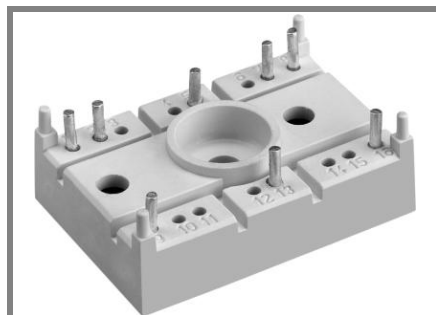




SEMITOP® 2

## IGBT Module

SK 30 GB 123

SK 30 GAL 123

SK 30 GAR 123

Preliminary Data

### Features

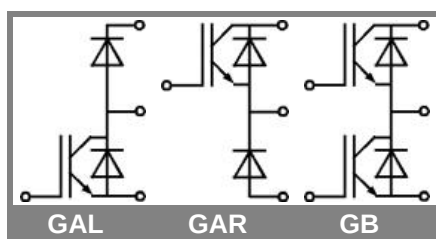
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonding aluminium oxide ceramic (DBC)
- High short circuit capability
- N channel, homogeneous silicon structure (NPT= Non punch-through IGBT)
- Low tail current with low temperature dependance

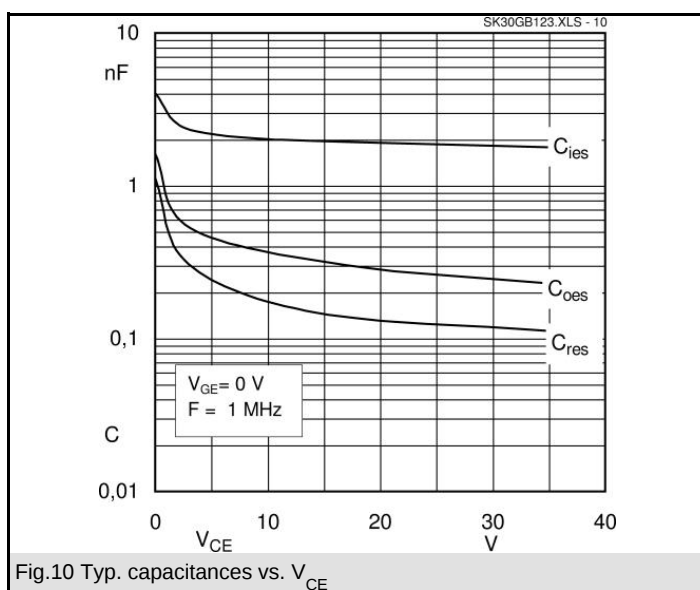
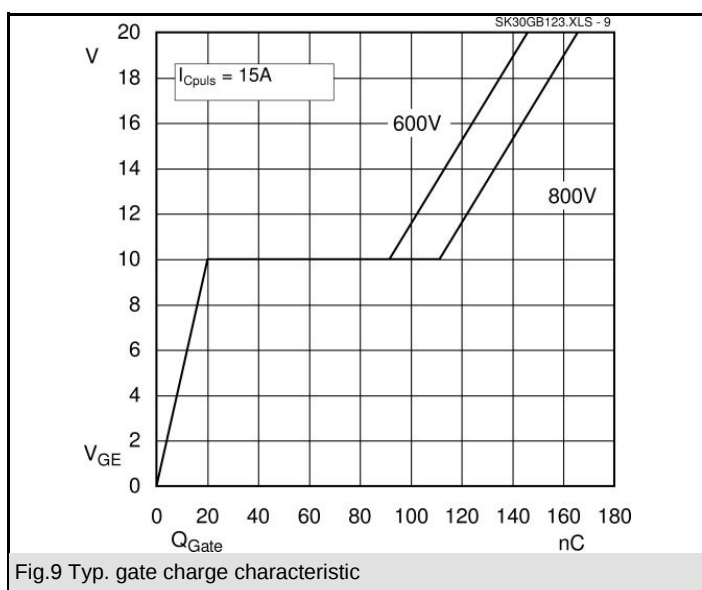
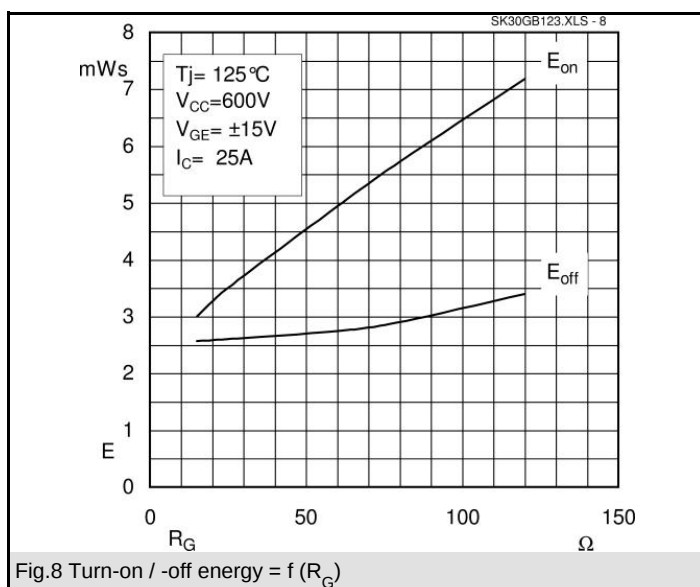
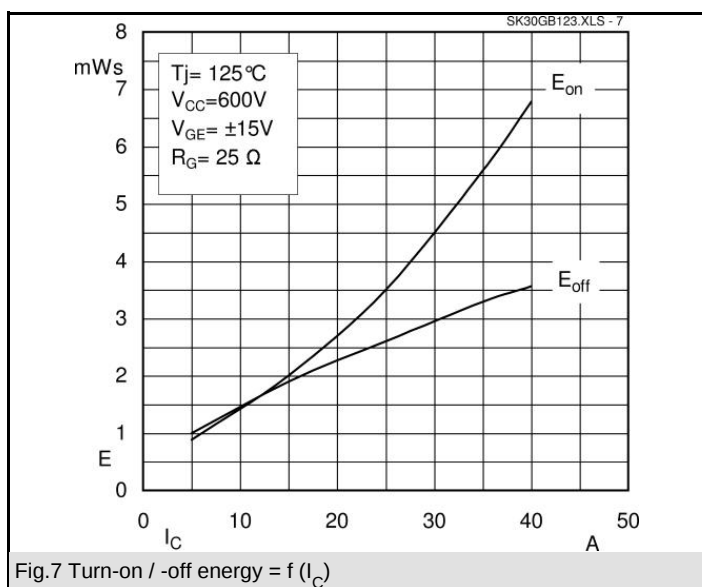
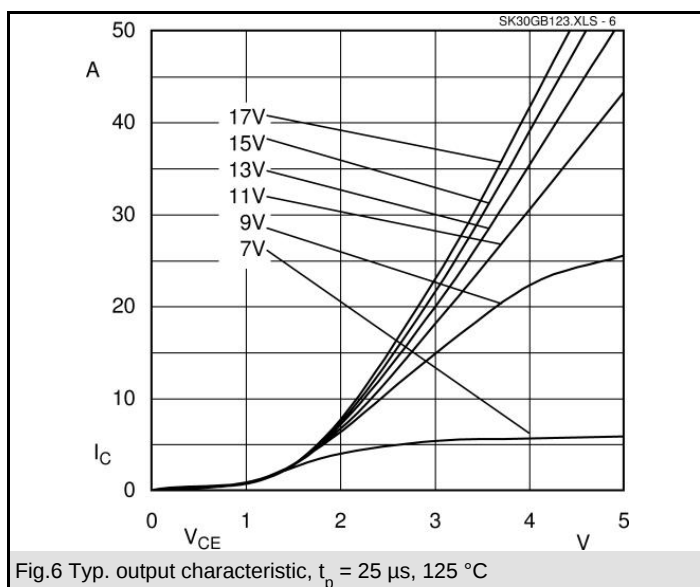
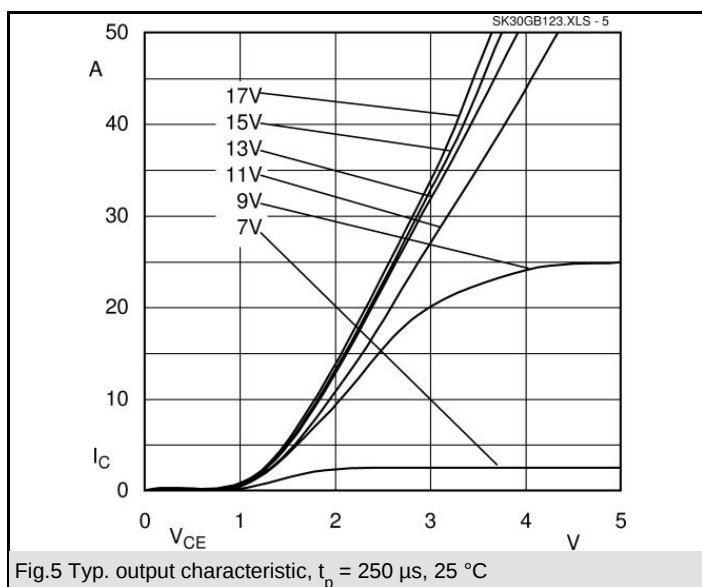
### Typical Applications

