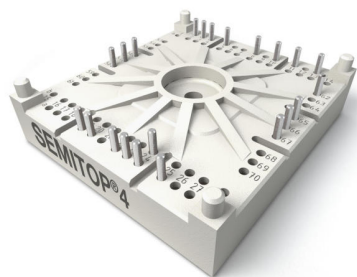


# SK 50 DGDL 126 T



**SEMITOP<sup>®</sup>4**

**3-phase bridge rectifier +  
brake chopper + 3-phase  
bridge inverter**

**SK 50 DGDL 126 T**

Preliminary Data

## Features

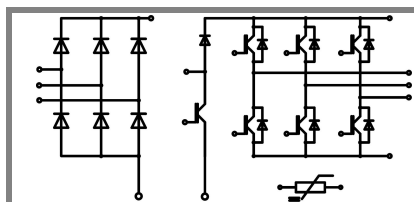
- One screw mounting module
- Fully compatible with SEMITOP<sup>®</sup>1,2,3
- Improved thermal performances by aluminium oxide substrate
- Trench IGBT technology
- CAL technology free-wheeling diode
- Integrated NTC temperature sensor

## Typical Applications\*

- Inverter up to 28 kVA
- Typ. motor power 15 kW

1)  $V_{ce,sat}$ ,  $V_f$  = chip level value

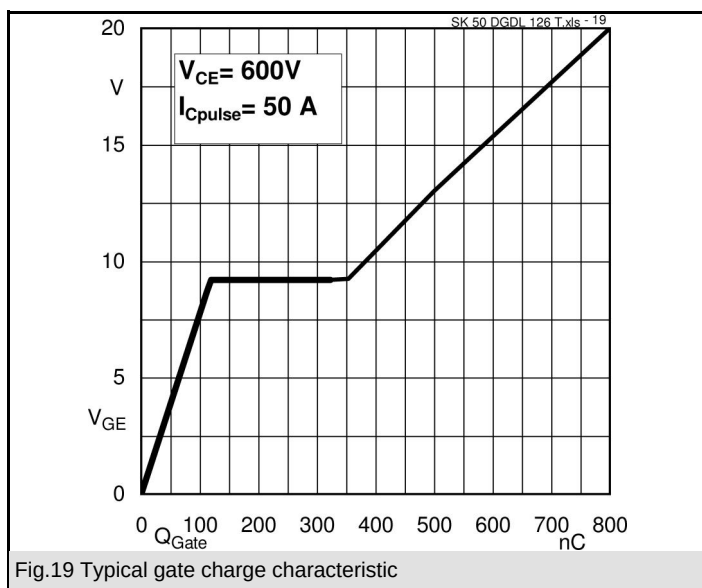
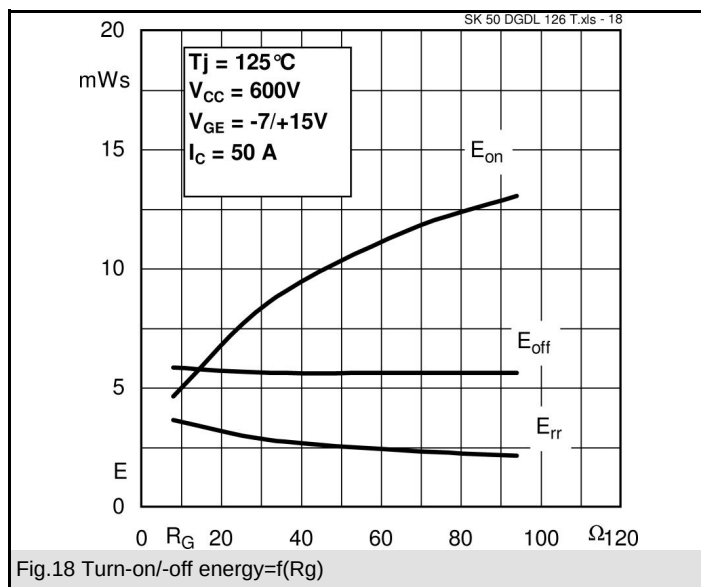
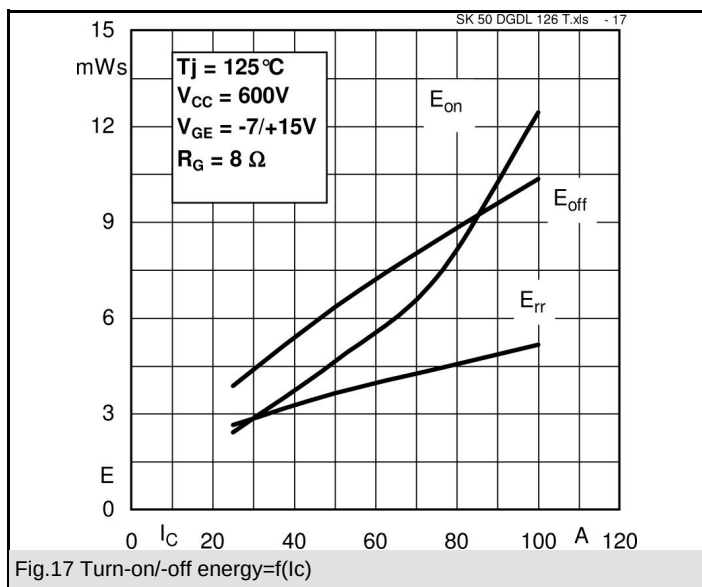
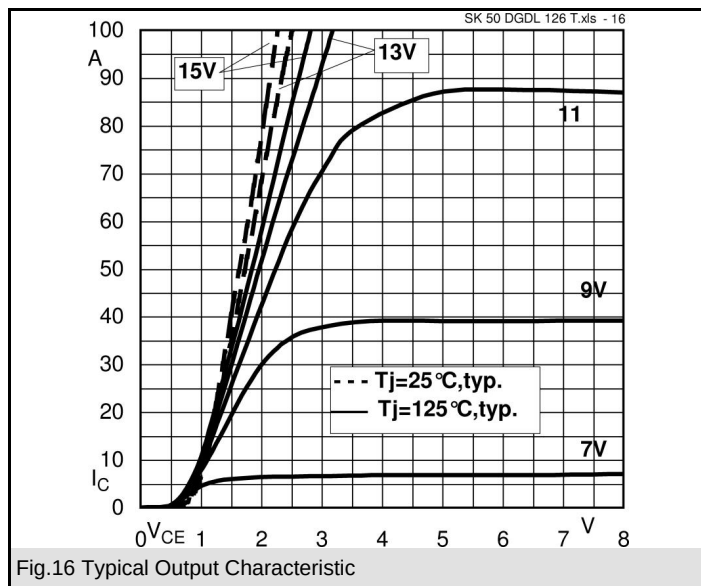
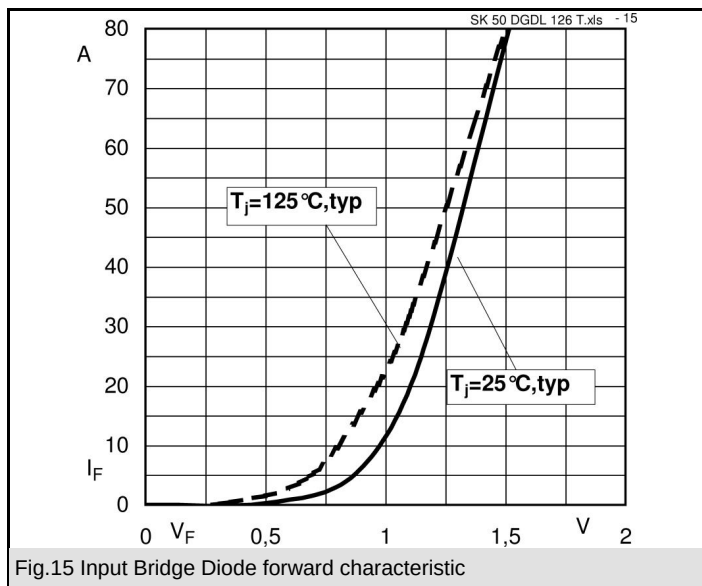
2) For IGBT chopper diagrams please refer to SK35DGDL126T

