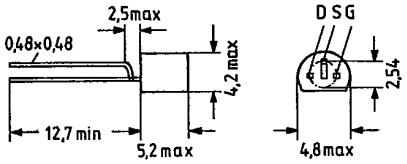
N-Channel Junction Field-Effect Transistors

BF 245 A
BF 245 B
BF 245 C

BF 245 A, B, and C are N-channel junction field-effect transistors in plastic package similar to TO 92 (10 A 3 DIN 41868). They are particularly suitable for use in dc, AF and RF amplifiers.

Type	Ordering code
BF 245	Q62702-F236
BF 245 A	Q62702-F209
BF 245 B	Q62702-F182
BF 245 C	Q62702-F205



Approx. weight 0.25 g — Dimensions in mm

Maximum ratings

Drain-source voltage	$\pm V_{DS}$	30	V
Drain-gate voltage (I_S = 0)	$+V_{DG}$	30	V
Gate-source voltage (I_D = 0)	$-V_{GS}$	30	V
Drain current	I_D	25	mA
Gate current	I_G	10	mA
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−65 to +150	°C
Total power dissipation ($T_{amb} \leq 75$°C)[1]	P_{tot}	300	mW

Thermal resistance

Junction to ambient air	R_{thJA}	≤250	K/W[1]

1) If the transistors with max 3 mm lead length are fixed on PCBs with a 10 mm x 10 mm large copper area for the drain terminal, R_{thJA} = 2 K/W, P_{tot} = max. 300 mW then applies up to T_{amb} = 90°C.

BF 245 A
BF 245 B
BF 245 C

SIEMENS AKTIENGESELLSCHAF

Static characteristics (T_j = 25 °C)

Gate cutoff current				
($-V_{GS}$ = 20 V, V_{DS} = 0)		$-I_{GSS}$	≦5	nA
($-V_{GS}$ = 20 V, V_{DS} = 0, T_j = 125 °C)		$-I_{GSS}$	≦500	nA
Gate-source breakdown voltage				
($-I_G$ = 1 µA, V_{DS} = 0)		$-V_{(BR)GSS}$	≧30	V
Drain-source short-circuit current				
(V_{DS} = 15 V, V_{GS} = 0)	BF 245 A:	I_{DSS}	2.0 to 6.5	mA[2]
	BF 245 B:	I_{DSS}	6 to 15	mA
	BF 245 C:	I_{DSS}	12 to 25	mA
Gate-source voltage				
(V_{DS} = 15 V, I_D = 200 µA)	BF 245 A:	$-V_{GS}$	0.4 to 2.2	V[2]
	BF 245 B:	$-V_{GS}$	1.6 to 3.8	V
	BF 245 C:	$-V_{GS}$	3.2 to 7.5	V
Gate-source pinch-off voltage				
(V_{DS} = 15 V, I_D = 10 nA)		$-V_P$	0.5 to 8.0	V

Dynamic characteristics (T_{amb} = 25 °C)

Four-pole characteristics			
(V_{DS} = 15 V, V_{GS} = 0, f = 1 kHz)	$\lvert y_{21s}\rvert$	3.0 to 6.5	mS
	$\lvert y_{22s}\rvert$	25	µS
(V_{DS} = 15 V, V_{GS} = 0, f = 200 MHz)	g_{11}	250	µS
	$\lvert y_{21s}\rvert$	6	mS
	g_{22s}	40	µS
(V_{DS} = 20 V, $-V_{GS}$ = 1 V, f = 1 MHz)	C_{11s}	4.0	pF
	C_{12s}	1.1	pF
	C_{22s}	1.6	pF
Cutoff frequency of short-circuit forward transfer admittance[1] (V_{DS} = 15 V, V_{GS} = 0)	f_{y21s}	700	MHz
Noise figure (V_{DS} = 15 V, V_{GS} = 0, R_g = 1 kΩ, f = 100 MHz, T_{amb} = 25 °C)	NF	1.5	dB

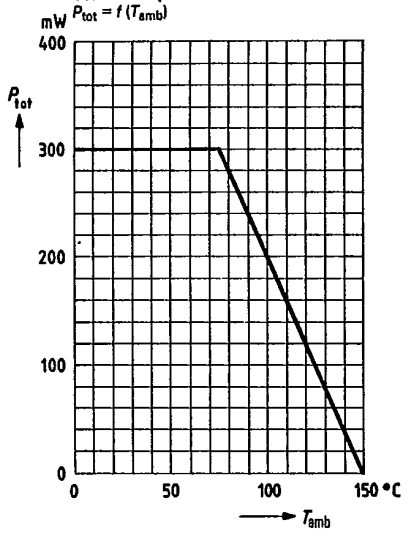
1) Frequency for a decrease in the small-signal short-circuit forward transfer admittance to 70% of the value at 1 kHz.

