

### SKM 111AR

#### Features

- N Channel, enhancement mode
- Avalanche characteristic
- Short connections and built-in gate resistors to suppress internal oscillations even in critical applications
- Isolated copper baseplate
- All electrical connections on top for easy busbaring Large clearances (10mm) and creepage distances (20mm)

#### Typical Applications

- Switched mode power supplies
- DC servo and robot drives
- DC choppers
- UPS equipment
- Not suitable for linear amplification



#### Absolute Maximum Ratings (Tc=25°C, unless otherwise specified)

| Symbol                            | Conditions  | Values          | Units |
|-----------------------------------|-------------|-----------------|-------|
| V <sub>DS</sub>                   | Ts=25(80)°C | 100             | V     |
| I <sub>D</sub>                    |             | 100(150)        | A     |
| I <sub>DM</sub>                   |             | 600             | A     |
| V <sub>GS</sub>                   |             | ±2              | V     |
| Tvj, (Tstg)                       |             | -40...+150(125) | °C    |
| Visol                             | AC, 1min.   | 2500            | V     |
| <b>Inverse diode</b>              |             |                 |       |
| I <sub>F</sub> =-I <sub>S</sub>   |             | 200             | A     |
| I <sub>FM</sub> =-I <sub>SM</sub> |             | 600             | A     |

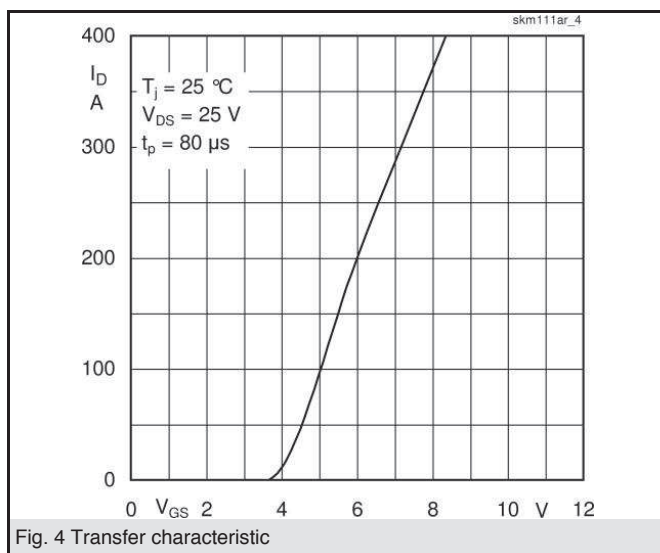
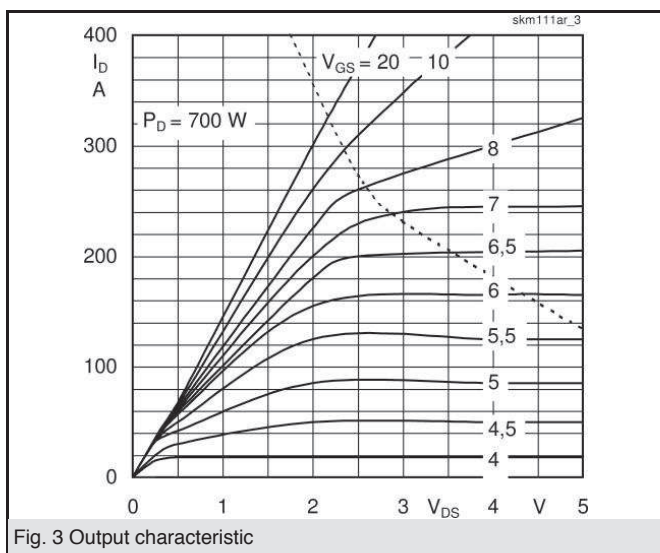
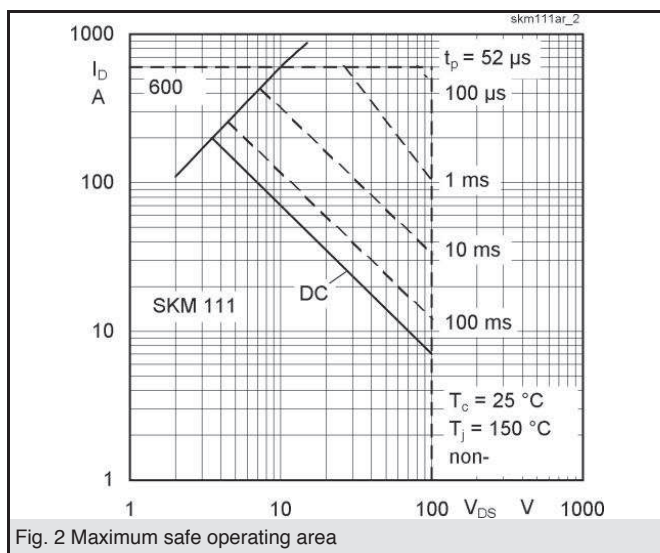
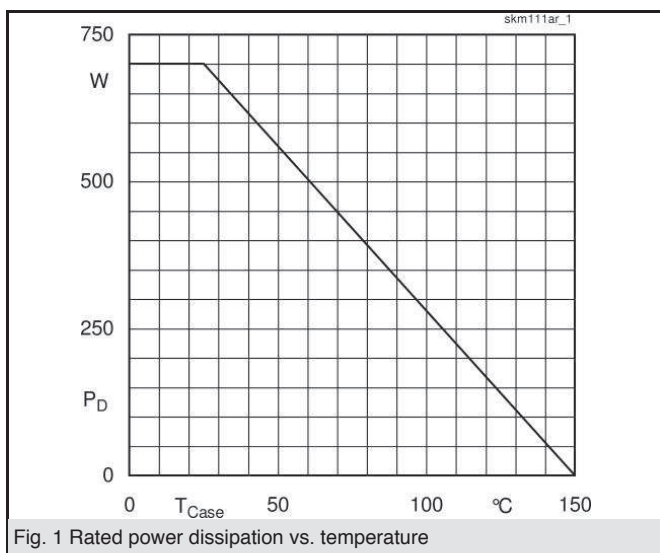
#### Characteristics (Tc=25°C, unless otherwise specified)

