

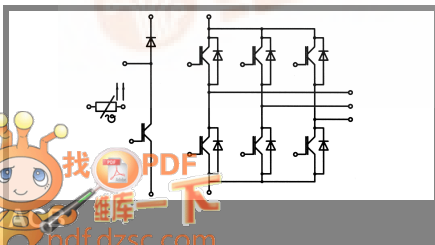
- Inverter up to 6,3 kVA
- Typical motor power 4 kW

### Remarks

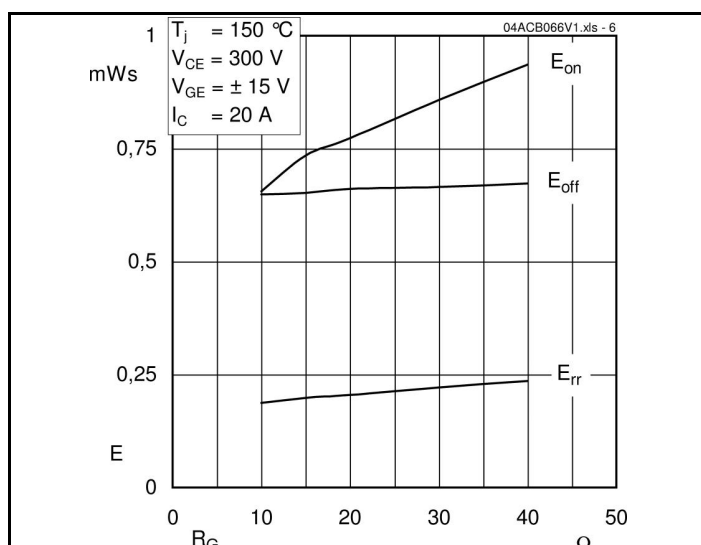
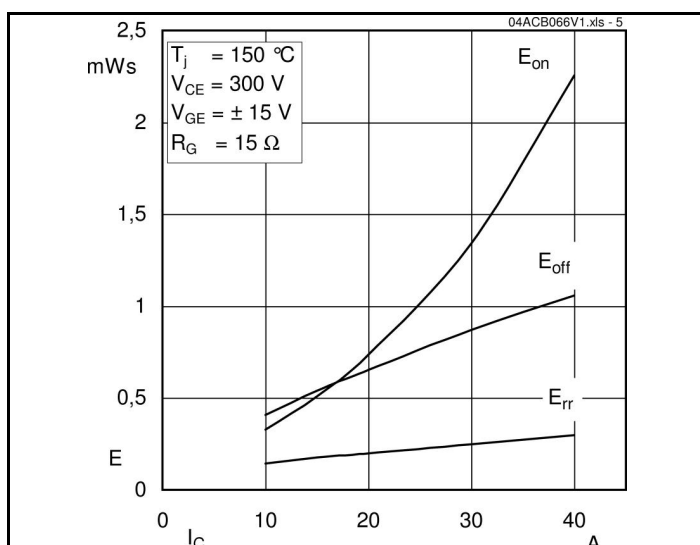
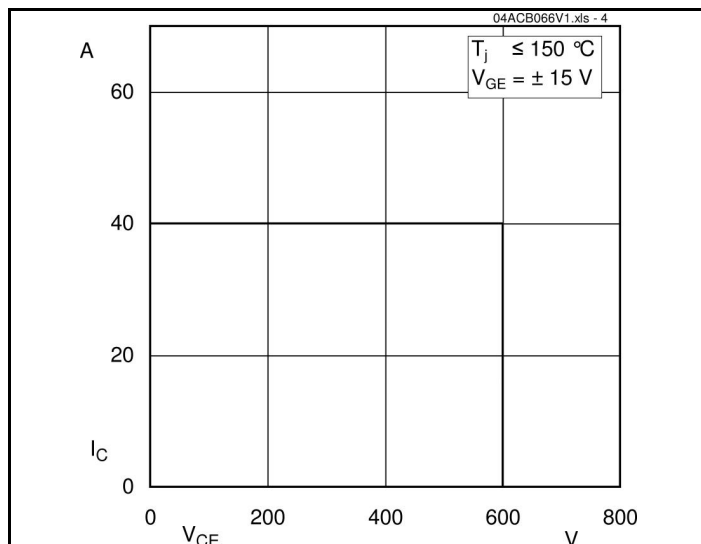
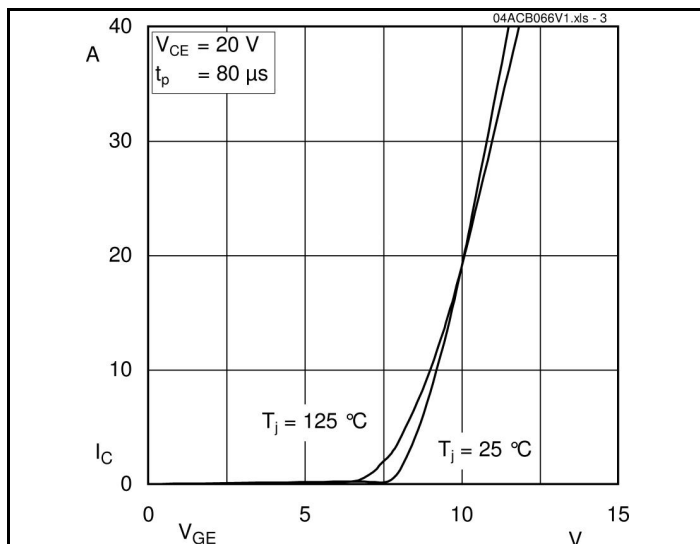
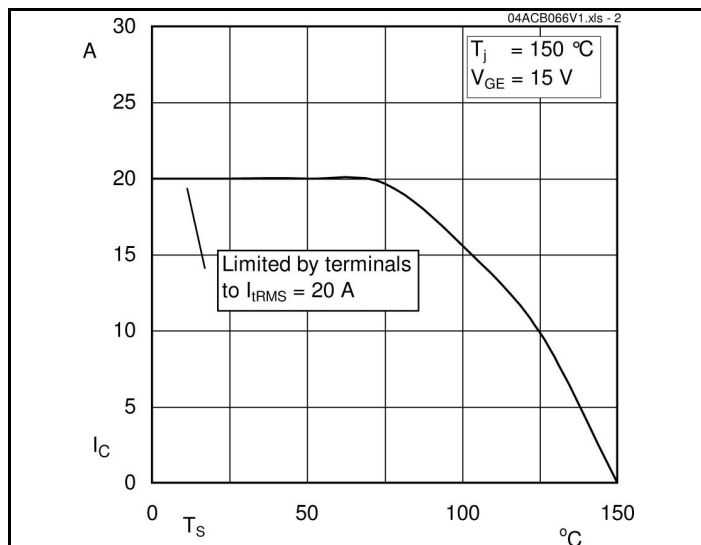
