

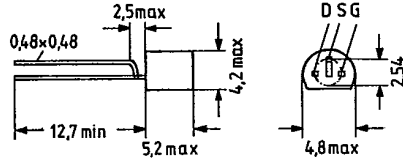
N-Channel Junction Field-Effect Transistors

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

($-V_{GS} = 20\text{ V}$, $V_{DS} = 0$) $-I_{GSS} \leq 5$ 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 mA²⁾BF 245 B: $I_{DSS} 6$ to 15 mABF 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 V²⁾BF 245 B: $-V_{GS} 1.6$ to 3.8 VBF 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 VDynamic 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 admittance¹⁾($V_{DS} = 15\text{ V}$, $V_{GS} = 0$) $f_{y21s} 700$ MHz

Noise figure

($V_{DS} = 15\text{ V}$, $V_{GS} = 0$, $R_g = 1\text{ k}\Omega$,
 $f = 100\text{ MHz}$, $T_{amb} = 25^\circ\text{C}$)

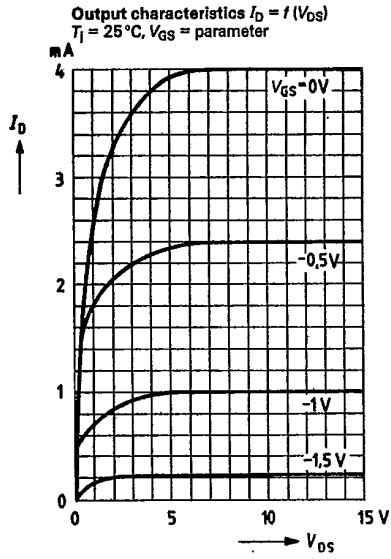
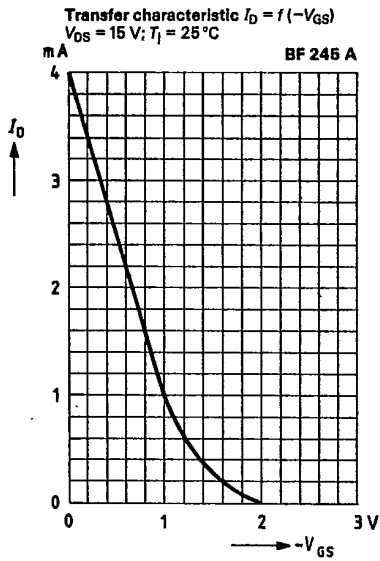
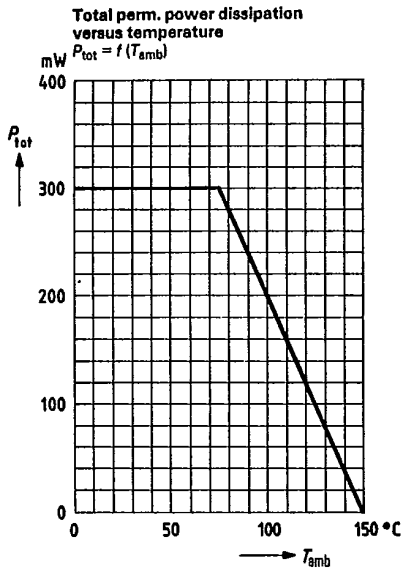
NF 1.5 dB

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 mA, $-V_{GS} = 0.4$ to 1.0 VBF 245 A2: $I_{DSS} = 3.0$ to 4.5 mA, $-V_{GS} = 0.7$ to 1.4 VBF 245 A3: $I_{DSS} = 4.5$ to 8.5 mA, $-V_{GS} = 1.1$ to 2.2 V

BF 245 A
 BF 245 B
 BF 245 C

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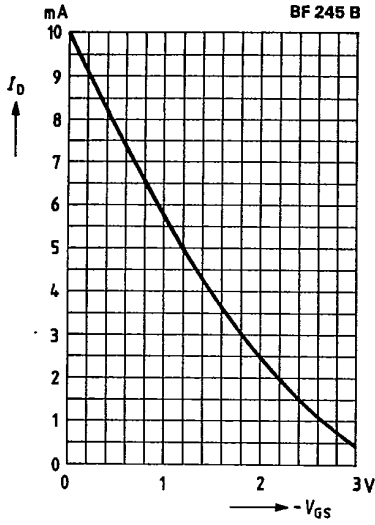
B-01

