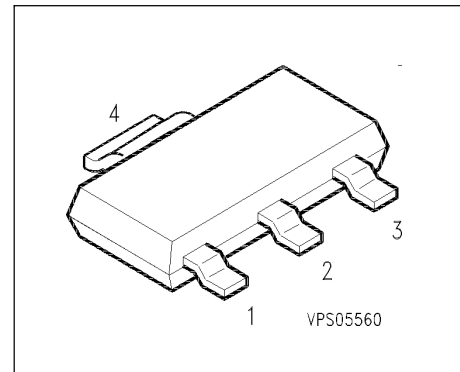


BSP 92

SIPMOS® Small-Signal Transistor

- P channel
- Enhancement mode
- Logic Level
- $V_{GS(th)} = -0.8 \dots -2.0 \text{ V}$



| | | | |
|-------|-------|-------|-------|
| Pin 1 | Pin 2 | Pin 3 | Pin 4 |
| G | D | S | D |

| Type | V_{DS} | I_D | $R_{DS(on)}$ | Package | Marking |
|--------|---------------|--------|---------------------------|---------|---------|
| BSP 92 | -240 V | -0.2 A | 20 Ω | SOT-223 | BSP 92 |
| Type | Ordering Code | | Tape and Reel Information | | |
| BSP 92 | Q62702-S653 | | E6327 | | |

Maximum Ratings

| Parameter | Symbol | Values | Unit |
|-------------------------------------|-------------|----------|------|
| Drain source voltage | V_{DS} | -240 | V |
| Drain-gate voltage | V_{DGR} | -240 | V |
| $R_{GS} = 20 \text{ k}\Omega$ | | | |
| Gate source voltage | V_{GS} | ± 20 | |
| Gate-source peak voltage, aperiodic | V_{gs} | \pm | |
| Continuous drain current | I_D | -0.2 | A |
| $T_A = 35 \text{ }^\circ\text{C}$ | | | |
| DC drain current, pulsed | I_{Dpuls} | -0.8 | |
| $T_A = 25 \text{ }^\circ\text{C}$ | | | |
| Power dissipation | P_{tot} | 1.7 | 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 ¹⁾ | R_{thJA} | ≤ 72 | K/W |
| Thermal resistance, junction-soldering point ¹⁾ | R_{thJS} | ≤ 12 | |
| DIN humidity category, DIN 40 040 | | E | |
| IEC climatic category, DIN IEC 68-1 | | 55 / 150 / 56 | |

1) Transistor on epoxy pcb 40 mm x 40 mm x 1,5 mm with 6 cm² copper area for drain connection

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 $V_{GS} = 0\text{ V}, I_D = -0.25\text{ mA}, T_j = 25^\circ\text{C}$ | $V_{(BR)DSS}$ | -240 | - | - | V |
| Gate threshold voltage $V_{GS}=V_{DS}, I_D = -1\text{ mA}$ | $V_{GS(th)}$ | -0.8 | -1.5 | -2 | |
| Zero gate voltage drain current $V_{DS} = -240\text{ V}, V_{GS} = 0\text{ V}, T_j = 25^\circ\text{C}$ $V_{DS} = -240\text{ V}, V_{GS} = 0\text{ V}, T_j = 125^\circ\text{C}$ $V_{DS} = -60\text{ V}, V_{GS} = 0\text{ V}, T_j = 25^\circ\text{C}$ | I_{DSS} | - | -0.1 -10 - | -1 -100 -0.2 | μA |
| Gate-source leakage current $V_{GS} = -20\text{ V}, V_{DS} = 0\text{ V}$ | I_{GSS} | - | -10 | -100 | |
| Drain-Source on-state resistance $V_{GS} = -10\text{ V}, I_D = -0.2\text{ A}$ | $R_{DS(on)}$ | - | 12 | 20 | |

