

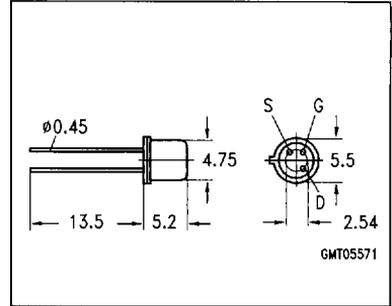
$$V_{DS} = 240 \text{ V}$$

$$I_D = 0.35 \text{ A}$$

$$R_{DS(on)} = 6.0 \Omega$$

- N channel
- Enhancement mode
- Package: TO-18¹⁾

Not for new design!



Type	Ordering code for version in bulk
■ BSS 91	Q 62702-S457

Maximum Ratings

Parameter	Symbol	Values	Unit
Drain-source voltage	V_{DS}	240	V
Drain-gate voltage, $R_{GS} = 20 \text{ k}\Omega$	V_{DGR}	240	
Gate-source voltage	V_{GS}	± 14	
Gate-source peak voltage, aperiodic	V_{gs}	± 20	
Continuous drain current, $T_C = 25 \text{ }^\circ\text{C}$	I_D	0.35	A
Pulsed drain current, $T_C = 25 \text{ }^\circ\text{C}$	$I_{D \text{ puls}}$	1.4	
Max. power dissipation, $T_A = 25 \text{ }^\circ\text{C}$	P_{tot}	1.5	W
Operating and storage temperature range	T_j, T_{stg}	$-55 \dots +150$	$^\circ\text{C}$
Thermal resistance, chip-ambient (without heat sink), chip-case	R_{thJA}	≤ 300	K/W
	R_{thJC}	≤ 83	
DIN humidity category, DIN 40 040	—	E	—
IEC climatic category, DIN IEC 68-1	—	55/150/56	

¹⁾ See chapter Package Outlines.

Electrical Characteristics

at $T_j = 25\text{ °C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

Static Characteristics

Drain-source breakdown voltage $V_{GS} = 0, I_D = 0.25\text{ mA}$	$V_{(BR)DSS}$	240	–	–	V
Gate threshold voltage $V_{GS} = V_{DS}, I_D = 1\text{ mA}$	$V_{GS(th)}$	0.8	1.5	2.0	
Zero gate voltage drain current $V_{DS} = 240\text{ V}, V_{GS} = 0$ $T_j = 25\text{ °C}$ $T_j = 125\text{ °C}$	I_{DSS}	–	0.1	1.0	μA
		–	10	100	
$V_{DS} = 60\text{ V}, V_{GS} = 0$ $T_j = 25\text{ °C}$		–	–	200	nA
Gate-source leakage current $V_{GS} = 20\text{ V}, V_{DS} = 0$	I_{GSS}	–	10	100	nA
Drain-source on-resistance $V_{GS} = 10\text{ V}, I_D = 0.35\text{ A}$ $V_{GS} = 4.5\text{ V}, I_D = 0.35\text{ A}$	$R_{DS(on)}$	–	3.5	6.0	Ω
		–	5.0	10.0	

Dynamic Characteristics

Forward transconductance $V_{DS} \geq 2 \times I_D \times R_{DS(on)max}, I_D = 0.35\text{ A}$	g_{fs}	0.14	0.37	–	S
Input capacitance $V_{GS} = 0, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$	C_{iss}	–	115	155	pF
Output capacitance $V_{GS} = 0, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$	C_{oss}	–	15	25	
Reverse transfer capacitance $V_{GS} = 0, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$	C_{rss}	–	8	12	
Turn-on time t_{on} , ($t_{on} = t_{d(on)} + t_r$) $V_{DD} = 30\text{ V}, V_{GS} = 10\text{ V}, R_{GS} = 50\ \Omega, I_D = 0.28\text{ A}$	$t_{d(on)}$	–	6	9	ns
	t_r	–	10	15	
Turn-off time t_{off} , ($t_{off} = t_{d(off)} + t_f$) $V_{DD} = 30\text{ V}, V_{GS} = 10\text{ V}, R_{GS} = 50\ \Omega, I_D = 0.28\text{ A}$	$t_{d(off)}$	–	33	45	
	t_f	–	22	30	

Electrical Characteristics (cont'd)

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

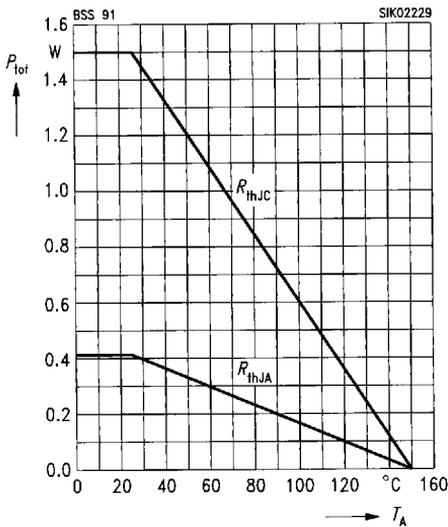
Reverse Diode

Continuous reverse drain current $T_A = 25\text{ }^\circ\text{C}$	I_S	—	—	0.35	A
Pulsed reverse drain current $T_A = 25\text{ }^\circ\text{C}$	I_{SM}	—	—	1.4	
Diode forward on-voltage $I_F = 0.7\text{ A}$, $V_{GS} = 0$	V_{SD}	—	0.9	1.4	V