2) BF 245 A1: I_{DSS} = 2.0 to 3.0 mA, $-V_{GS}$ = 0.4 to 1.0 V
BF 245 A2: I_{DSS} = 3.0 to 4.5 mA, $-V_{GS}$ = 0.7 to 1.4 V
BF 245 A3: I_{DSS} = 4.5 to 6.5 mA, $-V_{GS}$ = 1.1 to 2.2 V

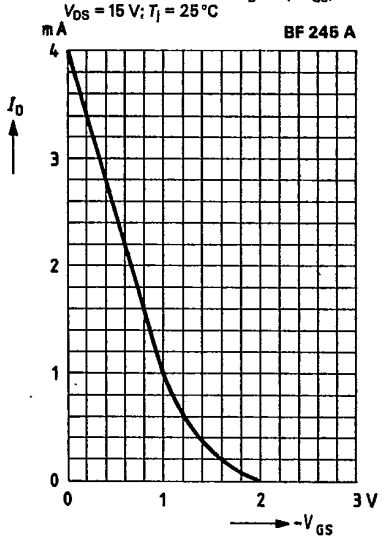
SIEMENS AKTIENGESELLSCHAF

BF 245 A
BF 245 B
BF 245 C

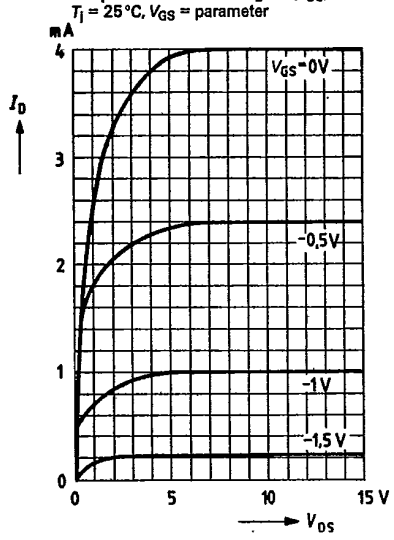
Total perm. power dissipation versus temperature
$P_{tot} = f(T_{amb})$



Transfer characteristic $I_D = f(-V_{GS})$
$V_{DS} = 15$ V; $T_j = 25$ °C



Output characteristics $I_D = f(V_{DS})$
$T_j = 25$ °C, V_{GS} = parameter

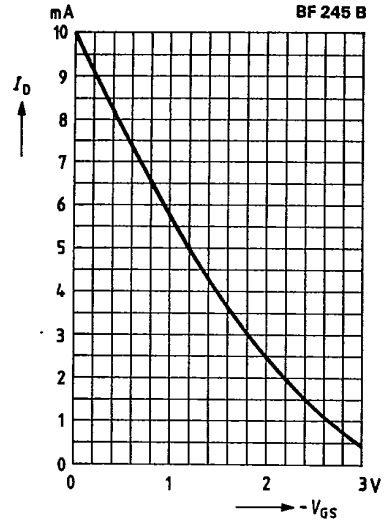


1882 B-01

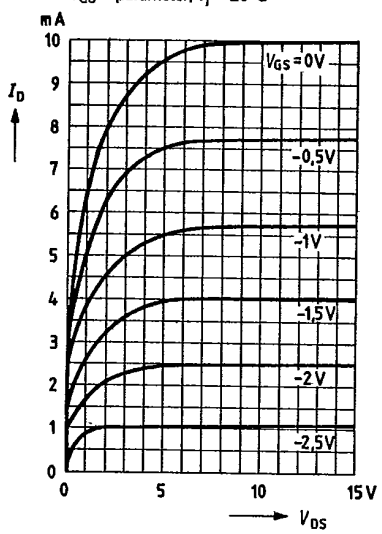
SIEMENS AKTIENGESELLSCHAF

BF 245 A
BF 245 B
BF 245 C

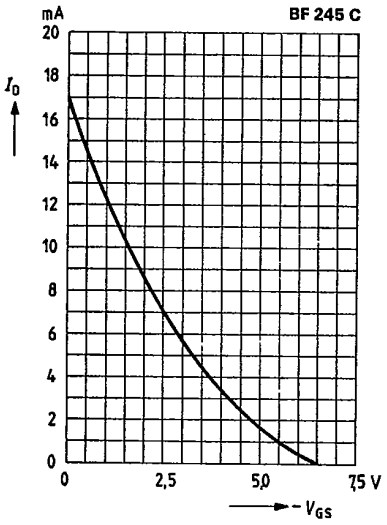
Transfer characteristic $I_D = f(-V_{GS})$
V_{DS} = 15 V; T_j = 25 °C



