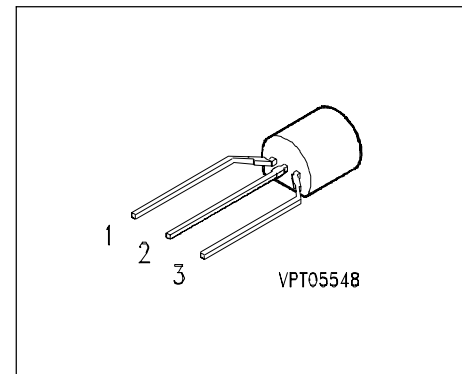


## BSS 101

### SIPMOS® Small-Signal Transistor

- N channel
- Enhancement mode
- Logic Level
- $V_{GS(th)} = 0.8...2.0V$



|       |       |       |
|-------|-------|-------|
| Pin 1 | Pin 2 | Pin 3 |
| S     | G     | D     |

| Type    | $V_{DS}$ | $I_D$  | $R_{DS(on)}$ | Package | Marking |
|---------|----------|--------|--------------|---------|---------|
| BSS 101 | 240 V    | 0.13 A | 16 $\Omega$  | TO-92   | SS 101  |

| Type    | Ordering Code | Tape and Reel Information |
|---------|---------------|---------------------------|
| BSS 101 | Q62702-S493   | E6288                     |
| BSS 101 | Q62702-S636   | E6325                     |

### Maximum Ratings

| Parameter                                | Symbol      | Values   | Unit |
|--|-------------|----------|------|
| Drain source voltage                     | $V_{DS}$    | 240      | V    |
| Drain-gate voltage                       | $V_{DGR}$   | 240      |      |
| $R_{GS} = 20 \text{ k}\Omega$            |             |          |      |
| Gate source voltage                      | $V_{GS}$    | $\pm 20$ |      |
| ESD Sensitivity (HBM) as per MIL-STD 883 |             | Class 1  |      |
| Continuous drain current                 | $I_D$       | 0.13     | A    |
| $T_A = 33 \text{ }^\circ\text{C}$        |             |          |      |
| DC drain current, pulsed                 | $I_{Dpuls}$ | 0.52     |      |
| $T_A = 25 \text{ }^\circ\text{C}$        |             |          |      |
| Power dissipation                        | $P_{tot}$   | 0.63     | W    |
| $T_A = 25 \text{ }^\circ\text{C}$        |             |          |      |

**Maximum Ratings**

| Parameter   | Symbol     | Values        | Unit |
|---|------------|---------------|------|
| Chip or operating temperature                         | $T_j$      | -55 ... + 150 | °C   |
| Storage temperature                                   | $T_{stg}$  | -55 ... + 150 |      |
| Thermal resistance, chip to ambient air <sup>1)</sup> | $R_{thJA}$ | ≤ 200         | K/W  |
| DIN humidity category, DIN 40 040                     |            | E             |      |
| IEC climatic category, DIN IEC 68-1                   |            | 55 / 150 / 56 |      |

**Electrical Characteristics, at  $T_j = 25^\circ\text{C}$ , unless otherwise specified**

| Parameter | Symbol | Values |      |      | Unit |
|-----------|--------|--------|------|------|------|
|           |        | min.   | typ. | max. |      |

**Static Characteristics**

|  |               |     |               |               |                         |
|--|---------------|-----|---------------|---------------|-------------------------|
| Drain- source breakdown voltage<br>$V_{GS} = 0\text{ V}, I_D = 0.25\text{ mA}, T_j = 25^\circ\text{C}$   | $V_{(BR)DSS}$ | 240 | -             | -             | V                       |
| Gate threshold voltage<br>$V_{GS} = V_{DS}, I_D = 1\text{ mA}$   | $V_{GS(th)}$  | 0.8 | 1.4           | 2             |                         |
| Zero gate voltage drain current<br>$V_{DS} = 240\text{ V}, V_{GS} = 0\text{ V}, T_j = 25^\circ\text{C}$<br>$V_{DS} = 240\text{ V}, V_{GS} = 0\text{ V}, T_j = 125^\circ\text{C}$<br>$V_{DS} = 130\text{ V}, V_{GS} = 0\text{ V}, T_j = 25^\circ\text{C}$ | $I_{DSS}$     | -   | 0.1<br>2<br>- | 1<br>60<br>30 | $\mu\text{A}$<br><br>nA |
| Gate-source leakage current<br>$V_{GS} = 20\text{ V}, V_{DS} = 0\text{ V}$   | $I_{GSS}$     | -   | 1             | 10            | nA                      |
| Drain-Source on-state resistance<br>$V_{GS} = 10\text{ V}, I_D = 0.13\text{ A}$<br>$V_{GS} = 4.5\text{ V}, I_D = 0.13\text{ A}$  | $R_{DS(on)}$  | -   | 12<br>15      | 16<br>26      | $\Omega$                |