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

| Parameter | Symbol | Values | | | Unit |
|--|--------------|--------|------|------|------|
| | | min. | typ. | max. | |
| Dynamic Characteristics | | | | | |
| Transconductance $V_{DS} \geq 2 * I_D * R_{DS(on)max}, I_D = -0.2 \text{ A}$ | g_{fs} | 0.06 | 0.13 | - | S |
| Input capacitance $V_{GS} = 0 \text{ V}, V_{DS} = -25 \text{ V}, f = 1 \text{ MHz}$ | C_{iss} | - | 95 | 130 | pF |
| Output capacitance $V_{GS} = 0 \text{ V}, V_{DS} = -25 \text{ V}, f = 1 \text{ MHz}$ | C_{oss} | - | 20 | 30 | |
| Reverse transfer capacitance $V_{GS} = 0 \text{ V}, V_{DS} = -25 \text{ V}, f = 1 \text{ MHz}$ | C_{rss} | - | 10 | 15 | |
| Turn-on delay time $V_{DD} = -30 \text{ V}, V_{GS} = -10 \text{ V}, I_D = -0.25 \text{ A}$ $R_{GS} = 50 \Omega$ | $t_{d(on)}$ | - | 8 | 12 | ns |
| Rise time $V_{DD} = -30 \text{ V}, V_{GS} = -10 \text{ V}, I_D = -0.25 \text{ A}$ $R_{GS} = 50 \Omega$ | t_r | - | 25 | 40 | |
| Turn-off delay time $V_{DD} = -30 \text{ V}, V_{GS} = -10 \text{ V}, I_D = -0.25 \text{ A}$ $R_{GS} = 50 \Omega$ | $t_{d(off)}$ | - | 25 | 33 | |
| Fall time $V_{DD} = -30 \text{ V}, V_{GS} = -10 \text{ V}, I_D = -0.25 \text{ A}$ $R_{GS} = 50 \Omega$ | t_f | - | 42 | 55 | |

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

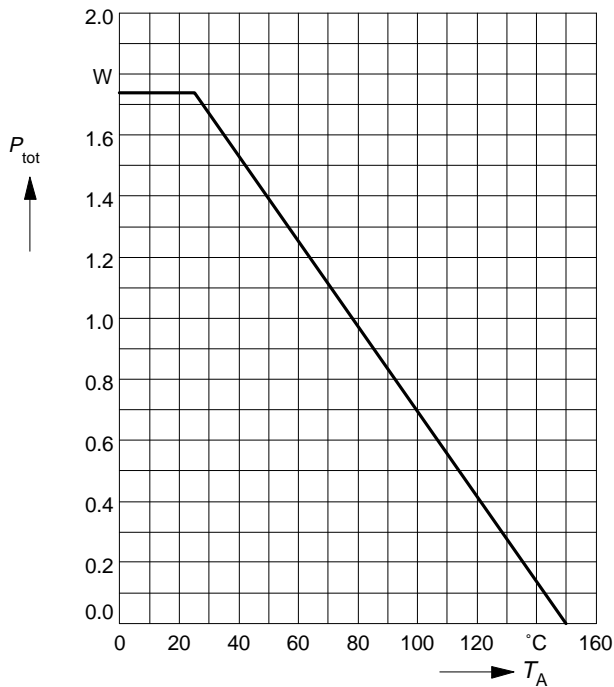
| Parameter | Symbol | Values | | | Unit |
|-----------|--------|--------|------|------|------|
| | | min. | typ. | max. | |

Reverse Diode

| | | | | | |
|---|----------|---|------|------|---|
| Inverse diode continuous forward current $T_A = 25^\circ\text{C}$ | I_S | - | - | -0.2 | A |
| Inverse diode direct current,pulsed $T_A = 25^\circ\text{C}$ | I_{SM} | - | - | -0.8 | |
| Inverse diode forward voltage $V_{GS} = 0\text{ V}, I_F = -0.4\text{ A}, T_j = 25^\circ\text{C}$ | V_{SD} | - | -0.9 | -1.2 | V |