| Symbol               | Conditions                                              | min. | typ.    | max.      | Units |
|----------------------|---------------------------------------------------------|------|---------|-----------|-------|
| V <sub>(BR)DSS</sub> | V <sub>GS</sub> =0V, I <sub>D</sub> =0.25mA             | 100  |         |           | V     |
| V <sub>GS(th)</sub>  | V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =1mA  | 2.1  | 3       | 4         | V     |
| I <sub>DSS</sub>     | V <sub>GS</sub> =0V V <sub>DS</sub> =100V, Tj=25(125)°C |      | 50(300) | 250(1000) | μA    |
| I <sub>GSS</sub>     | V <sub>GS</sub> =20V V <sub>DS</sub> =0V                |      | 10      | 100       | nA    |
| R <sub>DS(on)</sub>  | V <sub>GS</sub> =10V I <sub>D</sub> =130A               |      | 7       | 8.5       | mΩ    |
| g <sub>fs</sub>      | V <sub>DS</sub> =25V I <sub>D</sub> =130A               | 60   | 75      |           | S     |
| C <sub>CHC</sub>     | V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1 MHz      |      |         | 160       | pF    |
| C <sub>iss</sub>     |                                                         |      | 10      | 13        | nF    |
| C <sub>oss</sub>     |                                                         |      | 5       | 7.5       | nF    |
| C <sub>rss</sub>     |                                                         |      | 1.8     | 2.7       | nF    |
| L <sub>DS</sub>      |                                                         |      |         | 20        | nH    |
| t <sub>d(on)</sub>   | V <sub>DD</sub> =50V I <sub>D</sub> =130A               |      |         | 60        | ns    |
| t <sub>r</sub>       | V <sub>GS</sub> =10V R <sub>G</sub> =3.3Ω               |      |         | 220       | ns    |
| t <sub>d(off)</sub>  |                                                         |      |         | 270       | ns    |
| t <sub>f</sub>       |                                                         |      |         | 200       | ns    |