505

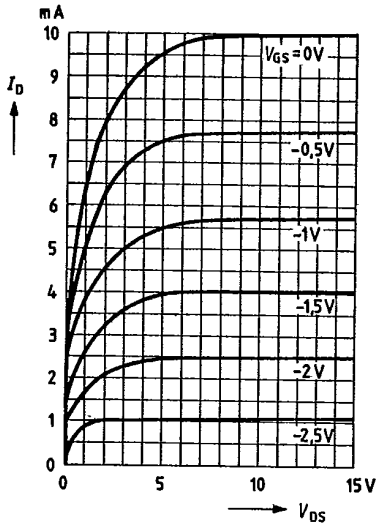
BF 245 A
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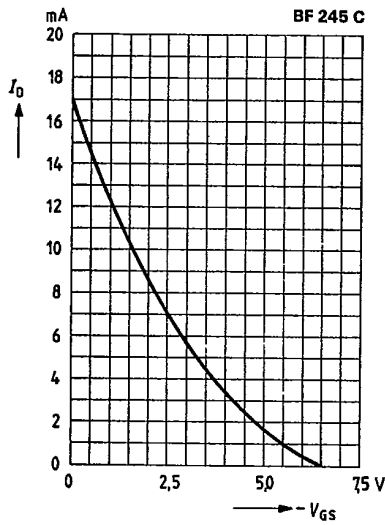
Transfer characteristic $I_D = f(-V_{GS})$
 $V_{DS} = 15\text{ V}; T_j = 25^\circ\text{C}$



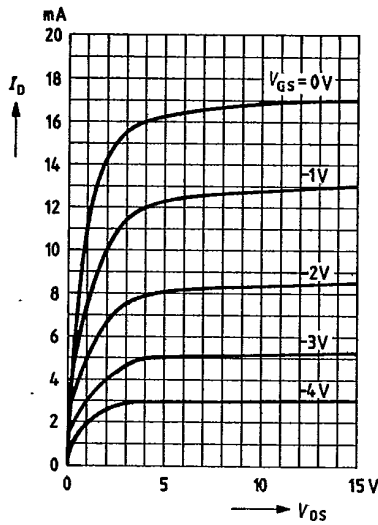
Output characteristics $I_D = f(V_{DS})$
 $V_{GS} = \text{parameter}; T_j = 25^\circ\text{C}$



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 $V_{DS} = 15\text{ V}; T_j = 25^\circ\text{C}$

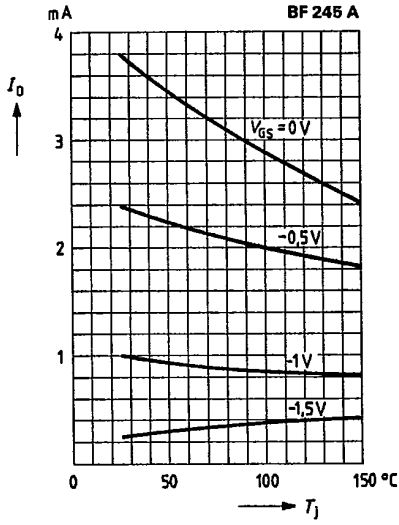


Output characteristics $I_D = f(V_{DS})$
 $V_{GS} = \text{parameter}; T_j = 25^\circ\text{C}$

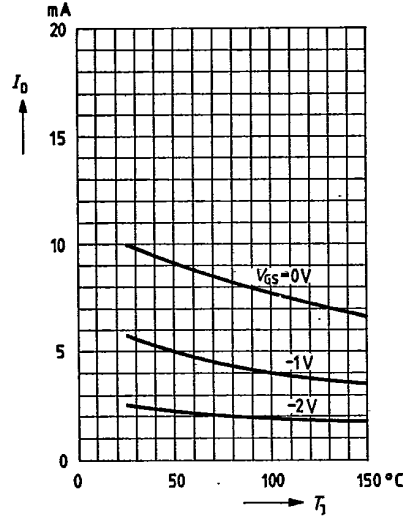


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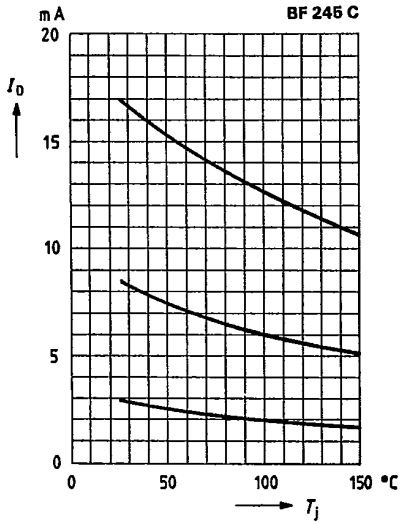
Drain current versus temperature
 $I_D = f(T_j)$; $V_{GS} = \text{parameter}$; $V_{DS} = 15 \text{ V}$