Power dissipation

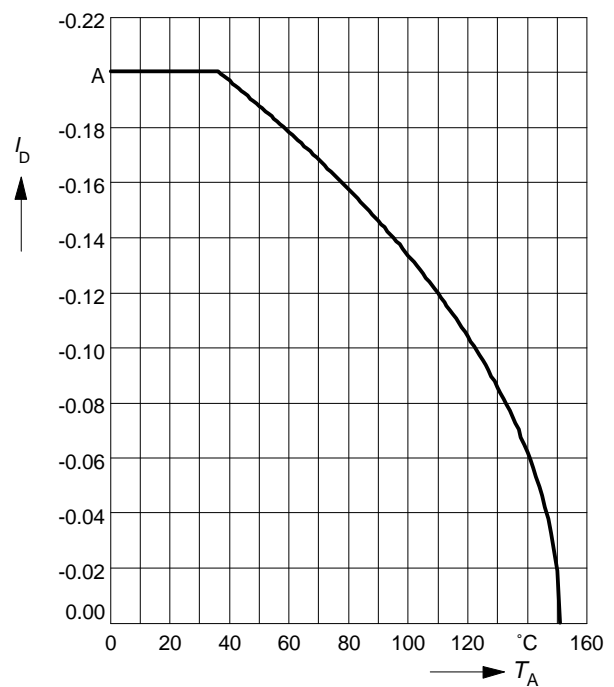
$P_{tot} = f(T_A)$



Drain current

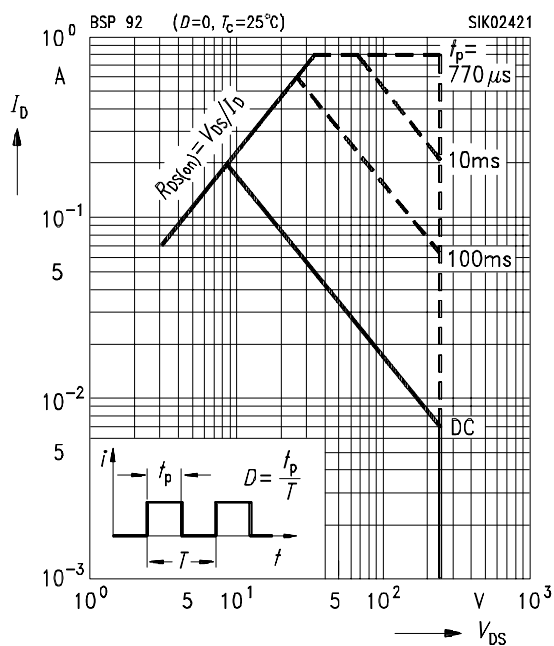
$I_D = f(T_A)$

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



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

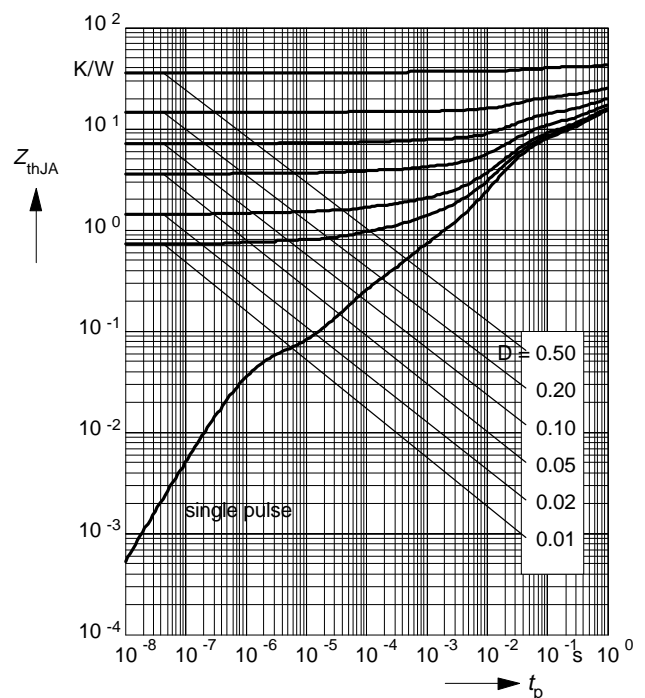
parameter : $D = 0, T_C = 25^\circ\text{C}$



