

## SKM 200 GB 128 D

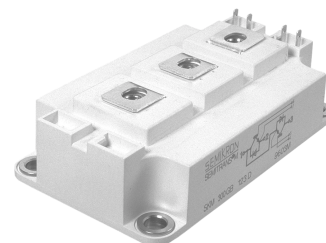
| Absolute Maximum Ratings  |                                                                           | $T_{case} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified |                    |
|---------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------|--------------------|
| Symbol                    | Conditions                                                                | Values                                                               | Units              |
| <b>IGBT</b>               |                                                                           |                                                                      |                    |
| $V_{CES}$                 |                                                                           | 1200                                                                 | V                  |
| $I_C$                     | $T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$                       | 310 (220)                                                            | A                  |
| $I_{CRM}$                 | $T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$ , $t_p = 1\text{ ms}$ | 620 (440)                                                            | A                  |
| $V_{GES}$                 |                                                                           | $\pm 20$                                                             | V                  |
| $T_{vj}$ , ( $T_{stg}$ )  | $T_{OPERATION} \leq T_{stg}$                                              | $-40 \dots +150\text{ (125)}$                                        | $^{\circ}\text{C}$ |
| $V_{isol}$                | AC, 1 min.                                                                | 2500                                                                 | V                  |
| <b>Inverse Diode</b>      |                                                                           |                                                                      |                    |
| $I_{FAV} = -I_C$          | $T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$                       | 190 (130)                                                            | A                  |
| $I_{FRM}$                 | $T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$ , $t_p < 1\text{ ms}$ | 620 (440)                                                            | A                  |
| $I_{FSM}$                 | $t_p = 10\text{ ms}$ ; sin.; $T_j = 150\text{ }^{\circ}\text{C}$          | 1450                                                                 | A                  |
| <b>Freewheeling Diode</b> |                                                                           |                                                                      |                    |
| $I_{FAV} = -I_C$          | $T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$                       |                                                                      | A                  |
| $I_{FRM}$                 | $T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$ , $t_p < 1\text{ ms}$ |                                                                      | A                  |
| $I_{FSM}$                 | $t_p = 10\text{ ms}$ ; sin.; $T_j = 150\text{ }^{\circ}\text{C}$          |                                                                      | A                  |

