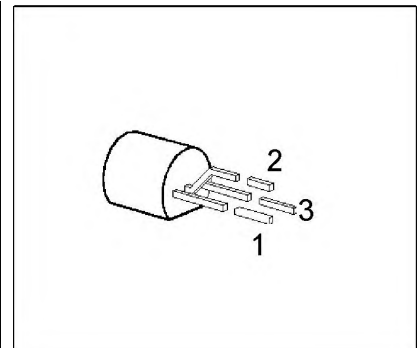
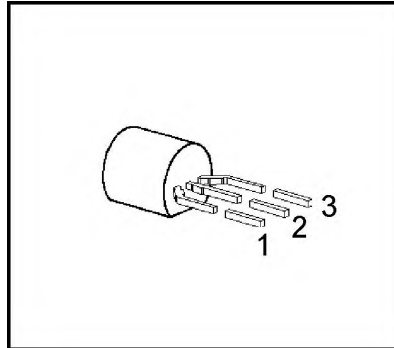


- V_{DS} 240 V
- I_D 0.29 A
- $R_{DS(on)}$ 6.0 Ω
- $V_{GS(th)}$ 0.8 ... 2.0 V
- N channel
- Enhancement mode
- Logic level



Type	Ordering Code	Tape and Reel Information	Pin Configuration			Marking	Package
			1	2	3		
BSS 89	Q62702-S455	bulk	G	D	S	BSS 89 marked SS89	TO-92
BSS 89	Q62702-S519	E6288: 1500 pcs/reel; 2 reels/carton; gate first					
BSS 89	Q62702-S619	E6296: 1500 pcs/reel; 2 reels/carton; source first					
BSS 89	Q62702-S385	E6325: 2000 pcs/carton; Ammopack					

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, $T_A = 29 \text{ }^\circ\text{C}$	I_D	0.29	A
Pulsed drain current, $T_A = 25 \text{ }^\circ\text{C}$	$I_{D \text{ puls}}$	1.16	
Max. power dissipation, $T_A = 25 \text{ }^\circ\text{C}$	P_{tot}	1.0	W
Operating and storage temperature range	T_j, T_{stg}	- 55 ... + 150	$^\circ\text{C}$
Thermal resistance, chip-ambient (without heat sink)	R_{thJA}	≤ 125	K/W
DIN humidity category, DIN 40 040	-	E	-
IEC climatic category, DIN IEC 68-1	-	55/150/56	

Electrical Characteristics

at $T_j = 25\text{ °C}$, 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 $V_{DS} = 240\text{ V}, V_{GS} = 0$ $T_j = 25\text{ °C}$ $T_j = 125\text{ °C}$ $V_{DS} = 60\text{ V}, V_{GS} = 0$ $T_j = 25\text{ °C}$	I_{DSS}	–	0.1	1.0	μA
		–	10	100	
		–	–	0.2	
Gate-source leakage current $V_{GS} = 20\text{ V}, V_{DS} = 0$	I_{GSS}	–	10	100	nA
Drain-source on-resistance $V_{GS} = 10\text{ V}, I_D = 0.29\text{ A}$ $V_{GS} = 4.5\text{ V}, I_D = 0.29\text{ A}$	$R_{DS(on)}$	–	3.0	6.0	Ω
		–	4.0	10.0	

Dynamic Characteristics

Forward transconductance $V_{DS} \geq 2 \times I_D \times R_{DS(on)max}, I_D = 0.29\text{ A}$	g_{fs}	0.14	0.33	–	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)