Transient thermal impedance

$Z_{thJA} = f(t_p)$

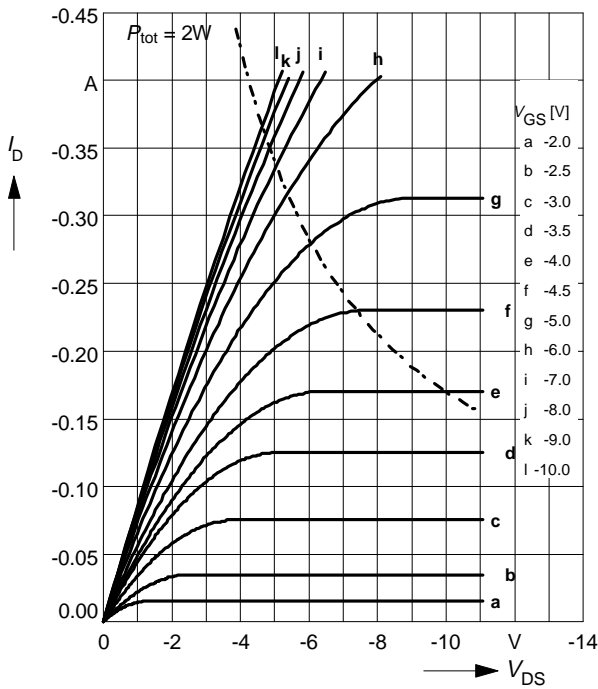
parameter: $D = t_p / T$



Typ. output characteristics

$I_D = f(V_{DS})$

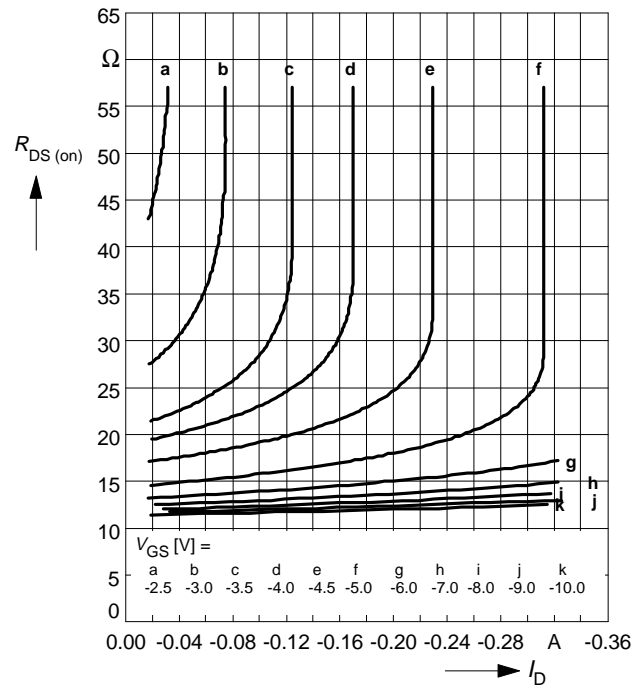
parameter: $t_p = 80 \mu s$



Typ. drain-source on-resistance

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

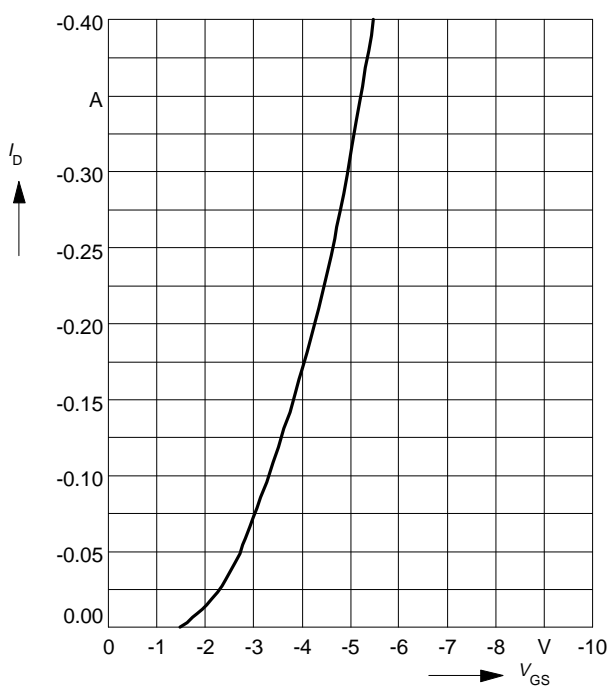
parameter: $t_p = 80 \mu s, T_j = 25 \text{ }^\circ\text{C}$



