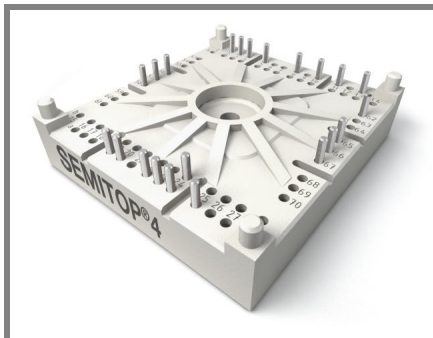


# SK75GD066T



**SEMITOP® 4**

## IGBT Module

**SK75GD066T**

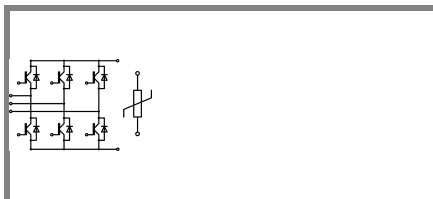
Preliminary Data

### Features

- One screw mounting module
- Fully compatible with SEMITOP®1,2,3
- Improved thermal performances by aluminium oxide substrate
- Trench IGBT technology
- CAL technology FWD
- Integrated NTC temperature sensor

### Typical Applications\*

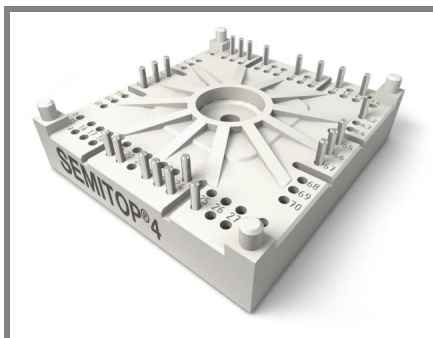
- Inverter up to 16 kVA
- Typ. motor power 7,5 kW



**GD-T**

| Absolute Maximum Ratings |   | $T_s = 25\text{ °C}$ , unless otherwise specified |                    |
|--------------------------|---|---|--------------------|
| Symbol                   | Conditions  | Values  | Units              |
| <b>IGBT</b>              |   |   |                    |
| $V_{CES}$                | $T_j = 25\text{ °C}$  | 600   | V                  |
| $I_C$                    | $T_j = 175\text{ °C}$   | $T_s = 25\text{ °C}$                              | 83 A               |
|                          |   | $T_s = 70\text{ °C}$                              | 67 A               |
| $I_{CRM}$                | $I_{CRM} = 2 \times I_{Cnom}$   | 150   | A                  |
| $V_{GES}$                |   | $\pm 20$  | V                  |
| $t_{psc}$                | $V_{CC} = 360\text{ V}$ ; $V_{GE} \leq 20\text{ V}$ ; $T_j = 125\text{ °C}$<br>$V_{CES} < 600\text{ V}$ | 6   | $\mu\text{s}$      |
| <b>Inverse Diode</b>     |   |   |                    |
| $I_F$                    | $T_j = 175\text{ °C}$   | $T_s = 25\text{ °C}$                              | 92 A               |
|                          |   | $T_s = 70\text{ °C}$                              | 73 A               |
| $I_{FRM}$                | $I_{FRM} = 2 \times I_{Fnom}$   | 150   | A                  |
| <b>Module</b>            |   |   |                    |
| $I_{t(RMS)}$             |   |   | A                  |
| $T_{vj}$                 |   | -40 ... +175                                      | $^{\circ}\text{C}$ |
| $T_{stg}$                |   | -40 ... +125                                      | $^{\circ}\text{C}$ |
| $V_{isol}$               | AC, 1 min.  | 2500  | V                  |

