SEMITOP[®]3

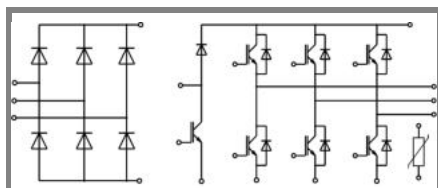
3-phase bridge rectifier + brake chopper + 3-phase bridge inverter

SK 15 DGDL 12T4 ET

Target Data

Features

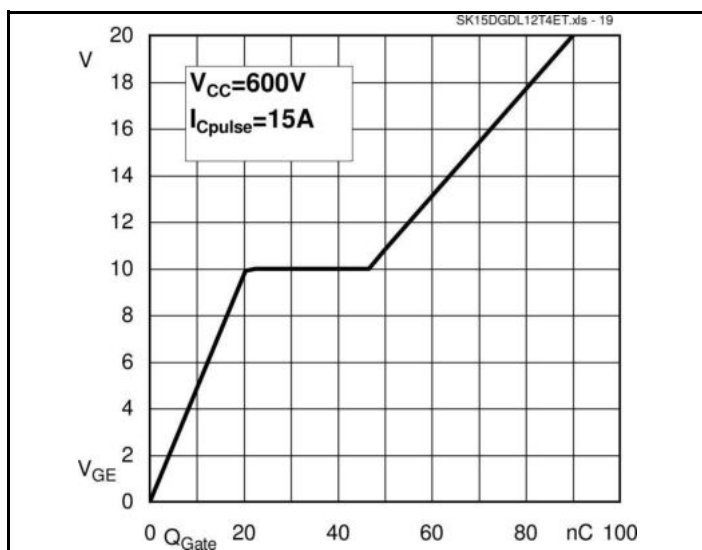
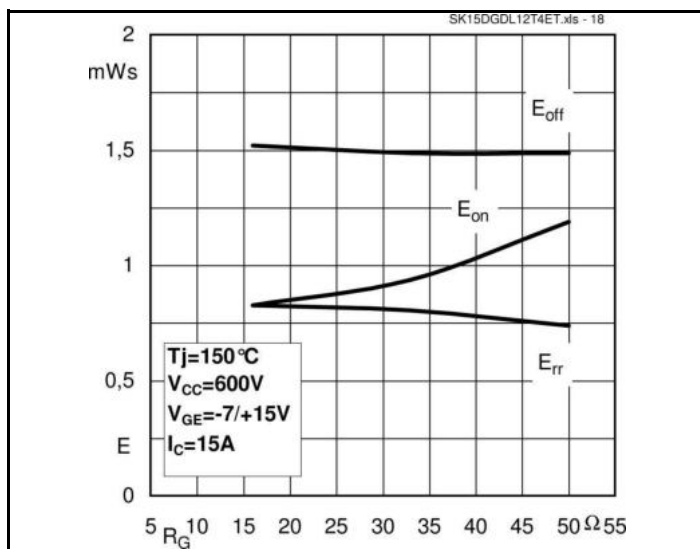