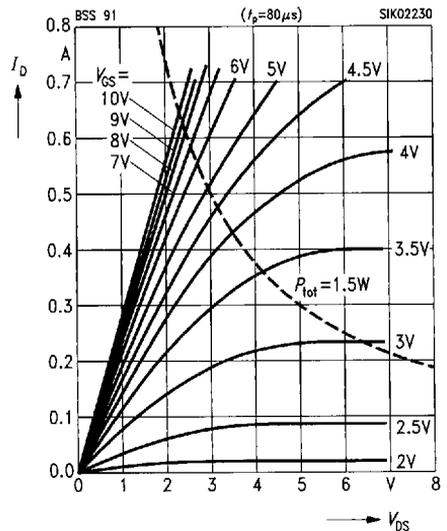
Characteristics

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

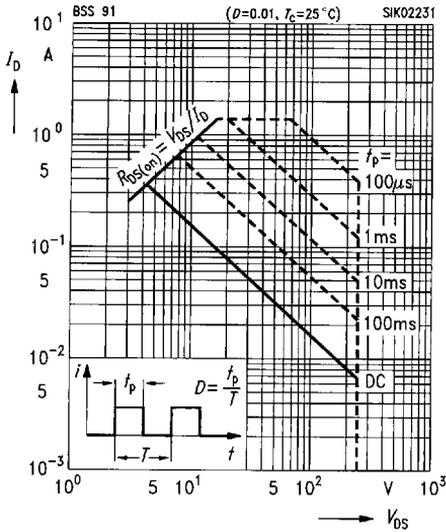
Total power dissipation $P_{tot} = f(T_A)$



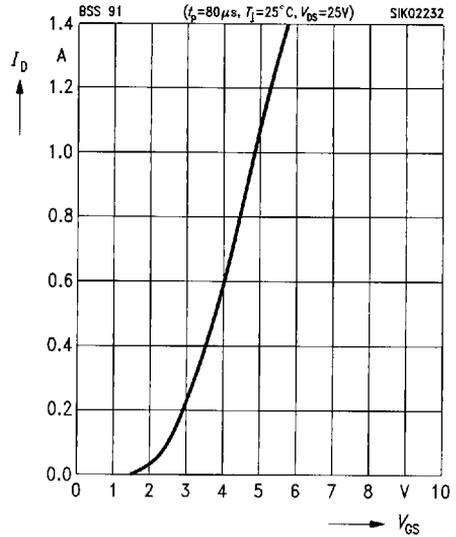
Typ. output characteristics $I_D = f(V_{DS})$
parameter: $t_p = 80\text{ }\mu\text{s}$



Safe operating area $I_D = f(V_{DS})$
 parameter: $D = 0.01, T_C = 25^\circ\text{C}$

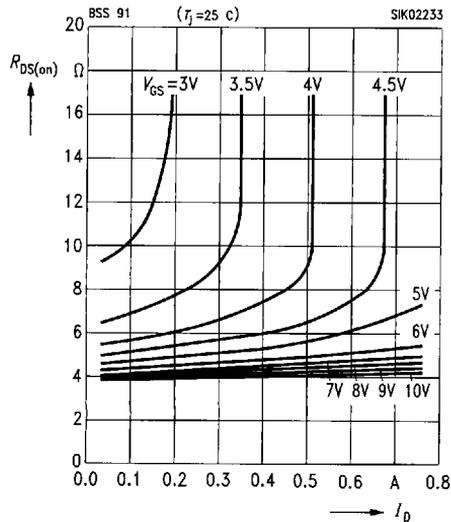


Typ. transfer characteristics $I_D = f(V_{GS})$
 parameter: $t_p = 80 \mu\text{s}, V_{DS} = 25 \text{ V}$