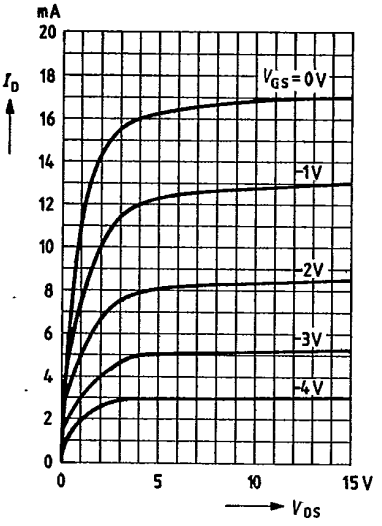
Output characteristics $I_D = f(V_{DS})$
V_{GS} = parameter; T_j = 25 °C



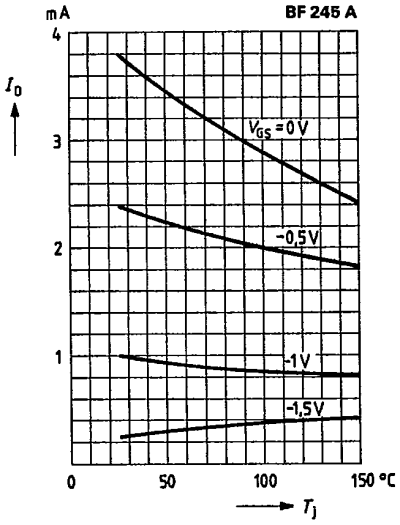
Transfer characteristic $I_D = f(-V_{GS})$
V_{DS} = 15 V, T_j = 25 °C



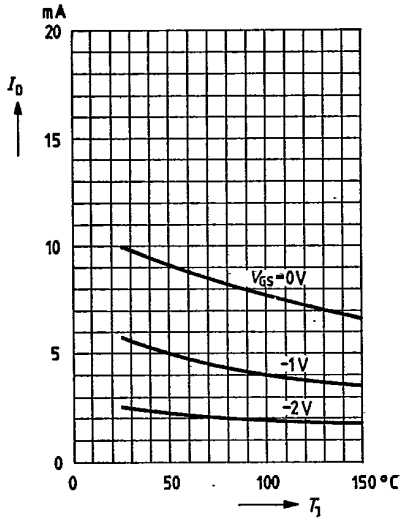
Output characteristics $I_D = f(V_{DS})$
V_{GS} = parameter; T_j = 25 °C



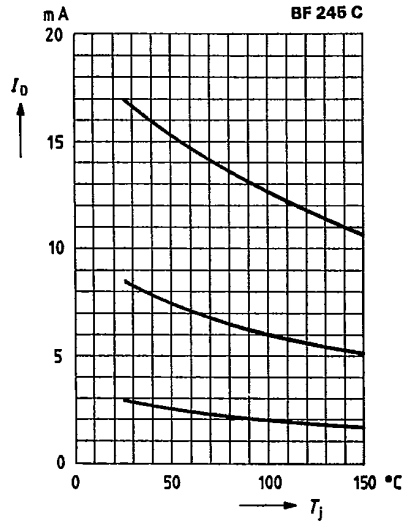
Drain current versus temperature
$I_D = f(T_j)$; V_{GS} = parameter? V_{DS} = 15 V



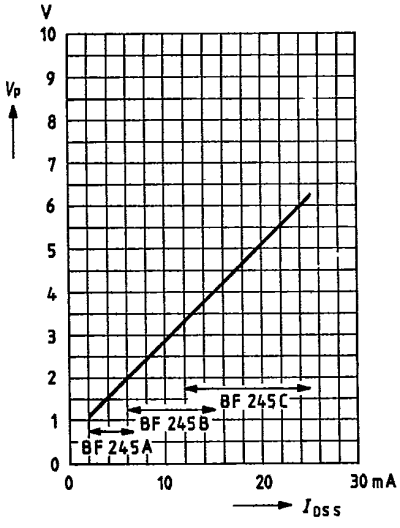
Drain current versus temperature
$I_D = f(T_j)$; V_{GS} = parameter, V_{DS} = 15 V



Drain current versus temperature
$I_D = f(T_j)$; V_{GS} = parameter, V_{DS} = 15 V

