

| Absolute Maximum and Minimum Ratings <sup>1)</sup> |                                |       |                        |      |
|----------------------------------------------------|--------------------------------|-------|------------------------|------|
| Symbol                                             | Rating                         | Value |                        | Unit |
|                                                    |                                | min.  | max.                   |      |
| V <sub>sup</sub>                                   | Driver supply voltage          | –     | 18                     | V    |
| V <sub>i</sub>                                     | Input signal voltage           | – 0,3 | V <sub>sup</sub> + 0,3 | V    |
| V <sub>isol</sub>                                  | Input–Output                   | –     | 2500                   | V–   |
| T <sub>case</sub>                                  | Case temperature <sup>2)</sup> | – 40  | + 85                   | °C   |
| T <sub>stg</sub>                                   | Storage temperature            | – 40  | + 85                   | °C   |

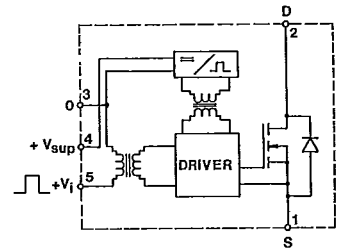
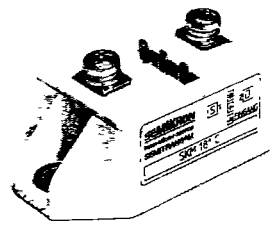
| Operating Conditions |                              |                         |                         |      |
|----------------------|------------------------------|-------------------------|-------------------------|------|
| Symbol               | Rating                       | Value                   |                         | Unit |
|                      |                              | min.                    | max.                    |      |
| V <sub>sup</sub>     | Driver supply voltage        | 8                       | 15                      | V    |
| V <sub>iL</sub>      | Logic 0 input voltage (LOW)  | –                       | 0,14 · V <sub>sup</sub> | V    |
| V <sub>iH</sub>      | Logic 1 input voltage (HIGH) | 0,86 · V <sub>sup</sub> | –                       | V    |
| f                    | Operating frequency          | 0                       | 50 <sup>4)</sup>        | kHz  |
| t <sub>p</sub>       | Input pulse duration         | 0,5 <sup>5)</sup>       | –                       | µs   |
| t <sub>p(off)</sub>  | Input pulse off-time         | 0,5 <sup>5)</sup>       | –                       | µs   |

| Electrical Characteristics @ T <sub>case</sub> = 25 °C |                                                                    |       |      |      |
|--------------------------------------------------------|--------------------------------------------------------------------|-------|------|------|
| Symbol                                                 | Rating                                                             | Value |      | Unit |
|                                                        |                                                                    | min.  | max. |      |
| I <sub>sup</sub>                                       | Driver supply current quiescent; V <sub>sup</sub> = 15 V operating | –     | 19   | mA   |
| I <sub>i</sub>                                         | Input signal current                                               | –     | 1    | µA   |

| Switching times (see Fig. 62) |                      |                      |                     |                        |                         |                         |                      |
|-------------------------------|----------------------|----------------------|---------------------|------------------------|-------------------------|-------------------------|----------------------|
| Module                        | Rating               | Test conditions      |                     |                        | Typical switching times |                         |                      |
|                               | V <sub>DS</sub><br>V | V <sub>DD</sub><br>V | I <sub>D</sub><br>A | t <sub>don</sub><br>ns | t <sub>r</sub><br>ns    | t <sub>doff</sub><br>µs | t <sub>r</sub><br>ns |
| SKM 111 ARC                   | 100                  | 50                   | 130                 | 280                    | 500                     | 1,5                     | 600                  |
| SKM 121 ARC                   | 200                  | 100                  | 80                  | 280                    | 220                     | 1,8                     | 450                  |
| SKM 141 C                     | 400                  | 200                  | 60                  | 250                    | 120                     | 2                       | 450                  |
| SKM 151 C                     | 500                  | 250                  | 36                  | 250                    | 120                     | 2                       | 450                  |
| SKM 151 FC                    | 500                  | 250                  | 36                  | 350                    | 160                     | 2                       | 400                  |
| SKM 181 C                     | 800                  | 400                  | 23                  | 350                    | 130                     | 2,3                     | 400                  |
| SKM 181 FC                    | 800                  | 400                  | 23                  | 330                    | 120                     | 2,5                     | 430                  |
| SKM 191 C                     | 1000                 | 500                  | 17                  | 350                    | 150                     | 2,5                     | 450                  |
| SKM 191 FC                    | 1000                 | 500                  | 18                  | 350                    | 150                     | 2,5                     | 450                  |

**SEMITRANS® M**  
**Single Switch Power MOSFET Modules with Built-in Driver Circuit**  
**SKM 111 ARC<sup>3)</sup> SKM 181 C**  
**SKM 121 ARC<sup>3)</sup> SKM 181 FC**  
**SKM 141 C SKM 191 C**  
**SKM 151 C SKM 191 FC**  
**SKM 151 FC**

T-39-15



**Features**

- Internal isolation between input and output stages
- The power supply for the driver must not be isolated
- CMOS compatible input