**Electrical Characteristics, at  $T_j = 25^\circ\text{C}$ , unless otherwise specified**

| Parameter | Symbol | Values |      |      | Unit |
|-----------|--------|--------|------|------|------|
|           |        | min.   | typ. | max. |      |

**Dynamic Characteristics**

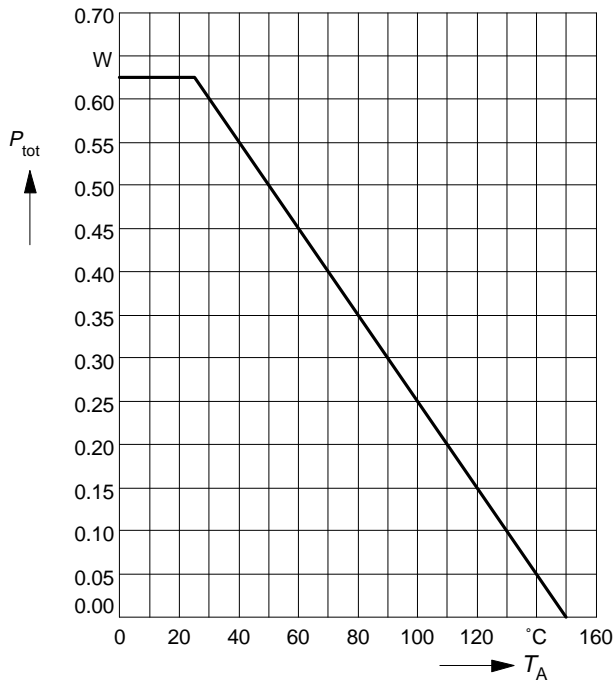
|  |              |      |      |    |    |
|--|--------------|------|------|----|----|
| Transconductance<br>$V_{DS} \geq 2 * I_D * R_{DS(on)max}, I_D = 0.13 \text{ A}$                                  | $g_{fs}$     | 0.06 | 0.16 | -  | S  |
| Input capacitance<br>$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$                            | $C_{iss}$    | -    | 60   | 80 | pF |
| Output capacitance<br>$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$                           | $C_{oss}$    | -    | 8    | 12 |    |
| Reverse transfer capacitance<br>$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$                 | $C_{rss}$    | -    | 3.5  | 5  |    |
| Turn-on delay time<br>$V_{DD} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.26 \text{ A}$<br>$R_G = 50 \Omega$  | $t_{d(on)}$  | -    | 5    | 8  | ns |
| Rise time<br>$V_{DD} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.26 \text{ A}$<br>$R_G = 50 \Omega$           | $t_r$        | -    | 8    | 12 |    |
| Turn-off delay time<br>$V_{DD} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.26 \text{ A}$<br>$R_G = 50 \Omega$ | $t_{d(off)}$ | -    | 12   | 16 |    |
| Fall time<br>$V_{DD} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.26 \text{ A}$<br>$R_G = 50 \Omega$           | $t_f$        | -    | 15   | 20 |    |

**Electrical Characteristics, at  $T_j = 25^\circ\text{C}$ , unless otherwise specified**

| Parameter   | Symbol   | Values |      |      | Unit |
|---|----------|--------|------|------|------|
|   |          | min.   | typ. | max. |      |
| <b>Reverse Diode</b>  |          |        |      |      |      |
| Inverse diode continuous forward current<br>$T_A = 25^\circ\text{C}$        | $I_S$    | -      | -    | 0.13 | A    |
| Inverse diode direct current, pulsed<br>$T_A = 25^\circ\text{C}$            | $I_{SM}$ | -      | -    | 0.52 |      |
| Inverse diode forward voltage<br>$V_{GS} = 0\text{ V}, I_F = 0.26\text{ A}$ | $V_{SD}$ | -      | 0.85 | 1.2  | V    |

