# SKM75GB12V

**SEMITRANS® 2**

**SKM75GB12V**

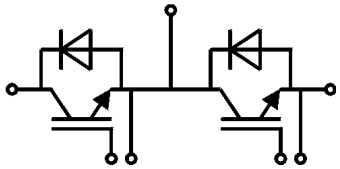
Target Data

### Features

- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to 6 x Icnom
- Fast & soft inverse CAL diodes
- Large clearance (10 mm) and creepage distances (20 mm)
- Isolated copper baseplate using DBC Technology (Direct Copper Bonding)
- UL recognized, file no. E63532

### Typical Applications*

- AC inverter drives
- UPS
- Electronic welders at fsw up to 20 kHz



**GB**

| Absolute Maximum Ratings | | | | |
|---|---|---|---|---|
| **Symbol** | **Conditions** | | **Values** | **Unit** |
| **IGBT** | | | | |
| $V_{CES}$ | | | 1200 | V |
| $I_C$ | $T_j$ = 175 °C | $T_c$ = 25 °C | 121 | A |
| | | $T_c$ = 80 °C | 91 | A |
| $I_{Cnom}$ | | | 75 | A |
| $I_{CRM}$ | $I_{CRM}$ = 3x$I_{Cnom}$ | | 225 | A |
| $V_{GES}$ | | | -20 ... 20 | V |
| $t_{psc}$ | $V_{CC}$ = 720 V<br>$V_{GE} \leq$ 20 V<br>$V_{CES} \leq$ 1200 V | $T_j$ = 125 °C | 10 | µs |
| $T_j$ | | | -40 ... 175 | °C |
| **Inverse diode** | | | | |
| $I_F$ | $T_j$ = 175 °C | $T_c$ = 25 °C | 97 | A |
| | | $T_c$ = 80 °C | 73 | A |
| $I_{Fnom}$ | | | 75 | A |
| $I_{FRM}$ | $I_{FRM}$ = 3x$I_{Fnom}$ | | 225 | A |
| $I_{FSM}$ | $t_p$ = 10 ms, sin 180°, $T_j$ = 25 °C | | 430 | A |
| $T_j$ | | | -40 ... 175 | °C |
| **Module** | | | | |
| $I_{t(RMS)}$ | | | 200 | A |
| $T_{stg}$ | | | -40 ... 125 | °C |
| $V_{isol}$ | AC sinus 50Hz, t = 1 min | | 4000 | V |

| Characteristics | | | | | | |
|---|---|---|---|---|---|---|
| **Symbol** | **Conditions** | | **min.** | **typ.** | **max.** | **Unit** |
| **IGBT** | | | | | | |
| $V_{CE(sat)}$ | $I_C$ = 75 A<br>$V_{GE}$ = 15 V<br>chiplevel | $T_j$ = 25 °C | | 1.85 | 2.3 | V |
| | | $T_j$ = 150 °C | | 2.25 | 2.45 | V |
| $V_{CE0}$ | | $T_j$ = 25 °C | | 0.94 | 1.25 | V |
| | | $T_j$ = 150 °C | | 0.88 | 1.22 | V |
| $r_{CE}$ | $V_{GE}$ = 15 V | $T_j$ = 25 °C | | 12.1 | 14.0 | mΩ |
| | | $T_j$ = 150 °C | | 18.3 | 16.4 | mΩ |
| $V_{GE(th)}$ | $V_{GE}$=$V_{CE}$, $I_C$ = 3 mA | | 6 | 6.5 | 7 | V |
| $I_{CES}$ | $V_{GE}$ = 0 V<br>$V_{CE}$ = 1200 V | $T_j$ = 25 °C | | 0.1 | 0.3 | mA |
| | | $T_j$ = 150 °C | | | | mA |
| $C_{ies}$ | $V_{CE}$ = 25 V<br>$V_{GE}$ = 0 V | f = 1 MHz | | 4.5 | | nF |
| $C_{oes}$ | | f = 1 MHz | | 0.44 | | nF |
| $C_{res}$ | | f = 1 MHz | | 0.442 | | nF |
| $Q_G$ | | | | 780 | | nC |
| $R_{Gint}$ | | | | 10.0 | | Ω |
| $t_{d(on)}$ | $V_{CC}$ = 600 V | $T_j$ = 150 °C | | | | ns |
| $t_r$ | $I_C$ = 75 A<br>$V_{GE}$ = ±15 V<br>$R_{G\ on}$ = 1.3 Ω<br>$R_{G\ off}$ = 1.3 Ω | $T_j$ = 150 °C | | | | ns |
| $E_{on}$ | | $T_j$ = 150 °C | | 7.5 | | mJ |
| $t_{d(off)}$ | | $T_j$ = 150 °C | | | | ns |
| $t_f$ | | $T_j$ = 150 °C | | | | ns |
| $E_{off}$ | | $T_j$ = 150 °C | | 6 | | mJ |
| $R_{th(j-c)}$ | per IGBT | | | | 0.38 | K/W |

