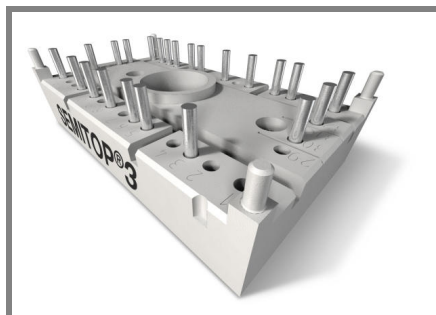


# SK10GD126ET



**SEMITOP® 3**

## IGBT Module

**SK10GD126ET**

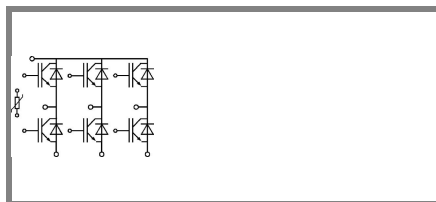
Preliminary Data

### Features

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

### Typical Applications\*

- Inverter

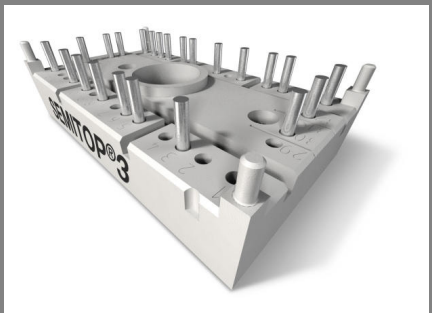


**GD-ET**

| Absolute Maximum Ratings |                                                                                                       | T <sub>s</sub> = 25 °C, unless otherwise specified |              |       |
|--------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------|--------------|-------|
| Symbol                   | Conditions                                                                                            |                                                    | Values       | Units |
| IGBT                     |                                                                                                       |                                                    |              |       |
| V <sub>CES</sub>         | T <sub>j</sub> = 25 °C                                                                                |                                                    | 1200         | V     |
| I <sub>C</sub>           | T <sub>j</sub> = 150 °C                                                                               | T <sub>s</sub> = 25 °C                             | 15           | A     |
|                          |                                                                                                       | T <sub>s</sub> = 80 °C                             | 11           | A     |
| I <sub>CRM</sub>         | I <sub>CRM</sub> = 2 x I <sub>Cnom</sub>                                                              |                                                    | 16           | A     |
| V <sub>GES</sub>         |                                                                                                       |                                                    | ± 20         | V     |
| t <sub>psc</sub>         | V <sub>CC</sub> = 600 V; V <sub>GE</sub> ≤ 20 V; T <sub>j</sub> = 125 °C<br>V <sub>CES</sub> < 1200 V |                                                    | 10           | µs    |
| Inverse Diode            |                                                                                                       |                                                    |              |       |
| I <sub>F</sub>           | T <sub>j</sub> = 150 °C                                                                               | T <sub>s</sub> = 25 °C                             | 25           | A     |
|                          |                                                                                                       | T <sub>s</sub> = 80 °C                             | 17           | A     |
| I <sub>FRM</sub>         | I <sub>FRM</sub> = 2 x I <sub>Fnom</sub>                                                              |                                                    | 30           | A     |
| Module                   |                                                                                                       |                                                    |              |       |
| I <sub>t(RMS)</sub>      |                                                                                                       |                                                    |              | A     |
| T <sub>vj</sub>          |                                                                                                       |                                                    | -40 ... +150 | °C    |
| T <sub>stg</sub>         |                                                                                                       |                                                    | -40 ... +125 | °C    |
| V <sub>isol</sub>        | AC, 1 min.                                                                                            |                                                    | 2500         | V     |

