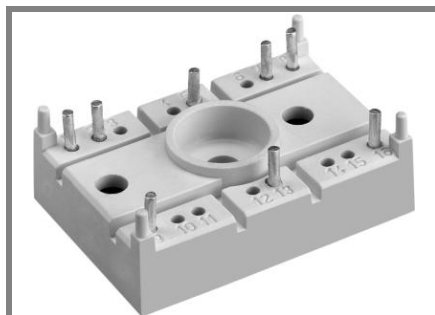


# SK 60 GAL 123



**SEMITOP® 2**

## IGBT Module

**SK 60 GAR 123**

**SK 60 GAL 123**

Preliminary Data

### Features

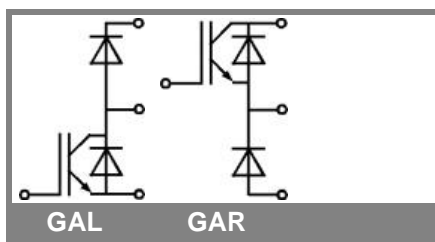
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonding aluminium oxide ceramic (DBC)
- High short circuit capability
- NPT (Non-Punch-Through technology)
- $V_{ce(sat)}$  with positive coefficient
- Low tail with low temperature dependance

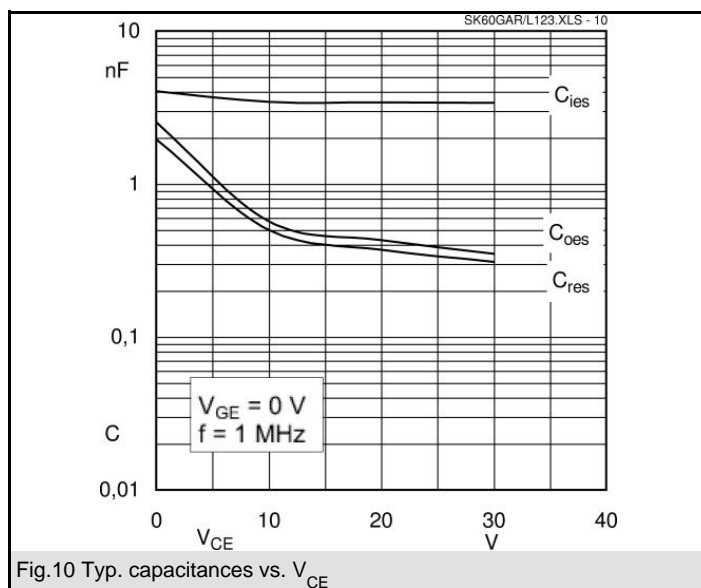
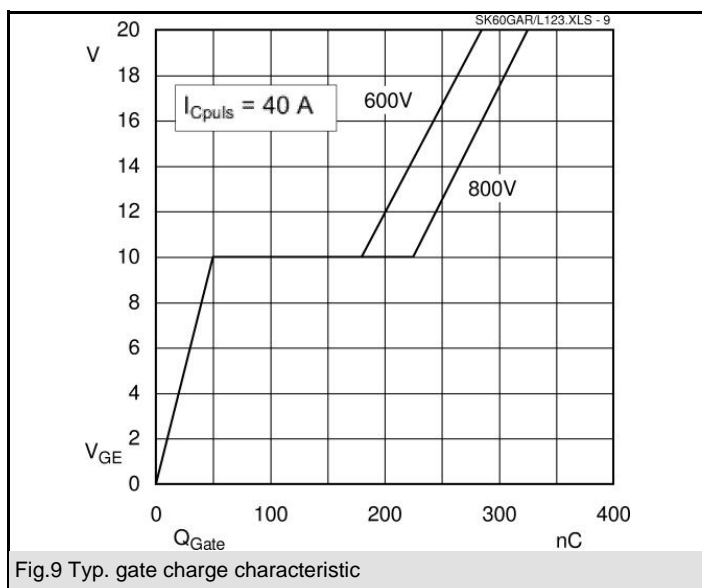
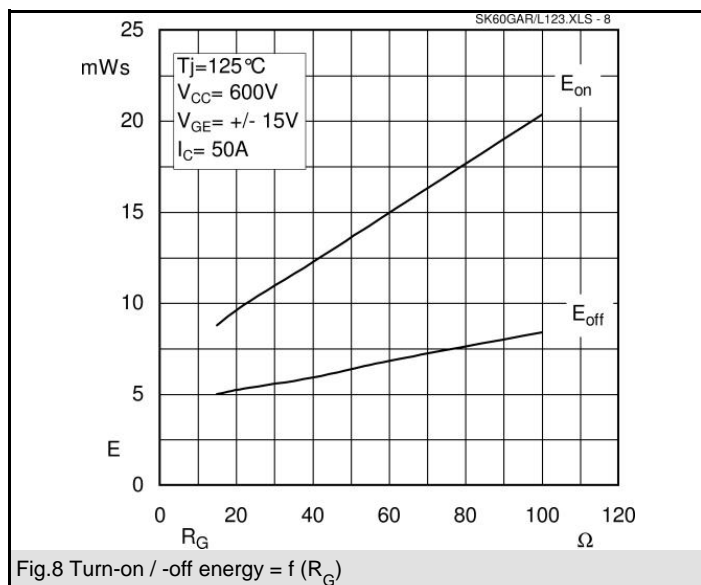
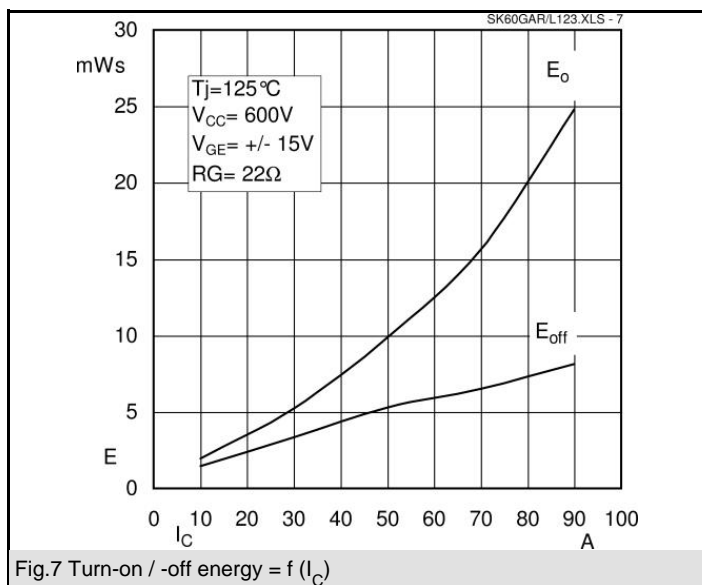
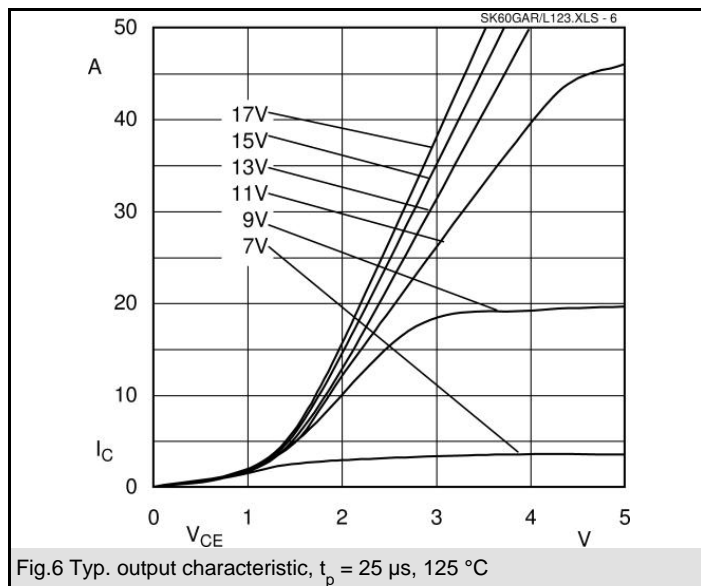
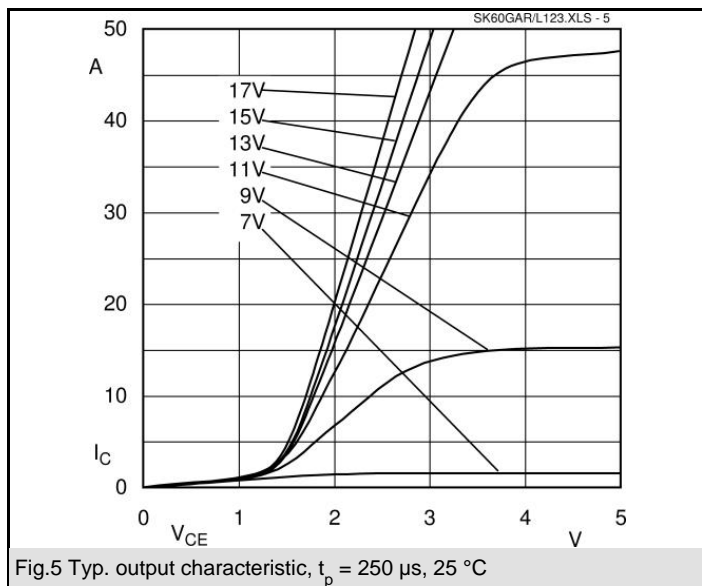
### Typical Applications