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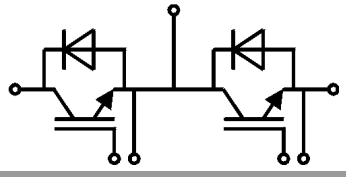

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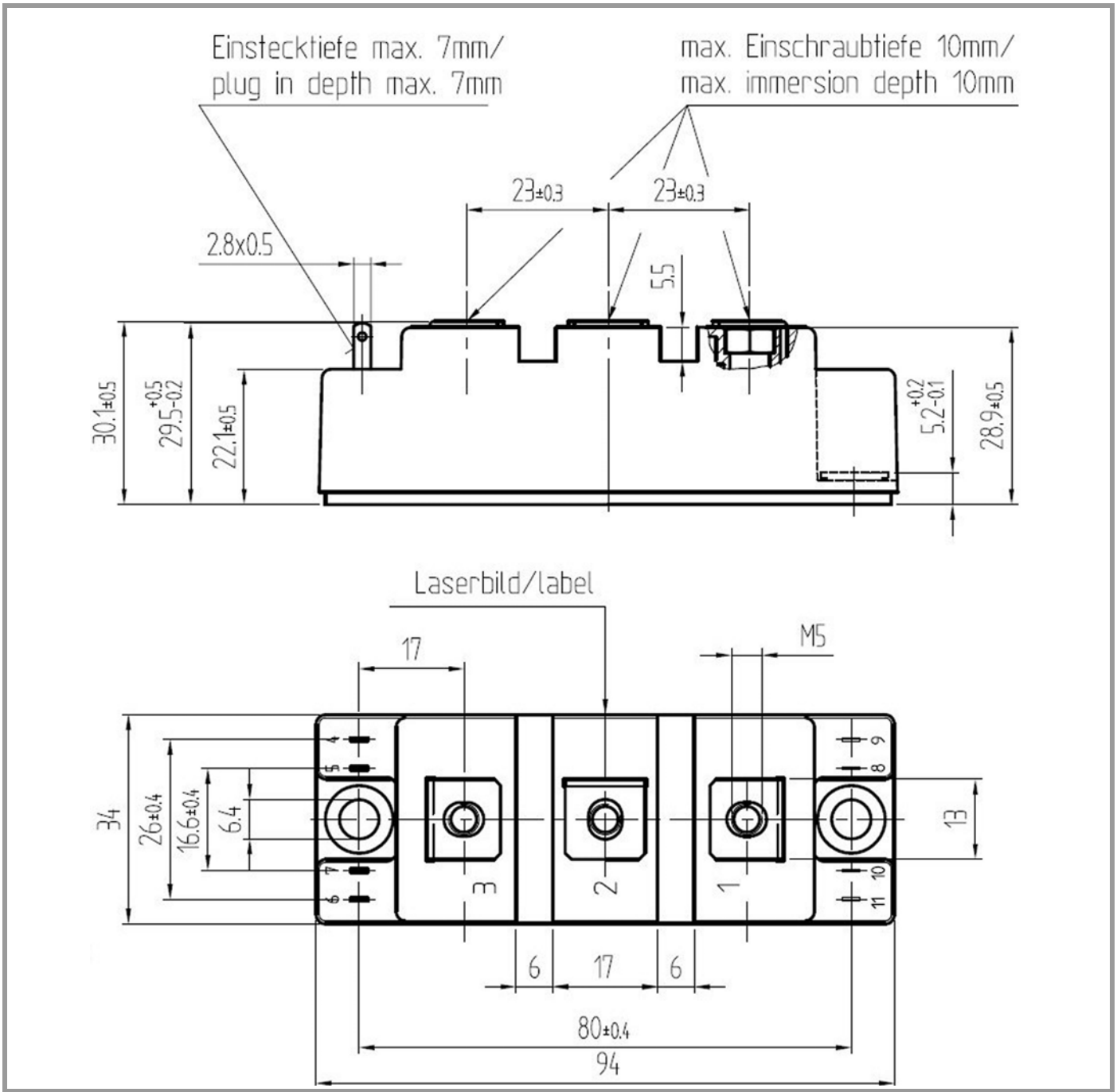
**Characteristics**