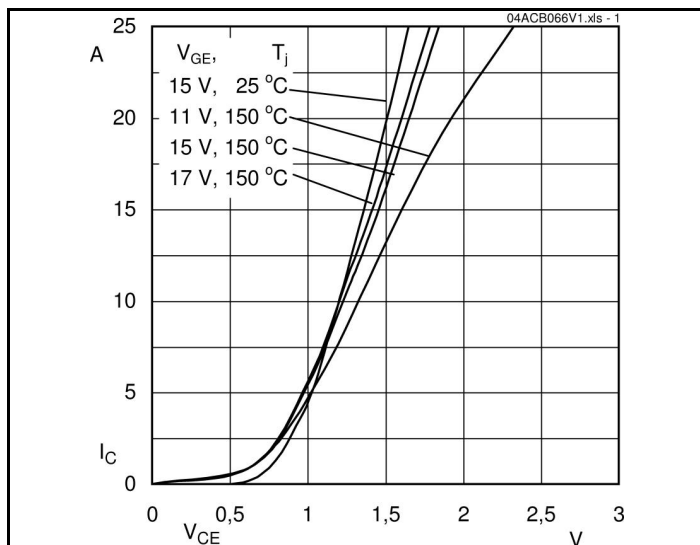
- Case temperature limited to  $T_C=125^{\circ}\text{C}$  max.
- Product reliability results are valid for  $T_J=150^{\circ}\text{C}$
- SC data:  $t_p \leq 6 \mu\text{s}$ ;  $V_{GE} \leq 15 \text{ V}$ ;  $T_J = 150^{\circ}\text{C}$ ;  $V_{CC} = 360 \text{ V}$
- $V_{CEsat}$ ,  $V_F$  = chip level value

