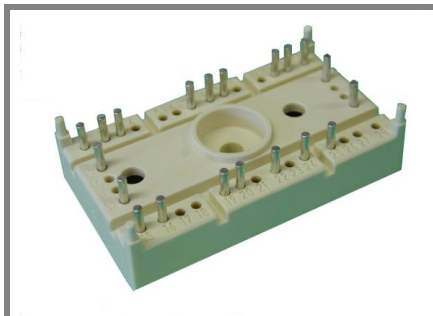


# SK 10 GD 065 ET



**SEMITOP<sup>®</sup> 3**

## 3-phase bridge inverter

**SK 10 GD 065 ET**

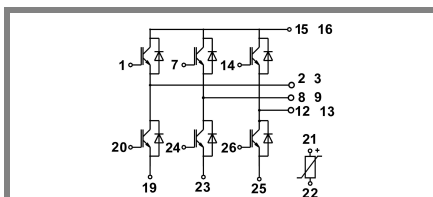
Preliminary Data

### Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded alumium oxide ceramic (DCB)
- Ultrafast NPT technology IGBT
- CAL Technology FWD
- Integrated NTC temperature sensor

### Typical Applications

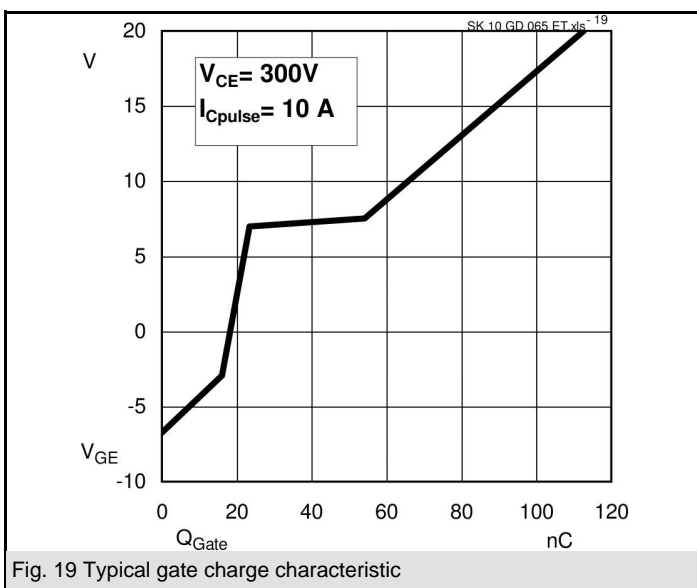
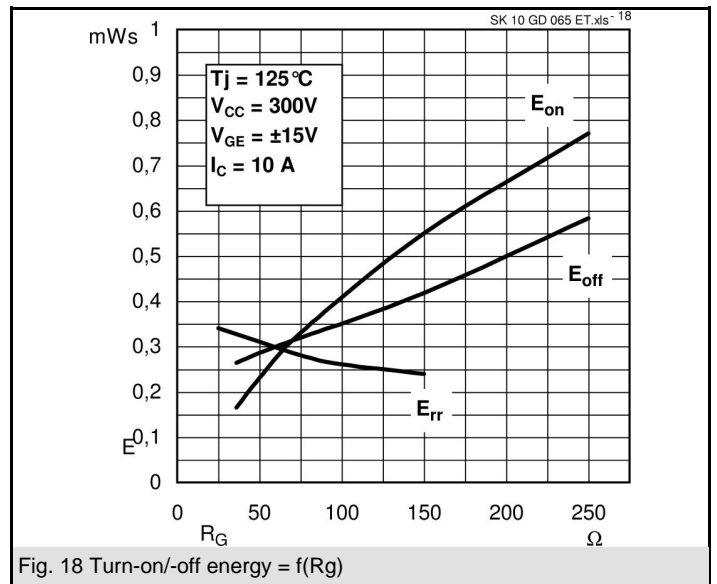
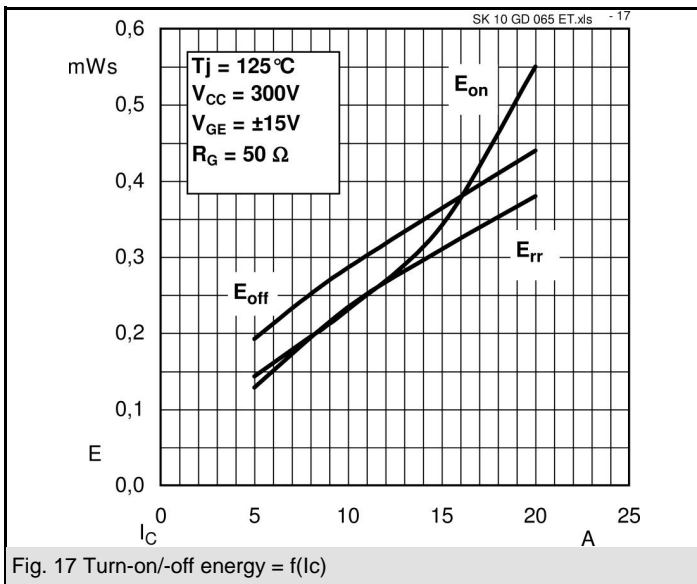
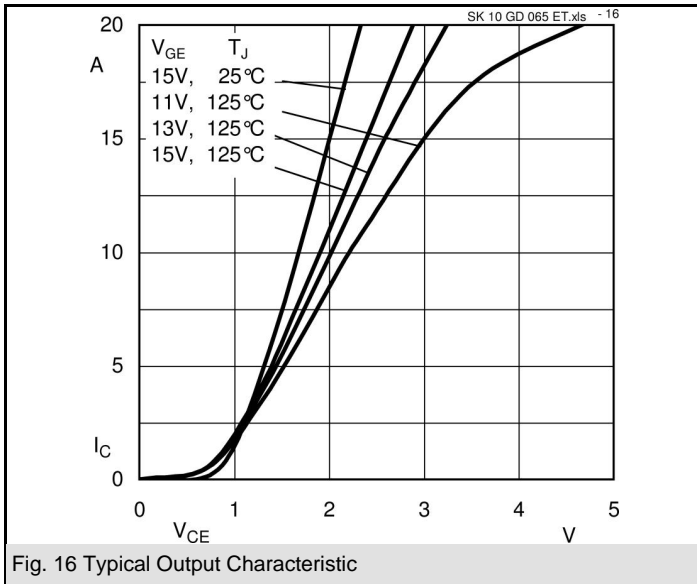
- Inverter