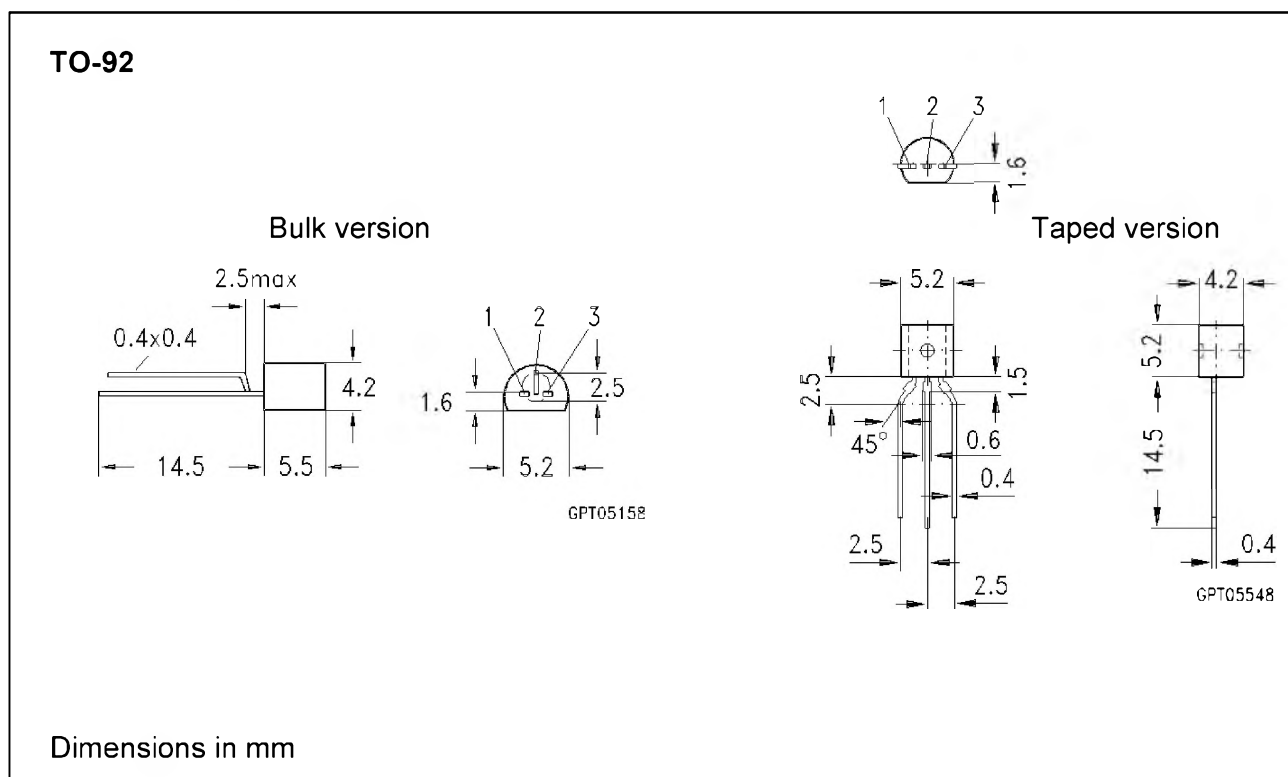
at $T_j = 25\text{ °C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

Reverse Diode

Continuous reverse drain current $T_A = 25\text{ °C}$	I_S	—	—	0.29	A
Pulsed reverse drain current $T_A = 25\text{ °C}$	I_{SM}	—	—	1.16	
Diode forward on-voltage $I_F = 0.58\text{ A}$, $V_{GS} = 0$	V_{SD}	—	0.85	1.4	V