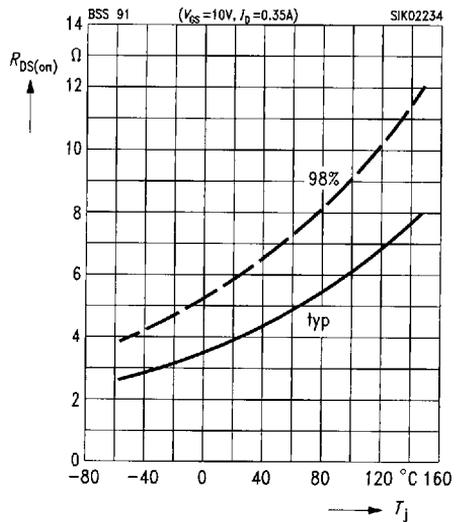
Typ. drain-source on-resistance

$R_{DS(on)} = f(I_D)$
 parameter: V_{GS}

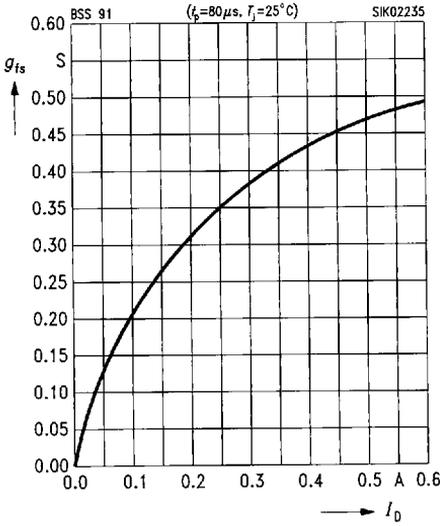


Drain-source on-resistance

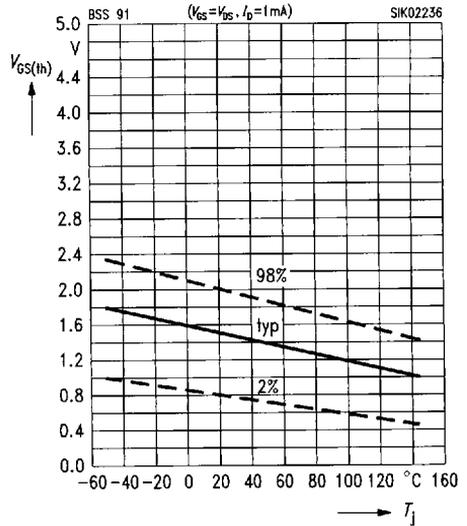
$R_{DS(on)} = f(T_j)$
 parameter: $I_D = 0.35 \text{ A}, V_{GS} = 10 \text{ V}, (\text{spread})$



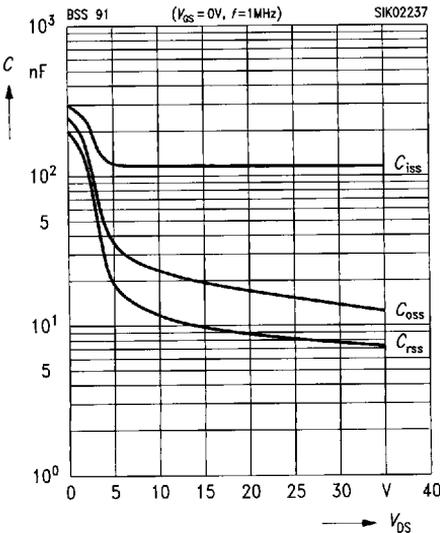
Typ. forward transconductance $g_{fs} = f(I_D)$
 parameter: $V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$, $t_p = 80 \mu s$



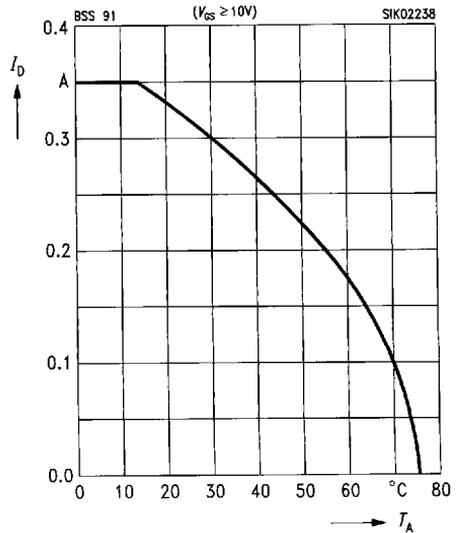
Gate threshold voltage $V_{GS(th)} = f(T_j)$
 parameter: $V_{DS} = V_{GS}$, $I_D = 1 \text{ mA}$, (spread)



Typ. capacitances $C = f(V_{DS})$
 parameter: $V_{GS} = 0 \text{ V}$, $f = 1 \text{ MHz}$



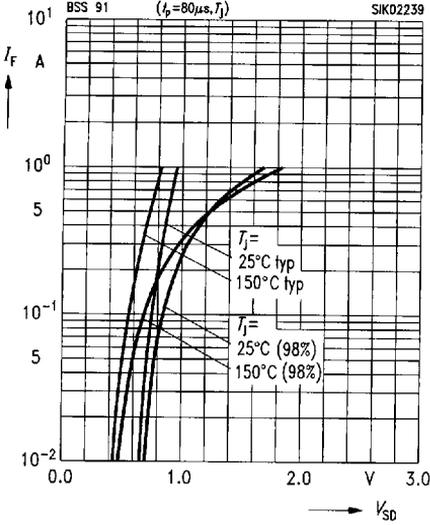
Drain current $I_D = f(T_A)$
 parameter: $V_{GS} \geq 10 \text{ V}$



Forward characteristics of reverse diode

$I_F = f(V_{SD})$

parameter: $t_p = 80 \mu s, T_j$, (spread)



Drain-source breakdown voltage

$V_{(BR)DSS} = b \times V_{(BR)DSS}(25^\circ\text{C})$

