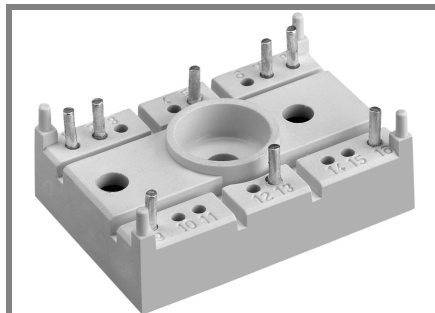




**SEMITOP® 2**

## MOSFET Module

**SK 115 MAA 10**

Target Data

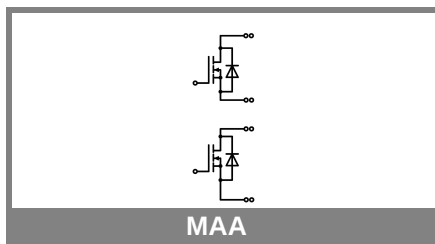
### Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonding aluminium oxide ceramic (DBC)
- Trench-gate technology
- Short internal connections and low inductance case

### Typical Applications

- Low switched mode power supplies
- DC servo drives
- UPS

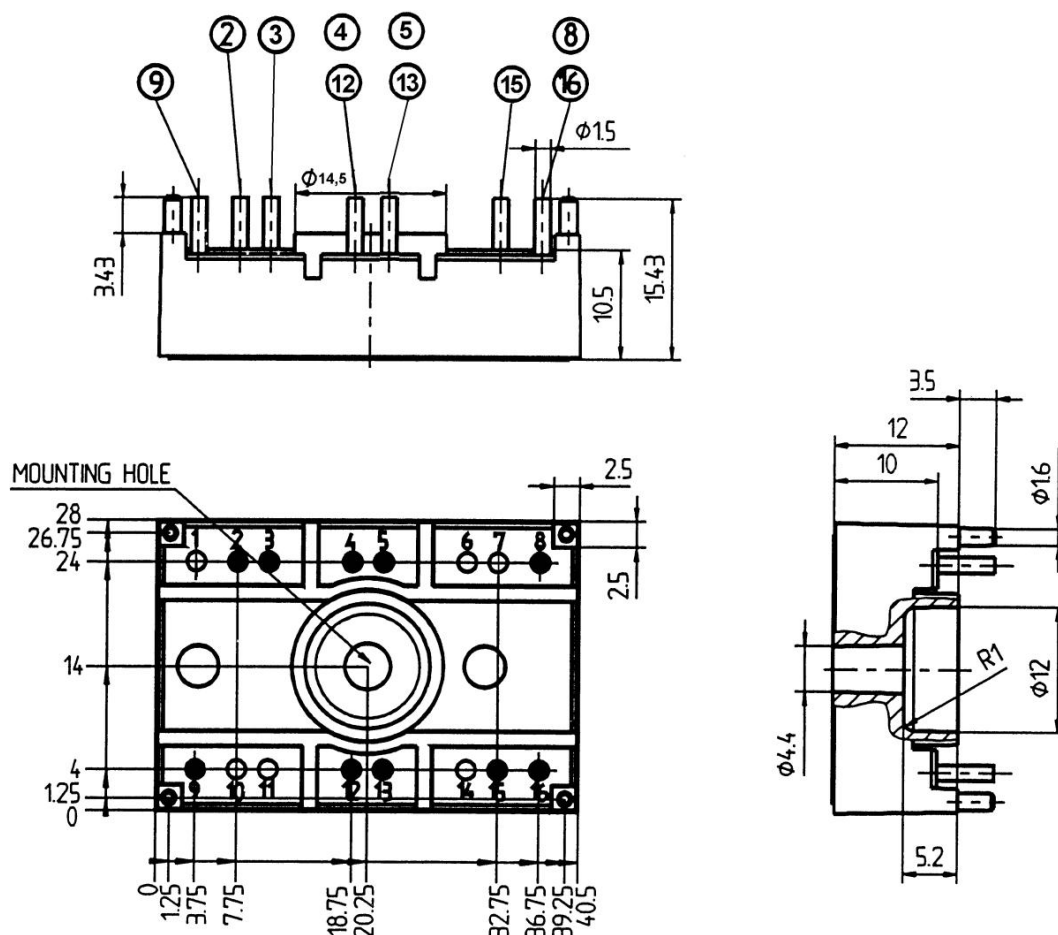
1) Maximum PCB temperature, at pins contact, = 85°C



**MAA**

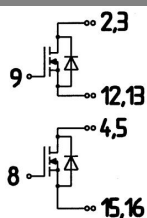
| Absolute Maximum Ratings      |                                               | $T_s = 25\text{ °C}$ , unless otherwise specified |       |
|-------------------------------|-----------------------------------------------|---------------------------------------------------|-------|
| Symbol                        | Conditions                                    | Values                                            | Units |
| <b>MOSFET</b>                 |                                               |                                                   |       |
| $V_{DSS}$                     |                                               | 100                                               | V     |
| $V_{GSS}$                     |                                               | $\pm 20$                                          | V     |
| $I_D$                         | $T_s = 25\text{ (80) °C}; 1)$                 | 95 (75)                                           | A     |
| $I_{DM}$                      | $t_p < \text{ms}; T_s = \text{°C};$           |                                                   | A     |
| $T_j$                         |                                               | - 40 ... + 150                                    | °C    |
| <b>Inverse diode</b>          |                                               |                                                   |       |
| $I_F = -I_D$                  | $T_s = 25\text{ (80) °C};$                    | 95 (75)                                           | A     |
| $I_{FM} = -I_{DM}$            | $t_p < 1\text{ ms}; T_s = 25\text{ (80) °C};$ |                                                   | A     |
| $T_j$                         |                                               | - 40 ... + 150                                    | °C    |
| <b>Freewheeling CAL diode</b> |                                               |                                                   |       |
| $I_F = -I_D$                  | $T_s = \text{°C}$                             |                                                   | A     |
| $T_j$                         |                                               |                                                   | °C    |
| $T_{stg}$                     |                                               | - 40 ... + 125                                    | °C    |
| $T_{sol}$                     | Terminals, 10 s                               | 260                                               | °C    |
| $V_{isol}$                    | AC, 1 min (1s)                                | 2500 / 3000                                       | V     |