| Characteristics                           |                                                                                                | $T_{case} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified |           |          |               |
|-------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-----------|----------|---------------|
| Symbol                                    | Conditions                                                                                     | min.                                                                 | typ.      | max.     | Units         |
| <b>IGBT</b>                               |                                                                                                |                                                                      |           |          |               |
| $V_{GE(TO)}$                              | $V_{GE} = V_{CE}$ , $I_C = 6\text{ mA}$                                                        | 4,5                                                                  | 5,5       | 6,45     | V             |
| $I_{CES}$                                 | $V_{GE} = 0$ , $V_{CE} = V_{CES}$ , $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$            |                                                                      |           | tbd      | mA            |
| $V_{CE(TO)}$                              |                                                                                                |                                                                      | 1,0 (0,9) | 1,15     | V             |
| $r_{CE}$                                  | $V_{GE} = 15\text{ V}$ , $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$                       |                                                                      | 6,7 (9,3) | 8,3(tbd) | m $\Omega$    |
| $V_{CE(sat)}$                             | $I_C = 150\text{ A}$ , $V_{GE} = 15\text{ V}$ , chip level                                     |                                                                      | 2,0 (2,3) | 2,4      | V             |
| $C_{ies}$                                 |                                                                                                |                                                                      | tbd       |          | nF            |
| $C_{oes}$                                 | $V_{GE} = 0$ , $V_{CE} = 25\text{ V}$ , $f = 1\text{ MHz}$                                     |                                                                      | tbd       |          | nF            |
| $C_{res}$                                 |                                                                                                |                                                                      | tbd       |          | nF            |
| $L_{CE}$                                  |                                                                                                |                                                                      |           | 20       | nH            |
| $R_{CC'+EE'}$                             | resistance, terminal-chip $25\text{ (125)}\text{ }^{\circ}\text{C}$                            |                                                                      | tbd       |          | m $\Omega$    |
| $t_{d(on)}$                               | under following conditions:                                                                    |                                                                      | 140       |          | ns            |
| $t_r$                                     | $V_{CC} = 600\text{ V}$ , $I_C = 150\text{ A}$                                                 |                                                                      | 55        |          | ns            |
| $t_{d(off)}$                              | $R_{Gon} = R_{Goff} = 6\text{ }\Omega$ , $T_j = 125\text{ }^{\circ}\text{C}$ ,                 |                                                                      | 850       |          | ns            |
| $t_f$                                     | $V_{GE} \pm 15\text{ V}$                                                                       |                                                                      | 40        |          | ns            |
| $E_{on}$                                  |                                                                                                |                                                                      | 20        |          | mJ            |
| $E_{off}$                                 |                                                                                                |                                                                      | 13        |          | mJ            |
| <b>Inverse Diode</b>                      |                                                                                                |                                                                      |           |          |               |
| $V_F = V_{EC}$                            | $I_F = 150\text{ A}$ ; $V_{GE} = 0\text{ V}$ ; $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$ |                                                                      | 2,0 (1,8) | 2,5      | V             |
| $V_{T(TO)}$                               | $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$                                                |                                                                      | 1,1 (tbd) | 1,2      | V             |
| $r_T$                                     | $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$                                                |                                                                      | 6 (tbd)   | 8,7(tbd) | m $\Omega$    |
| $I_{RRM}$                                 | $I_F = 150\text{ A}$ ; $T_j = 125\text{ }^{\circ}\text{C}$                                     |                                                                      | tbd       |          | A             |
| $Q_{rr}$                                  | $di/dt = 1500\text{ A}/\mu\text{s}$                                                            |                                                                      | tbd       |          | $\mu\text{C}$ |
| $E_{rr}$                                  | $V_{GE} = 0\text{ V}$                                                                          |                                                                      | tbd       |          | mJ            |
| <b>Freewheeling Diode of GAL/GAR type</b> |                                                                                                |                                                                      |           |          |               |
| $V_F = V_{EC}$                            | $I_F = 150\text{ A}$ ; $V_{GE} = 0\text{ V}$ ; $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$ |                                                                      |           |          | V             |
| $V_{TO}$                                  | $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$                                                |                                                                      |           |          | V             |
| $r_T$                                     | $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$                                                |                                                                      |           |          | m $\Omega$    |
| $I_{RRM}$                                 | $I_F = 150\text{ A}$ ; $T_j = 125\text{ }^{\circ}\text{C}$                                     |                                                                      |           |          | A             |
| $Q_{rr}$                                  | $V_{GE} = 0\text{ V}$                                                                          |                                                                      |           |          | $\mu\text{C}$ |
| $E_{rr}$                                  |                                                                                                |                                                                      |           |          | mJ            |
| <b>Thermal Characteristics</b>            |                                                                                                |                                                                      |           |          |               |
| $R_{th(j-c)}$                             | per IGBT                                                                                       |                                                                      |           | 0,09     | K/W           |
| $R_{th(j-c)D}$                            | per Inverse Diode                                                                              |                                                                      |           | 0,25     | K/W           |
| $R_{th(j-c)FD}$                           | per FWD                                                                                        |                                                                      |           | —        | K/W           |
| $R_{th(c-s)}$                             | per module                                                                                     |                                                                      |           | 0,038    | K/W           |
| <b>Mechanical Data</b>                    |                                                                                                |                                                                      |           |          |               |
| $M_s$                                     | to heatsink (M6)                                                                               | 3                                                                    |           | 5        | Nm            |
| $M_t$                                     | for terminals (M5)                                                                             | 2,5                                                                  |           | 5        | Nm            |
| $w$                                       |                                                                                                |                                                                      |           | 325      | g             |

