

# SEMiX191KD16s



SEMiX® 1s

## Rectifier Diode Module SEMiX191KD16s

### Features

Terminal height 17 mm  
Chips soldered directly to isolated substrate

### Typical Applications\*

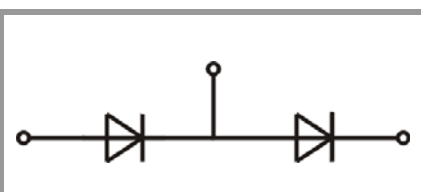
- Input Bridge Rectifier for AC/DC motor control
- Power supply

### Absolute Maximum Ratings

| Symbol                 | Conditions    |                       | Values      | Unit             |
|------------------------|---------------|-----------------------|-------------|------------------|
| <b>Rectifier Diode</b> |               |                       |             |                  |
| $I_{FAV}$              | sin. 180°     | $T_c = 85\text{ °C}$  | 190         | A                |
|                        |               | $T_c = 100\text{ °C}$ | 145         | A                |
| $I_{FSM}$              | 10 ms         | $T_j = 25\text{ °C}$  | 6000        | A                |
|                        |               | $T_j = 130\text{ °C}$ | 5000        | A                |
| $i^2t$                 | 10 ms         | $T_j = 25\text{ °C}$  | 180000      | A <sup>2</sup> s |
|                        |               | $T_j = 130\text{ °C}$ | 125000      | A <sup>2</sup> s |
| $V_{RSM}$              |               |                       | 1700        | V                |
| $V_{RRM}$              |               |                       | 1600        | V                |
| $T_j$                  |               |                       | -40 ... 130 | °C               |
| <b>Module</b>          |               |                       |             |                  |
| $T_{stg}$              |               |                       | -40 ... 125 | °C               |
| $V_{isol}$             | AC sinus 50Hz | 1 min                 | 4000        | V                |
|                        |               | 1 s                   | 4800        | V                |

### Characteristics

| Symbol               | Conditions                                                  |           | min. | typ.  | max.     | Unit             |
|----------------------|-------------------------------------------------------------|-----------|------|-------|----------|------------------|
| Diode                |                                                             |           |      |       |          |                  |
| V <sub>F</sub>       | T <sub>J</sub> = 25 °C, I <sub>F</sub> = 500 A              |           |      |       | 1.5      | V                |
| V <sub>(TO)</sub>    | T <sub>J</sub> = 130 °C                                     |           |      |       | 0.85     | V                |
| r <sub>T</sub>       | T <sub>J</sub> = 130 °C                                     |           |      |       | 0.95     | mΩ               |
| I <sub>RD</sub>      | T <sub>J</sub> = 130 °C, V <sub>RD</sub> = V <sub>RRM</sub> |           |      |       | 12       | mA               |
| R <sub>th(j-c)</sub> |                                                             | per diode |      |       |          | K/W              |
|                      |                                                             |           |      |       |          | K/W              |
| R <sub>th(j-c)</sub> | sin. 180                                                    | per diode |      |       | 0.18     | K/W              |
|                      |                                                             |           |      |       |          | K/W              |
| Module               |                                                             |           |      |       |          |                  |
| R <sub>th(c-s)</sub> | per chip                                                    |           |      |       |          | K/W              |
|                      | per module                                                  |           |      | 0.075 |          | K/W              |
| M <sub>s</sub>       | to heat sink (M5)                                           |           | 3    |       | 5        | Nm               |
| M <sub>t</sub>       | to terminals (M6)                                           |           | 2.5  |       | 5        | Nm               |
| a                    |                                                             |           |      |       | 5 * 9,81 | m/s <sup>2</sup> |
| w                    |                                                             |           |      | 145   |          | g                |



