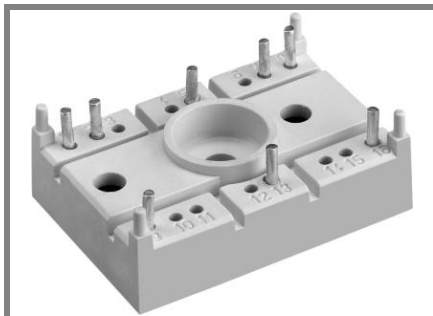


# SK 50 GARL 065



**SEMISTOP® 2**

## IGBT Module

### SK 50 GARL 065

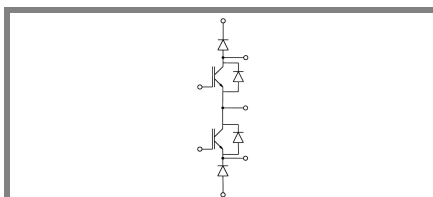
Preliminary Data

#### Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- N-channel homogeneous silicon structure (NPT-Non punch-through IGBT)
- Low tail current with low temperature dependence
- Low threshold voltage

#### Typical Applications

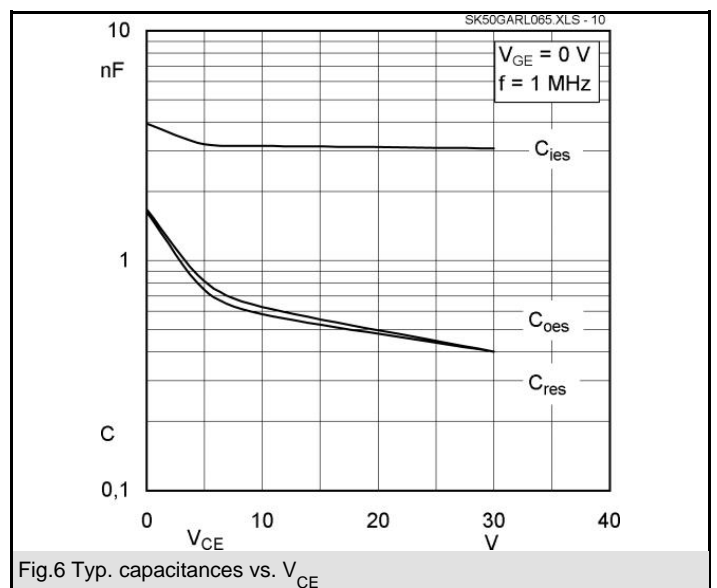
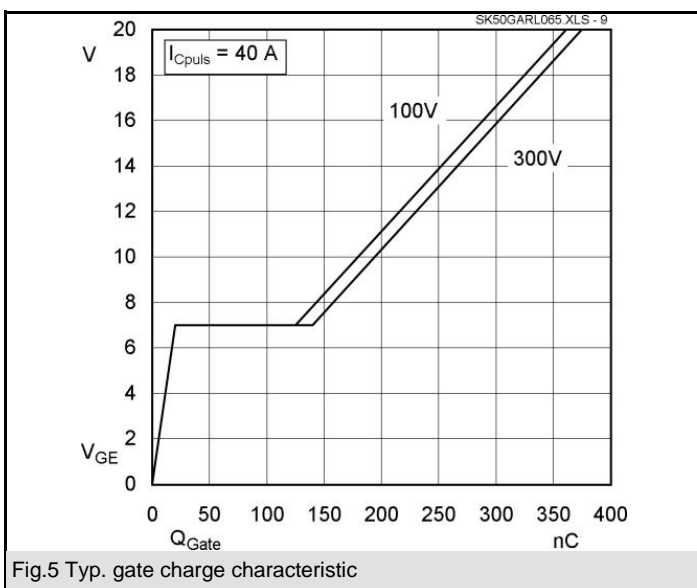
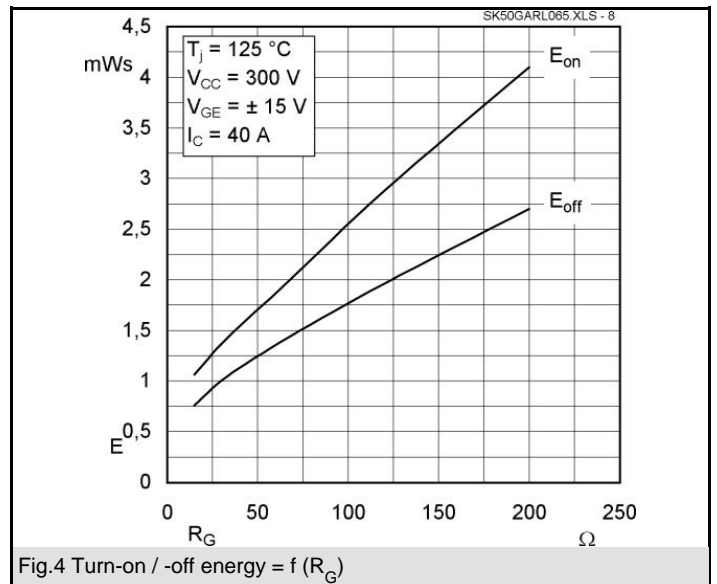
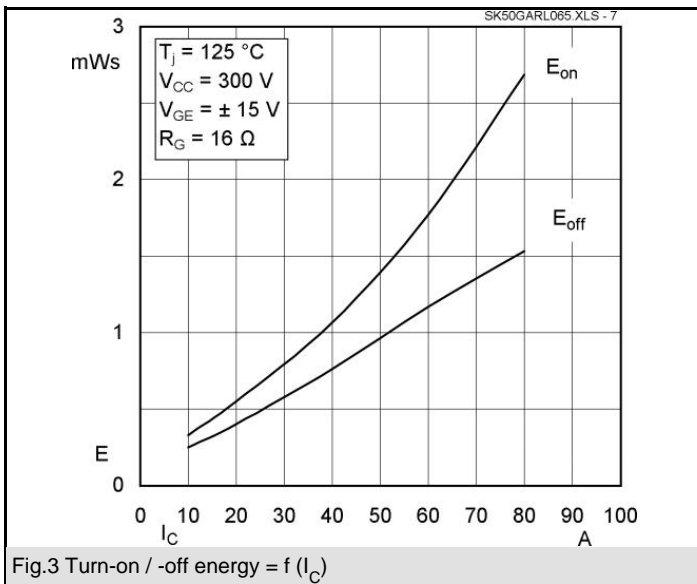
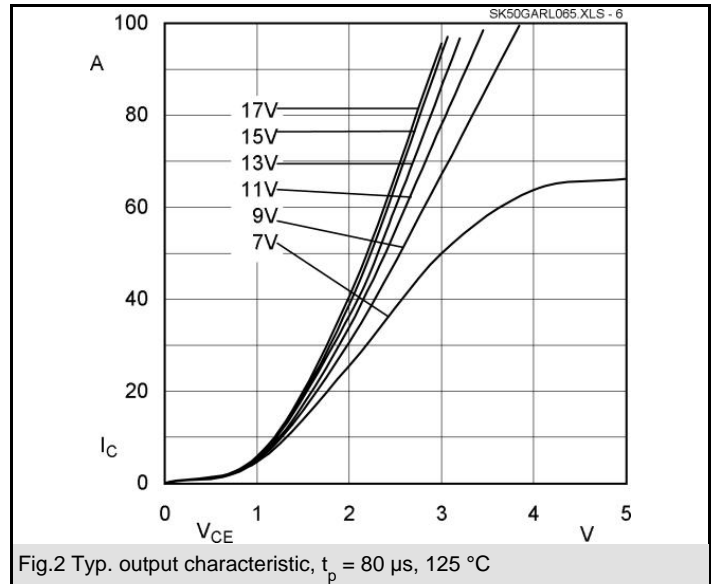
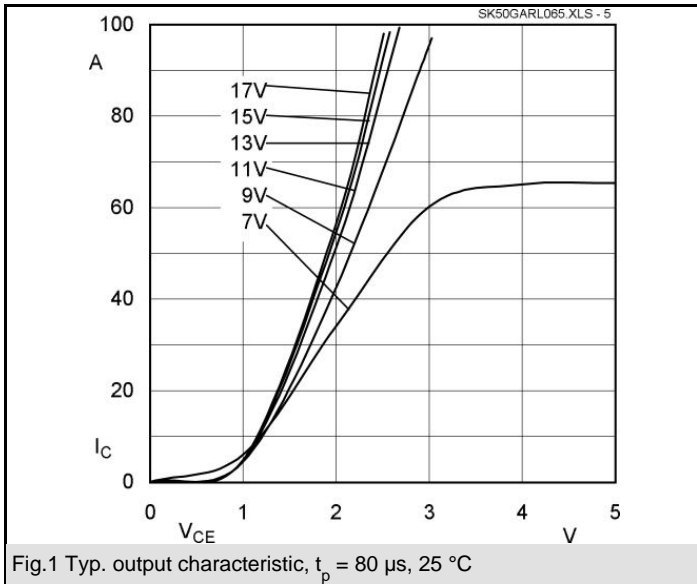
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS