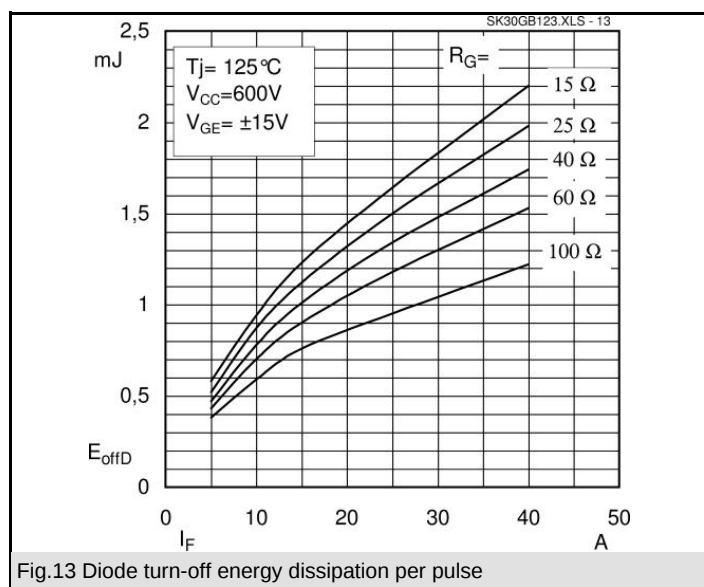
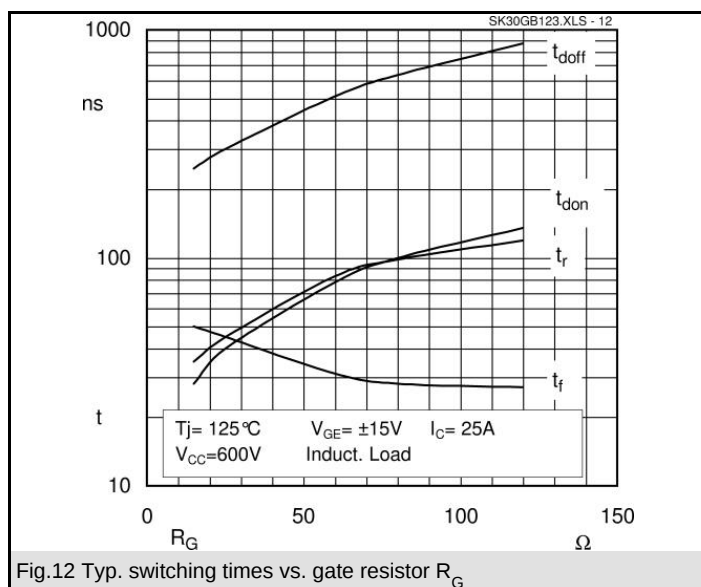
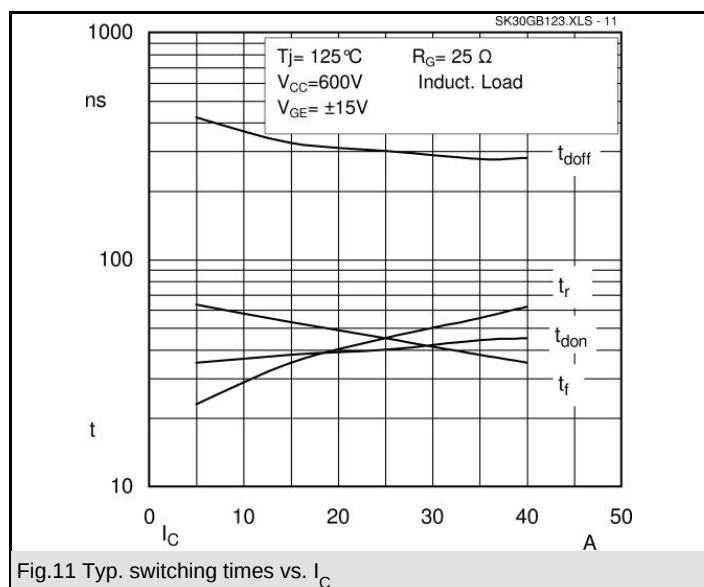
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS

| 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     |
| $I_C$                                 | $T_s = 25\text{ (80) °C}$ ;                       | 33 (22)                                           | A     |
| $I_{CM}$                              | $t_p < 1\text{ ms}$ ; $T_s = 25\text{ (80) °C}$ ; | 66 (44)                                           | A     |
| $T_j$                                 |                                                   | - 40 ... + 150                                    | °C    |
| <b>Inverse/Freewheeling CAL diode</b> |                                                   |                                                   |       |
| $I_F$                                 | $T_s = 25\text{ (80) °C}$ ;                       | 37 (25)                                           | A     |
| $I_{FM} = -I_{CM}$                    | $t_p < 1\text{ ms}$ ; $T_s = 25\text{ (80) °C}$ ; | 74 (50)                                           | 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>                           |                                                                                     |                                                   |           |           |               |
| $V_{CE(sat)}$                         | $I_C = 25\text{ A}$ , $T_j = 25\text{ (125) °C}$                                    |                                                   | 2,5 (3,1) | 3 (3,7)   | V             |
| $V_{GE(th)}$                          | $V_{CE} = V_{GE}$ ; $I_C = 0,001\text{ A}$                                          | 4,5                                               | 5,5       | 6,5       | V             |
| $C_{res}$                             | $V_{CE} = 25\text{ V}$ ; $V_{GE} = 0\text{ V}$ ; 1 MHz                              |                                                   | 1,65      |           | nF            |
| $R_{th(j-s)}$                         | per IGBT                                                                            |                                                   |           | 1         | K/W           |
|                                       | per module                                                                          |                                                   |           |           | K/W           |
| $t_{d(on)}$                           | under following conditions:<br>$V_{CC} = 600\text{ V}$ , $V_{GE} = \pm 15\text{ V}$ |                                                   | 40        |           | ns            |
| $t_r$                                 | $I_C = 25\text{ A}$ , $T_j = 125\text{ °C}$                                         |                                                   | 45        |           | ns            |
| $t_{d(off)}$                          | $R_{Gon} = R_{Goff} = 25\text{ }\Omega$                                             |                                                   | 300       |           | ns            |
| $t_f$                                 |                                                                                     |                                                   | 45        |           | ns            |
| $E_{on} + E_{off}$                    | Inductive load                                                                      |                                                   | 6,1       |           | mJ            |
| <b>Inverse/Freewheeling CAL diode</b> |                                                                                     |                                                   |           |           |               |
| $V_F = V_{EC}$                        | $I_F = 25\text{ A}$ ; $T_j = 25\text{ (125) °C}$                                    |                                                   | 2 (1,8)   | 2,5 (2,3) | V             |
| $V_{(TO)}$                            | $T_j = (125)\text{ °C}$                                                             |                                                   | (1)       | (1,2)     | V             |
| $r_T$                                 | $T_j = (125)\text{ °C}$                                                             |                                                   | (32)      | (44)      | m $\Omega$    |
| $R_{th(j-s)}$                         |                                                                                     |                                                   |           | 1,2       | K/W           |
| $I_{RRM}$                             | under following conditions:<br>$I_F = 22\text{ A}$ ; $V_R = 600\text{ V}$           |                                                   | 25        |           | A             |
| $Q_{rr}$                              | $di_F/dt = -500\text{ A}/\mu\text{s}$                                               |                                                   | 4,5       |           | $\mu\text{C}$ |
| $E_{off}$                             | $V_{GE} = 0\text{ V}$ ; $T_j = 125\text{ °C}$                                       |                                                   | 1         |           | mJ            |
| <b>Mechanical data</b>                |                                                                                     |                                                   |           |           |               |
| M1                                    | mounting torque                                                                     |                                                   |           | 2         | Nm            |
| w                                     |                                                                                     |                                                   | 19        |           | g             |
| Case                                  | SEMITOP® 2                                                                          |                                                   | T 8       |           |               |