| Absolute Maximum Ratings |                                                               | $T_S = 25^{\circ}\text{C}$ , unless otherwise specified |                    |
|--------------------------|---------------------------------------------------------------|---------------------------------------------------------|--------------------|
| Symbol                   | Conditions                                                    | Values                                                  | Units              |
| <b>IGBT - Inverter</b>   |                                                               |                                                         |                    |
| $V_{CES}$                |                                                               | 600                                                     | V                  |
| $I_C$                    | $T_S = 25 (70)^{\circ}\text{C}$ , $T_J = 150^{\circ}\text{C}$ | 30 (21)                                                 | A                  |
| $I_C$                    | $T_S = 25 (70)^{\circ}\text{C}$ , $T_J = 175^{\circ}\text{C}$ | 33 (25)                                                 | A                  |
| $I_{CRM}$                | $t_p = 1 \text{ ms}$                                          | 40                                                      | A                  |
| $V_{GES}$                |                                                               | $\pm 20$                                                | V                  |
| $T_J$                    |                                                               | -40 ... +175                                            | $^{\circ}\text{C}$ |
| <b>Diode - Inverter</b>  |                                                               |                                                         |                    |
| $I_F$                    | $T_S = 25 (70)^{\circ}\text{C}$ , $T_J = 150^{\circ}\text{C}$ | 24 (16)                                                 | A                  |
| $I_F$                    | $T_S = 25 (70)^{\circ}\text{C}$ , $T_J = 175^{\circ}\text{C}$ | 31 (23)                                                 | A                  |
| $I_{FRM}$                | $t_p = 1 \text{ ms}$                                          | 40                                                      | A                  |
| $T_J$                    |                                                               | -40 ... +175                                            | $^{\circ}\text{C}$ |
| $I_{tRMS}$               | per power terminal (20 A / spring)                            | 20                                                      | A                  |
| $T_{stg}$                | $T_{op} \leq T_{stg}$                                         | -40 ... +125                                            | $^{\circ}\text{C}$ |
| $V_{isol}$               | AC, 1 min.                                                    | 2500                                                    | V                  |