| Characteristics |                                                  | $T_s = 25\text{ °C}$ , unless otherwise specified |      |      |                                           |
|-----------------|--------------------------------------------------|---------------------------------------------------|------|------|-------------------------------------------|
| Symbol          | Conditions                                       | min.                                              | typ. | max. | Units                                     |
| <b>IGBT</b>     |                                                  |                                                   |      |      |                                           |
| $V_{GE(th)}$    | $V_{GE} = V_{CE}$ , $I_C = 0,3\text{ mA}$        | 5                                                 | 5,8  | 6,5  | V                                         |
| $I_{CES}$       | $V_{GE} = 0\text{ V}$ , $V_{CE} = V_{CES}$       |                                                   |      | 0,05 | $T_j = 25\text{ °C}$<br>mA                |
|                 |                                                  |                                                   |      |      | $T_j = 125\text{ °C}$<br>mA               |
| $I_{GES}$       | $V_{CE} = 0\text{ V}$ , $V_{GE} = 20\text{ V}$   |                                                   |      | 120  | $T_j = 25\text{ °C}$<br>nA                |
|                 |                                                  |                                                   |      |      | $T_j = 125\text{ °C}$<br>nA               |
| $V_{CE0}$       |                                                  |                                                   | 1    | 1,2  | $T_j = 25\text{ °C}$<br>V                 |
|                 |                                                  |                                                   |      |      | $T_j = 125\text{ °C}$<br>V                |
| $r_{CE}$        | $V_{GE} = 15\text{ V}$                           |                                                   | 87   | 113  | $T_j = 25\text{ °C}$<br>$\text{m}\Omega$  |
|                 |                                                  |                                                   |      |      | $T_j = 125\text{ °C}$<br>$\text{m}\Omega$ |
| $V_{CE(sat)}$   | $I_{Cnom} = 8\text{ A}$ , $V_{GE} = 15\text{ V}$ |                                                   | 1,7  | 2,1  | $T_j = 25\text{ °C}_{chiplev.}$<br>V      |
|                 |                                                  |                                                   |      |      | $T_j = 125\text{ °C}_{chiplev.}$<br>V     |
| $C_{ies}$       | $V_{CE} = 25$ , $V_{GE} = 0\text{ V}$            |                                                   | 0,6  |      | nF                                        |
| $C_{oes}$       |                                                  |                                                   |      |      | nF                                        |
| $C_{res}$       |                                                  |                                                   |      |      | nF                                        |
| $t_{d(on)}$     | $R_{Gon} = 75\text{ }\Omega$                     |                                                   | 85   |      | $V_{CC} = 600\text{ V}$<br>ns             |
| $t_r$           |                                                  |                                                   |      |      | $I_C = 8\text{ A}$<br>ns                  |
| $E_{on}$        | $R_{Goff} = 75\text{ }\Omega$                    |                                                   | 1    |      | mJ                                        |
| $t_{d(off)}$    |                                                  |                                                   |      |      | $T_j = 125\text{ °C}$<br>ns               |
| $t_f$           |                                                  |                                                   |      |      | $V_{GE} = \pm 15\text{ V}$<br>ns          |
| $E_{off}$       |                                                  |                                                   | 90   |      | mJ                                        |
|                 |                                                  |                                                   | 1    |      |                                           |
| $R_{th(j-s)}$   | per IGBT                                         |                                                   |      | 2    | K/W                                       |