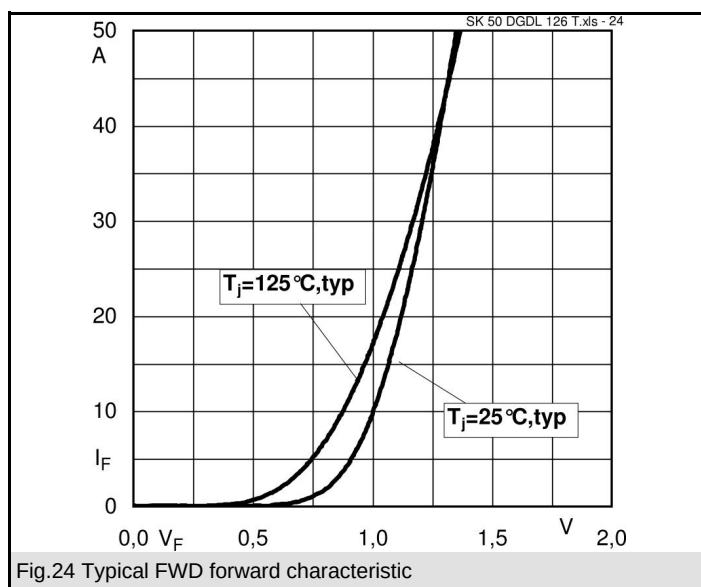
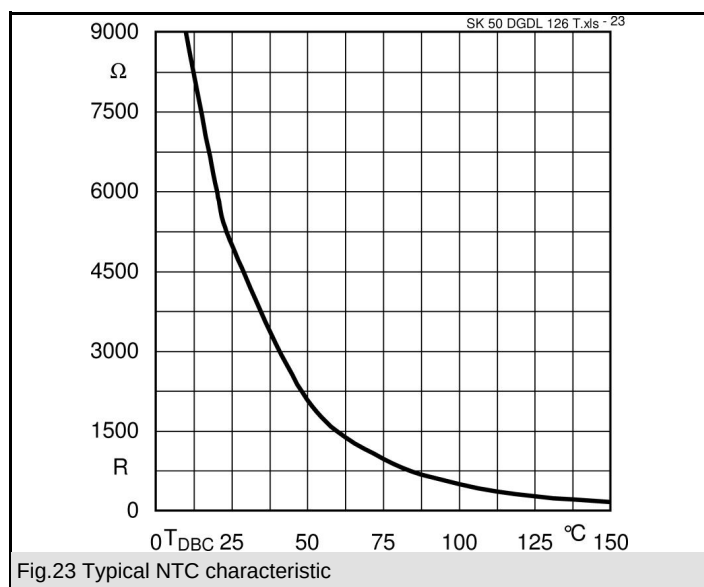
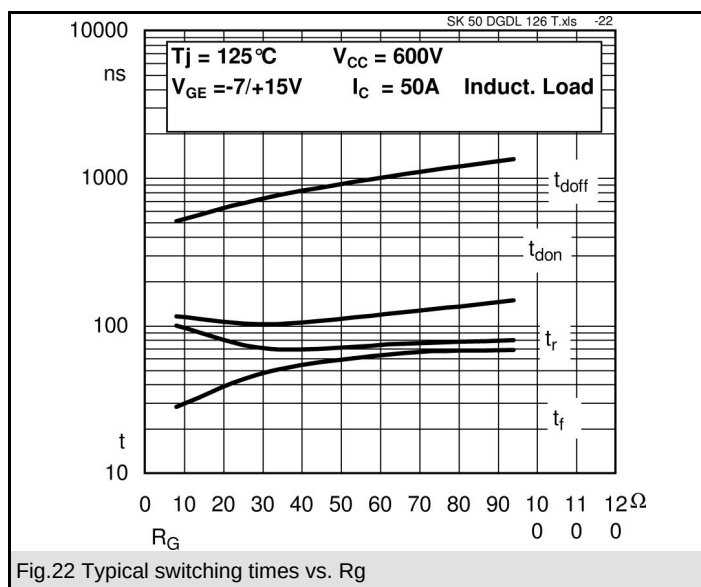
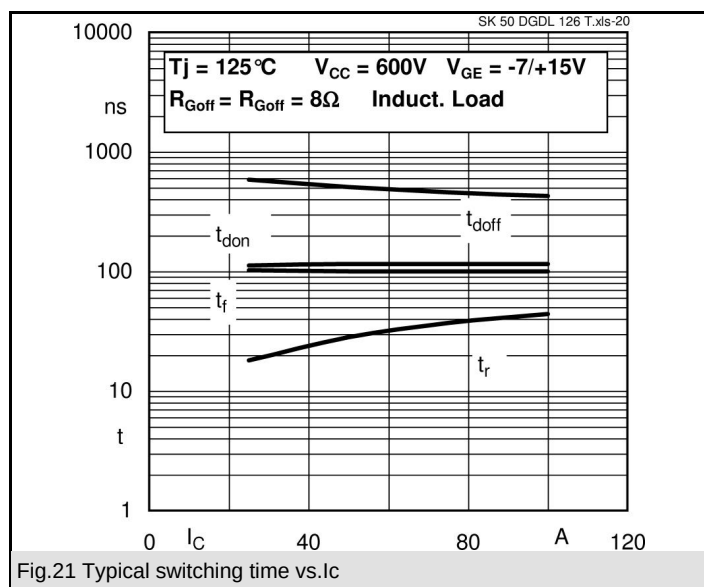