KD

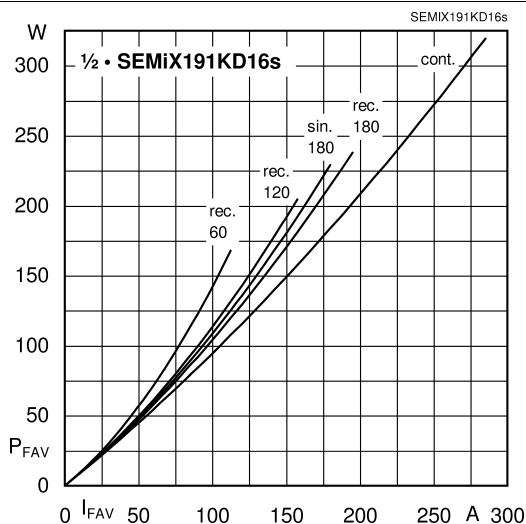


Fig. 1L: Power dissipation per thyristor/diode vs. on-state current

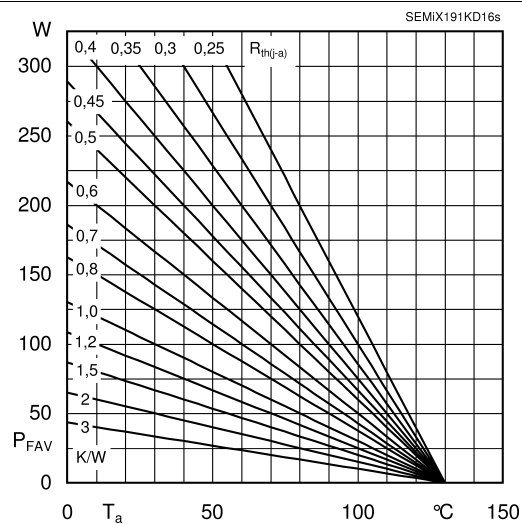


Fig. 1R: Power dissipation per thyristor/diode vs. ambient temperature

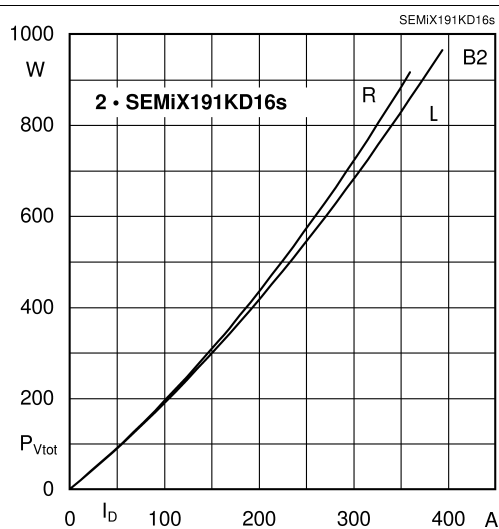


Fig. 3L: Power dissipation of two modules vs. direct current