**Power dissipation**

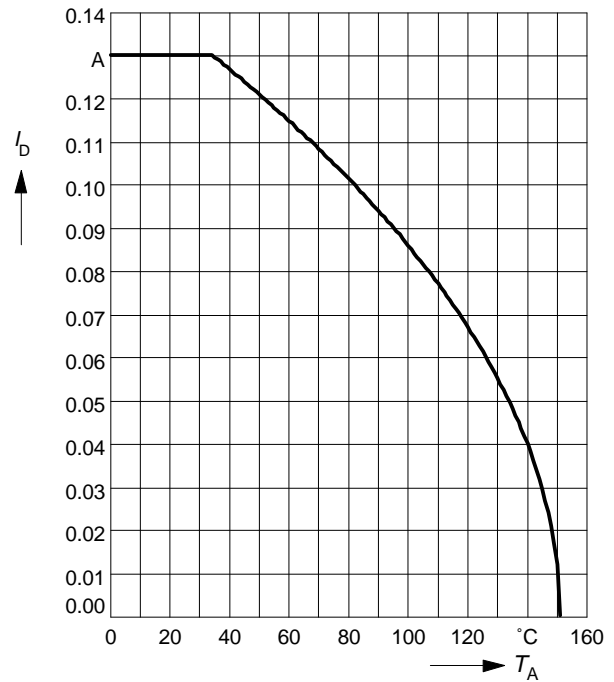
$$P_{tot} = f(T_A)$$



**Drain current**

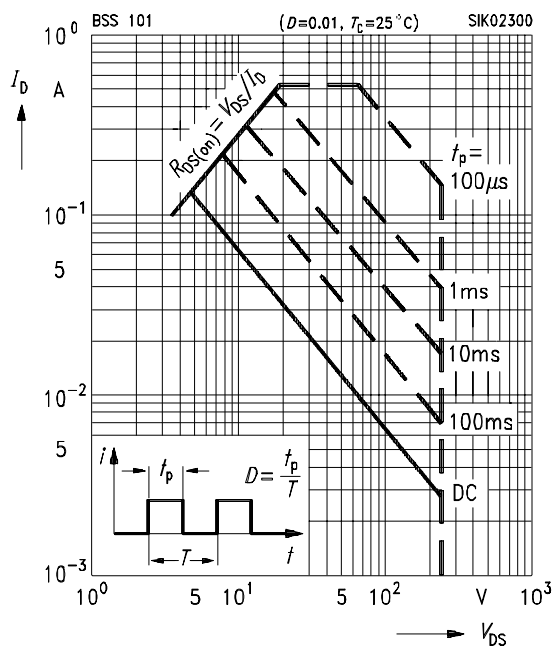
$$I_D = f(T_A)$$

parameter:  $V_{GS} \geq 10$  V



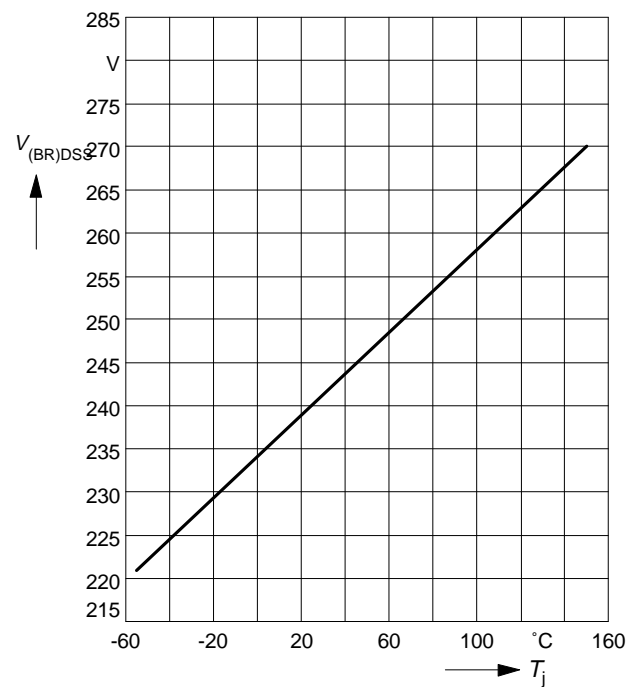
**Safe operating area  $I_D=f(V_{DS})$**