| Characteristics                     |                                                           | T <sub>S</sub> = 25 °C, unless otherwise specified |             |             |       |
|-------------------------------------|-----------------------------------------------------------|----------------------------------------------------|-------------|-------------|-------|
| Symbol                              | Conditions                                                | min.                                               | typ.        | max.        | Units |
| IGBT - Inverter, Chopper            |                                                           |                                                    |             |             |       |
| V <sub>CEsat</sub>                  | I <sub>Cnom</sub> = 20 A, T <sub>J</sub> = 25 (150) °C    | 1,1                                                | 1,45 (1,65) | 1,85 (2,05) | V     |
| V <sub>GE(th)</sub>                 | V <sub>GE</sub> = V <sub>CE</sub> , I <sub>C</sub> = 1 mA |                                                    | 5,8         |             | V     |
| V <sub>CE(TO)</sub>                 | T <sub>J</sub> = 25 (150) °C                              |                                                    | 0,9 (0,85)  | 1 (0,9)     | V     |
| r <sub>T</sub>                      | T <sub>J</sub> = 25 (150) °C                              |                                                    | 30 (43)     | 45 (60)     | mΩ    |
| C <sub>ies</sub>                    | V <sub>CE</sub> = 25 V, V <sub>GE</sub> = 0 V, f = 1 MHz  |                                                    | 1,13        |             | nF    |
| C <sub>oes</sub>                    | V <sub>CE</sub> = 25 V, V <sub>GE</sub> = 0 V, f = 1 MHz  |                                                    | 0,25        |             | nF    |
| C <sub>res</sub>                    | V <sub>CE</sub> = 25 V, V <sub>GE</sub> = 0 V, f = 1 MHz  |                                                    | 0,18        |             | nF    |
| R <sub>CC'+EE'</sub>                | spring contact-chip T <sub>S</sub> = 25 (150) °C          |                                                    |             |             | mΩ    |
| R <sub>th(j-s)</sub>                | per IGBT                                                  |                                                    | 1,6         |             | K/W   |
| t <sub>d(on)</sub>                  | under following conditions                                |                                                    | 20          |             | ns    |
| t <sub>r</sub>                      | V <sub>CC</sub> = 300 V, V <sub>GE</sub> = ± 15V          |                                                    | 30          |             | ns    |
| t <sub>d(off)</sub>                 | I <sub>Cnom</sub> = 20 A, T <sub>J</sub> = 150 °C         |                                                    | 175         |             | ns    |
| t <sub>f</sub>                      | R <sub>Gon</sub> = R <sub>Goff</sub> = 15 Ω               |                                                    | 50          |             | ns    |
| E <sub>on</sub> (E <sub>off</sub> ) | inductive load                                            |                                                    | 0,8 (0,7)   |             | mJ    |
| Diode - Inverter, Chopper           |                                                           |                                                    |             |             |       |
| V <sub>F</sub> = V <sub>EC</sub>    | I <sub>Fnom</sub> = 20 A, T <sub>J</sub> = 25 (150) °C    |                                                    | 1,6 (1,65)  | 1,9 (1,95)  | V     |
| V <sub>(TO)</sub>                   | T <sub>J</sub> = 25 (150) °C                              |                                                    | 1 (0,9)     | 1,1 (1)     | V     |
| r <sub>T</sub>                      | T <sub>J</sub> = 25 (150) °C                              |                                                    | 30 (37,5)   | 40 (42,5)   | mΩ    |
| R <sub>th(j-s)</sub>                | per diode                                                 |                                                    | 2,5         |             | K/W   |
| I <sub>RRM</sub>                    | under following conditions                                |                                                    | 25          |             | A     |
| Q <sub>rr</sub>                     | I <sub>Fnom</sub> = 20 A, V <sub>R</sub> = 300 V          |                                                    | 2,3         |             | μC    |
| E <sub>rr</sub>                     | V <sub>GE</sub> = 0 V, T <sub>J</sub> = 150 °C            |                                                    | 0,2         |             | mJ    |
|                                     | di <sub>F</sub> /dt = 1240 A/μs                           |                                                    |             |             |       |
| Temperature Sensor                  |                                                           |                                                    |             |             |       |
| R <sub>ts</sub>                     | 3 %, T <sub>r</sub> = 25 (100) °C                         |                                                    | 1000(1670)  |             | Ω     |
| Mechanical Data                     |                                                           |                                                    |             |             |       |
| m                                   |                                                           |                                                    | 21,5        |             | g     |
| M <sub>s</sub>                      | Mounting torque                                           | 2                                                  |             | 2,5         | Nm    |