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

parameter: $t_p = 80 \mu s$

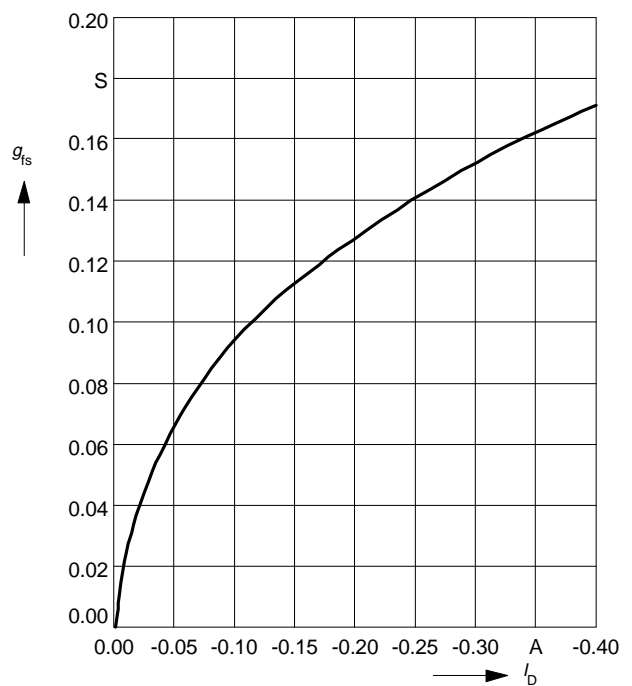
$V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$



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

parameter: $t_p = 80 \mu s,$

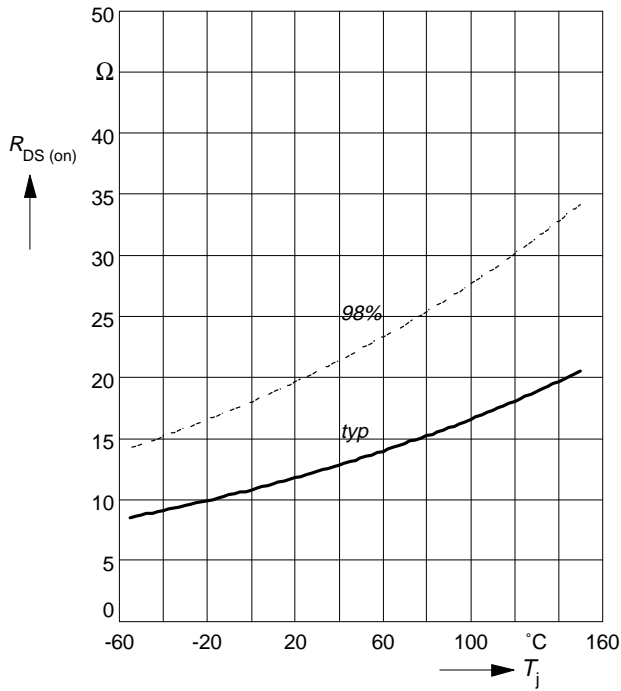
$V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$