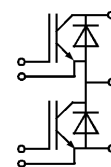
## SEMITRANS™ M SPT IGBT Module

### SKM 200 GB 128 D

Target Data



SEMITRANS 3



GB

### Features

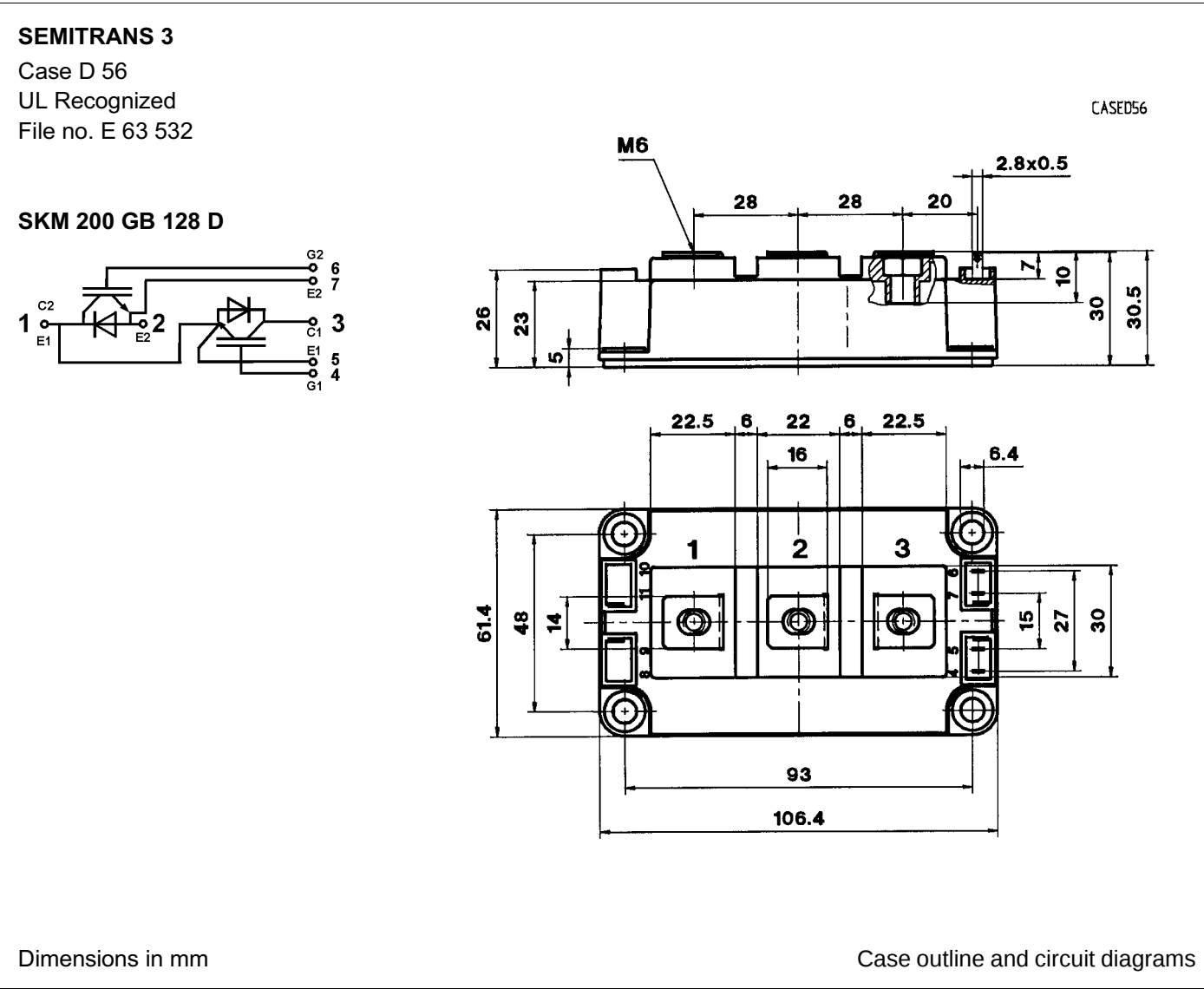
- Homogeneous Si
- SPT = Soft-Punch-Through technology
- $V_{CE(sat)}$  with positive temperature coefficient
- High short circuit capability, self limiting to  $6 \times I_C$

### Typical Applications

- AC inverter drives
- UPS
- Electronic welders at  $f_{sw} > 20\text{ kHz}$

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

|              |        |                    |
|--------------|--------|--------------------|
| Packing Unit | 12 pcs | SEMIBOX D          |
| Mounting Kit | 10 pcs | Ident-No. 33321100 |



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