DGDL - T

| Absolute Maximum Ratings                                                               |                                                                 | Ts = 25 °C, unless otherwise specified |                  |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------|----------------------------------------|------------------|
| Symbol                                                                                 | Conditions                                                      | Values                                 | Units            |
| <b>IGBT - Inverter. For IGBT chopper maximum ratings, please refer to SK35DGDL126T</b> |                                                                 |                                        |                  |
| $V_{CES}$                                                                              | $T_s = 25 (70) ^\circ C$                                        | 1200                                   | V                |
| $I_C$                                                                                  | $I_{CRM} = 2 \times I_{Cnom}$ , $t_p = 1 \text{ ms}$            | 68 (52)                                | A                |
| $I_{CRM}$                                                                              |                                                                 | 100                                    | A                |
| $V_{GES}$                                                                              |                                                                 | $\pm 20$                               | V                |
| $T_j$                                                                                  |                                                                 | -40 ... +150                           | $^\circ C$       |
| <b>Diode - Inverter,Chopper</b>                                                        |                                                                 |                                        |                  |
| $I_F$                                                                                  | $T_s = 25 (70) ^\circ C$                                        | 62 (46)                                | A                |
| $I_{FRM}$                                                                              | $I_{FRM} = 2 \times I_{Fnom}$ , $t_p = 1 \text{ ms}$            | 100                                    | A                |
| $T_j$                                                                                  |                                                                 | -40 ... +150                           | $^\circ C$       |
| <b>Rectifier</b>                                                                       |                                                                 |                                        |                  |
| $V_{RRM}$                                                                              | $T_s = 70 ^\circ C$                                             | 1600                                   | V                |
| $I_F$                                                                                  | $t_p = 10 \text{ ms}$ , $\sin 180 ^\circ$ , $T_j = 25 ^\circ C$ | 61                                     | A                |
| $I_{FSM} / I_{TSM}$                                                                    | $t_p = 10 \text{ ms}$ , $\sin 180 ^\circ$ , $T_j = 25 ^\circ C$ | 700                                    | A                |
| $I_t^2$                                                                                |                                                                 | 2400                                   | A <sup>2</sup> s |
| $T_j$                                                                                  |                                                                 | -40 ... +150                           | $^\circ C$       |
| $T_{sol}$                                                                              | Terminals, 10 s                                                 | 260                                    | $^\circ C$       |
| $T_{stg}$                                                                              |                                                                 | -40 ... +125                           | $^\circ C$       |
| $V_{isol}$                                                                             | AC, 1 min. / 1 s                                                | 2500 / 3000                            | V                |