Drain-source on-resistance

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

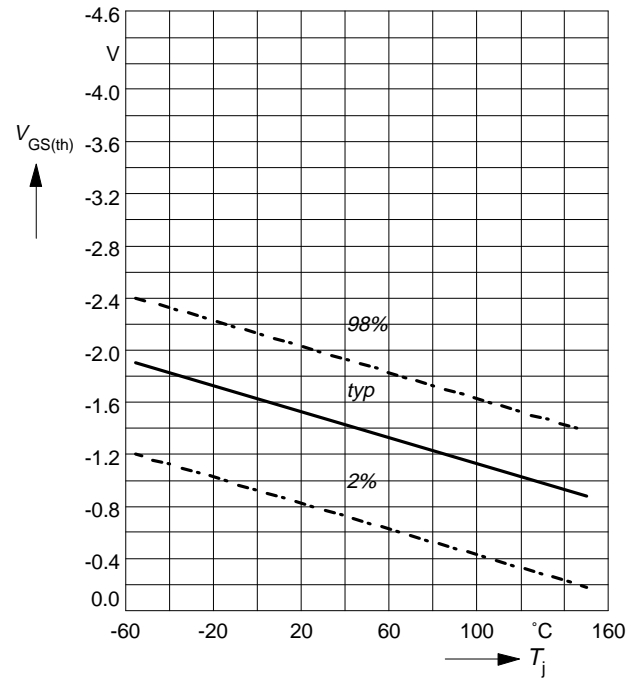
parameter: $I_D = -0.2\text{ A}$, $V_{GS} = -10\text{ V}$



Gate threshold voltage

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

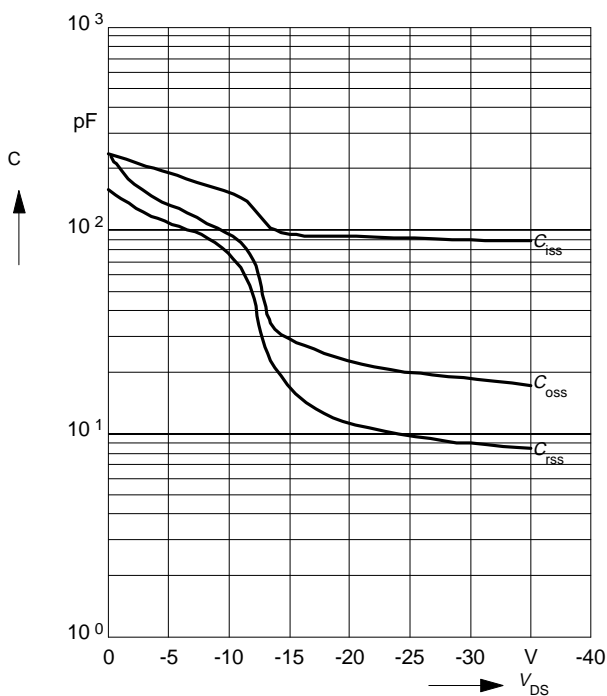
parameter: $V_{GS} = V_{DS}$, $I_D = -1\text{ mA}$