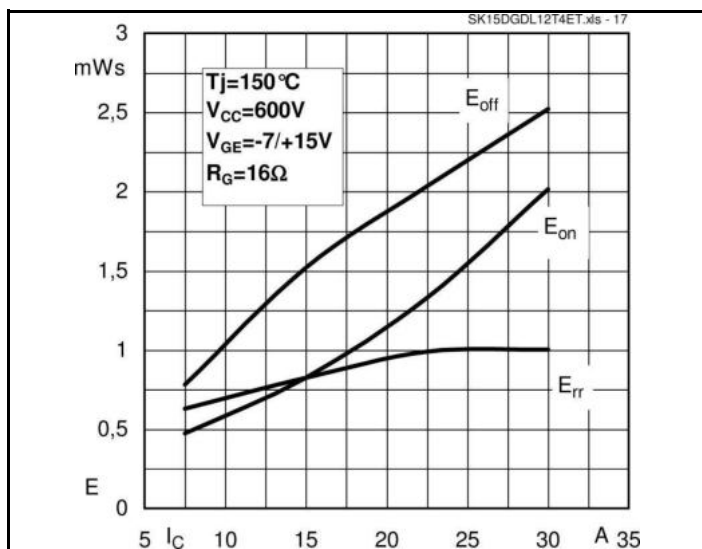
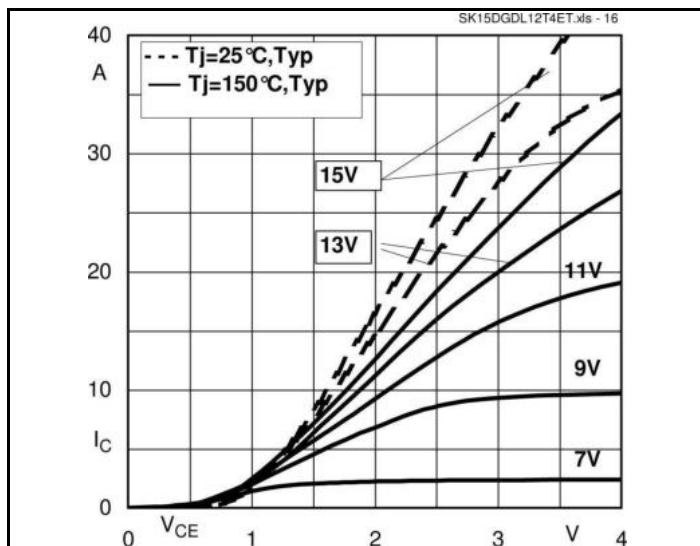
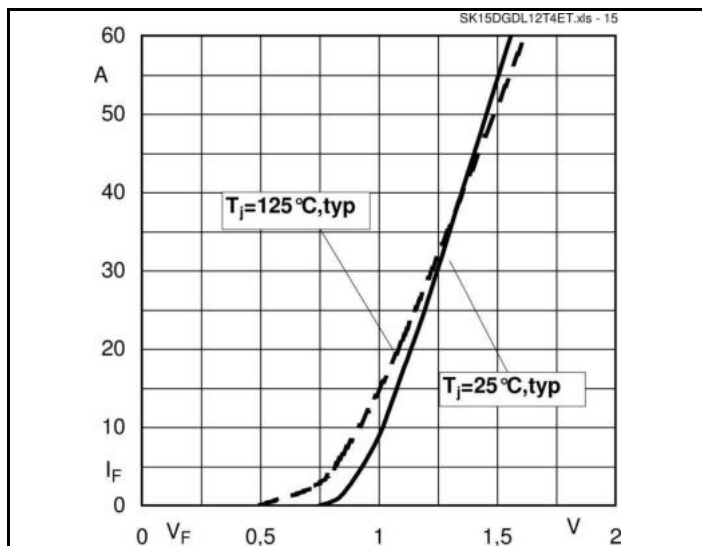
- One screw mounting module
- Trench4 IGBT technology
- CAL4 technology FWD
- Integrated NTC temperature sensor