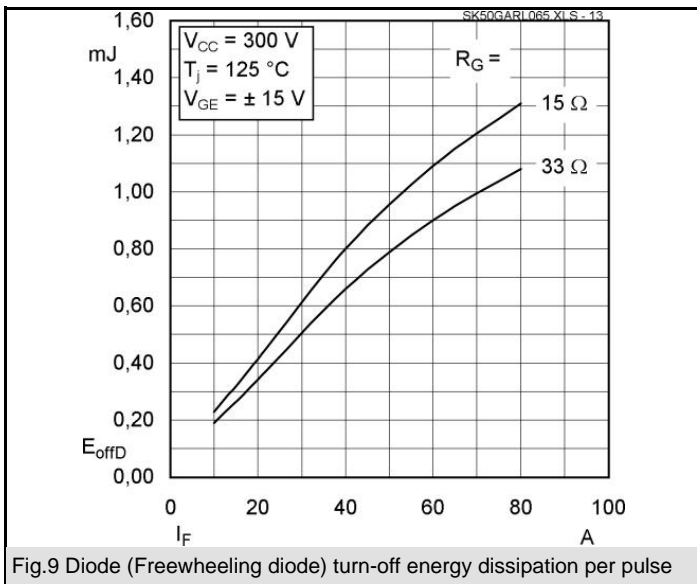
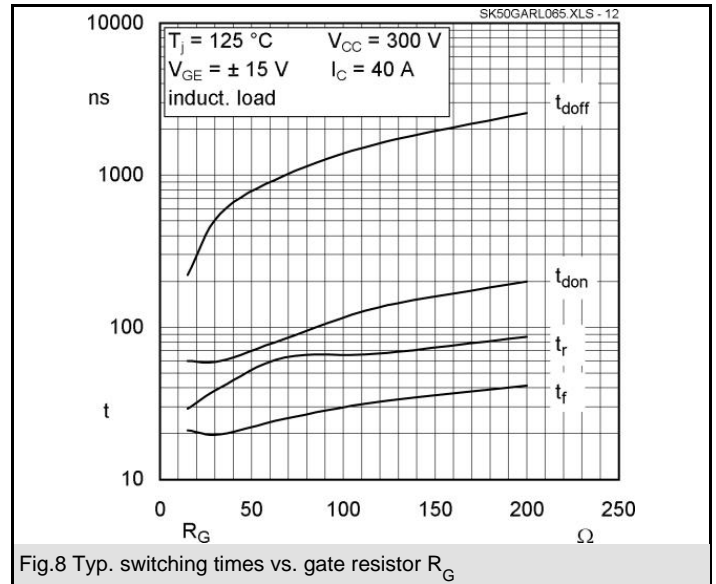
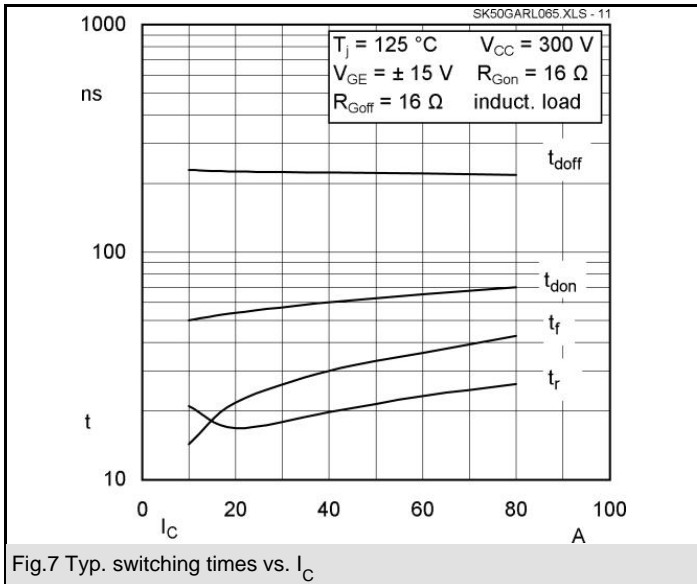