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#### Characteristics (Tc=25°C, unless otherwise specified)

| Symbol                         | Conditions                                | min. | typ. | max. | Units |
|--------------------------------|-------------------------------------------|------|------|------|-------|
| <b>Inverse diode</b>           |                                           |      |      |      |       |
| V <sub>SD</sub>                | I <sub>F</sub> =400A; V <sub>GS</sub> =0V |      | 1.25 | 1.6  | V     |
| t <sub>rr</sub>                | T <sub>j</sub> =25(150)°C                 |      | 400  |      | ns    |
| Q <sub>rr</sub>                | T <sub>j</sub> =25°C                      |      | 3.5  |      | μC    |
| I <sub>rr</sub>                | T <sub>j</sub> =150°C                     |      |      |      | A     |
| <b>Thermal characteristics</b> |                                           |      |      |      |       |
| R <sub>th(j-c)</sub>           | per MOSFET                                |      |      | 0.18 | K/W   |
| R <sub>th(c-s)</sub>           | Ms' surface 10μm,per module               |      |      | 0.05 | K/W   |
| <b>Mechanical data</b>         |                                           |      |      |      |       |
| M <sub>s</sub>                 | to heatsink (M6)                          | 4    |      | 5    | Nm    |
| M <sub>t</sub>                 | for terminals (M5)                        | 2.5  |      | 3.5  | Nm    |
| W                              |                                           |      |      | 130  | g     |



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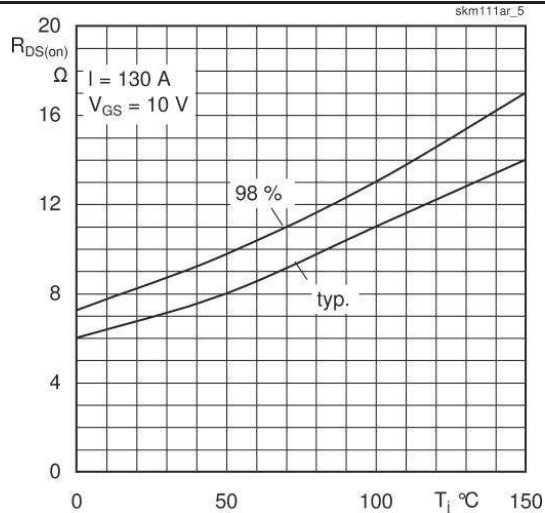


