

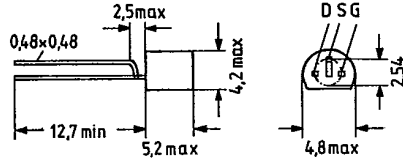
**N-Channel Junction Field-Effect Transistors**

**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	$R_{thJA}$	$\leq 250$	K/W <sup>1</sup> )
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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 ( $-V_{GS} = 20\text{ V}, V_{DS} = 0$ )	$-I_{GSS}$	$\leq 5$	nA
( $-V_{GS} = 20\text{ V}, V_{DS} = 0, T_j = 125^\circ\text{C}$ )	$-I_{GSS}$	$\leq 500$	nA
Gate-source breakdown voltage ( $-I_G = 1\ \mu\text{A}, V_{DS} = 0$ )	$-V_{(BR)GSS}$	$\geq 30$	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	$\mu\text{S}$
( $V_{DS} = 15\text{ V}, V_{GS} = 0, f = 200\ \text{MHz}$ )	$g_{11}$	250	$\mu\text{S}$
	$ y_{21s} $	6	mS
	$g_{22s}$	40	$\mu\text{S}$
( $V_{DS} = 20\text{ V}, -V_{GS} = 1\text{ V}, f = 1\ \text{MHz}$ )	$C_{11s}$	4.0	pF
	$C_{12s}$	1.1	pF
	$C_{22s}$	1.6	pF
Cutoff frequency of short-circuit forward transfer admittance <sup>1)</sup> ( $V_{DS} = 15\text{ V}, V_{GS} = 0$ )	$f_{y21s}$	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.

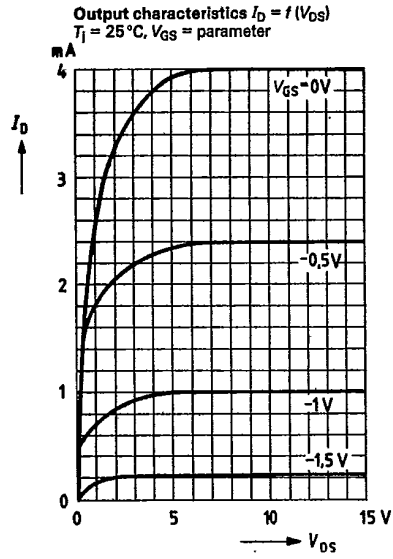
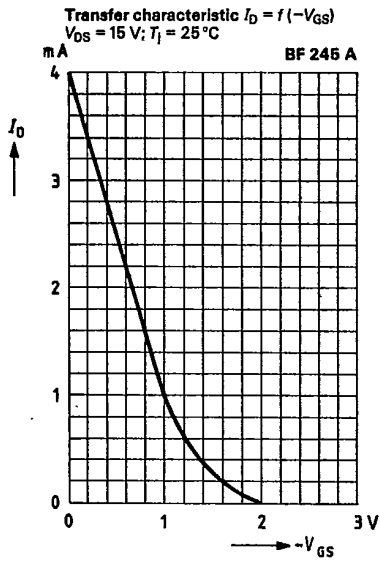
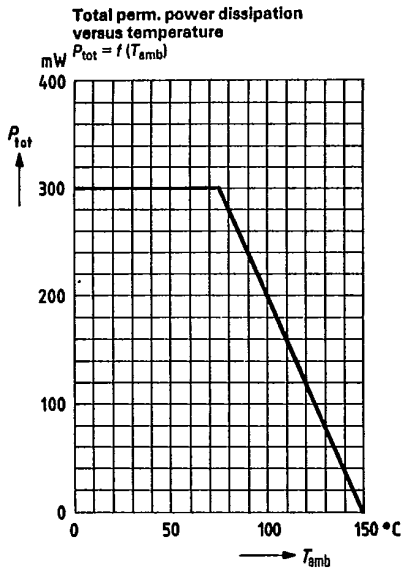
2) BF 245 A1:  $I_{DSS} = 2.0$  to  $3.0\ \text{mA}, -V_{GS} = 0.4$  to  $1.0\ \text{V}$