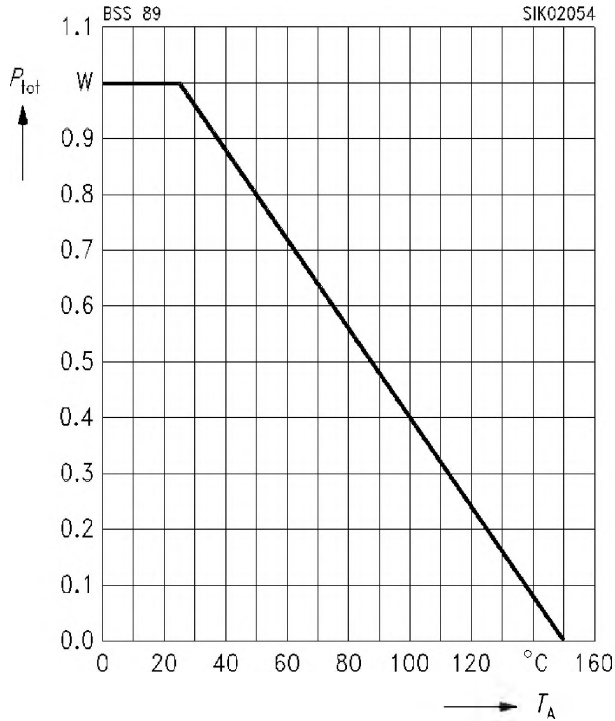
Package Outline



Characteristics

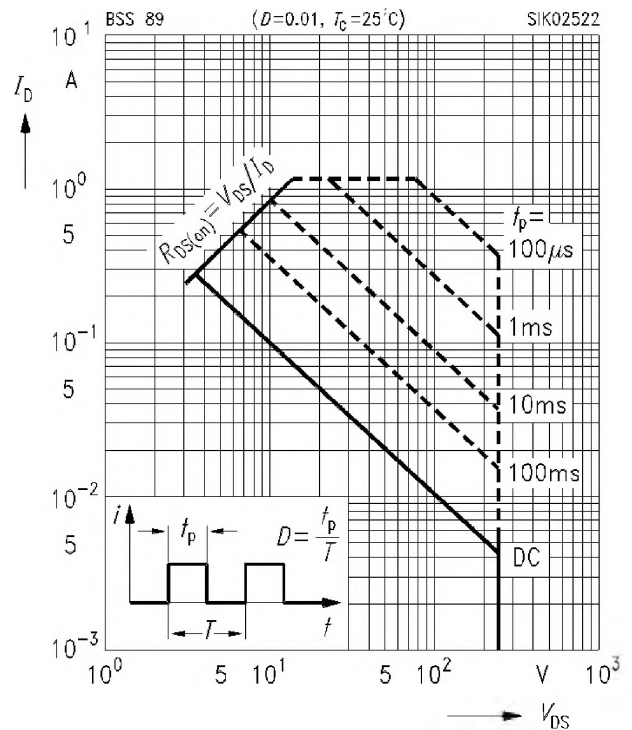
at $T_j = 25^\circ\text{C}$, unless otherwise specified.

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



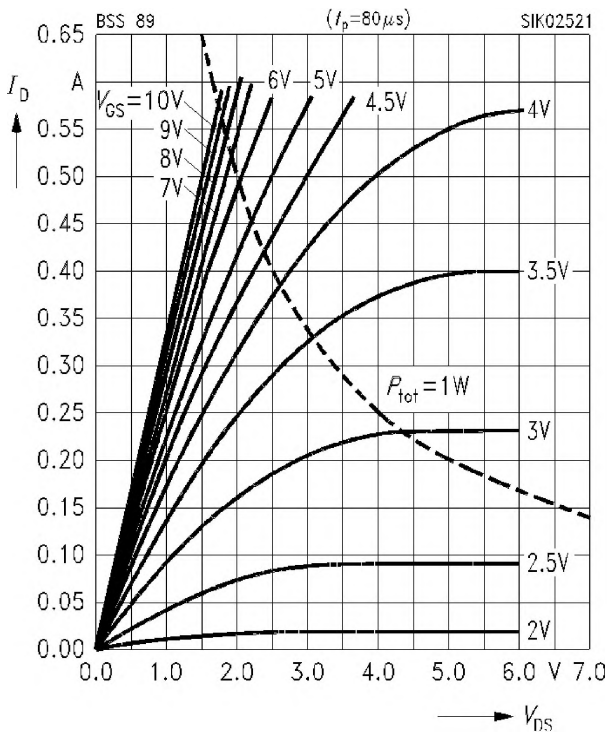
Safe operating area $I_D = f(V_{\text{DS}})$