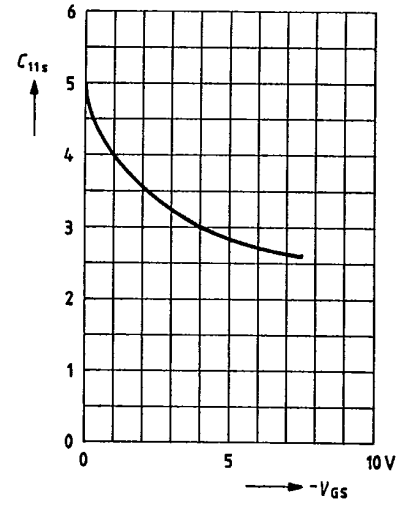


Correlation between V_p and I_{DSS}
V_{DS} = 15 V, I_D = 10 mA; T_j = 25 °C

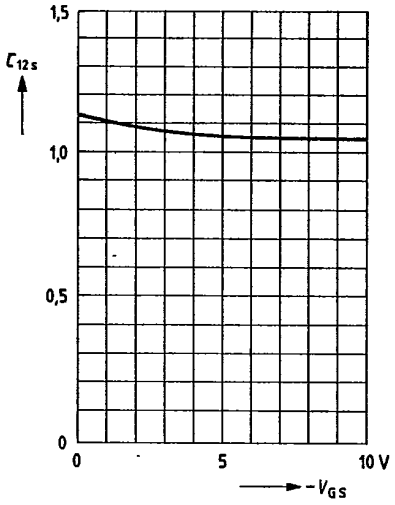


BF 245 A
BF 245 B
BF 245 C

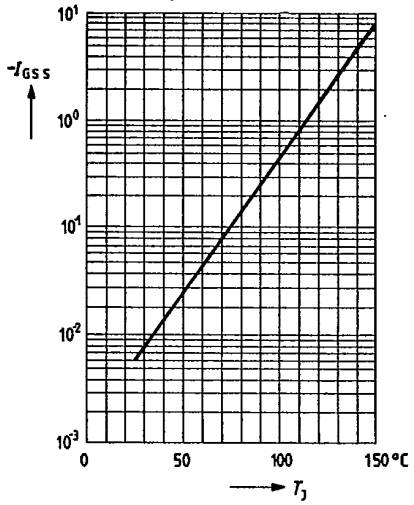
Input characteristics $C_{11S} = f(-V_{GS})$
$V_{DS} = 20$ V; $f = 1$ MHz; $T_{amb} = 25$ °C



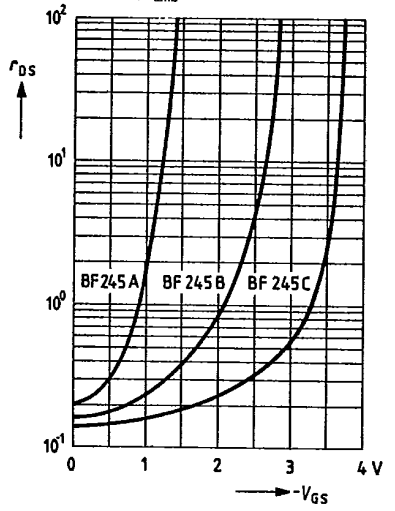
Reverse transfer capacitance
$C_{12S} = f(-V_{GS})$; $V_{DS} = 20$ V;
$f = 1$ MHz; $T_{amb} = 25$ °C



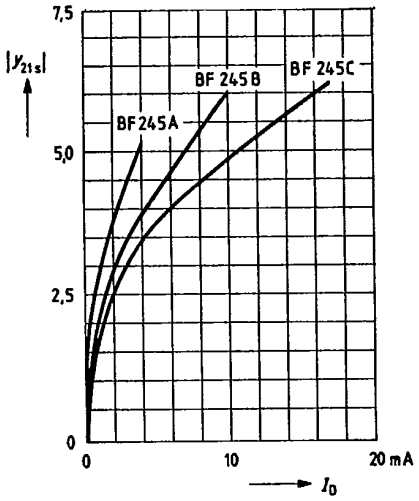
Reverse current versus temperature
$-I_{GSS} = f(T_j)$; $-V_{GS} = 20$ V; $V_{DS} = 0$



Dynamic drain-source resistance
$r_{DS} = f(-V_{GS})$; $V_{DS} = 0$;
$f = 1$ kHz; $T_{amb} = 25$ °C



Small-signal short-circuit forward transfer admittance $y_{21s} = f(I_D)$
mS V_{DS} = 15 V; f = 1 kHz; T_{amb} = 25 °C



Noise figure $NF = f(f)$
V_{DS} = 15 V; V_{GS} = 0;
dB R_g = 1 kΩ, T_{amb} = 25 °C