**Typical Applications**

- DC choppers
- AC motor drives
- Power supplies for LASERs
- Uninterruptible power supplies
- Ultrasonic generator
- Plasma cutting
- Inductive heating
- Electronic welding

**This is an electrostatic discharge sensitive device (ESDS). Please observe the international standard IEC 747-1, Chapter IX.**

1) For the ratings and characteristics of the power MOSFET output stages see the corresponding tables and diagrams  
 2) The case temperature of the module is the ambient temperature of the built-in driver  
 3) These types contain gate resistors to reduce di/dt  
 4) For higher operating frequencies please consult your SEMIKRON service office  
 5) Important! See also the technical explanations in Part A

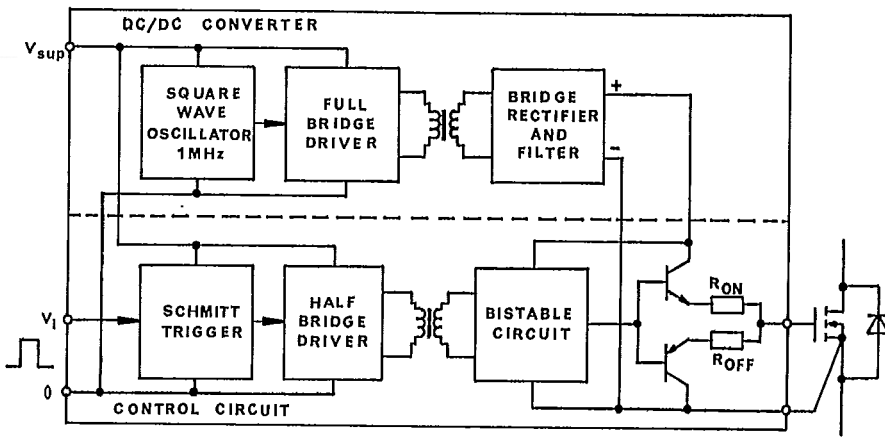


Fig. 61 Block diagram of the driver circuit

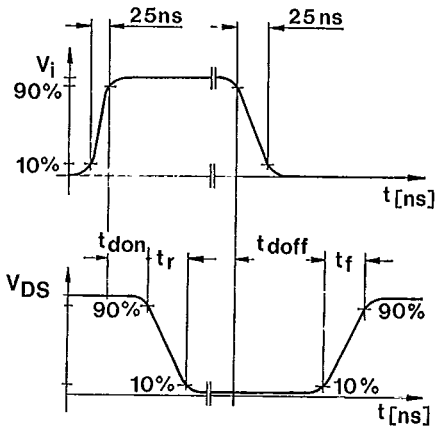


Fig. 62 Definitions of the switching times

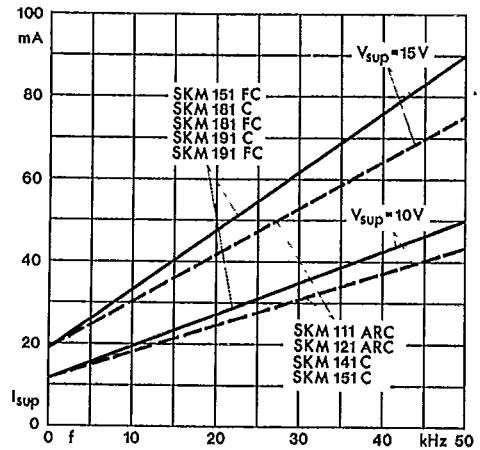
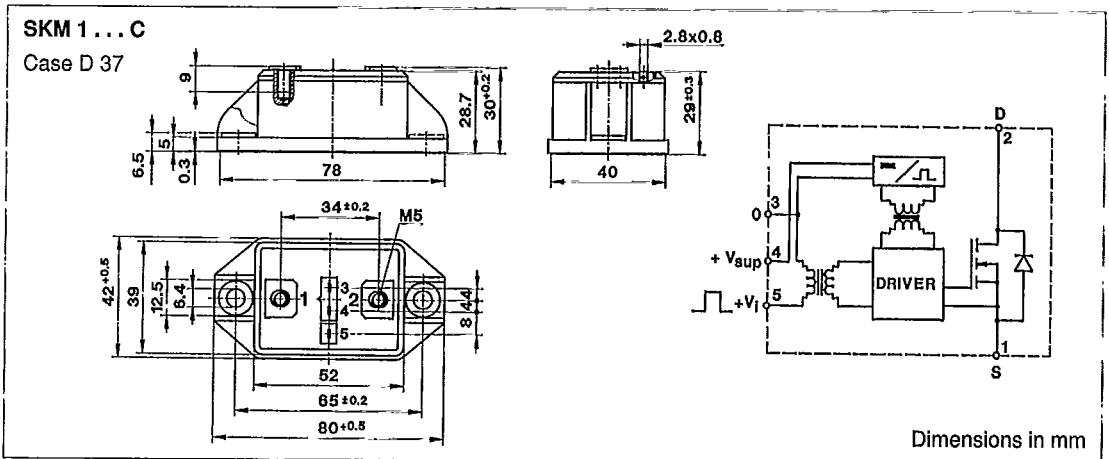


Fig. 63 Supply current vs. operating frequency



Dimensions in mm