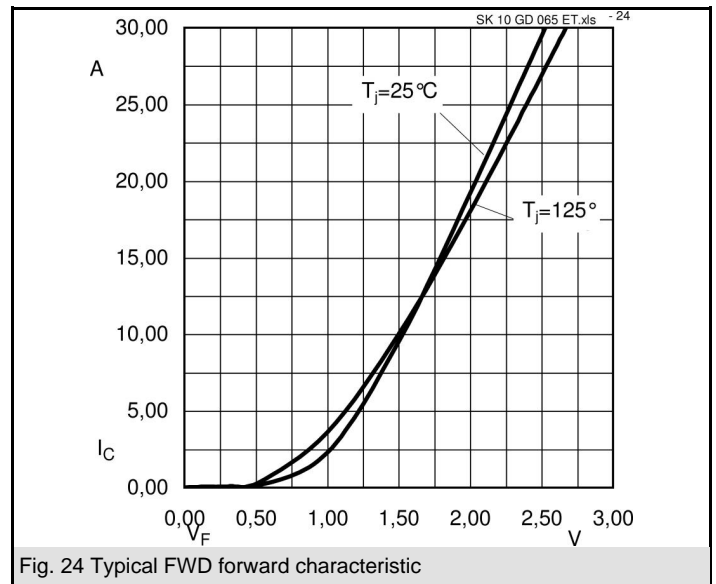
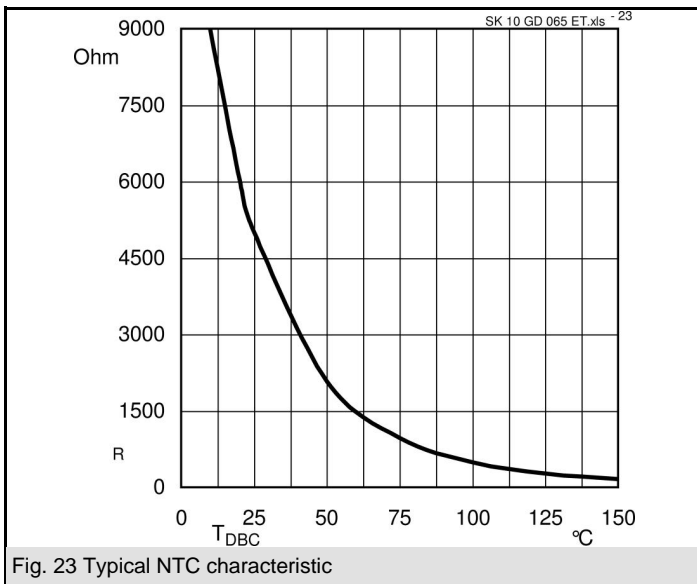
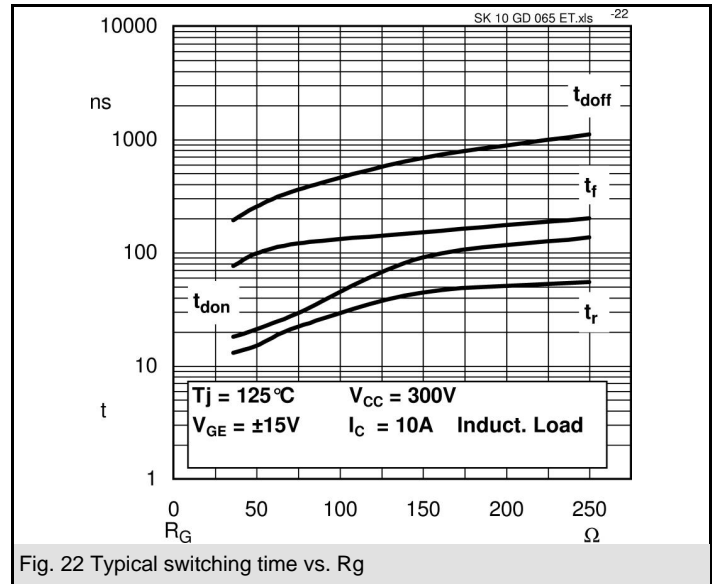
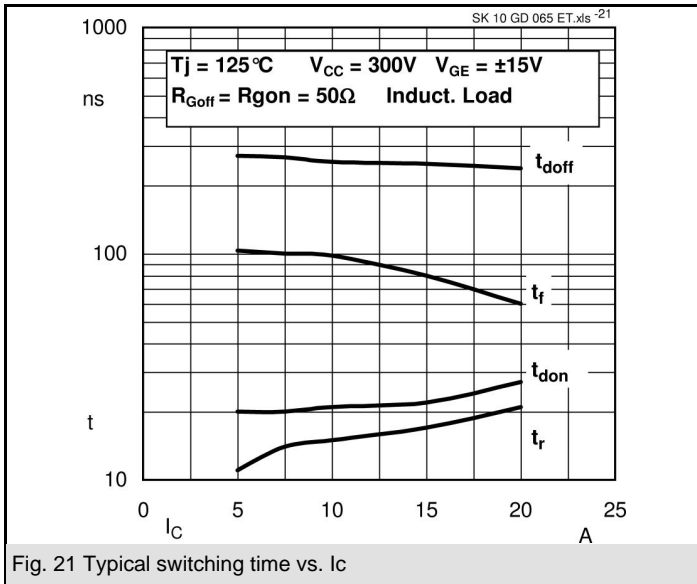