| Symbol | Conditions | | min. | typ. | max. | Unit |
|---|---|---|---|---|---|---|
| **Inverse diode** | | | | | | |
| $V_F = V_{EC}$ | $I_F$ = 75 A<br>$V_{GE}$ = 0 V<br>chip | $T_j$ = 25 °C | | 2.2 | 2.5 | V |
| | | $T_j$ = 150 °C | | 2.1 | 2.4 | V |
| $V_{F0}$ | | $T_j$ = 25 °C | | 1.3 | 1.5 | V |
| | | $T_j$ = 150 °C | | 0.9 | 1.1 | V |
| $r_F$ | | $T_j$ = 25 °C | | 11.6 | 13.2 | mΩ |
| | | $T_j$ = 150 °C | | 16.1 | 17.6 | mΩ |
| $I_{RRM}$ | $I_F$ = 75 A<br>$di/dt_{off}$ = 990 A/µs<br>$V_{GE}$ = ±15 V<br>$V_{CC}$ = 600 V | $T_j$ = 150 °C | | 37 | | A |
| $Q_{rr}$ | | $T_j$ = 150 °C | | 12.6 | | µC |
| $E_{rr}$ | | $T_j$ = 150 °C | | 4.7 | | mJ |
| $R_{th(j-c)}$ | per diode | | | | 0.58 | K/W |
| **Module** | | | | | | |
| $L_{CE}$ | | | | | 30 | nH |
| $R_{CC'+EE'}$ | terminal-chip | $T_C$ = 25 °C | | 0.65 | | mΩ |
| | | $T_C$ = 125 °C | | 1 | | mΩ |
| $R_{th(c-s)}$ | per module | | | 0.04 | 0.05 | K/W |
| $M_s$ | to heat sink M6 | | 3 | | 5 | Nm |
| $M_t$ | | to terminals M5 | 2.5 | | 5 | Nm |
| | | | | | | Nm |
| w | | | | | 160 | g |

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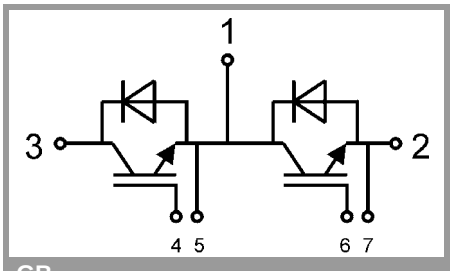


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This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX

* 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.