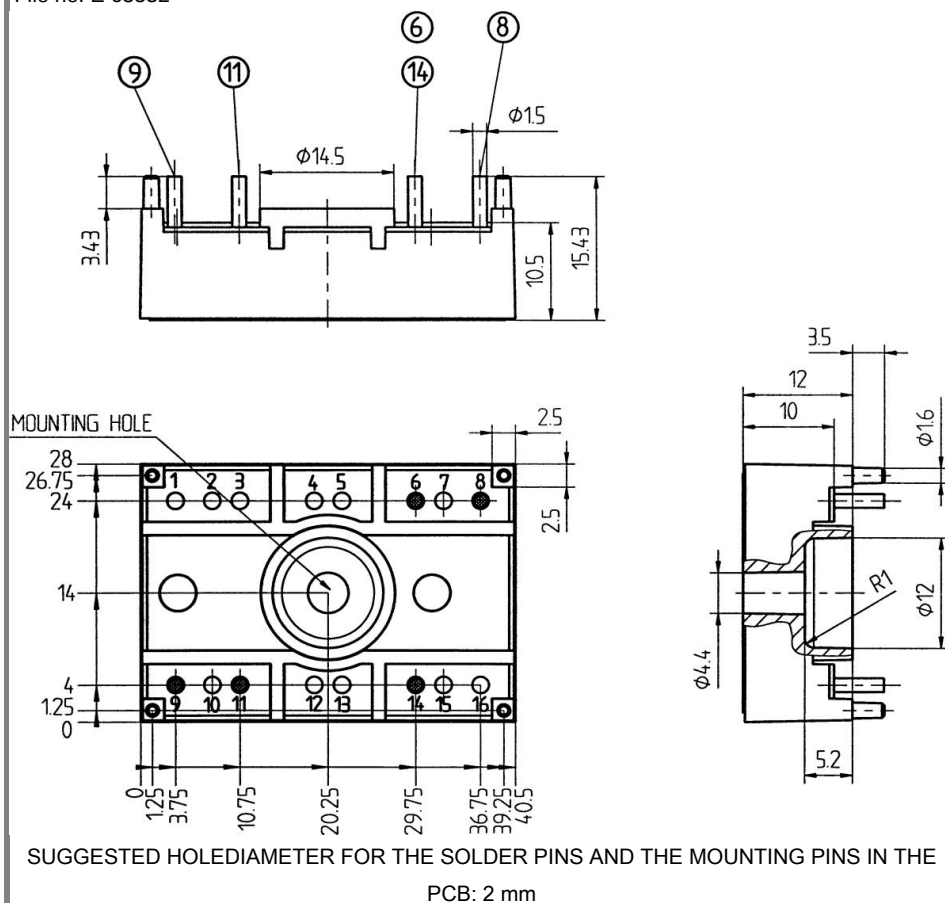




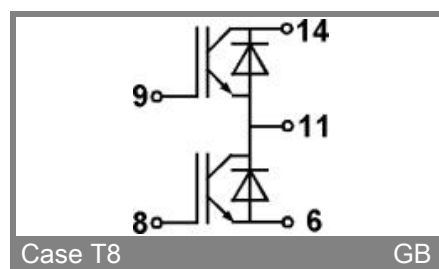
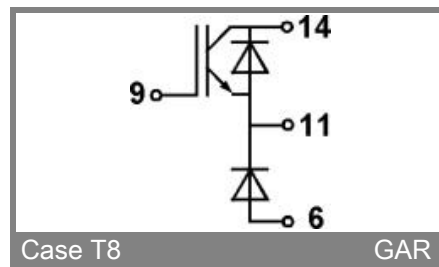
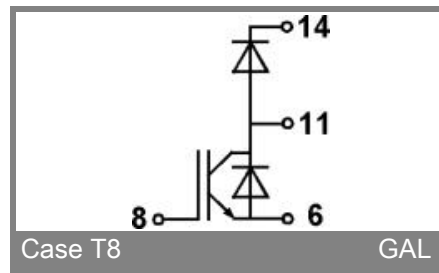
SK 30 GB 123

UL Recognized  
File no. E 63532

Dimensions in mm



## Case T8



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

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.