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



Typ. output characteristics $I_D = f(V_{\text{DS}})$

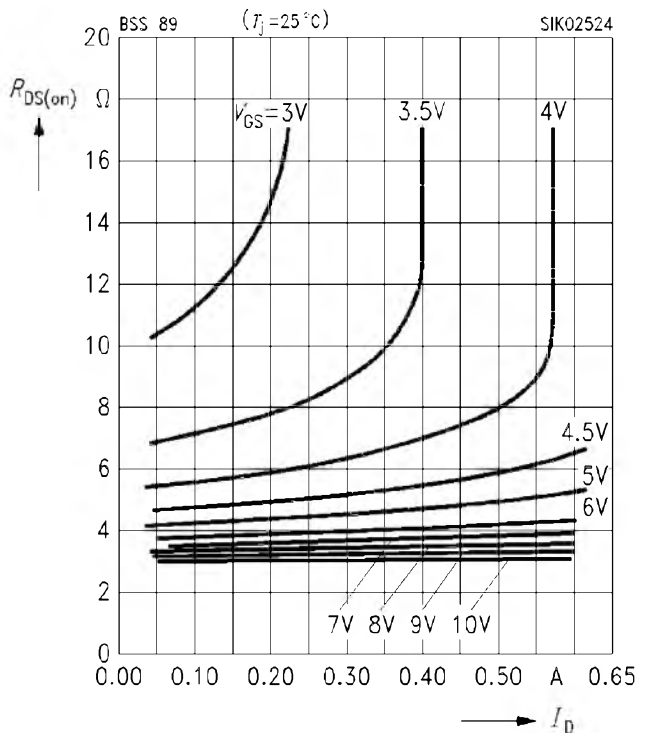
parameter: $t_p = 80 \mu\text{s}$



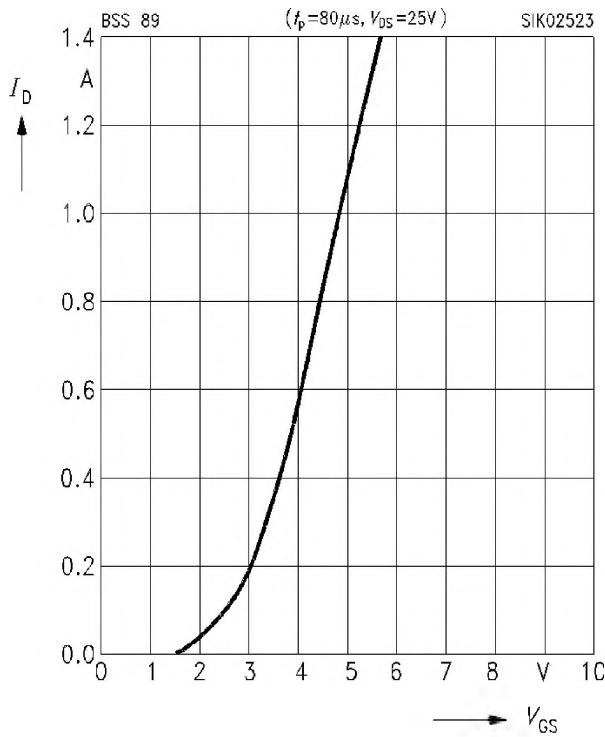
Typ. drain-source on-resistance

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

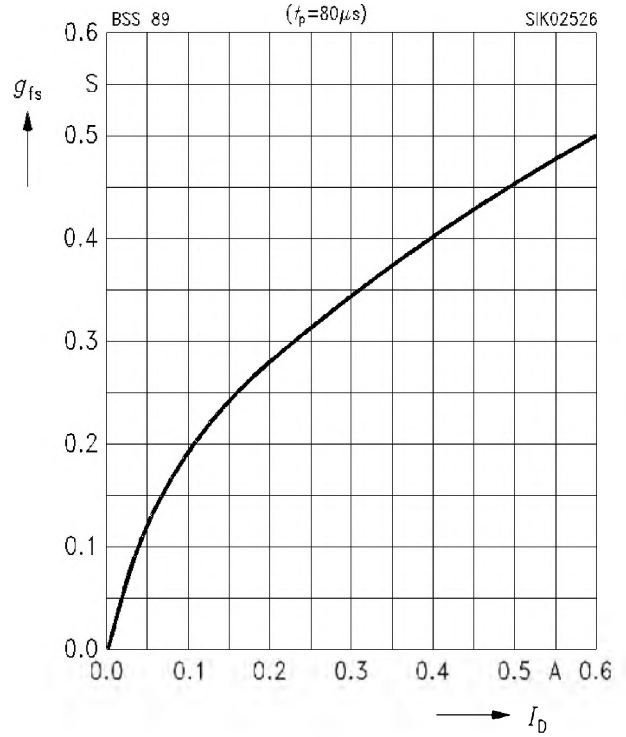
parameter: V_{GS}



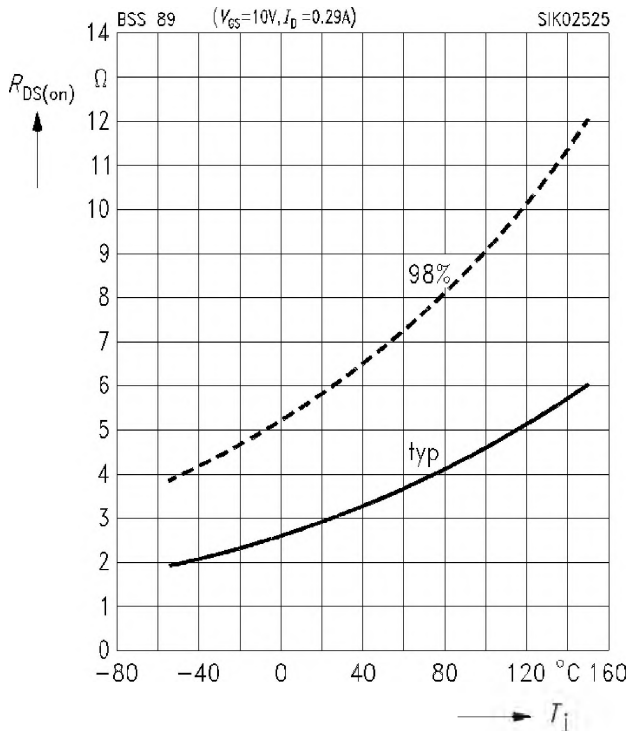