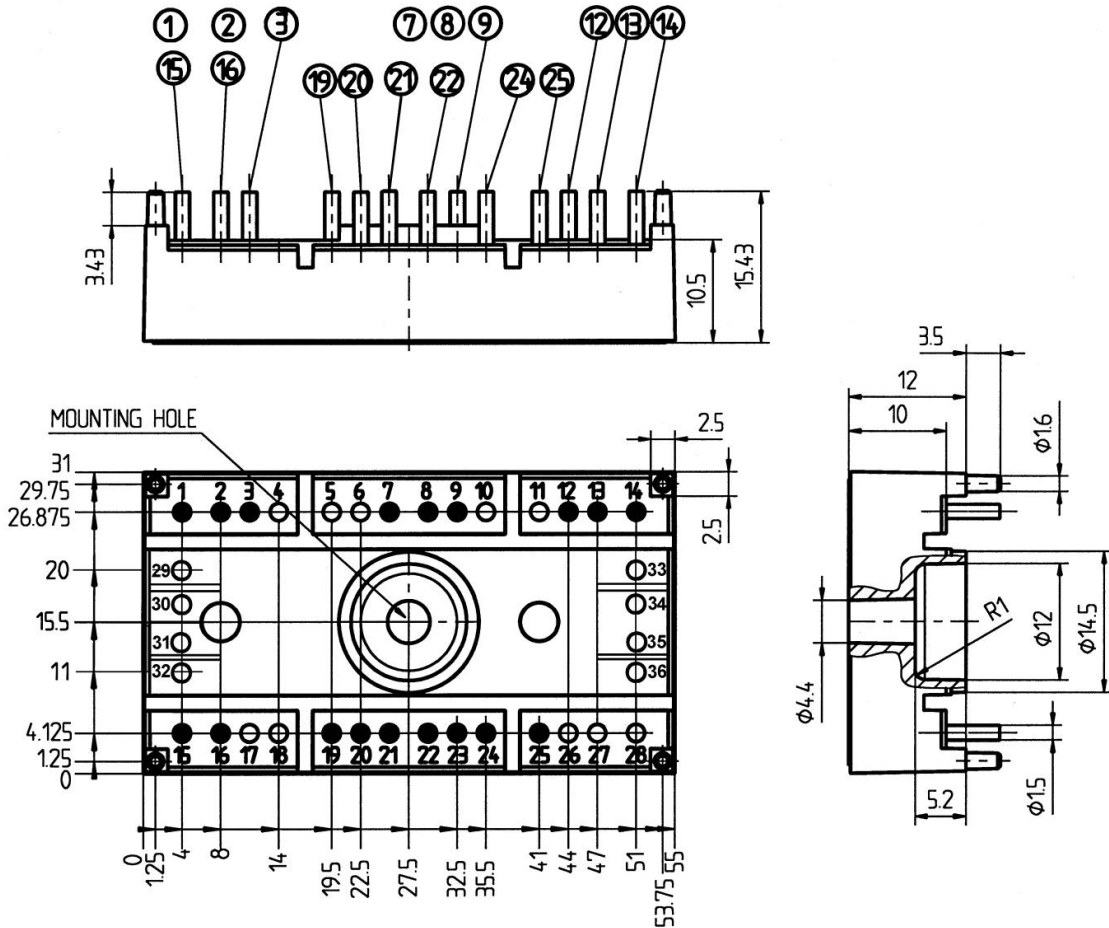
**GD - ET**

| Absolute Maximum Ratings         |   | $T_s = 25^\circ\text{C}$ , unless otherwise specified |                      |
|----------------------------------|---|---|----------------------|
| Symbol                           | Conditions  | Values  | Units                |
| <b>IGBT - Inverter, Chopper</b>  |   |   |                      |
| $V_{CES}$                        |   | 600   | V                    |
| $I_C$                            | $T_s = 25 (80)^\circ\text{C}$                             | 17 (11)   | A                    |
| $I_{CM}$                         | $T_s = 25 (80)^\circ\text{C}$ , $t_p \leq 1 \text{ ms}$   | 34 (22)   | A                    |
| $V_{GES}$                        |   | $\pm 20$  | V                    |
| $T_j$                            |   | -40 ... +150  | $^\circ\text{C}$     |
| <b>Diode - Inverter, Chopper</b> |   |   |                      |
| $I_F$                            | $T_s = 25 (80)^\circ\text{C}$                             | 22 (15)   | A                    |
| $I_{FM} = -I_{CM}$               | $T_s = 25 (70)^\circ\text{C}$ , $t_p \leq 1 \text{ ms}$   | 42 (32)   | A                    |
| $T_j$                            |   | -40 ... +150  | $^\circ\text{C}$     |
| <b>Rectifier</b>                 |   |   |                      |
| $V_{RRM}$                        |   |   | V                    |
| $I_{FAV} / I_{TAV}$              | $T_s = ^\circ\text{C}$                                    |   | A                    |
| $I_{FSM} / I_{TSM}$              | $t_p = \text{ms}$ , $\sin^\circ$ , $T_j = ^\circ\text{C}$ |   | A                    |
| $I_t^2$                          | $t_p = \text{ms}$ , $\sin^\circ$ , $T_j = ^\circ\text{C}$ |   | $\text{A}^2\text{s}$ |
| $T_j$                            |   |   | $^\circ\text{C}$     |
| $T_{sol}$                        | Terminals, 10s  | 260   | $^\circ\text{C}$     |
| $T_{stg}$                        |   | -40, ... +125   | $^\circ\text{C}$     |
| $V_{isol}$                       | AC, 1 min. / 1s   | 2500 / 3000   | V                    |