parameter :  $D = 0.01$ ,  $T_C=25^\circ\text{C}$



**Drain-source breakdown voltage**

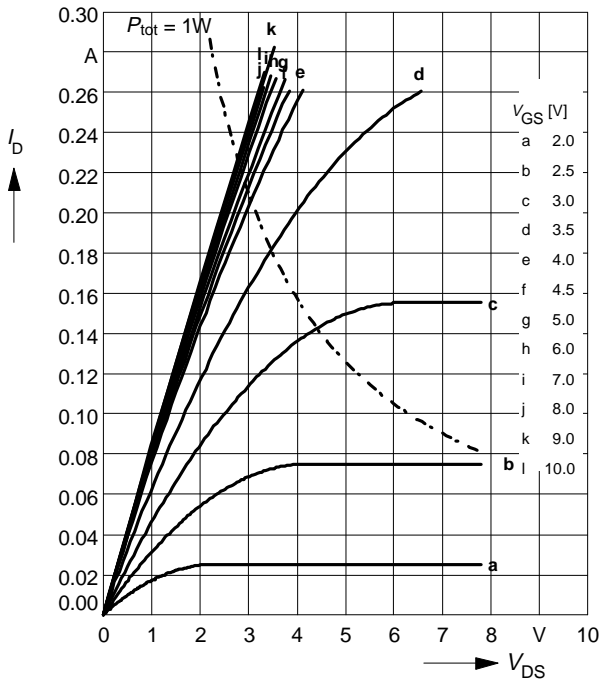
$$V_{(BR)DSS} = f(T_j)$$



**Typ. output characteristics**

$I_D = f(V_{DS})$

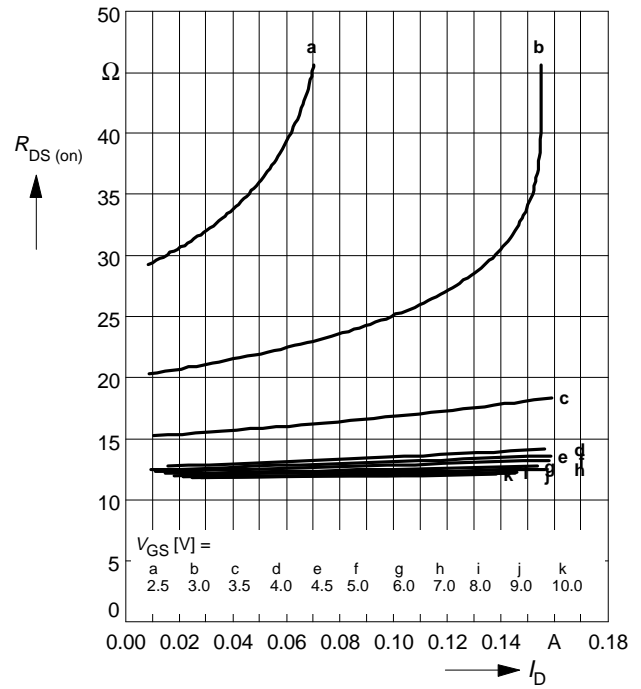
parameter:  $t_p = 80 \mu s$



**Typ. drain-source on-resistance**

$R_{DS(on)} = f(I_D)$

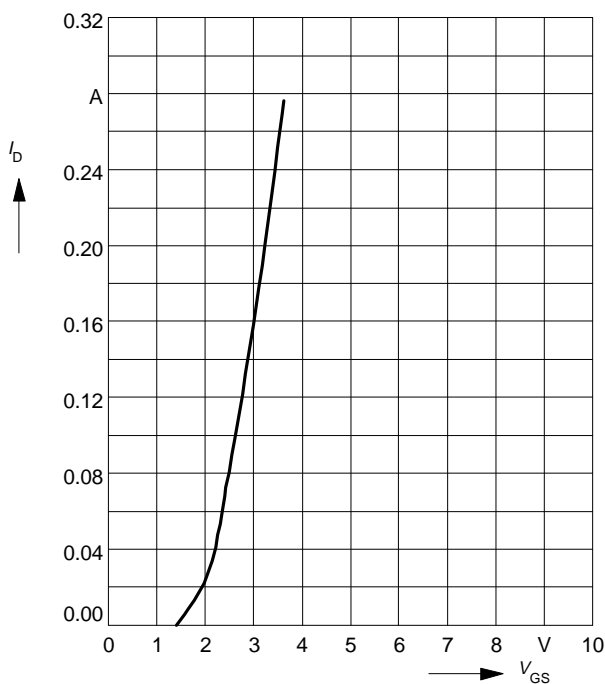
parameter:  $t_p = 80 \mu s, T_j = 25^\circ C$