# SK10GD126ET



SEMITOP<sup>®</sup> 3

## IGBT Module

SK10GD126ET

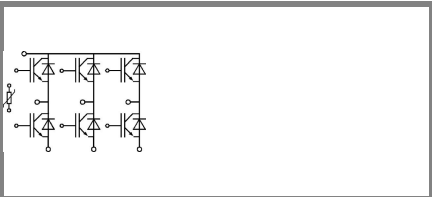
Preliminary Data

### Features

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

### Typical Applications\*

- Inverter

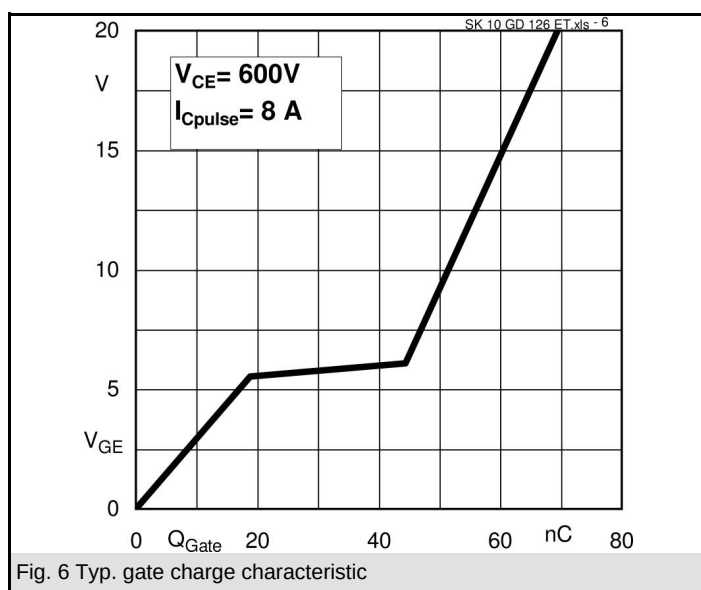
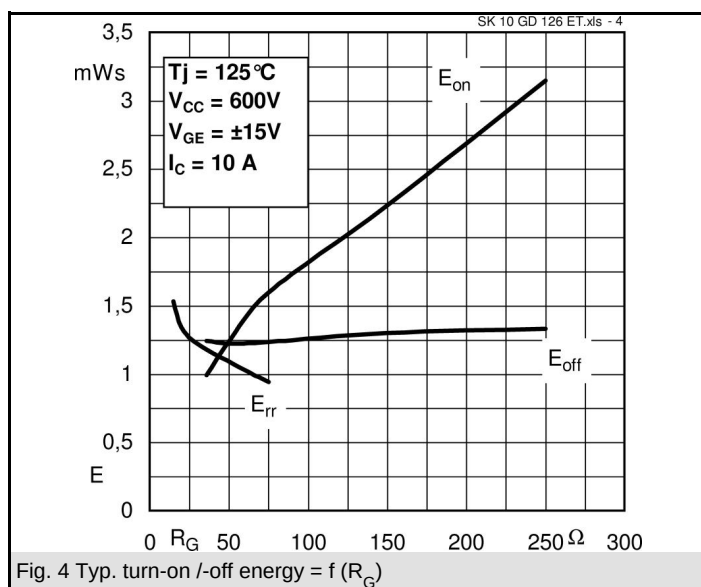
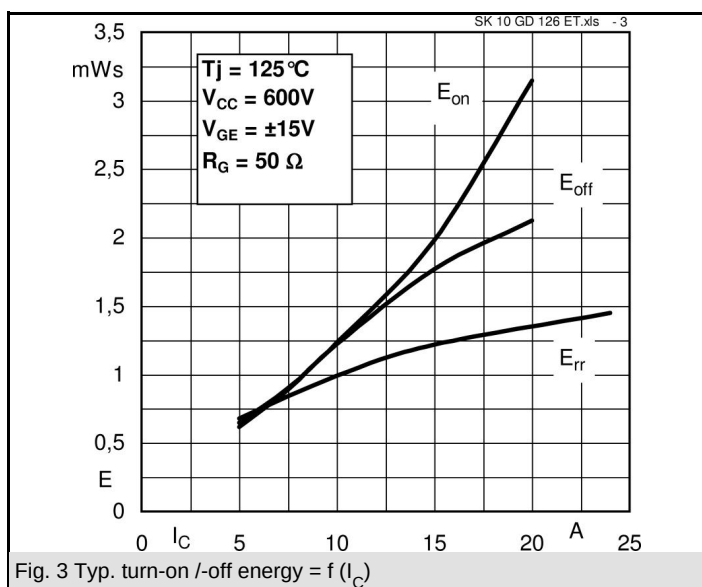
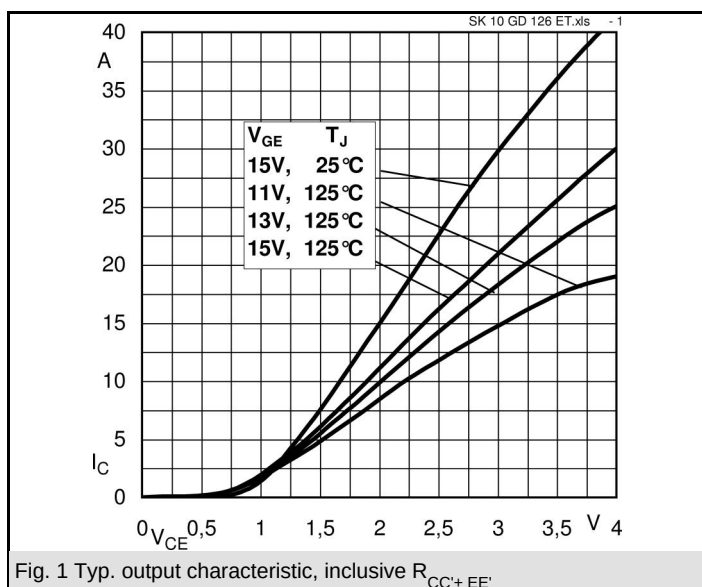


