**SEMITOP®3**

# IGBT module

**SK 50 GD 066 ET**

Target Data

## Features

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

## Typical Applications

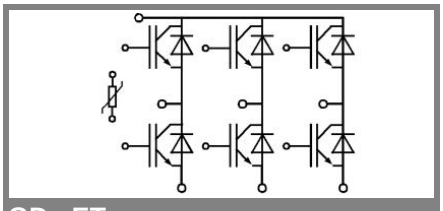
- Inverter up to 10 kVA
- Typ. motor power 4 kW

## Remarks

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

| Absolute Maximum Ratings | | $T_s$ = 25°C, unless otherwise specified | |
|---|---|---|---|
| **Symbol** | **Conditions** | **Values** | **Units** |
| **IGBT Inverter** | | | |
| $V_{CES}$ | | 600 | V |
| $I_C$ | $T_s$ = 25 (70) °C, $T_j$ = 150 °C | 51 (38) | A |
| $I_C$ | $T_s$ = 25 (70) °C, $T_j$ = 175 °C | 57 (45) | A |
| $I_{CM}$ | $T_s$ = 25 °C , tp ≤ 1 ms | 114 | A |
| $V_{GES}$ | | ± 20 | V |
| $T_j$ | | | °C |
| **Diode - Inverter** | | | |
| $I_F$ | $T_s$ = 25 (70) °C, $T_j$ = 150 °C | 52 (38) | A |
| $I_F$ | $T_s$ = 25 (70) °C, $T_j$ = 175 °C | 59 (46) | A |
| $T_j$ | | | °C |
| $T_j$ | | -40 ... + 175 | °C |
| $T_{sol}$ | Terminals, 10 s | 260 | °C |
| $T_{stg}$ | | -40 ... + 125 | °C |
| $V_{isol}$ | AC, 1 min. | 2500 | V |

| Characteristics | | $T_s$ = 25°C, unless otherwise specified | | | |
|---|---|---|---|---|---|
| **Symbol** | **Conditions** | **min.** | **typ.** | **max.** | **Units** |
| **IGBT - Inverter** | | | | | |
| $V_{CE(sat)}$ | $I_{Cnom}$ = 50 A, $T_j$ = 25 (150) °C | | 1,45 (1,65) | 1,85 (2,05) | V |
| $V_{GE(th)}$ | $V_{GE}$ = $V_{CE}$, $I_C$ = 0,8 mA | 5 | 5,8 | 6,5 | V |
| $V_{CE(TO)}$ | $T_j$ = 25 (150) °C | | 0,9 (0,8) | 1,1 (1) | V |
| $r_{CE}$ | $T_j$ = 25 (150) °C | | 11 (17) | 15 (21) | mΩ |
| $C_{ies}$ | $V_{CE}$ = 25 V, $V_{GE}$ = 0 V, f = 1 MHz | | 3,1 | | nF |
| $C_{oes}$ | $V_{CE}$ = 25 V, $V_{GE}$ = 0 V, f = 1 MHz | | 0,2 | | nF |
| $C_{res}$ | $V_{CE}$ = 25 V, $V_{GE}$ = 0 V, f = 1 MHz | | 0,093 | | nF |
| $R_{th(j-s)}$ | per IGBT | | 1,3 | | K/W |
| $t_{d(on)}$ | under following conditions | | - | | ns |
| $t_r$ | $V_{CC}$ = V, $V_{GE}$ = | | - | | ns |
| $t_{d(off)}$ | $I_{Cnom}$ = A, $T_j$ = °C | | - | | ns |
| $t_f$ | $R_{Gon}$ = $R_{Goff}$ = - Ω | | - | | ns |
| $E_{on}$ ($E_{off}$) | inductive load | | 1,54 (1,56) | | mJ |
| **Diode - Inverter** | | | | | |
| $V_F$ = $V_{EC}$ | $I_F$ = 50 A, $T_j$ = 25 (150) °C | | 1,5 (1,5) | 1,5 (1,5) | V |
| $V_{(TO)}$ | $T_j$ = 25 (150) °C | | 1 (0,9) | 1,1 (1) | V |
| $r_T$ | $T_j$ = 25 (150) °C | | 10 (12) | 12 (14) | mΩ |
| $R_{th(j-s)}$ | per diode | | 1,58 | | K/W |
| $I_{RRM}$ | under following conditions | | - | | A |
| $Q_{rr}$ | $I_{Fnom}$ = A, $V_R$ = V | | - | | µC |
| $E_{rr}$ | $V_{GE}$ = 0 V, $T_j$ = °C | | | | mJ |
| | $di_F/dt$ = - A/µs | | | | |
| **Temperature Sensor** | | | | | |
| $R_{ts}$ | 5 %, $T_r$ = 25 (100) °C | | 5000(493) | | Ω |
| **Mechanical Data** | | | | | |
| w | | | 30 | | g |
| $M_s$ | Mounting torque | | | 2,5 | Nm |