**Typ. transfer characteristics  $I_D = f(V_{GS})$**

parameter:  $t_p = 80 \mu s$

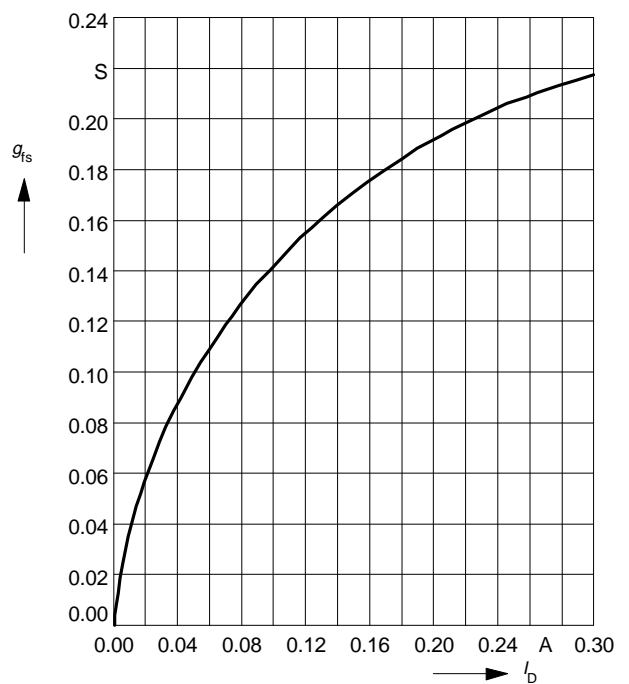
$V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$



**Typ. forward transconductance  $g_{fs} = f(I_D)$**

parameter:  $t_p = 80 \mu s,$

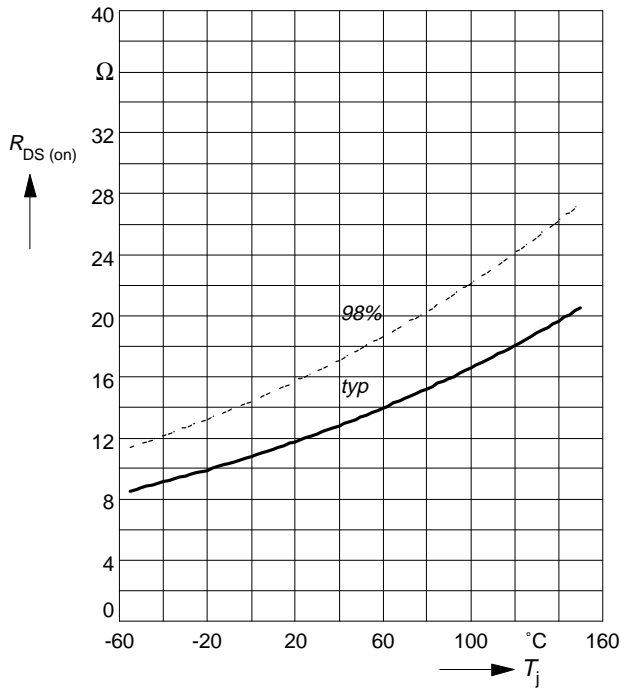
$V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$