Typ. transfer characteristics $I_D = f(V_{GS})$
 parameter: $t_p = 80 \mu s$, $V_{DS} = 2 \times I_D \times R_{DS(on)max}$



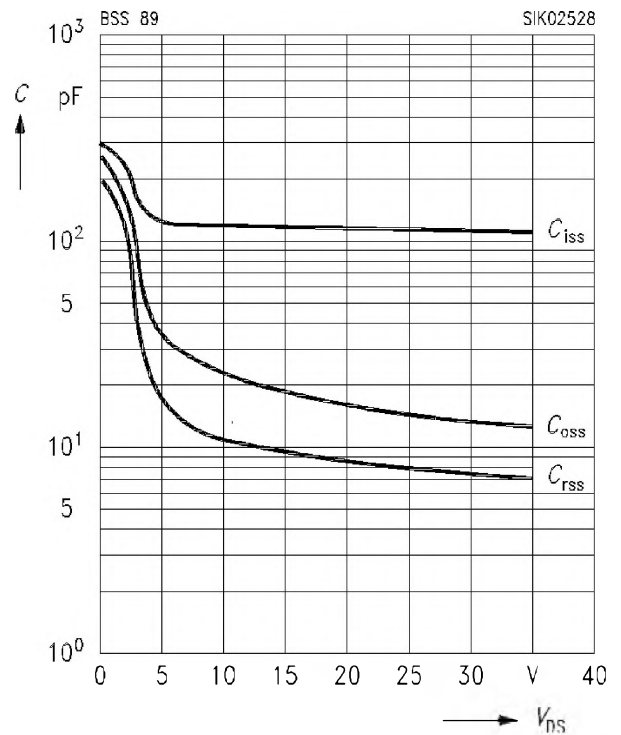
Typ. forward transconductance $g_{fs} = f(I_D)$
 parameter: $V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$, $t_p = 80 \mu s$



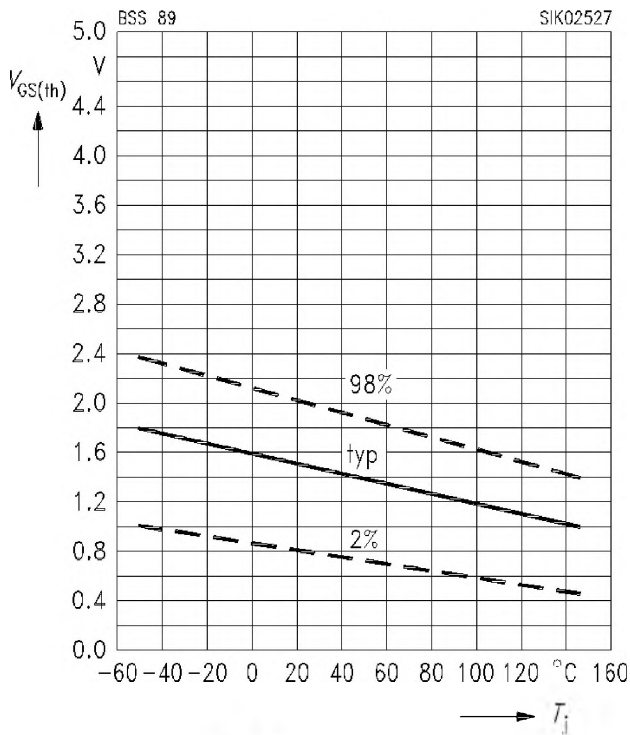
Drain-source on-resistance $R_{DS(on)} = f(T_j)$
 parameter: $I_D = 0.29 A$, $V_{GS} = 10 V$, (spread)



