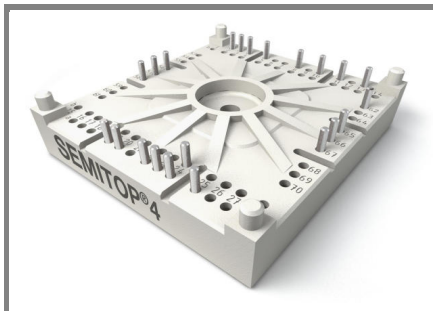


# SK200DHL066



**SEMITOP<sup>®</sup> 4**

## Half controlled bridge rectifier + IGBT braking chopper SK200DHL066

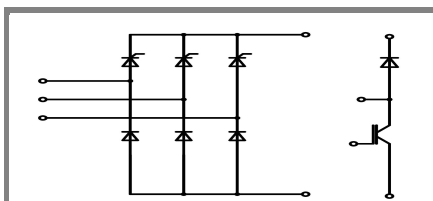
Target Data

### Features

- One screw mounting hole
- Fully compatible with SEMITOP<sup>®</sup>1,2,3
- Improved thermal performances by aluminium oxide substrate
- Trench IGBT brake chopper technology
- CAL technology free-wheeling diode chopper

### Typical Applications\*

- $V_{CE,sat}$ ,  $V_F$  = chip level value
- $I_{CM} = 2 \times I_{Cnom}$ ,  $t_p \leq 1ms$
- $I_{FM} = 2 \times I_{Fnom}$ ,  $t_p \leq 1ms$
- $I_C = I_{Cnom}$ ,  $I_F = I_{Fnom}$

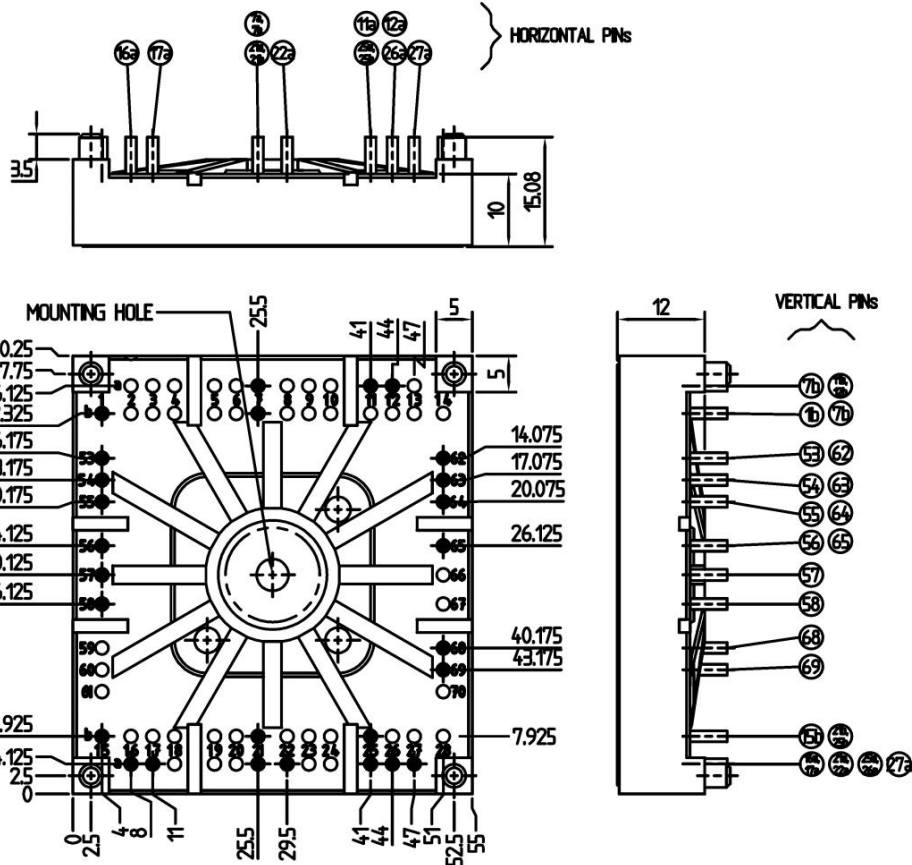


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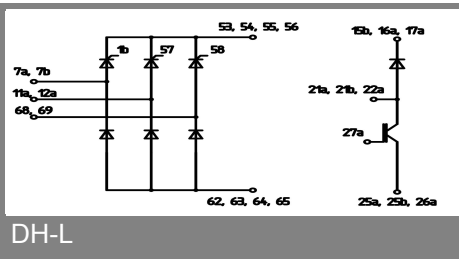
|                |                            |                                                                            |
|----------------|----------------------------|----------------------------------------------------------------------------|
| $V_{RSM}$<br>V | $V_{RRM}$ , $V_{DRM}$<br>V | $I_D = 210$ A (maximum value for continuous operation)<br>( $T_s = 70$ °C) |
|----------------|----------------------------|----------------------------------------------------------------------------|