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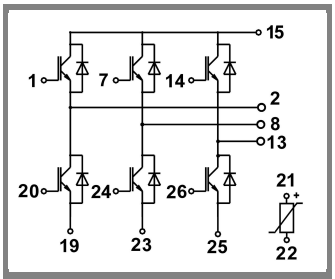


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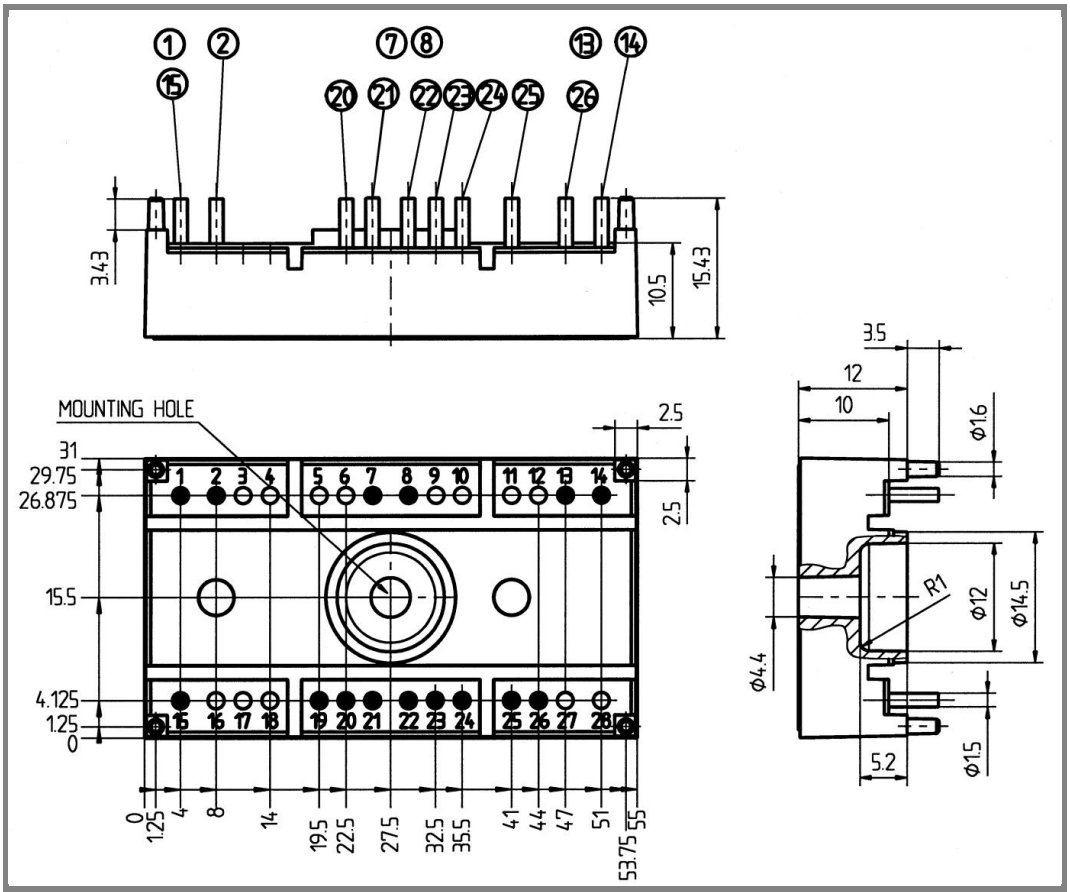


Case T 52

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

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