| Characteristics                                                                                   |                                                                        | Ts = 25 °C, unless otherwise specified |             |             |       |
|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------------|-------------|-------------|-------|
| Symbol                                                                                            | Conditions                                                             | min.                                   | typ.        | max.        | Units |
| <b>IGBT - Inverter. For IGBT chopper electrical characteristics, please refer to SK35DGDL126T</b> |                                                                        |                                        |             |             |       |
| $V_{CEsat}$                                                                                       | $I_C = 50 \text{ A}$ , $T_j = 25 (125) ^\circ C$                       |                                        | 1,7 (2)     | 2,15 (2,45) | V     |
| $V_{GE(th)}$                                                                                      | $V_{GE} = V_{CE}$ , $I_C = 2 \text{ mA}$                               | 5                                      | 5,8         | 6,5         | V     |
| $V_{CE(TO)}$                                                                                      | $T_j = 25 ^\circ C (125) ^\circ C$                                     |                                        | 1 (0,9)     | 1,2 (1,1)   | V     |
| $r_T$                                                                                             | $T_j = 25 ^\circ C (125) ^\circ C$                                     |                                        | 14 (22)     | 19 (27)     | mΩ    |
| $C_{ies}$                                                                                         | $V_{CE} = 25 \text{ V}$ , $V_{GE} = 0 \text{ V}$ , $f = 1 \text{ MHz}$ |                                        | 3,7         |             | nF    |
| $C_{oes}$                                                                                         | $V_{CE} = 25 \text{ V}$ , $V_{GE} = 0 \text{ V}$ , $f = 1 \text{ MHz}$ |                                        | 0,18        |             | nF    |
| $C_{res}$                                                                                         | $V_{CE} = 25 \text{ V}$ , $V_{GE} = 0 \text{ V}$ , $f = 1 \text{ MHz}$ |                                        | 0,16        |             | nF    |
| $R_{th(j-s)}$                                                                                     | per IGBT                                                               |                                        | 0,6         |             | K/W   |
| $t_{d(on)}$                                                                                       | under following conditions                                             |                                        | 115         |             | ns    |
| $t_r$                                                                                             | $V_{CC} = 600 \text{ V}$ , $V_{GE} = \pm 15 \text{ V}$                 |                                        | 28          |             | ns    |
| $t_{d(off)}$                                                                                      | $I_C = 50 \text{ A}$ , $T_j = 125 ^\circ C$                            |                                        | 509         |             | ns    |
| $t_f$                                                                                             | $R_{Gon} = R_{Goff} = 8 \Omega$                                        |                                        | 100         |             | ns    |
| $E_{on}$                                                                                          | inductive load                                                         |                                        | 4,6         |             | mJ    |
| $E_{off}$                                                                                         |                                                                        |                                        | 6,3         |             | mJ    |
| <b>Diode - Inverter,Chopper</b>                                                                   |                                                                        |                                        |             |             |       |
| $V_F = V_{EC}$                                                                                    | $I_F = 50 \text{ A}$ , $T_j = 25(125) ^\circ C$                        |                                        | 1,35 (1,35) |             | V     |
| $V_{(TO)}$                                                                                        | $T_j = 25 ^\circ C (125) ^\circ C$                                     |                                        | 0,95 (0,85) |             | V     |
| $r_T$                                                                                             | $T_j = 25 ^\circ C (125) ^\circ C$                                     |                                        | 8 (10)      |             | mΩ    |
| $R_{th(j-s)}$                                                                                     | per diode                                                              |                                        | 1           |             | K/W   |
| $I_{RRM}$                                                                                         | under following conditions                                             |                                        | 30          |             | A     |
| $Q_{rr}$                                                                                          | $I_F = 50 \text{ A}$ , $V_R = 600 \text{ V}$                           |                                        | 10          |             | μC    |
| $E_{rr}$                                                                                          | $V_{GE} = 0 \text{ V}$ , $T_j = 125 ^\circ C$                          |                                        | 3,6         |             | mJ    |
|                                                                                                   | $di_F/dt = 500 \text{ A/}\mu\text{s}$                                  |                                        |             |             |       |
| <b>Diode - Rectifier</b>                                                                          |                                                                        |                                        |             |             |       |
| $V_F$                                                                                             | $I_F = 35 \text{ A}$ , $T_j = 25() ^\circ C$                           |                                        | 1,1         |             | V     |
| $V_{(TO)}$                                                                                        | $T_j = 150 ^\circ C$                                                   |                                        | 0,8         |             | V     |
| $r_T$                                                                                             | $T_j = 150 ^\circ C$                                                   |                                        | 11          |             | mΩ    |
| $R_{th(j-s)}$                                                                                     | per diode                                                              |                                        | 0,9         |             | K/W   |
| <b>Temperatur sensor</b>                                                                          |                                                                        |                                        |             |             |       |
| $R_{ts}$                                                                                          | 5 %, $T_r = 25 (100) ^\circ C$                                         |                                        | 5000(493)   |             | Ω     |
| <b>Mechanical data</b>                                                                            |                                                                        |                                        |             |             |       |
| w                                                                                                 |                                                                        |                                        | 60          |             | g     |
| $M_s$                                                                                             | Mounting torque                                                        | 2,5                                    |             | 2,75        | Nm    |