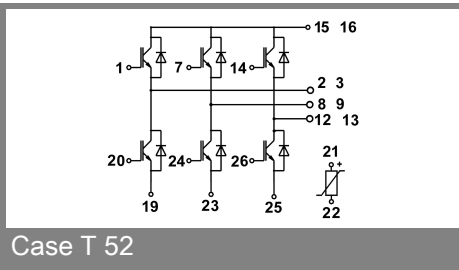
| Characteristics                  |  | $T_s = 25^\circ\text{C}$ , unless otherwise specified |           |      |               |
|----------------------------------|--|---|-----------|------|---------------|
| Symbol                           | Conditions   | min.  | typ.      | max. | Units         |
| <b>IGBT - Inverter, Chopper</b>  |  |   |           |      |               |
| $V_{CEsat}$                      | $I_C = 6 \text{ A}$ , $T_j = 25 (125)^\circ\text{C}$                   |   | 2 (2,2)   | 2,5  | V             |
| $V_{GE(th)}$                     | $V_{GE} = V_{CE}$ , $I_C = 0,5 \text{ mA}$                             | 3   | 4         | 5    | V             |
| $V_{CE(TO)}$                     | $T_j = 25^\circ\text{C} (125)^\circ\text{C}$                           |   | 1,2 (1,1) | 1,3  | V             |
| $r_T$                            | $T_j = 25^\circ\text{C} (125)^\circ\text{C}$                           |   | 133 (183) | 200  | m $\Omega$    |
| $C_{ies}$                        | $V_{CE} = 25 \text{ V}$ , $V_{GE} = 0 \text{ V}$ , $f = 1 \text{ MHz}$ |   | 0,5       |      | nF            |
| $C_{oes}$                        | $V_{CE} = 25 \text{ V}$ , $V_{GE} = 0 \text{ V}$ , $f = 1 \text{ MHz}$ |   | 0,1       |      | nF            |
| $C_{res}$                        | $V_{CE} = 25 \text{ V}$ , $V_{GE} = 0 \text{ V}$ , $f = 1 \text{ MHz}$ |   | 0,1       |      | nF            |
| $R_{th(j-s)}$                    | per IGBT   |   |           | 2    | K/W           |
| $t_{d(on)}$                      | under following conditions   |   | 45        |      | ns            |
| $t_r$                            | $V_{CC} = 300 \text{ V}$ , $V_{GE} = \pm 15 \text{ V}$                 |   | 30        |      | ns            |
| $t_{d(off)}$                     | $I_C = 6 \text{ A}$ , $T_j = 125^\circ\text{C}$                        |   | 340       |      | ns            |
| $t_f$                            | $R_{Gon} = R_{Goff} = 210 \Omega$                                      |   | 25        |      | ns            |
| $E_{on}$                         | inductive load   |   | 0,18      |      | mJ            |
| $E_{off}$                        |  |   | 0,13      |      | mJ            |
| <b>Diode - Inverter, Chopper</b> |  |   |           |      |               |
| $V_F = V_{EC}$                   | $I_F = 6 \text{ A}$ , $T_j = 25 (125)^\circ\text{C}$                   |   | 1,3 (1,2) | 1,5  | V             |
| $V_{(TO)}$                       | $T_j = 25^\circ\text{C} (125)^\circ\text{C}$                           |   | 1 (0,9)   | 1,1  | V             |
| $r_T$                            | $T_j = 25^\circ\text{C} (125)^\circ\text{C}$                           |   | 45 (50)   | 60   | m $\Omega$    |
| $R_{th(j-s)}$                    | per diode  |   |           | 2,3  | K/W           |
| $I_{RRM}$                        | under following conditions   |   | 8,4       |      | A             |
| $Q_{rr}$                         | $I_F = 6 \text{ A}$ , $V_R = 300 \text{ V}$                            |   | 0,8       |      | $\mu\text{C}$ |
| $E_{rr}$                         | $V_{GE} = 0 \text{ V}$ , $T_j = 125^\circ\text{C}$                     |   | 0,18      |      | mJ            |
|                                  | $di_F/dt = 170 \text{ A}/\mu\text{s}$                                  |   |           |      |               |
| <b>Diode rectifier</b>           |  |   |           |      |               |
| $V_F$                            | $I_F = \text{A}$ , $T_j = 25^\circ\text{C}$                            |   |           |      | V             |
| $V_{(TO)}$                       | $T_j = ^\circ\text{C}$   |   |           |      | V             |
| $r_T$                            | $T_j = ^\circ\text{C}$   |   |           |      | m $\Omega$    |
| $R_{th(j-s)}$                    | per diode  |   |           |      | K/W           |
| <b>Temperatur sensor</b>         |  |   |           |      |               |
| $R_{ts}$                         | 5 %, $T_r = 25 (100)^\circ\text{C}$                                    |   | 5000(493) |      | $\Omega$      |
| <b>Mechanical data</b>           |  |   |           |      |               |
| w                                |  |   | 30        |      | g             |
| $M_s$                            | Mounting torque  |   |           | 2,5  | Nm            |







Case T 52 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 52

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

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.