| Characteristics      |                                                                                    | T <sub>s</sub> = 25 °C, unless otherwise specified |      |      |       |
|----------------------|------------------------------------------------------------------------------------|----------------------------------------------------|------|------|-------|
| Symbol               | Conditions                                                                         | min.                                               | typ. | max. | Units |
| MOSFET               |                                                                                    |                                                    |      |      |       |
| V <sub>(BR)DSS</sub> | V <sub>GS</sub> = 0 V, I <sub>D</sub> = 5,6 mA                                     | 100                                                |      |      | V     |
| V <sub>GS(th)</sub>  | V <sub>GS</sub> = V <sub>DS</sub> ; I <sub>D</sub> = 5,6 mA                        | 2,5                                                | 3,3  |      | V     |
| I <sub>DSS</sub>     | V <sub>GS</sub> = 0 V; V <sub>DS</sub> = V <sub>DSS</sub> ; T <sub>j</sub> = 25 °C |                                                    |      | 100  | µA    |
| I <sub>GSS</sub>     | V <sub>GS</sub> = ± 20V ;V <sub>DS</sub> = 0 V                                     |                                                    |      | 200  | nA    |
| R <sub>DS(on)</sub>  | I <sub>D</sub> = 80 A; V <sub>GS</sub> = 10 V; T <sub>j</sub> = 25 °C              |                                                    |      | 4,5  | mΩ    |
| R <sub>DS(on)</sub>  | I <sub>D</sub> = A; V <sub>GS</sub> = V; T <sub>j</sub> = °C                       |                                                    |      |      | mΩ    |
| C <sub>CHC</sub>     | per MOSFET                                                                         |                                                    |      |      | pF    |
| C <sub>iss</sub>     | under following conditions:                                                        |                                                    | 17,5 |      | nF    |
| C <sub>oss</sub>     | V <sub>GS</sub> = 0 V; V <sub>DS</sub> = 25 V; f = 1 MHz                           |                                                    | 2    |      | nF    |
| C <sub>rss</sub>     |                                                                                    |                                                    |      |      | nF    |
| L <sub>DS</sub>      |                                                                                    |                                                    |      |      | nH    |
| t <sub>d(on)</sub>   | under following conditions:                                                        |                                                    | 300  |      | ns    |
| t <sub>r</sub>       | V <sub>DD</sub> = 50 V; V <sub>GS</sub> = 10 V;<br>I <sub>D</sub> = 50 A           |                                                    | 130  |      | ns    |
| t <sub>d(off)</sub>  | R <sub>G</sub> = 56 Ω                                                              |                                                    | 1550 |      | ns    |
| t <sub>f</sub>       |                                                                                    |                                                    | 150  |      | ns    |
| R <sub>th(j-s)</sub> | per MOSFET (per module)                                                            |                                                    |      | 0,7  | K/W   |
| Inverse diode        |                                                                                    |                                                    |      |      |       |
| V <sub>SD</sub>      | I <sub>F</sub> = 50 A; V <sub>GS</sub> = 0 V; T <sub>j</sub> = °C                  |                                                    | 0,9  |      | V     |
| I <sub>RRM</sub>     | under following conditions:                                                        |                                                    | 24   |      | A     |
| Q <sub>rr</sub>      | I <sub>F</sub> = 50 A; T <sub>vj</sub> = 25 °C; R <sub>G</sub> = 56 Ω              |                                                    | 0,9  |      | µC    |
| t <sub>rr</sub>      | V <sub>R</sub> = 65 A; di/dt = 100 A/µs                                            |                                                    | 70   |      | ns    |
| Free-wheeling diode  |                                                                                    |                                                    |      |      |       |
| V <sub>F</sub>       | I <sub>F</sub> = A; V <sub>GS</sub> = V                                            |                                                    |      |      | V     |
| I <sub>RRM</sub>     | under following conditions:                                                        |                                                    |      |      | A     |
| Q <sub>rr</sub>      | I <sub>F</sub> = A; T <sub>vj</sub> = °C                                           |                                                    |      |      | µC    |
| t <sub>rr</sub>      | V <sub>r</sub> = A; di/dt = A/µs                                                   |                                                    |      |      | ns    |
| Mechanical data      |                                                                                    |                                                    |      |      |       |
| M1                   | mounting torque                                                                    |                                                    |      | 2    | Nm    |
| w                    |                                                                                    |                                                    | 20   |      | g     |
| Case                 | SEMITOP® 2                                                                         |                                                    | T 48 |      |       |



SUGGESTED HOLEDIAMETER FOR THE SOLDER PINS AND THE MOUNTING PINS IN THE PCB: 2 mm

Case T 48



MAA

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.