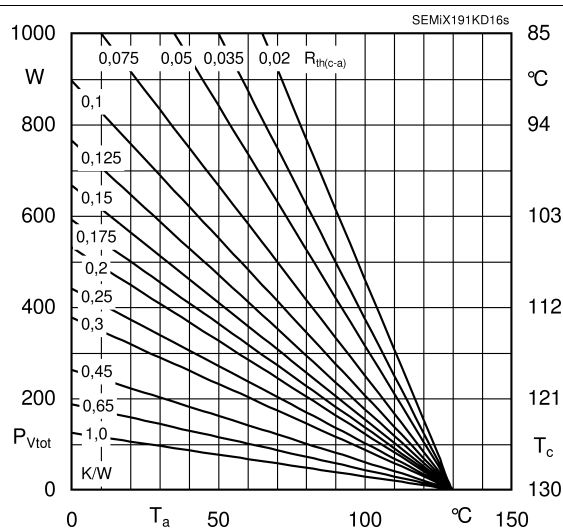


Fig. 3R: Power dissipation of two modules vs. case temperature

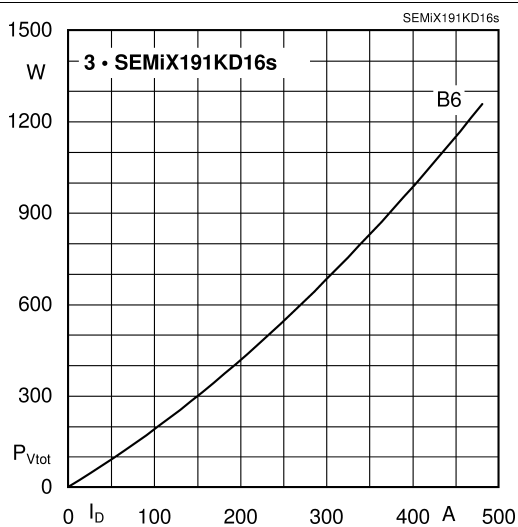


Fig. 4L: Power dissipation of three modules vs. direct current

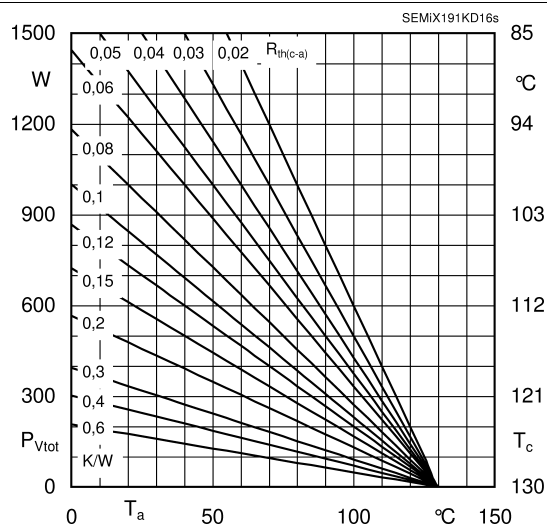


Fig. 4R: Power dissipation of three modules vs. case temperature

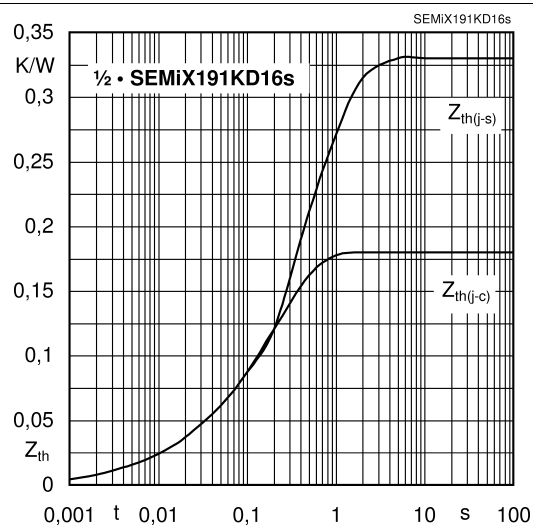