**GARL**

| Absolute Maximum Ratings                |   | $T_s = 25\text{ }^\circ\text{C}$ , unless otherwise specified |                  |
|---|---|---|------------------|
| Symbol                                  | Conditions  | Values  | Units            |
| <b>IGBT</b>                             |   |   |                  |
| $V_{CES}$                               |   | 600   | V                |
| $V_{GES}$                               |   | $\pm 20$  | V                |
| $I_C$                                   | $T_s = 25\text{ (80) }^\circ\text{C}$ ;                       | 54 (40)   | A                |
| $I_{CM}$                                | $t_p < 1\text{ ms}$ ; $T_s = 25\text{ (80) }^\circ\text{C}$ ; | 108 (80)  | A                |
| $T_j$                                   |   | - 40 ... + 150  | $^\circ\text{C}$ |
| <b>Inverse / Freewheeling CAL diode</b> |   |   |                  |
| $I_F = -I_C$                            | $T_s = 25\text{ (80) }^\circ\text{C}$ ;                       | 64 (48)   | A                |
| $I_{FM} = -I_{CM}$                      | $t_p < 1\text{ ms}$ ; $T_s = 25\text{ (80) }^\circ\text{C}$ ; | 124 (96)  | A                |
| $T_j$                                   |   | - 40 ... + 150  | $^\circ\text{C}$ |
| $T_{stg}$                               |   | - 40 ... + 125  | $^\circ\text{C}$ |
| $T_{sol}$                               | Terminals, 10 s   | 260   | $^\circ\text{C}$ |
| $V_{isol}$                              | AC 50 Hz, r.m.s. 1 min. / 1 s                                 | 2500 / 3000   | V                |