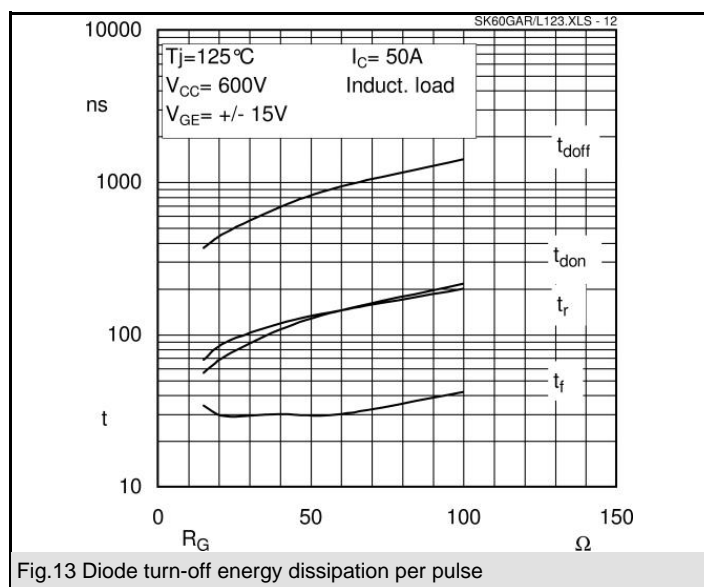
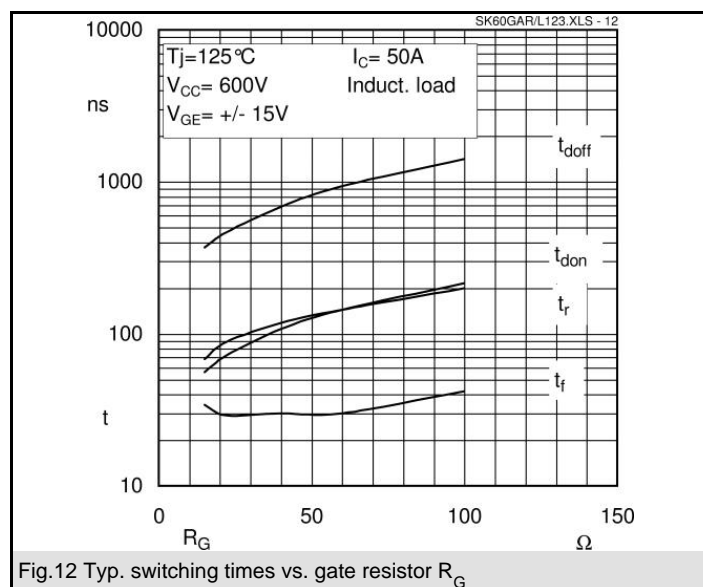
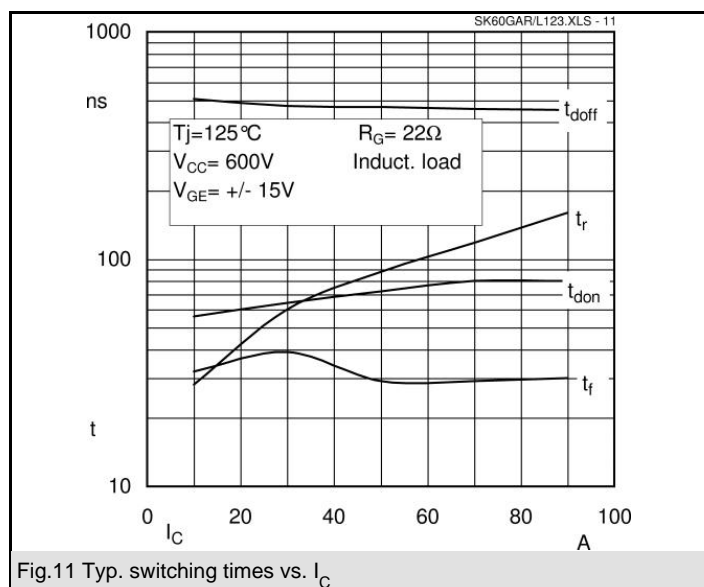
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS

| Absolute Maximum Ratings      |   | $T_s = 25\text{ °C}$ , unless otherwise specified |       |
|-------------------------------|---|---|-------|
| Symbol                        | Conditions  | Values  | Units |
| <b>IGBT</b>                   |   |   |       |
| $V_{CES}$                     |   | 1200  | V     |
| $V_{GES}$                     |   | $\pm 20$  | V     |
| $I_C$                         | $T_s = 25\text{ (80) °C}$ ;                       | 58 (40)   | A     |
| $I_{CM}$                      | $t_p < 1\text{ ms}$ ; $T_s = 25\text{ (80) °C}$ ; | 116 (80)  | A     |
| $T_j$                         |   | - 40 ... + 150                                    | °C    |
| <b>Freewheeling CAL diode</b> |   |   |       |
| $I_F$                         | $T_s = 25\text{ (80) °C}$ ;                       | 57 (38)   | A     |
| $I_{FM} = -I_{CM}$            | $t_p < 1\text{ ms}$ ; $T_s = 25\text{ (80) °C}$ ; | 104 (38)  | A     |
| $T_j$                         |   | - 40 ... + 150                                    | °C    |
| $T_{stg}$                     |   | - 40 ... + 125                                    | °C    |
| $T_{sol}$                     | Terminals, 10 s                                   | 260   | °C    |
| $V_{isol}$                    | AC 50 Hz, r.m.s. 1 min. / 1 s                     | 2500 / 3000                                       | V     |

| Characteristics               |   | $T_s = 25\text{ °C}$ , unless otherwise specified |           |         |            |
|-------------------------------|---|---|-----------|---------|------------|
| Symbol                        | Conditions  | min.  | typ.      | max.    | Units      |
| <b>IGBT</b>                   |   |   |           |         |            |
| $V_{CE(sat)}$                 | $I_C = 50\text{ A}$ , $T_j = 25\text{ (125) °C}$                                    |   | 2,5 (3,1) | 3 (3,7) | V          |
| $V_{GE(th)}$                  | $V_{CE} = V_{GE}$ ; $I_C = 0,002\text{ A}$  | 4,5   | 5,5       | 6,5     | V          |
| $C_{res}$                     | $V_{CE} = 25\text{ V}$ ; $V_{GE} = 0\text{ V}$ ; 1 MHz                              |   | 3,3       |         | nF         |
| $R_{th(j-s)}$                 | per IGBT<br>per module  |   |           | 0,6     | K/W<br>K/W |
| $t_{d(on)}$                   | under following conditions:<br>$V_{CC} = 600\text{ V}$ , $V_{GE} = \pm 15\text{ V}$ |   | 70        |         | ns         |
| $t_r$                         | $I_C = 50\text{ A}$ , $T_j = 125\text{ °C}$   |   | 90        |         | ns         |
| $t_{d(off)}$                  | $R_{Gon} = R_{Goff} = 22\text{ }\Omega$   |   | 460       |         | ns         |
| $t_f$                         |   |   | 30        |         | ns         |
| $E_{on} + E_{off}$            | Inductive load  |   | 16        |         | mJ         |
| <b>Freewheeling CAL diode</b> |   |   |           |         |            |
| $V_F = V_{EC}$                | $I_F = 50\text{ A}$ ; $T_j = 25\text{ (125) °C}$                                    |   | 2 (1,8)   | 2,5     | V          |
| $V_{(TO)}$                    | $T_j = (125)\text{ °C}$   |   | (1)       | (1,2)   | V          |
| $r_T$                         | $T_j = (125)\text{ °C}$   |   | (18)      | (22)    | mΩ         |
| $R_{th(j-s)}$                 |   |   |           | 0,9     | K/W        |
| $I_{RRM}$                     | under following conditions:<br>$I_F = 50\text{ A}$ ; $V_R = 600\text{ V}$           |   | 40        |         | A          |
| $Q_{rr}$                      | $di_F/dt = -800\text{ A/}\mu\text{s}$   |   | 8         |         | μC         |
| $E_{off}$                     | $V_{GE} = 0\text{ V}$ ; $T_j = 125\text{ °C}$                                       |   | 2,3       |         | mJ         |
| <b>Mechanical data</b>        |   |   |           |         |            |
| M1                            | mounting torque   |   |           | 2       | Nm         |
| w                             |   |   | 19        |         | g          |
| Case                          | SEMITOP® 2  |   | T 18      |         |            |