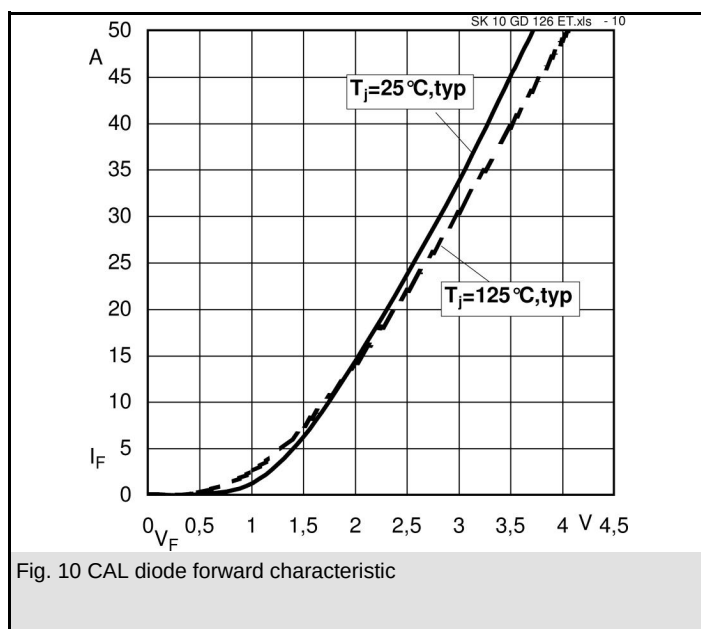
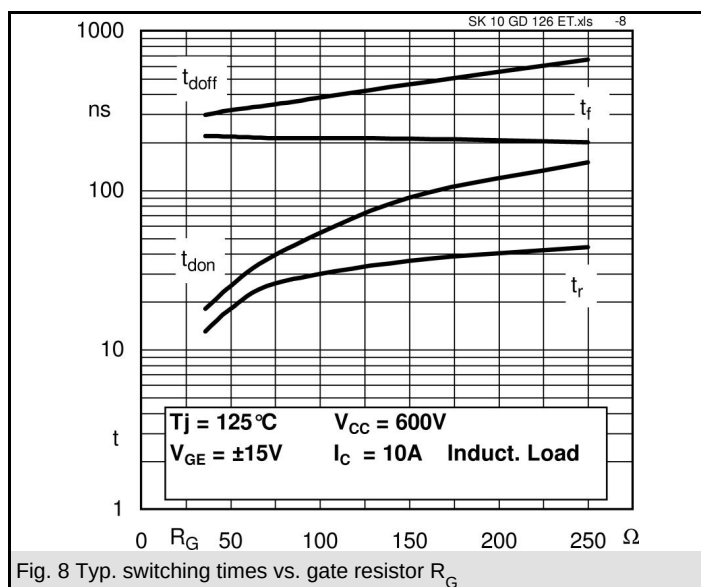
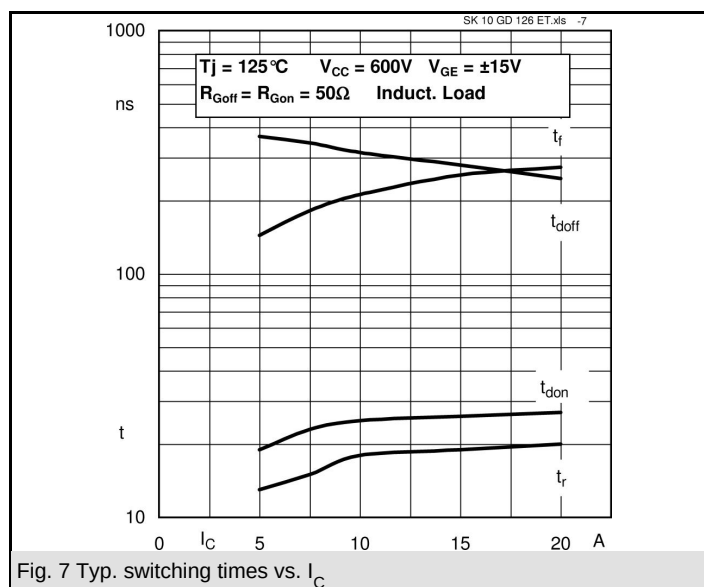
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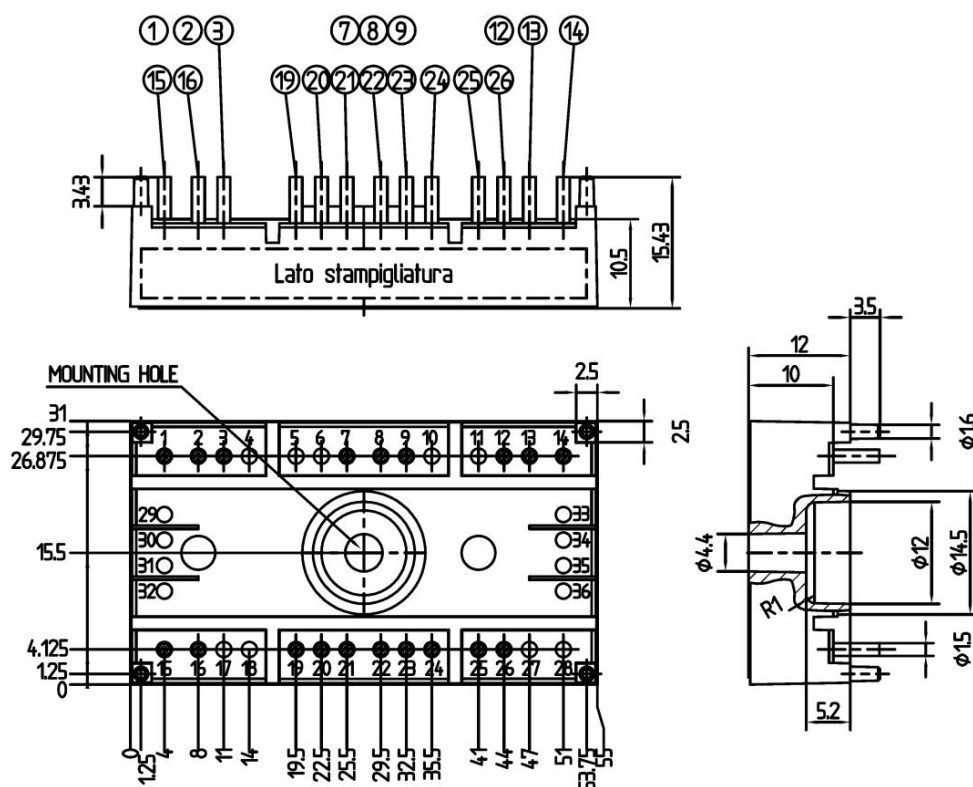
| Characteristics                  |                                                |                                             |        |      |       |
|----------------------------------|------------------------------------------------|---------------------------------------------|--------|------|-------|
| Symbol                           | Conditions                                     | min.                                        | typ.   | max. | Units |
| Inverse Diode                    |                                                |                                             |        |      |       |
| V <sub>F</sub> = V <sub>EC</sub> | I <sub>Fnom</sub> = 8 A; V <sub>GE</sub> = 0 V | T <sub>j</sub> = 25 °C <sub>chiplev.</sub>  | 1,9    | 2,2  | V     |
|                                  |                                                | T <sub>j</sub> = 125 °C <sub>chiplev.</sub> | 2      |      | V     |
| V <sub>F0</sub>                  |                                                | T <sub>j</sub> = 25 °C                      | 1      | 1,1  | V     |
|                                  |                                                | T <sub>j</sub> = 125 °C                     | 0,8    | 0,9  | V     |
| r <sub>F</sub>                   |                                                | T <sub>j</sub> = 25 °C                      | 40     | 47   | mΩ    |
