

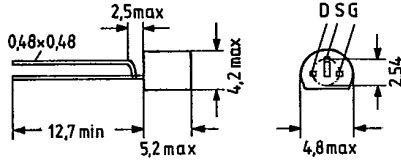
N-Channel Junction Field-Effect Transistors

BF 245 A
BF 245 B
BF 245 C

SIEMENS AKTIENGESELLSCHAFT 57 D.

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 ($T_{amb} \leq 75^\circ\text{C}$) ¹⁾	P_{tot}	300	mW

Thermal resistance

Junction to ambient air	R_{thJA}	≤ 250	K/W ¹⁾
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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, $R_{thJA} = 2 \text{ K/W}$, $P_{tot} = \text{max. } 300 \text{ mW}$ then applies up to $T_{amb} = 90^\circ\text{C}$.

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Static characteristics ($T_j = 25^\circ\text{C}$)

Gate cutoff current ($-V_{GS} = 20\text{ V}, V_{DS} = 0$)	$-I_{GSS}$	≤ 5	nA
($-V_{GS} = 20\text{ V}, V_{DS} = 0, T_j = 125^\circ\text{C}$)	$-I_{GSS}$	≤ 500	nA
Gate-source breakdown voltage ($-I_G = 1\ \mu\text{A}, V_{DS} = 0$)	$-V_{(BR)GSS}$	≥ 30	V
Drain-source short-circuit current ($V_{DS} = 15\text{ V}, V_{GS} = 0$)	BF 245 A: I_{DSS}	2.0 to 6.5	$\text{mA}^2)$
	BF 245 B: I_{DSS}	6 to 15	mA
	BF 245 C: I_{DSS}	12 to 25	mA
Gate-source voltage ($V_{DS} = 15\text{ V}, I_D = 200\ \mu\text{A}$)	BF 245 A: $-V_{GS}$	0.4 to 2.2	$\text{V}^2)$
	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 ($V_{DS} = 15\text{ V}, I_D = 10\ \text{nA}$)	$-V_P$	0.5 to 8.0	V

Dynamic characteristics ($T_{amb} = 25^\circ\text{C}$)

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

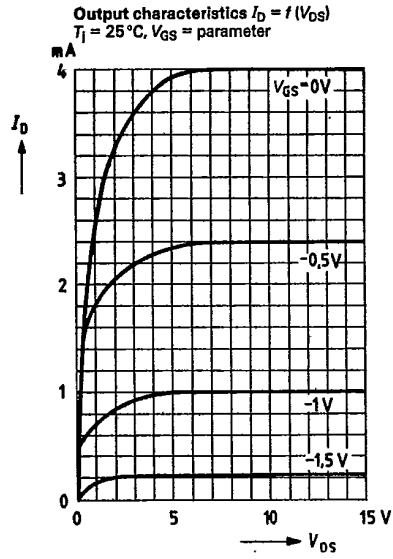
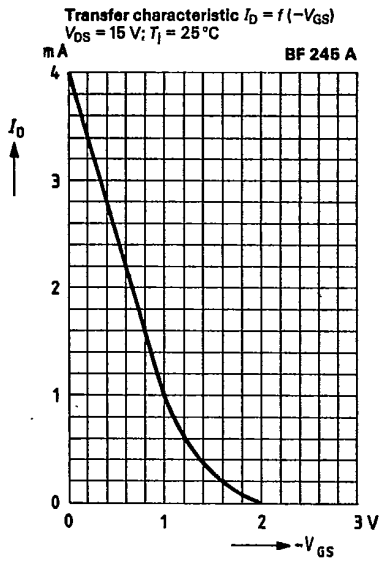
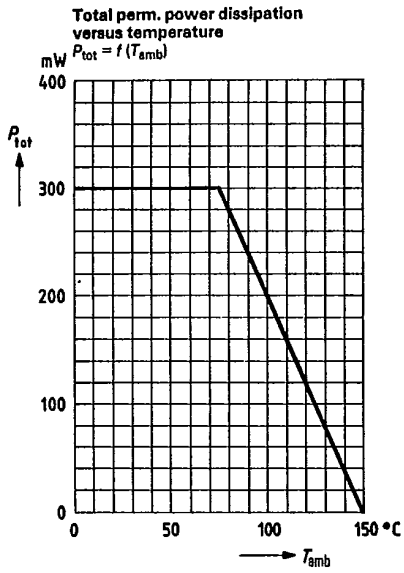
2) BF 245 A1: $I_{DSS} = 2.0$ to $3.0\ \text{mA}, -V_{GS} = 0.4$ to $1.0\ \text{V}$

