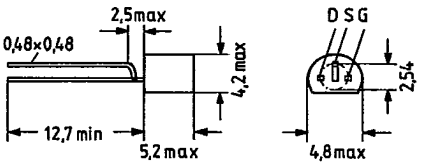
N-Channel Junction Field-Effect Transistors

BF 256 A
BF 256 B
BF 256 C

BF 256 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 RF applications.

Type	Ordering code
BF 256 A	Q68000-A5168
BF 256 B	Q62702-F413
BF 256 C	Q68000-A5169
BF 256	Q62702-F733



Approx. weight 0.25 g Dimensions in mm

Maximum ratings

Drain-source voltage	$\pm V_{DS}$	30	V
Drain-gate voltage (I_S = 0)	$+V_{DG\,0}$	30	V
Gate-source voltage (I_D = 0)	$-V_{GS\,0}$	30	V
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.

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

Gate cutoff current ($-V_{GS}$ = 20 V, V_{DS} = 0)		$-I_{GSS}$	≤5	nA
Drain-source short-circuit current (V_{DS} = 15 V, V_{GS} = 0)	BF 256 A:	I_{DSS}	3 to 7	mA
	BF 256 B:	I_{DSS}	6 to 13	mA[2]
	BF 256 C:	I_{DSS}	11 to 18	mA
Gate-source voltage (V_{DS} = 15 V, I_D = 200 µA)		$-V_{GS}$	0.5 to 7.5	V[2]
Gate-source breakdown voltage ($-I_G$ = 1 µA, V_{DS} = 0)		$-V_{(BR)GSS}$	≥30	V

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

Small-signal short-circuit forward transfer admittance (V_{DS} = 15 V, V_{GS} = 0, f = 1 kHz)	$\lvert y_{21s} \rvert$	5 (≥4.5)	mS
Reverse transfer capacitance (V_{DS} = 20 V, $-V_{GS}$ = 1 V, f = 1 MHz)	C_{12s}	0.7	pF
Output capacitance (V_{DS} = 20 V, V_{GS} = 0, f = 1 MHz)	C_{22s}	1.2	pF
Cutoff frequency of small-signal short circuit forward transfer admittance[1] (V_{DS} = 15 V, V_{GS} = 0)	f_{y21s}	1	GHz
Power gain (V_{DS} = 15 V, R_S = 47 Ω, f = 800 MHz)	G_p	11	dB
Noise figure (V_{DS} = 10 V, R_S = 47 Ω, f = 800 MHz)	NF	7.5	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 256 B 1: I_{DSS} = 6 to 8 mA, $-V_{GS}$ = 1.4 to 2.6 V

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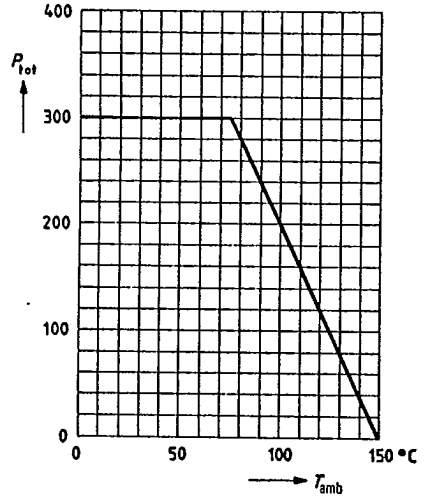
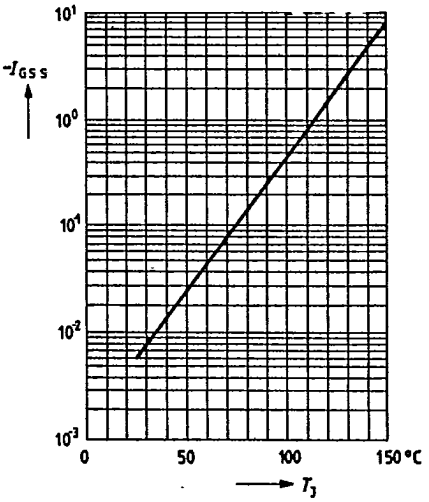
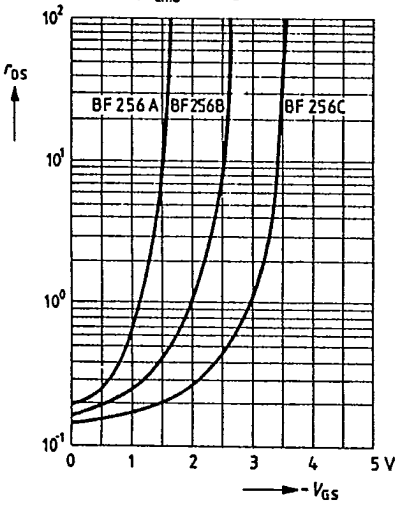
Total perm. power dissipation versus temperature
mW $P_{tot} = f(T_{amb})$



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



Dynamic drain-source resistance
$r_{DS} = f(-V_{GS})$; $V_{DS} = 0$;
kΩ $f = 1$ 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