Typ. capacitances

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

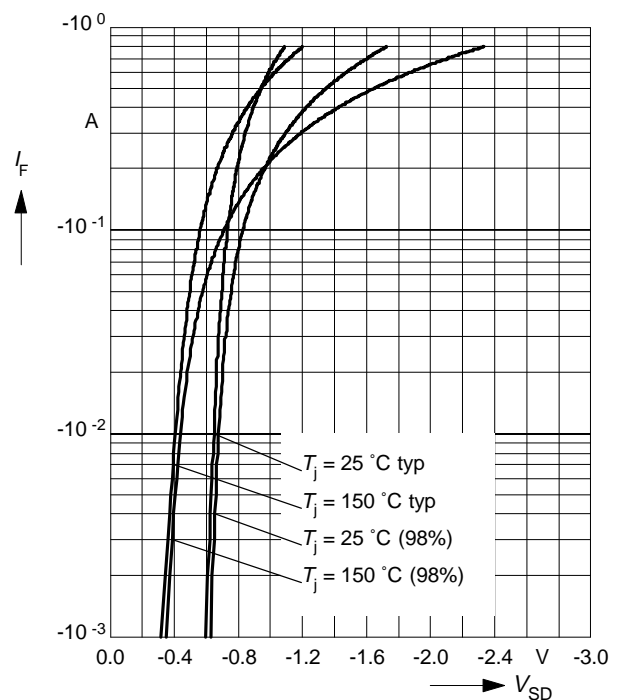
parameter: $V_{GS} = 0\text{ V}$, $f = 1\text{ MHz}$



Forward characteristics of reverse diode

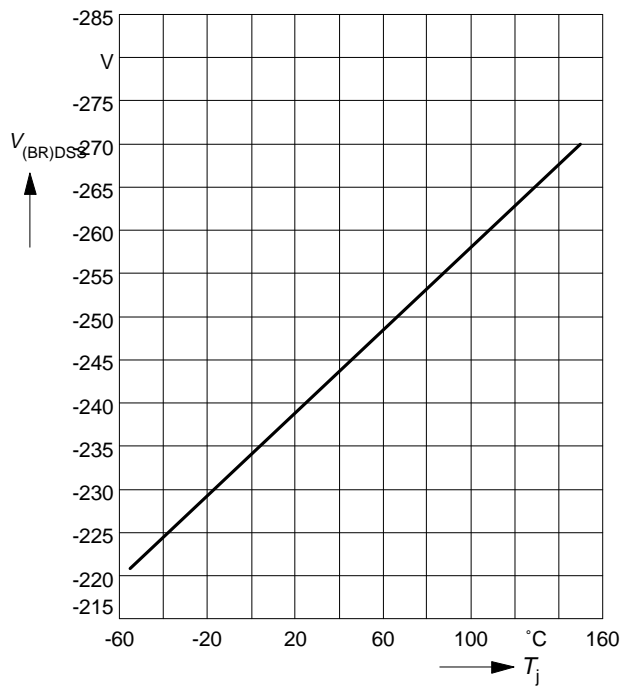
$$I_F = f(V_{SD})$$

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



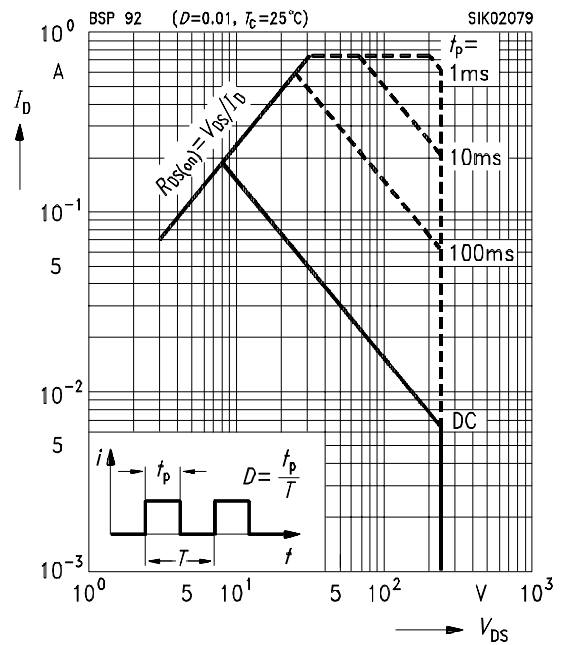
Drain-source breakdown voltage

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



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

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



This datasheet has been download from:

www.datasheetcatalog.com

Datasheets for electronics components.