BF 245 A2: $I_{DSS} = 3.0$ to $4.5\ \text{mA}, -V_{GS} = 0.7$ to $1.4\ \text{V}$

BF 245 A3: $I_{DSS} = 4.5$ to $8.5\ \text{mA}, -V_{GS} = 1.1$ to $2.2\ \text{V}$

BF 245 A
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 BF 245 C

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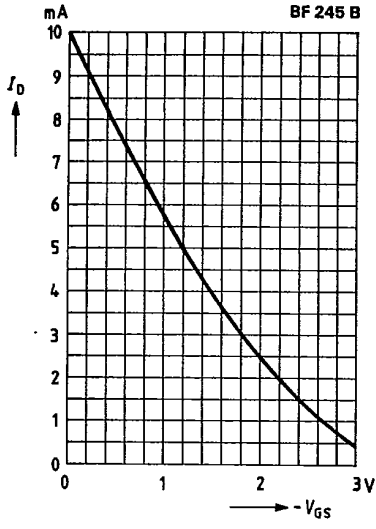
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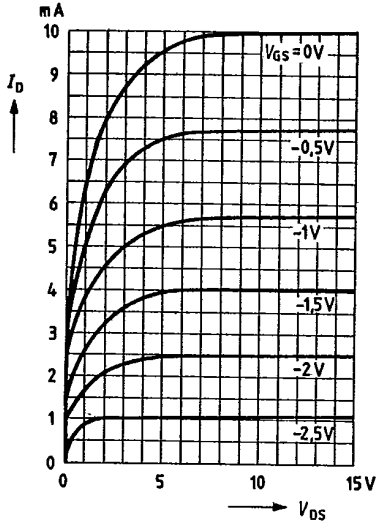
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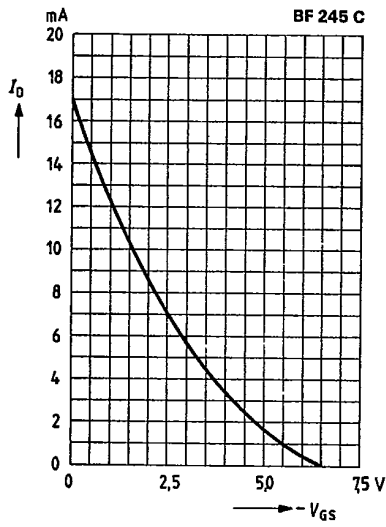
Transfer characteristic $I_D = f(-V_{GS})$
 $V_{DS} = 15\text{ V}; T_j = 25^\circ\text{C}$



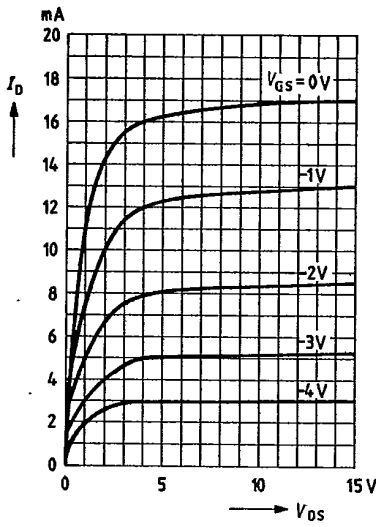
Output characteristics $I_D = f(V_{DS})$
 $V_{GS} = \text{parameter}; T_j = 25^\circ\text{C}$



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



Output characteristics $I_D = f(V_{DS})$
 $V_{GS} = \text{parameter}; T_j = 25^\circ\text{C}$

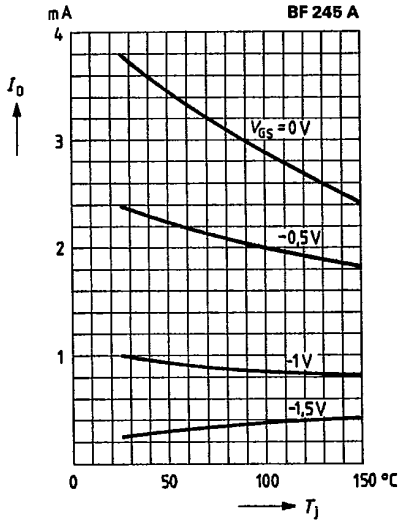


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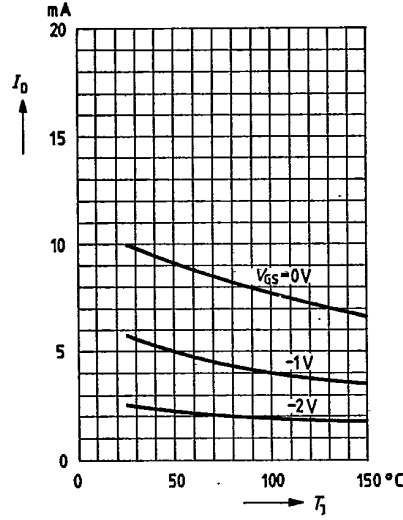
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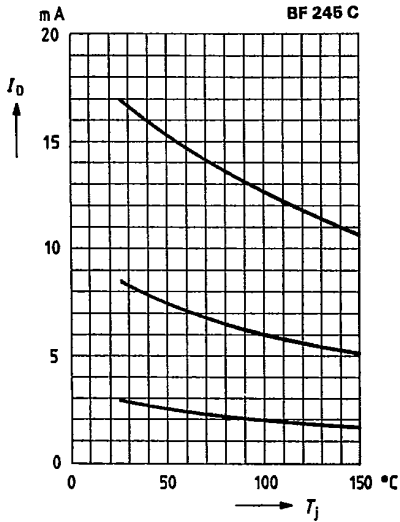
Drain current versus temperature
 $I_D = f(T_j)$; $V_{GS} = \text{parameter}$; $V_{DS} = 15 \text{ V}$