| Absolute Maximum Ratings        |                                             | $T_s = 25$ °C, unless otherwise specified |                  |
|---------------------------------|---------------------------------------------|-------------------------------------------|------------------|
| Symbol                          | Conditions                                  | Values                                    | Units            |
| <b>Bridge - Rectifier</b>       |                                             |                                           |                  |
| $I_D$                           | $T_s = 70$ °C; inductive load               | 210                                       | A                |
| $I_{FSM}/I_{TSM}$               | $t_p = 10$ ms; half sine wave, ; $T_{jmax}$ | 1250                                      | A                |
| $i^2t$                          | $t_p = 10$ ms; half sine wave, ; $T_{jmax}$ | 7810                                      | A <sup>2</sup> s |
| <b>IGBT - Chopper</b>           |                                             |                                           |                  |
| $V_{CES}/V_{GES}$               | $T_s = 25$ (70) °C                          | 600 / 20                                  | V                |
| $I_C$                           | $T_s = 25$ (70) °C                          | 174 (131)                                 | A                |
| $I_{CM}$                        | $t_p = 1$ ms; $T_s =$ °C                    | 400                                       | A                |
| <b>Freewheeling - CAL Diode</b> |                                             |                                           |                  |
| $V_{RRM}$                       | $T_s = 25$ (70) °C                          | 600                                       | V                |
| $I_F$                           | $T_s = 25$ (70) °C                          | 100 (80)                                  | A                |
| $I_{FM}$                        | $t_p = 1$ ms; $T_s =$ °C                    | 200                                       | A                |
| $T_{vj}$                        | Diode & IGBT (Thyristor)                    | -40 ... +150 (-40 ... +130)               | °C               |
| $T_{stg}$                       |                                             | -40 ... +125 (-40 ... +130)               | °C               |
| $T_{solder}$                    | terminals, 10 s                             | 260                                       | °C               |
| $V_{isol}$                      | a.c. 50 Hz, RMS 1 min. / 1 s                | 2500 / 3000                               | V                |

| Characteristics                   |                                                                                               |      |            |            |        |
|-----------------------------------|-----------------------------------------------------------------------------------------------|------|------------|------------|--------|
| Symbol                            | Conditions                                                                                    | min. | typ.       | max.       | Units  |
| <b>Diode - Rectifier</b>          |                                                                                               |      |            |            |        |
| $V_{TO} / r_t$                    | $T_j = 125$ °C                                                                                |      | 0,8 / 4    |            | V / mΩ |
| $R_{th(j-s)}$                     | per diode                                                                                     |      | 0,52       |            | K/W    |
| <b>Thyristor - Rectifier</b>      |                                                                                               |      |            |            |        |
| $V_{F(TO)} / r_t$                 | $T_j = 130$ °C                                                                                |      | 1,1 / 4,5  |            | V / mΩ |
| $R_{th(j-s)}$                     | per Thyristor                                                                                 |      | 0,44       |            | K/W    |
| $I_{GD}$                          | $T_j = 115$ °C; d.c.                                                                          | 6    |            |            | mA     |
| $V_{GT} / I_{GT}$                 | $T_j = 25$ °C                                                                                 |      |            | 1,98 / 100 | V / mA |
| $I_H / I_L$                       | $T_j = 25$ °C                                                                                 |      |            | 220 / 550  | mA     |
| $(dv/dt)_{cr}$                    | $T_j = 130$ °C                                                                                |      |            | 1000       | V/μs   |
| $(di/dt)_{cr}$                    | $T_j = 130$ °C                                                                                |      |            | 100        | A/μs   |
| <b>IGBT - Chopper</b>             |                                                                                               |      |            |            |        |
| $V_{CE(sat)}$                     | $I_C = 200$ A, $T_j = 125$ °C;<br>$V_{GE} = 15$ V                                             |      | 1,7        | 2,15       | V      |
| $R_{th(j-s)}$                     | per IGBT                                                                                      |      | 0,45       |            | K/W    |
| $t_{d(on)} / t_r$                 | valid for all values:<br>$V_{CC} = 300$ V; $V_{GE} = 15$ V;<br>$I_C = 200$ A; $T_j = 125$ °C; |      |            |            | ns     |
| $t_{d(off)} / t_f$                |                                                                                               |      |            |            | ns     |
| $E_{on} + E_{off}$                | $T_j = 125$ °C; $R_G = 4$ Ω;<br>inductive load                                                |      | 13,8       |            | mJ     |
| <b>CAL - Diode - Freewheeling</b> |                                                                                               |      |            |            |        |
| $V_{T(TO)} / r_t$                 | $T_j = 150$ °C                                                                                |      | 0,85 / 3,5 |            | V / mΩ |
| $R_{th(j-s)}$                     | per diode                                                                                     |      | 0,8        |            | K/W    |
| $I_{RRM}$                         | valid for all values:                                                                         |      |            |            | A      |
| $Q_{rr}$                          | $I_F = 200$ A; $V_R = -600$ V;<br>$di_F/dt = -A/\mu s$                                        |      |            |            | μC     |
| $E_{off}$                         | $V_{GE} = V$ ; $T_j = 125$ °C                                                                 |      |            |            | mJ     |
| <b>Temperature Sensor</b>         |                                                                                               |      |            |            |        |
| $R_{TS}$                          | $T =$ °C;                                                                                     |      |            |            | Ω      |
| <b>Mechanical data</b>            |                                                                                               |      |            |            |        |
| $M_S$                             | mounting Torque                                                                               | 2,5  |            | 2,75       | Nm     |



Case T 85 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



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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.