# SKiiP 04ACB066V1



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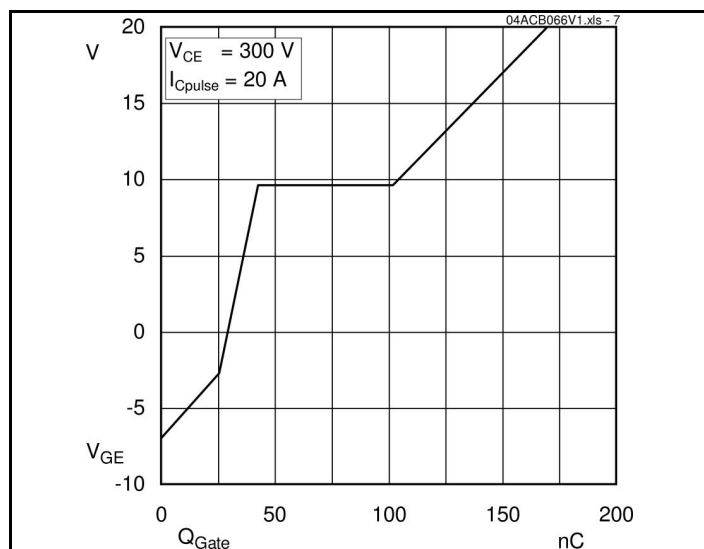