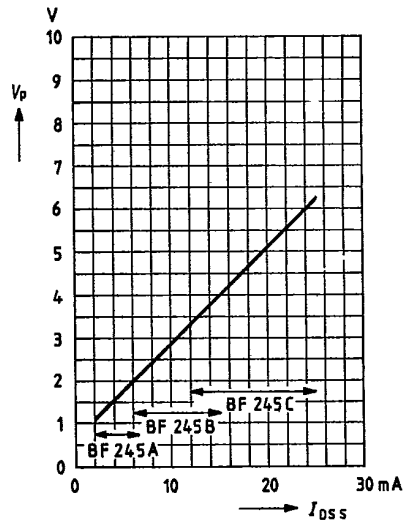
Drain current versus temperature
 $I_D = f(T_j)$; $V_{GS} = \text{parameter}$; $V_{DS} = 15 \text{ V}$



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



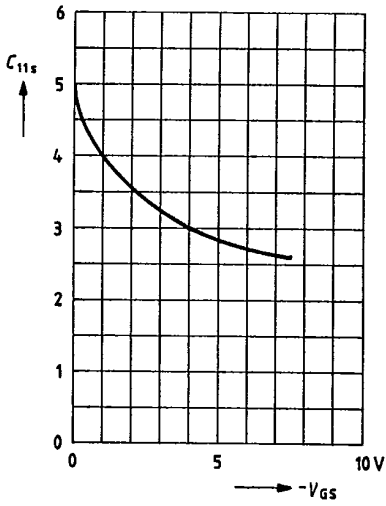
Correlation between V_p and I_{DSS}
 $V_{DS} = 15 \text{ V}$, $I_D = 10 \text{ mA}$; $T_j = 25^\circ \text{C}$



BF 245 A
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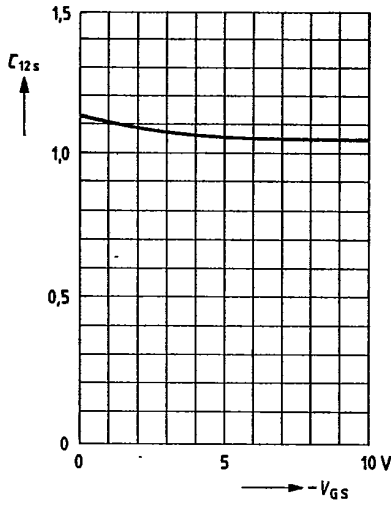
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Input characteristics $C_{11s} = f(-V_{GS})$
 $V_{DS} = 20\text{ V}; f = 1\text{ MHz}; T_{amb} = 25^\circ\text{C}$



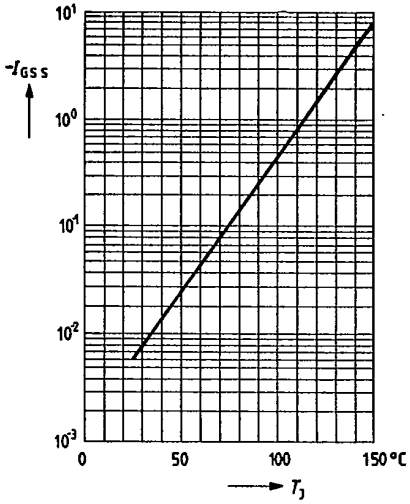
Reverse transfer capacitance

$C_{12s} = f(-V_{GS}); V_{DS} = 20\text{ V};$
 $f = 1\text{ MHz}; T_{amb} = 25^\circ\text{C}$



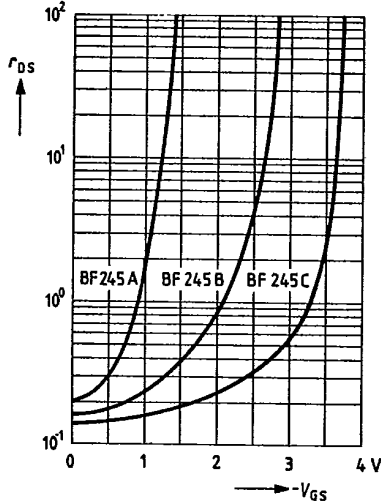
Reverse current versus temperature

$-I_{GSS} = f(T_j); -V_{GS} = 20\text{ V}; V_{DS} = 0$



Dynamic drain-source resistance

$r_{DS} = f(-V_{GS}); V_{DS} = 0;$
 $f = 1\text{ kHz}; T_{amb} = 25^\circ\text{C}$



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