**Drain-source on-resistance**

$$R_{DS(on)} = f(T_j)$$

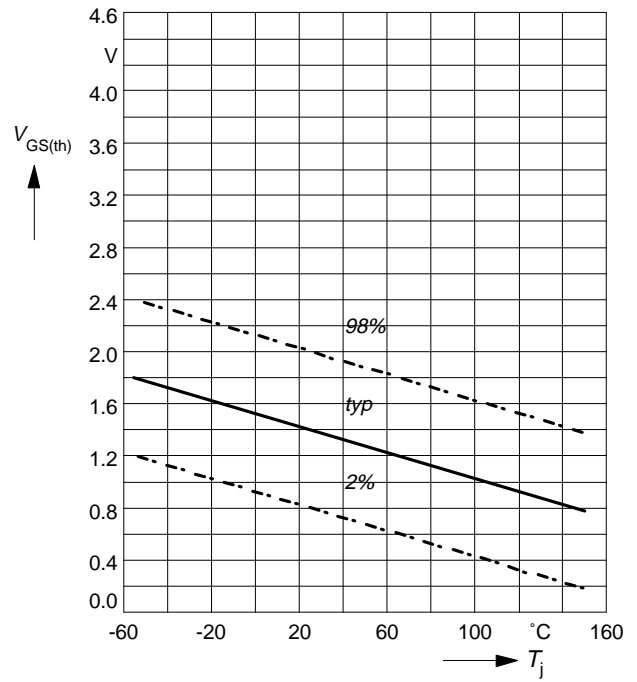
parameter:  $I_D = 0.13\text{ A}$ ,  $V_{GS} = 10\text{ V}$



**Gate threshold voltage**

$$V_{GS(th)} = f(T_j)$$

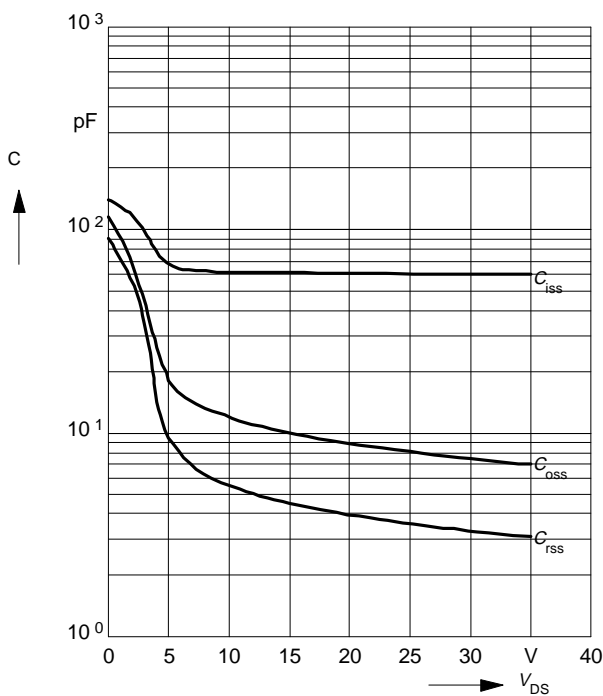
parameter:  $V_{GS} = V_{DS}$ ,  $I_D = 1\text{ mA}$



**Typ. capacitances**

$$C = f(V_{DS})$$

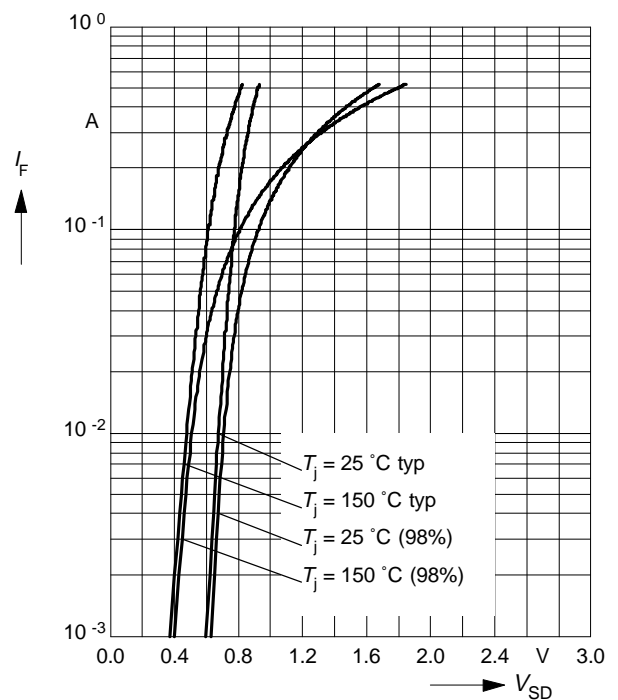
parameter:  $V_{GS} = 0\text{ V}$ ,  $f = 1\text{ MHz}$



**Forward characteristics of reverse diode**

$$I_F = f(V_{SD})$$

parameter:  $T_j, t_p = 80\text{ }\mu\text{s}$



This datasheet has been download from:

[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.