Fig. 7 Typ. Gate charge characteristic

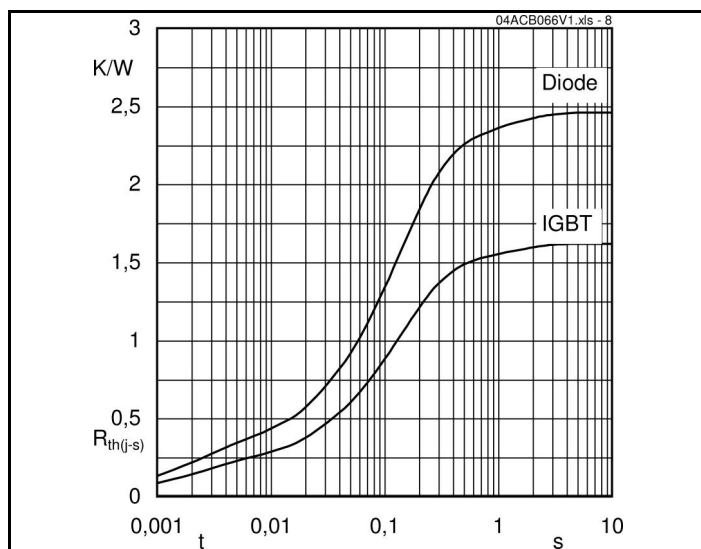


Fig. 8 Thermal impedance

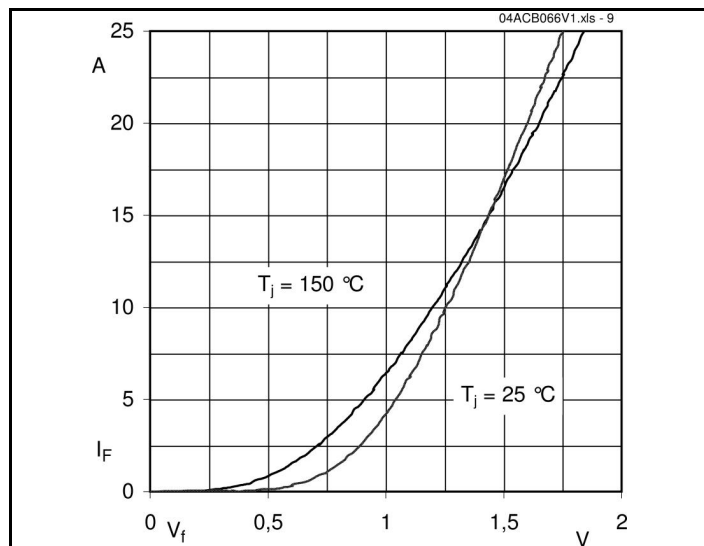
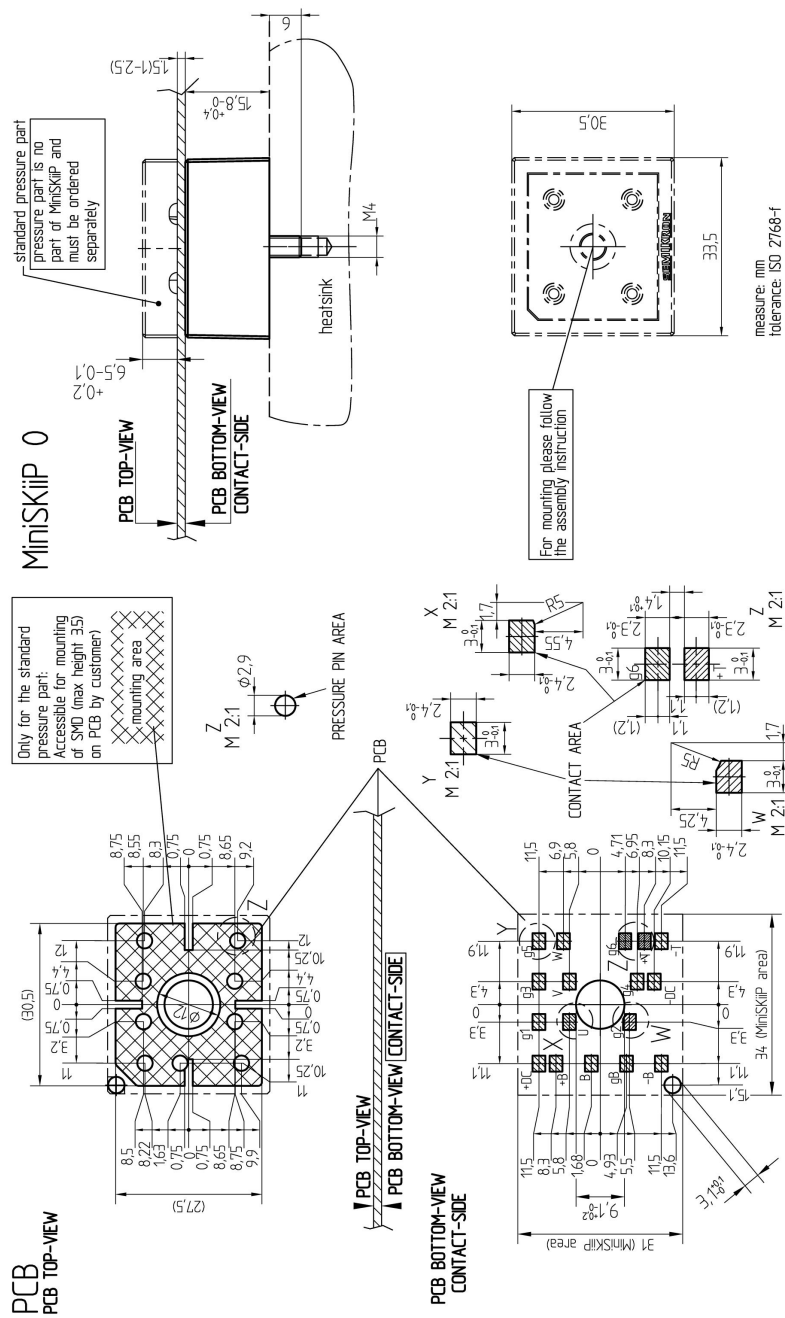
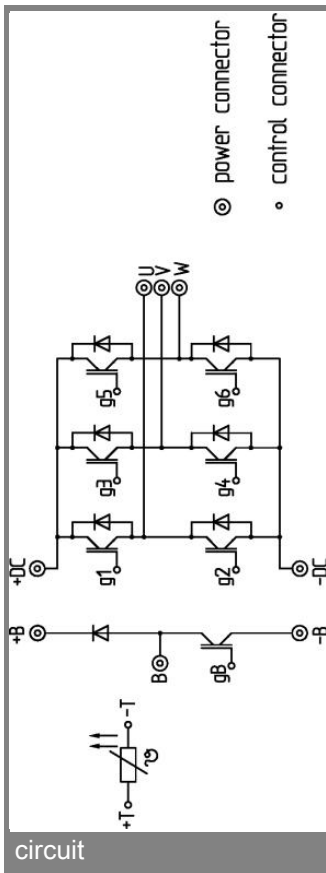


Fig. 9 Typ. freewheeling diode forward characteristic

# SKiip 04ACB066V1



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