Fig. 6: Transient thermal impedance vs. time

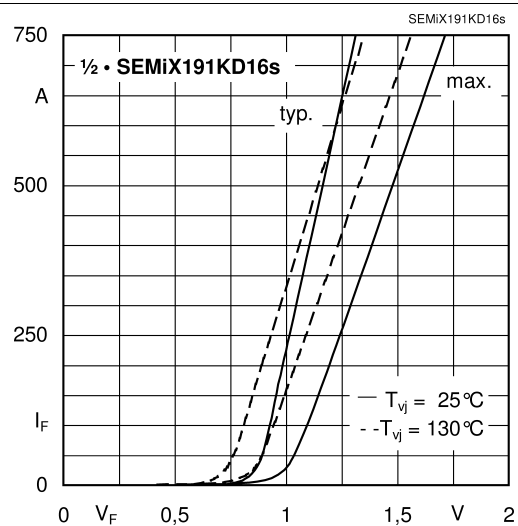


Fig. 7: On-state characteristics

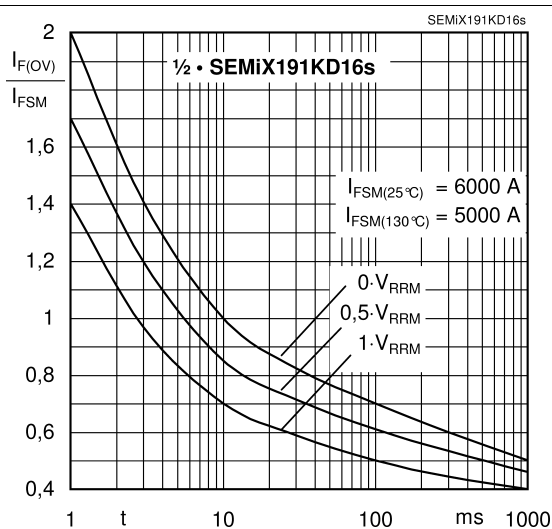
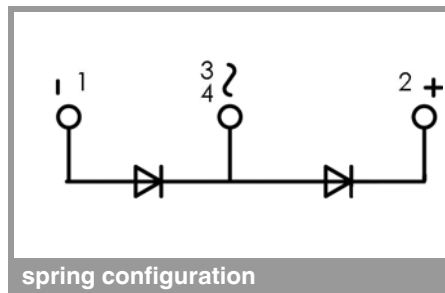
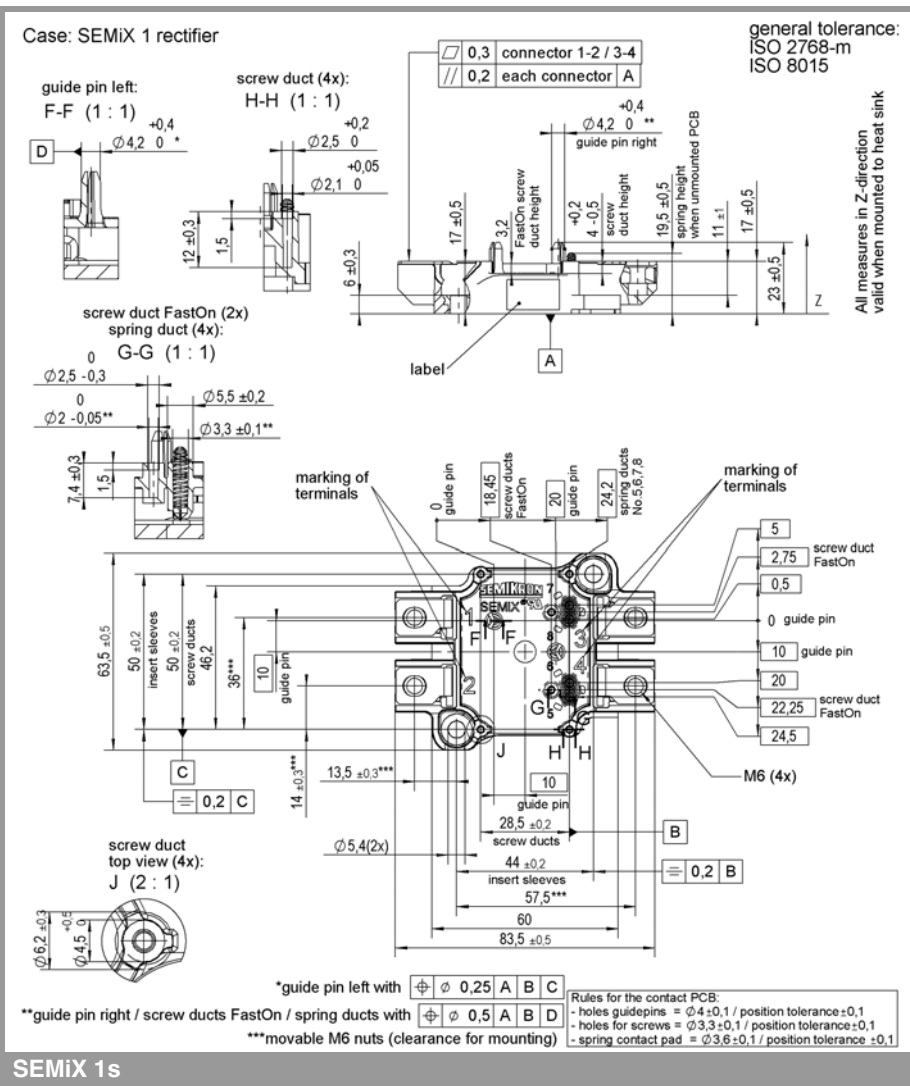


Fig. 8: Surge overload current vs. time



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 staff.