Fig. 5 On-resistance vs. temperature

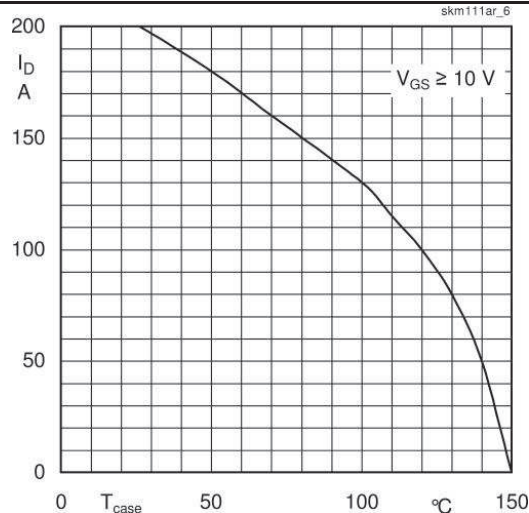


Fig. 6 Rated current vs. temperature

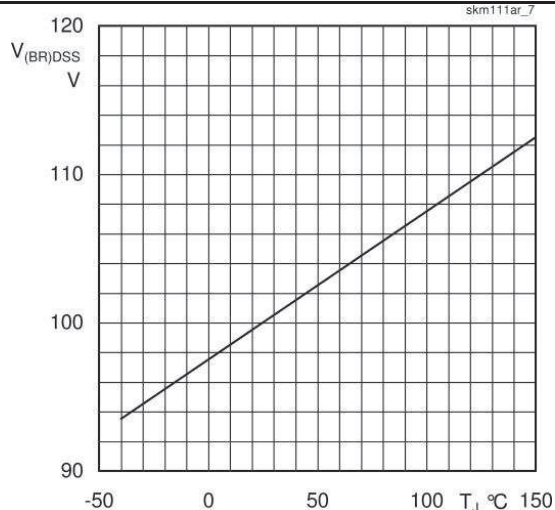


Fig. 7 Brakdown voltage vs. temperature

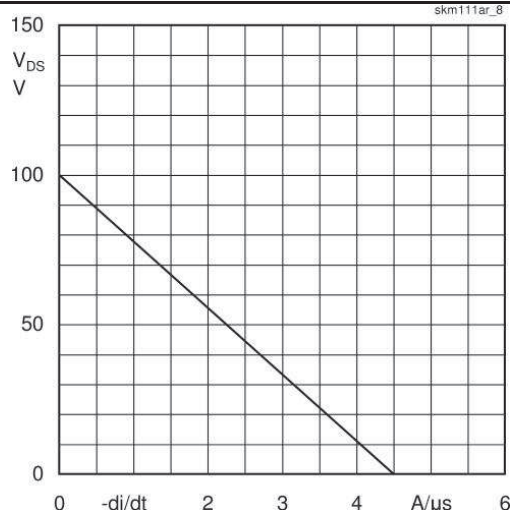


Fig. 8 Drain-source voltage derating

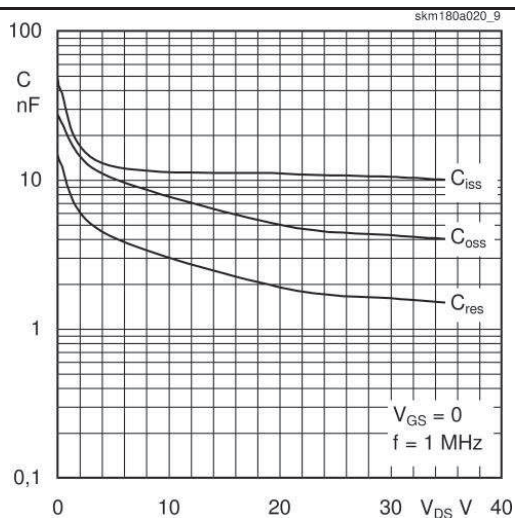


Fig. 9 Capacitances vs. drain-source voltage