| Characteristics |  | $T_s = 25\text{ °C}$ , unless otherwise specified   |       |        |                  |
|-----------------|--|---|-------|--------|------------------|
| Symbol          | Conditions   | min.  | typ.  | max.   | Units            |
| <b>IGBT</b>     |  |   |       |        |                  |
| $V_{GE(th)}$    | $V_{GE} = V_{CE}$ , $I_C = 1,2\text{ mA}$                      | 5   | 5,8   | 6,5    | V                |
| $I_{CES}$       | $V_{GE} = 0\text{ V}$ , $V_{CE} = V_{CES}$                     | $T_j = 25\text{ °C}$                                |       | 0,0038 | mA               |
|                 |  | $T_j = 125\text{ °C}$                               |       |        | mA               |
| $I_{GES}$       | $V_{CE} = 0\text{ V}$ , $V_{GE} = 20\text{ V}$                 | $T_j = 25\text{ °C}$                                |       | 600    | nA               |
|                 |  | $T_j = 125\text{ °C}$                               |       |        | nA               |
| $V_{CE0}$       |  | $T_j = 25\text{ °C}$                                | 0,8   | 1,1    | V                |
|                 |  | $T_j = 150\text{ °C}$                               | 0,7   | 1      | V                |
| $r_{CE}$        | $V_{GE} = 15\text{ V}$   | $T_j = 25\text{ °C}$                                | 8     | 10     | $\text{m}\Omega$ |
|                 |  | $T_j = 150\text{ °C}$                               | 12,7  | 14     | $\text{m}\Omega$ |
| $V_{CE(sat)}$   | $I_{Cnom} = 75\text{ A}$ , $V_{GE} = 15\text{ V}$              | $T_j = 25\text{ °C}_{chiplev.}$                     | 1,45  | 1,85   | V                |
|                 |  | $T_j = 150\text{ °C}_{chiplev.}$                    | 1,65  | 2,05   | V                |
| $C_{ies}$       | $V_{CE} = 25$ , $V_{GE} = 0\text{ V}$                          | $f = 1\text{ MHz}$                                  | 4,7   |        | nF               |
| $C_{oes}$       |  |   | 0,3   |        | nF               |
| $C_{res}$       |  |   | 0,145 |        | nF               |
| $t_{d(on)}$     | $R_{Gon} = 16\ \Omega$<br>$di/dt = 2250\text{ A}/\mu\text{s}$  | $V_{CC} = 300\text{ V}$<br>$I_C = 75\text{ A}$      | 95    |        | ns               |
| $t_r$           |  |   | 50    |        | ns               |
| $E_{on}$        | $R_{Goff} = 16\ \Omega$<br>$di/dt = 2250\text{ A}/\mu\text{s}$ | $T_j = 150\text{ °C}$<br>$V_{GE} = -7/+15\text{ V}$ | 3,1   |        | mJ               |
| $t_{d(off)}$    |  |   | 541   |        | ns               |
| $t_f$           |  |   | 70    |        | ns               |
| $E_{off}$       |  |   | 2,8   |        | mJ               |
| $R_{th(j-s)}$   | per IGBT   |   | 0,75  |        | K/W              |



**SEMITOP® 4**

## IGBT Module

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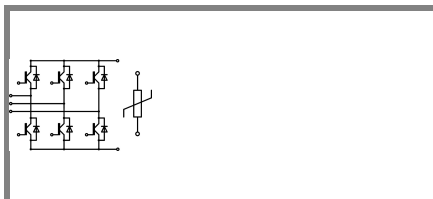
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**GD-T**

### Characteristics

| Symbol                    | Conditions  | min.   | typ.   | max. | Units |
|---------------------------|---|--|--------|------|-------|
| <b>Inverse Diode</b>      |   |  |        |      |       |
| $V_F = V_{EC}$            | $I_{Fnom} = 60 \text{ A}; V_{GE} = 0 \text{ V}$               | $T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$  | 1,35   |      | V     |
|                           |   | $T_j = 150 \text{ }^\circ\text{C}_{\text{chiplev.}}$ | 1,31   |      | V     |
| $V_{F0}$                  |   | $T_j = 25 \text{ }^\circ\text{C}$                    |        |      | V     |
|                           |   | $T_j = 150 \text{ }^\circ\text{C}$                   | 0,85   |      | V     |
| $r_F$                     |   | $T_j = 25 \text{ }^\circ\text{C}$                    |        |      | mΩ    |
|                           |   | $T_j = 150 \text{ }^\circ\text{C}$                   | 7,8    |      | mΩ    |
| $I_{RRM}$                 | $I_F = 75 \text{ A}$  | $T_j = 150 \text{ }^\circ\text{C}$                   | 60     |      | A     |
| $Q_{rr}$                  | $di/dt = 2250 \text{ A}/\mu\text{s}$                          |  | 6      |      | μC    |
| $E_{rr}$                  | $V_{CC} = 300\text{V}$  |  | 0,85   |      | mJ    |
| $R_{th(j-s)D}$            | per diode   |  | 1,2    |      | K/W   |
| $M_s$                     | to heat sink  | 2,5  |        | 2,75 | Nm    |
| w                         |   |  | 60     |      | g     |
| <b>Temperature sensor</b> |   |  |        |      |       |
| $R_{100}$                 | $T_s = 100 \text{ }^\circ\text{C} (R_{25} = 5\text{k}\Omega)$ |  | 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.