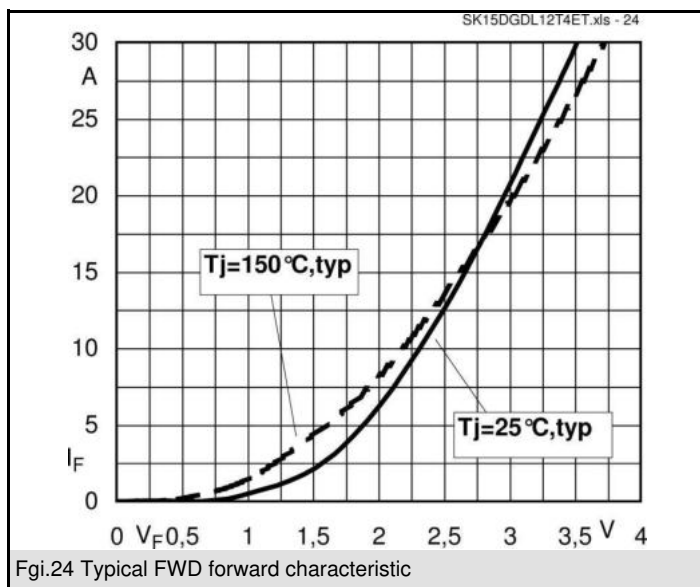
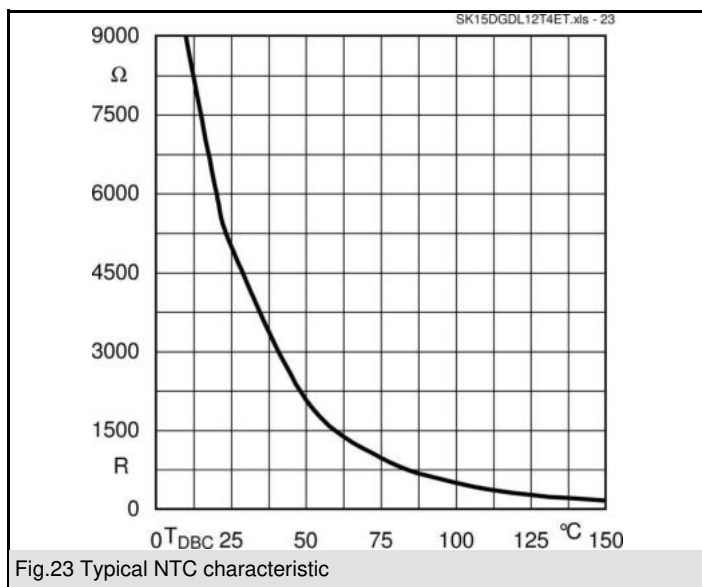
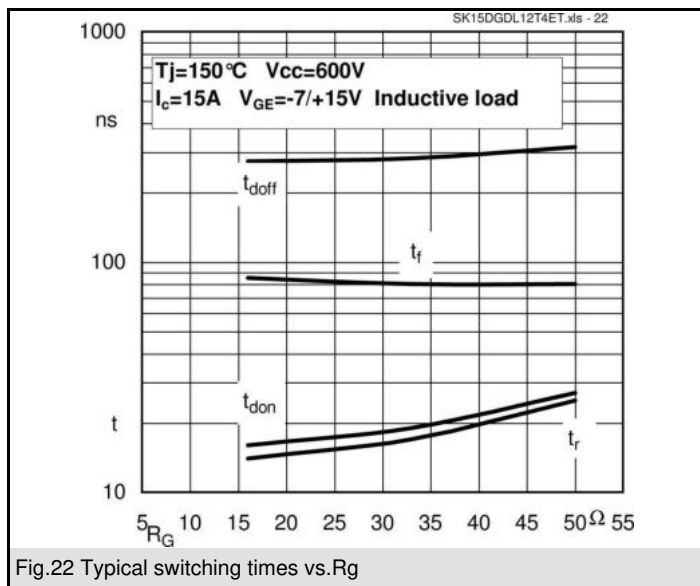
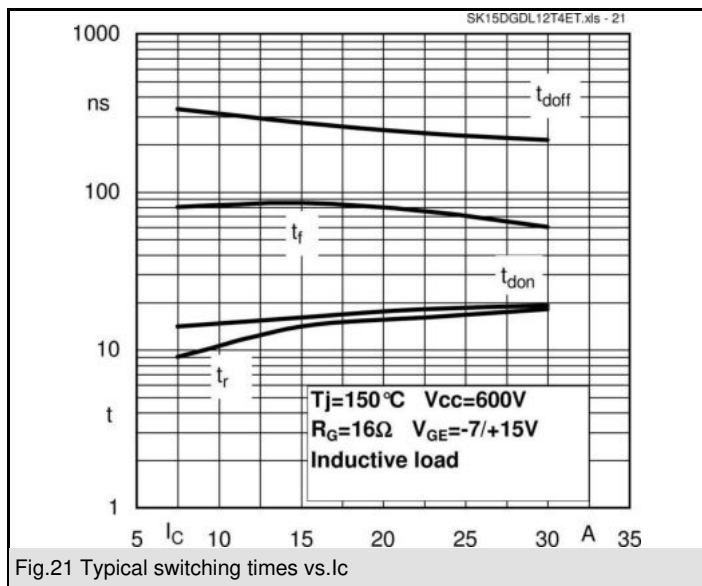
1) $V_{CE,sat}$, V_F = chip level value