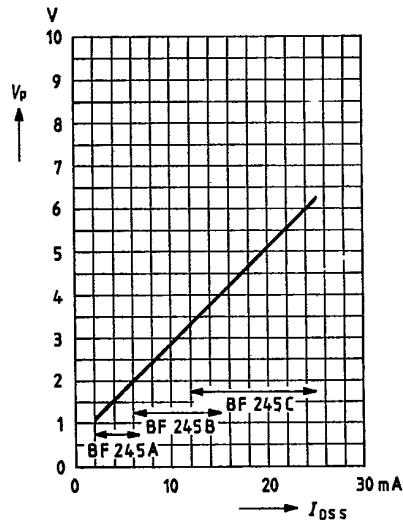
Drain current versus temperature
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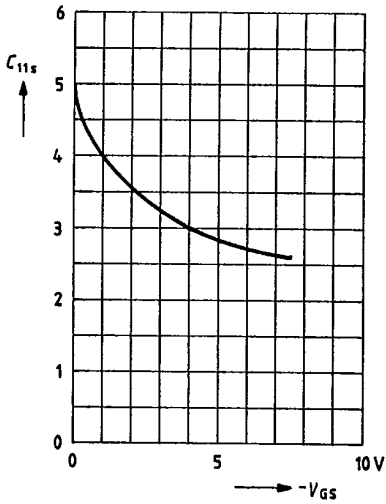
Correlation between V_p and I_{DSS}
 $V_{DS} = 15 \text{ V}$, $I_D = 10 \text{ mA}$; $T_j = 25^\circ \text{C}$



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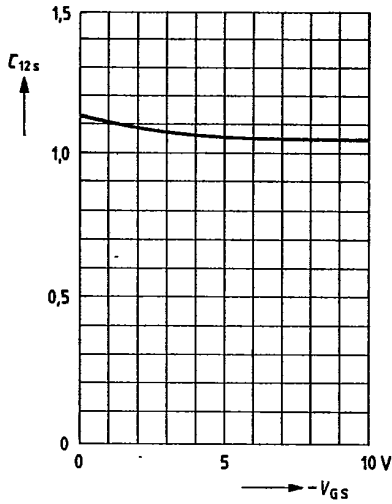
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Input characteristics $C_{11s} = f(-V_{GS})$
 $V_{DS} = 20\text{ V}; f = 1\text{ MHz}; T_{amb} = 25^\circ\text{C}$



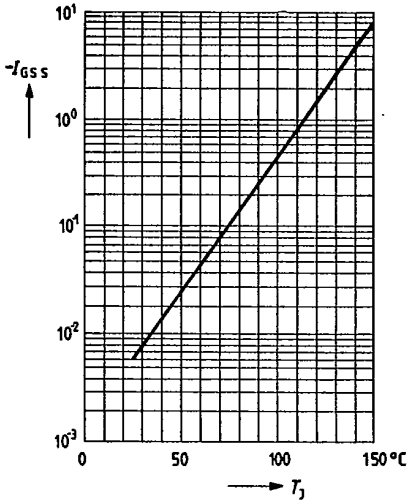
Reverse transfer capacitance

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



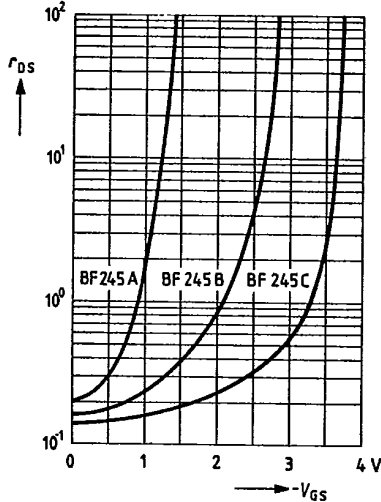
Reverse current versus temperature

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



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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