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  $2.2\ \text{V}$

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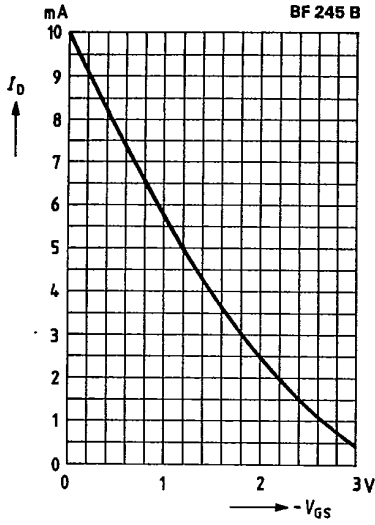
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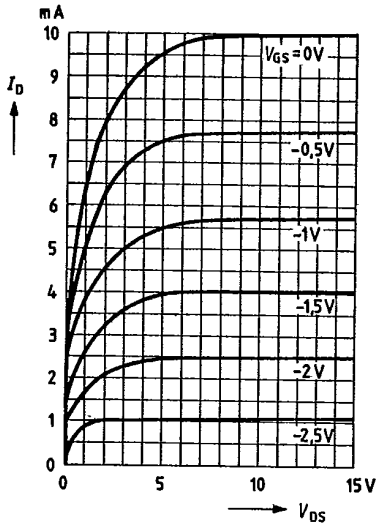
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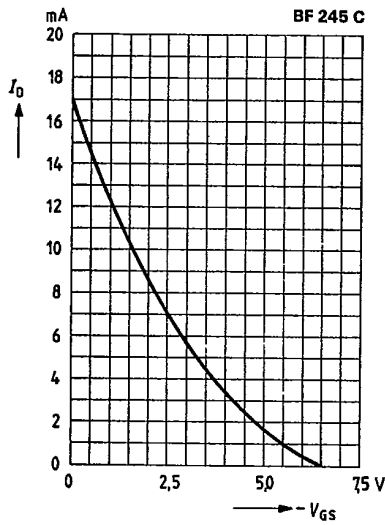
Transfer characteristic  $I_D = f(-V_{GS})$   
 $V_{DS} = 15\text{ V}; T_j = 25^\circ\text{C}$



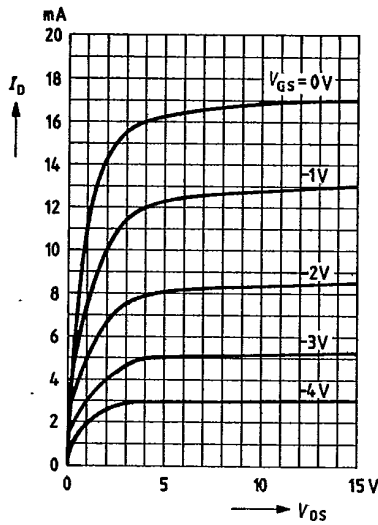
Output characteristics  $I_D = f(V_{DS})$   
 $V_{GS} = \text{parameter}; T_j = 25^\circ\text{C}$



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



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

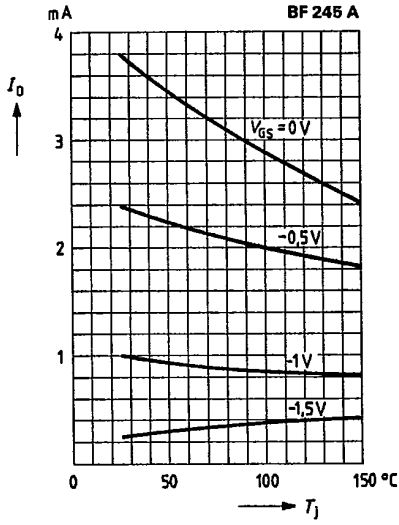


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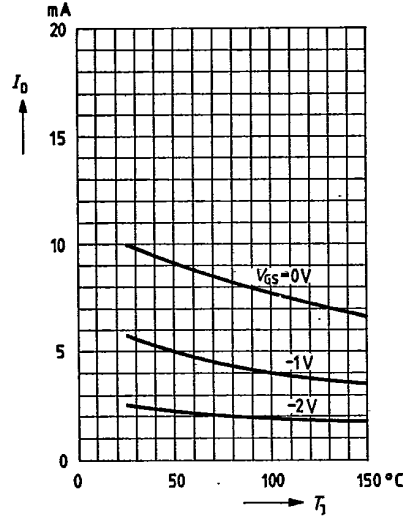
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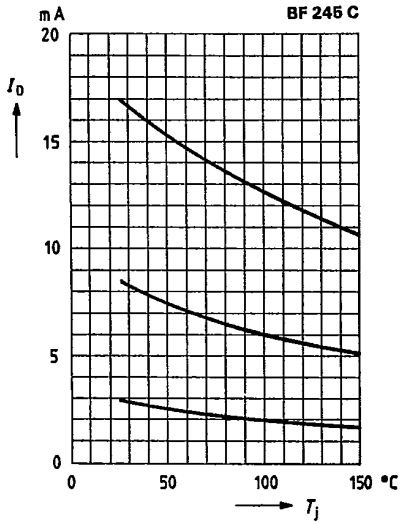
Drain current versus temperature  
 $I_D = f(T_j)$ ;  $V_{GS} = \text{parameter}$ ;  $V_{DS} = 15 \text{ V}$