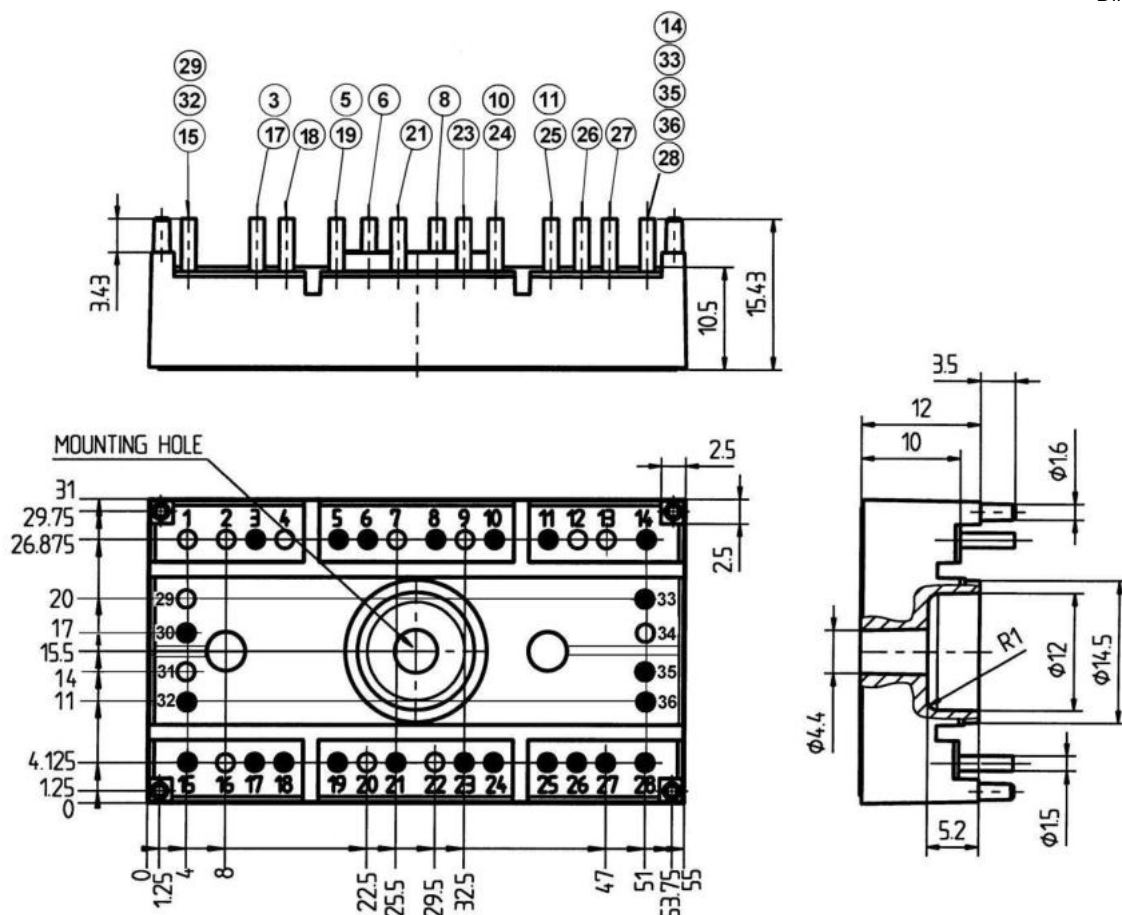
DGDL - ET

| Absolute Maximum Ratings | | Ts = 25 °C, unless otherwise specified | |
|---------------------------------|--|--|------------------|
| Symbol | Conditions | Values | Units |
| IGBT - Inverter,Chopper | | | |
| V_{CES} | $T_s = 25 (70) ^\circ C$ | 1200 | V |
| I_C | $T_s = 25 (70) ^\circ C$ | 27 (21) | A |
| I_{CRM} | $I_{CRM} = 3 \times I_{Cnom}$, $t_p = 1$ ms | 45 | A |
| V_{GES} | | ± 20 | V |
| T_j | | -40 ... +175 | $^\circ C$ |
| Diode - Inverter,Chopper | | | |
| I_F | $T_s = 25 (70) ^\circ C$ | 21 (17) | A |
| I_{FRM} | $I_{FRM} = 2 \times I_{Fnom}$, $t_p = 1$ ms | 45 | A |
| T_j | | -40 ... +150 | $^\circ C$ |
| Rectifier | | | |
| V_{RRM} | $T_s = 70 ^\circ C$ | 1600 | V |
| I_F | $T_s = 70 ^\circ C$ | 28 | A |
| I_{FSM} / I_{TSM} | $t_p = 10$ ms, $\sin 180 ^\circ$, $T_j = 25 ^\circ C$ | 220 | A |
| I_t^2 | $t_p = 10$ ms, $\sin 180 ^\circ$, $T_j = 25 ^\circ C$ | 240 | A ² s |
| T_j | | -40 ... +175 | $^\circ C$ |
| T_{sol} | Terminals, 10 s | 260 | $^\circ C$ |
| T_{stg} | | -40 ... +125 | $^\circ C$ |
| V_{isol} | AC, 1 min. / 1 s | 2500 / 3000 | V |