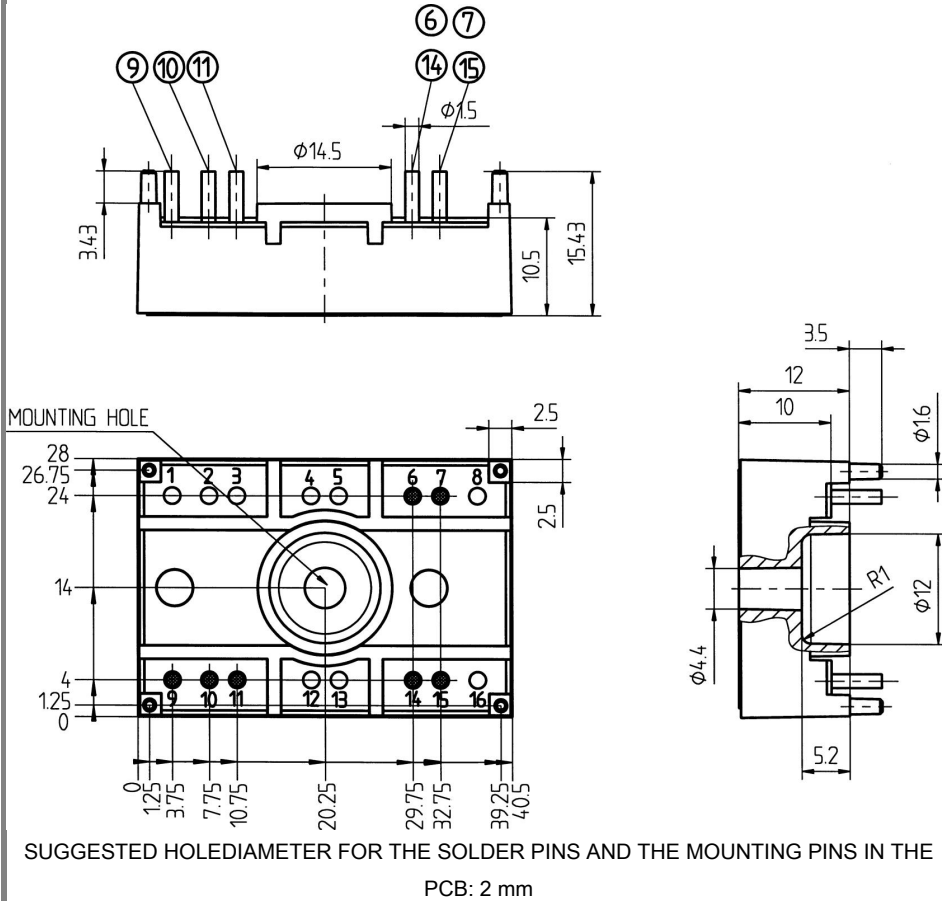




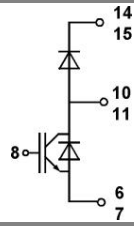
**SK 60 GAL 123**

UL Recognized  
File no. E 63532

Dimensions in mm

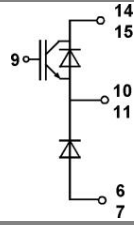


## Case T18



## Case T18

GAL



## Case T18

GAR

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

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