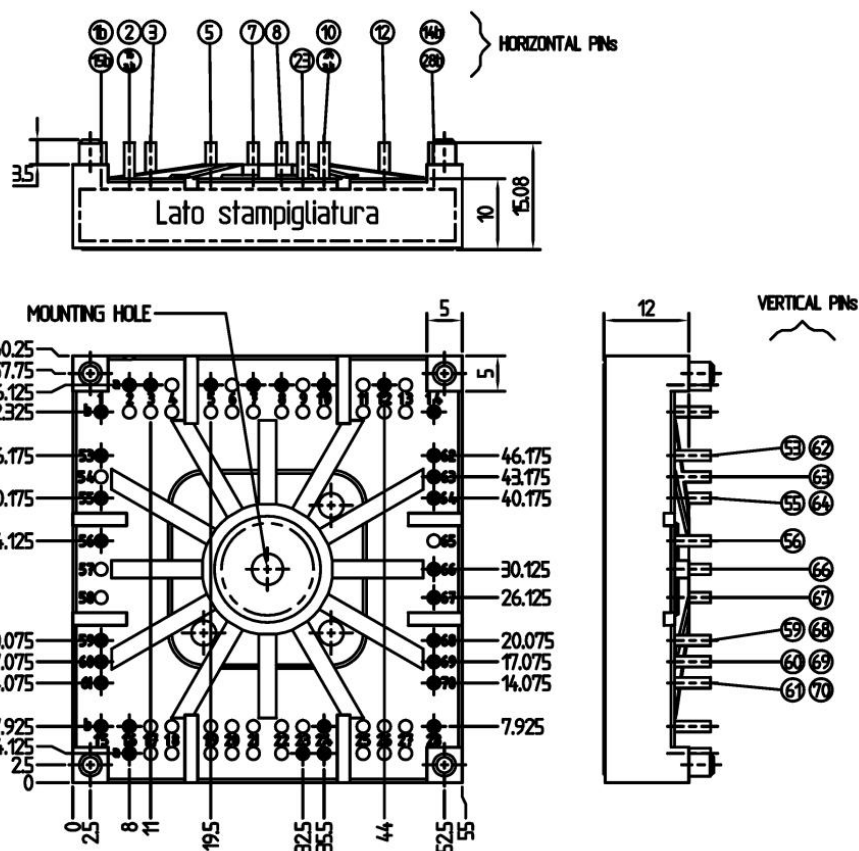




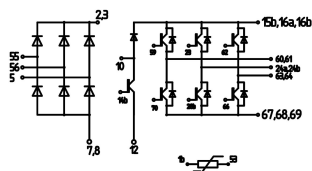
# SK 50 DGD L 126 T

UL recognized  
file no. E 63 532

Dimensions in mm



Case T 75 (Suggested hole diameter for the solder pins in the circuit board: 2mm. Suggested hole diameter for the mounting pins in the circuit board: 3,6mm )



Case T 75 (pin without letter refers to row "a", unless otherwise specified)

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

\* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.