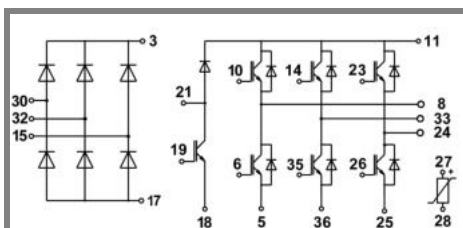
| Characteristics | | Ts = 25 °C, unless otherwise specified | | |
|---------------------------------|--|--|-------------|--------------|
| Symbol | Conditions | min. | typ. | max. |
| IGBT - Inverter | | | | |
| V_{CEsat} | $I_C = 15$ A, $T_j = 25 (150) ^\circ C$ | | 1,85 (2,25) | 2,05 (2,45) |
| $V_{GE(th)}$ | $V_{GE} = V_{CE}$, $I_C = 0,5$ mA | 5 | 5,8 | 6,5 |
| $V_{CE(TO)}$ | $T_j = 25 ^\circ C (150) ^\circ C$ | | 1,1 (1) | 1,3 (1,2) |
| r_T | $T_j = 25 ^\circ C (150) ^\circ C$ | | 50 (83,3) | |
| C_{ies} | $V_{CE} = 25$ V, $V_{GE} = 0$ V, $f = 1$ MHz | | 0,9 | |
| C_{oes} | $V_{CE} = 25$ V, $V_{GE} = 0$ V, $f = 1$ MHz | | 0,08 | |
| C_{res} | $V_{CE} = 25$ V, $V_{GE} = 0$ V, $f = 1$ MHz | | 0,055 | |
| $R_{th(j-s)}$ | per IGBT | | 1,65 | |
| $t_{d(on)}$ | under following conditions | | 16 | |
| t_r | $V_{CC} = 600$ V, $V_{GE} = \pm 15$ V | | 14 | |
| $t_{d(off)}$ | $I_C = 15$ A, $T_j = 150 ^\circ C$ | | 273 | |
| t_f | $R_{Gon} = R_{Goff} = 16 \Omega$ | | 85 | |
| E_{on} | inductive load | | 0,82 | |
| E_{off} | | | 1,52 | |
| Diode - Inverter,Chopper | | | | |
| $V_F = V_{EC}$ | $I_F = 15$ A, $T_j = 25(150) ^\circ C$ | | 2,38 (2,44) | 2,71 (2,77) |
| $V_{(TO)}$ | $T_j = 25 ^\circ C (150) ^\circ C$ | | 1,3 (0,9) | 1,5 (1,1) |
| r_T | $T_j = 25 ^\circ C (150) ^\circ C$ | | 72 (102,7) | 80,6 (111,3) |
| $R_{th(j-s)}$ | per diode | | 2,34 | |
| I_{RRM} | under following conditions | | 28 | |
| Q_{rr} | $I_F = 15$ A, $V_R = V$ | | 0,3 | |
| E_{rr} | $V_{GE} = 0$ V, $T_j = 150 ^\circ C$ | | 0,82 | |
| | $di_F/dt = 2750$ A/ μ s | | | |
| Diode - Rectifier | | | | |
| V_F | $I_F = 15$ A, $T_j = 25() ^\circ C$ | | 1,1 | |
| $V_{(TO)}$ | $T_j = 150 ^\circ C$ | | 0,9 | |
| r_T | $T_j = 150 ^\circ C$ | | 20 | |
| $R_{th(j-s)}$ | per diode | | 2 | |
| Temperatur sensor | | | | |
| R_{ts} | 5 %, $T_r = 25 (100) ^\circ C$ | | 5000(493) | Ω |
| Mechanical data | | | | |
| w | | | 30 | g |
| M_s | Mounting torque | 2,25 | 2,5 | Nm |







Case T 49 (Suggested hole diameter for solder pins and for mounting plastic pins: 2mm)



Case T 49

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.