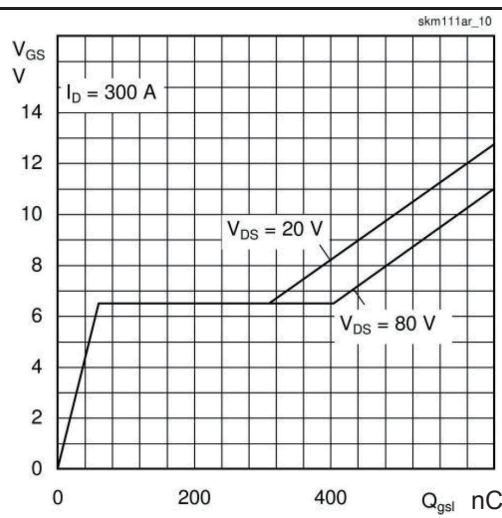
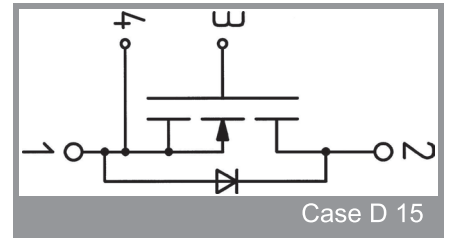
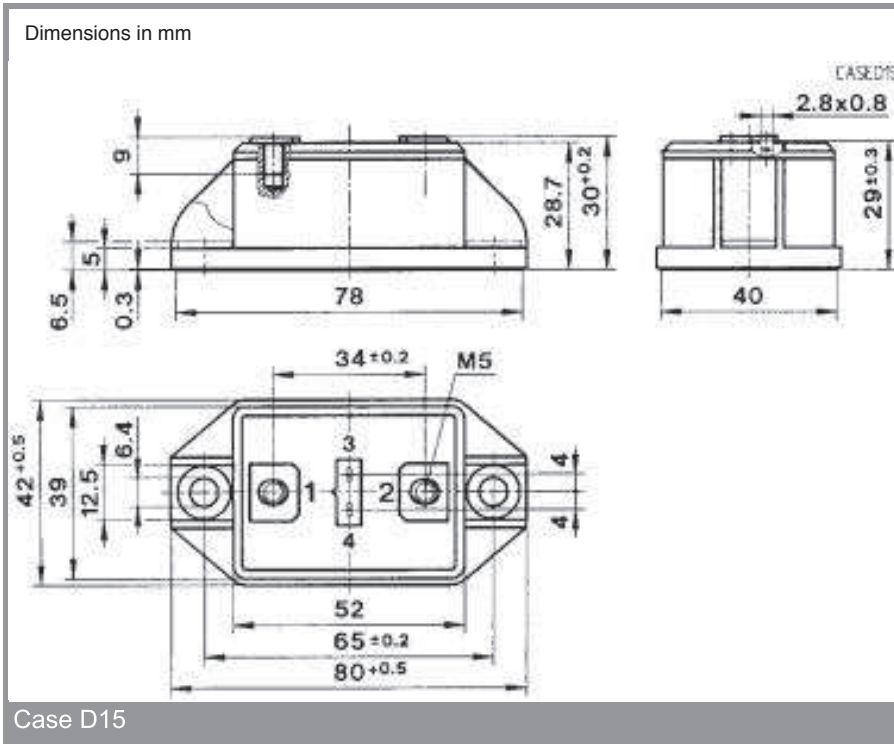
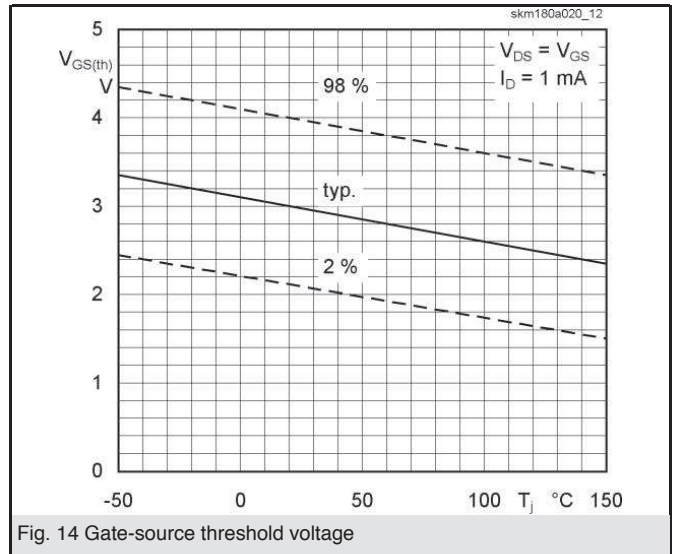
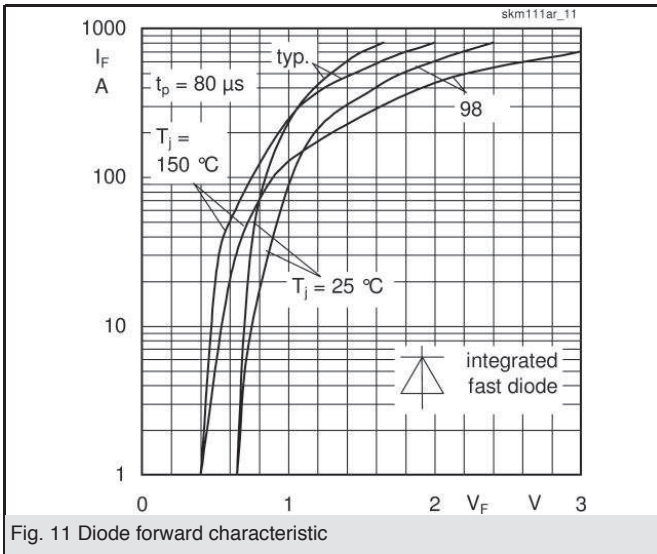


Fig. 10 Gate charge characteristic

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This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, chapter IX.