| Characteristics                         |   | $T_s = 25\text{ }^\circ\text{C}$ , unless otherwise specified |            |            |               |
|---|---|---|------------|------------|---------------|
| Symbol                                  | Conditions  | min.  | typ.       | max.       | Units         |
| <b>IGBT</b>                             |   |   |            |            |               |
| $V_{CE(sat)}$                           | $I_C = 40\text{ A}$ , $T_j = 25\text{ (125) }^\circ\text{C}$                        |   | 1,7 (2,2)  | 2 (2,2)    | V             |
| $V_{GE(th)}$                            | $V_{CE} = V_{GE}$ ; $I_C = 0,0007\text{ A}$   | 3   | 4          | 5          | V             |
| $C_{res}$                               | $V_{CE} = 25\text{ V}$ ; $V_{GE} = 0\text{ V}$ ; 1 MHz                              |   | 3          |            | nF            |
| $R_{th(j-s)}$                           | per IGBT<br>per module  |   |            | 0,85       | K/W<br>K/W    |
| $t_{d(on)}$                             | under following conditions:<br>$V_{CC} = 300\text{ V}$ , $V_{GE} = \pm 15\text{ V}$ |   | 60         | 80         | ns            |
| $t_r$                                   | $I_C = 40\text{ A}$ , $T_j = 125\text{ }^\circ\text{C}$                             |   | 30         | 40         | ns            |
| $t_{d(off)}$                            | $R_{Gon} = R_{Goff} = 16\text{ }^\circ\Omega$                                       |   | 220        | 280        | ns            |
| $t_f$                                   |   |   | 20         | 26         | ns            |
| $E_{on} + E_{off}$                      | Inductive load  |   | 1,8        | 2,4        | mJ            |
| <b>Inverse / Freewheeling CAL diode</b> |   |   |            |            |               |
| $V_F = V_{EC}$                          | $I_F = 50\text{ A}$ ; $T_j = 25\text{ (125) }^\circ\text{C}$                        |   | 1,45 (1,4) | 1,7 (1,75) | V             |
| $V_{(TO)}$                              | $T_j = (125)\text{ }^\circ\text{C}$   |   | (0,85)     | (0,9)      | V             |
| $r_T$                                   | $T_j = (125)\text{ }^\circ\text{C}$   |   | (11)       | (16)       | m $\Omega$    |
| $R_{th(j-s)}$                           |   |   |            | 1,1        | K/W           |
| $I_{RRM}$                               | under following conditions:<br>$I_F = 50\text{ A}$ ; $V_R = 300\text{ V}$           |   | 40         |            | A             |
| $Q_{rr}$                                | $di_F/dt = -1000\text{ A}/\mu\text{s}$  |   | 3,6        |            | $\mu\text{C}$ |
| $E_{off}$                               | $V_{GE} = 0\text{ V}$ ; $T_j = 125\text{ }^\circ\text{C}$                           |   | 0,55       |            | mJ            |
| <b>Mechanical data</b>                  |   |   |            |            |               |
| M1                                      | mounting torque   |   |            | 2          | Nm            |
| w                                       |   |   | 19         |            | g             |
| Case                                    | SEMISTOP® 2   |   | T 31       |            |               |

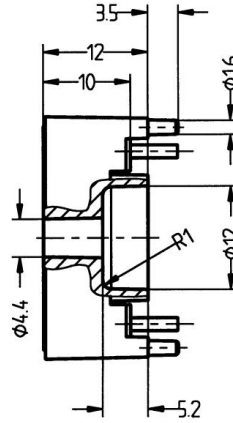
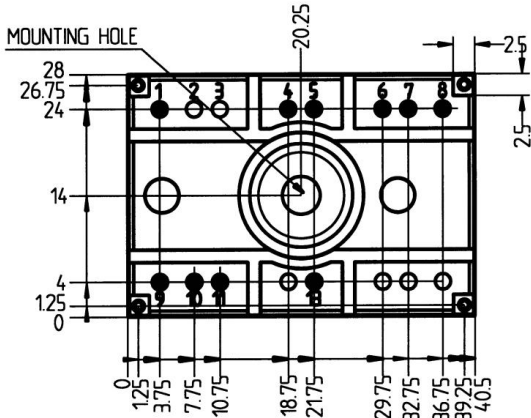
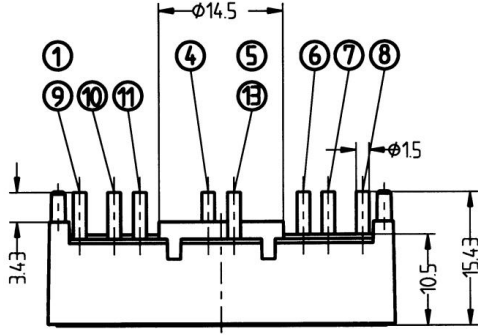




# SK 50 GARL 065

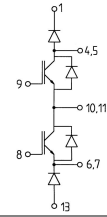
UL Recognized  
File no. E 63532

Dimensions in mm



SUGGESTED HOLEDIAMETER FOR THE SOLDER PINS AND THE MOUNTING PINS IN THE  
PCB: 2 mm

Case T31



Case T31

GARL

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

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