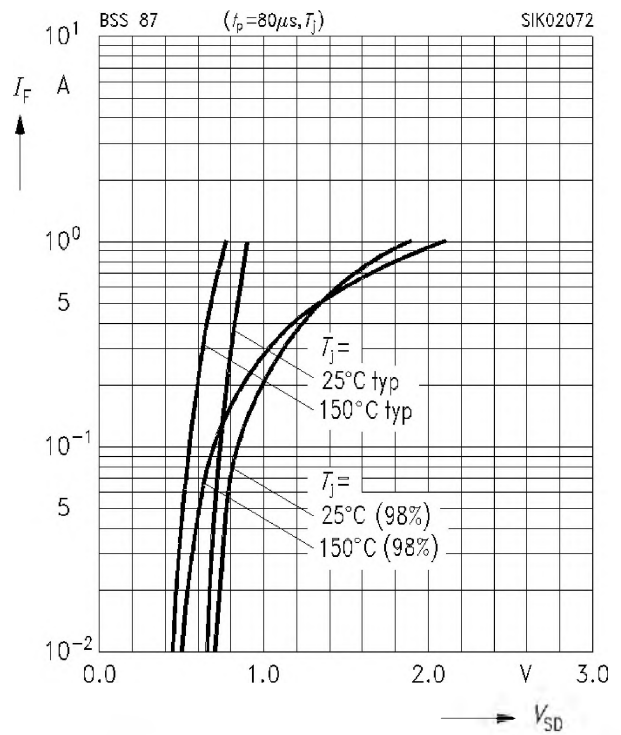
Typ. capacitances $C = f(V_{DS})$
 parameter: $V_{GS} = 0$, $f = 1 MHz$



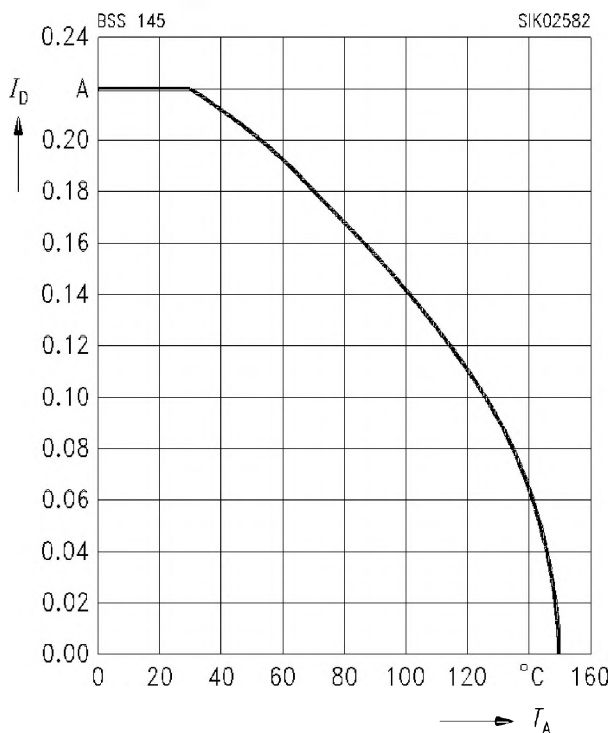
Gate threshold voltage $V_{GS(th)} = f(T_j)$
 parameter: $V_{DS} = V_{GS}$, $I_D = 1 \text{ mA}$, (spread)



Forward characteristics of reverse diode
 $I_F = f(V_{SD})$
 parameter: $t_p = 80 \mu\text{s}$, T_j , (spread)



Drain current $I_D = f(T_A)$
 parameter: $V_{GS} \geq 5 \text{ V}$



Drain-source breakdown voltage
 $V_{(BR)DSS} = b \times V_{(BR)DSS} (25 \text{ °C})$