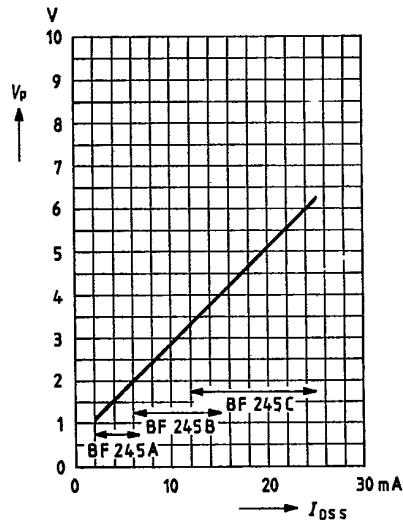
Drain current versus temperature  
 $I_D = f(T_j)$ ;  $V_{GS} = \text{parameter}$ ;  $V_{DS} = 15 \text{ V}$



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

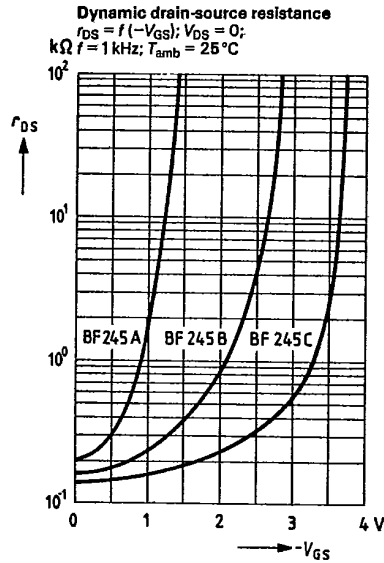
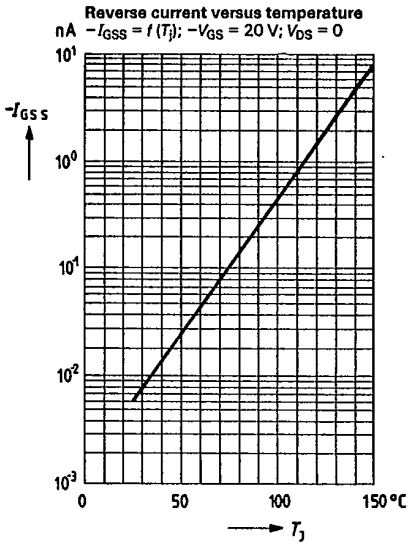
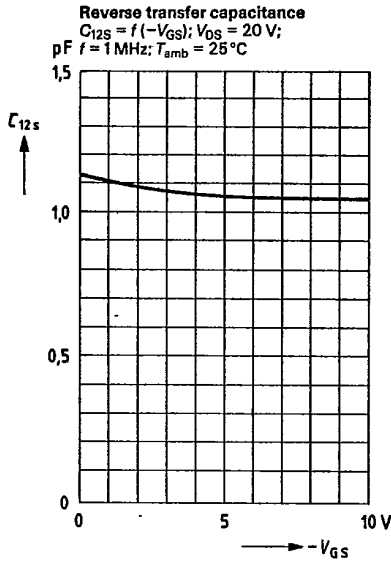
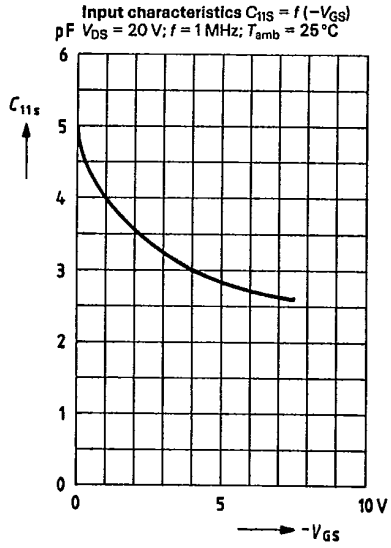


Correlation between  $V_p$  and  $I_{DSS}$   
 $V_{DS} = 15 \text{ V}$ ,  $I_D = 10 \text{ mA}$ ;  $T_j = 25^\circ \text{C}$



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