|                                  |                                                | T <sub>j</sub> = 125 °C                     | 53     |      | mΩ    |
| I <sub>RRM</sub>                 | I <sub>F</sub> = 15 A                          | T <sub>j</sub> = 125 °C                     | 21     |      | A     |
| Q <sub>rr</sub>                  | di/dt = -300 A/μs                              |                                             | 3,5    |      | μC    |
| E <sub>rr</sub>                  | V <sub>CC</sub> = 600V                         |                                             | 1,4    |      | mJ    |
| R <sub>th(j-s)D</sub>            | per diode                                      |                                             |        | 2,1  | K/W   |
| M <sub>s</sub>                   | to heat sink                                   | 2,25                                        |        | 2,5  | Nm    |
| w                                |                                                |                                             | 30     |      | g     |
| Temperature sensor               |                                                |                                             |        |      |       |
| R <sub>100</sub>                 | T <sub>s</sub> =100°C (R <sub>25</sub> =5kΩ)   |                                             | 493±5% |      | Ω     |

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

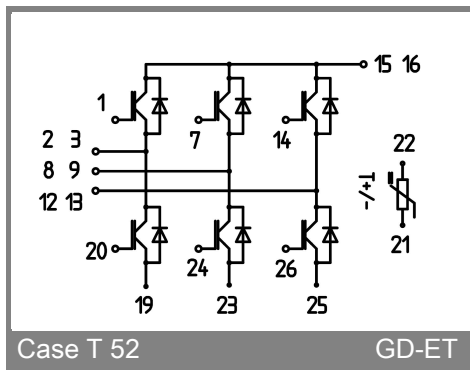
\* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.







Case T52 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 52

GD-ET