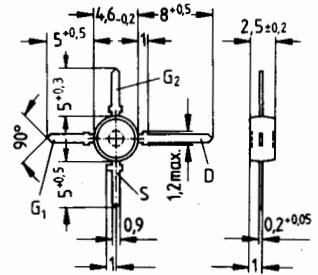


- Short-channel transistor with high S/C quality factor
- For low-noise, gain-controlled input stages up to 1 GHz



X-plast
Approx. weight 0.35 g

Dimensions in mm

Type	Ordering code for versions in bulk
BF 988	Q62702-F36

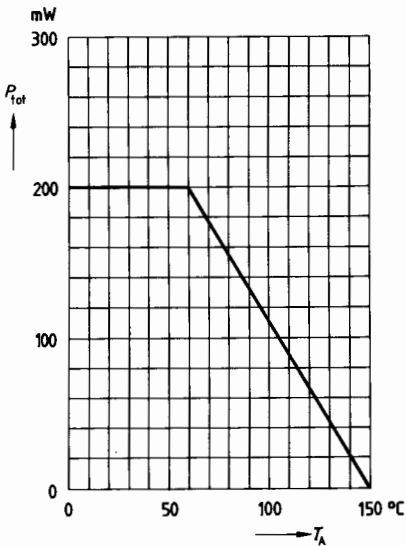
Maximum ratings	Symbol	Ratings	Unit
Drain-source voltage	V_{DS}	12	V
Drain current	I_D	30	mA
Gate 1/Gate 2 source peak current	$\pm I_{G1/2SM}$	10	mA
Total power dissipation $T_A \leq 60^\circ\text{C}$	P_{tot}	200	mW
Storage temperature range	T_{stg}	-55 ... +150	$^\circ\text{C}$
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Thermal resistance			
Channel - ambient	R_{thJA}	≤ 450	K/W

Electrical characteristicsat $T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified

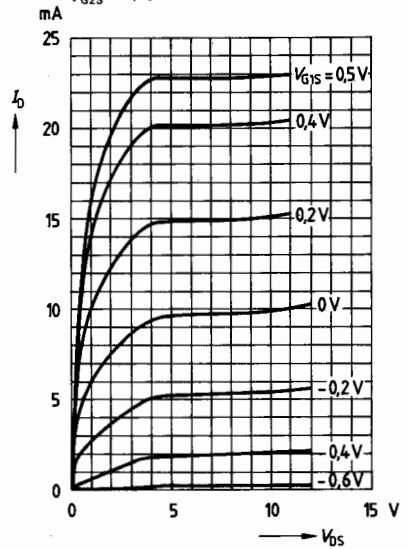
DC characteristics	Symbol	min.	typ.	max.	Unit
Drain-source breakdown voltage $I_D = 10\text{ }\mu\text{A}$, $-V_{G1S} = -V_{G2S} = 4\text{ V}$	$V_{(BR)DS}$	12	–	–	V
Gate 1-source breakdown voltage $\pm I_{G1S} = 10\text{ mA}$, $V_{G2S} = V_{DS} = 0$	$\pm V_{(BR)G1SS}$	8	–	14	V
Gate 2-source breakdown voltage $\pm I_{G2S} = 10\text{ mA}$, $V_{G1S} = V_{DS} = 0$	$\pm V_{(BR)G2SS}$	8	–	14	V
Gate 1-source leakage current $\pm V_{G1S} = 5\text{ V}$, $V_{G2S} = V_{DS} = 0$	$\pm I_{G1SS}$	–	–	50	nA
Gate 2-source leakage current $\pm V_{G2S} = 5\text{ V}$, $V_{G1S} = V_{DS} = 0$	$\pm I_{G2SS}$	–	–	50	nA
Drain current $V_{DS} = 8\text{ V}$, $V_{G1S} = 0$, $V_{G2S} = 4\text{ V}$	I_{DSS}	2	–	18	mA
Gate 1-source pinch-off voltage $V_{DS} = 8\text{ V}$, $V_{G2S} = 4\text{ V}$, $I_D = 20\text{ }\mu\text{A}$	$-V_{G1S(p)}$	–	–	2.5	V
Gate 2-source pinch-off voltage $V_{DS} = 8\text{ V}$, $V_{G1S} = 0$, $I_D = 20\text{ }\mu\text{A}$	$-V_{G2S(p)}$	–	–	2	V
AC characteristics	Symbol	min.	typ.	max.	Unit
Forward transconductance $V_{DS} = 8\text{ V}$, $I_D = 10\text{ mA}$, $V_{G2S} = 4\text{ V}$ $f = 1\text{ kHz}$	g_{fs}	–	24	–	mS
Gate 1 input capacitance $V_{DS} = 8\text{ V}$, $I_D = 10\text{ mA}$, $V_{G2S} = 4\text{ V}$ $f = 1\text{ MHz}$	C_{g1ss}	–	2.1	–	pF
Gate 2 input capacitance $V_{DS} = 8\text{ V}$, $I_D = 10\text{ mA}$, $V_{G2S} = 4\text{ V}$ $f = 1\text{ MHz}$	C_{g2ss}	–	1.2	–	pF
Reverse transfer capacitance $V_{DS} = 8\text{ V}$, $I_D = 10\text{ mA}$, $V_{G2S} = 4\text{ V}$ $f = 1\text{ MHz}$	C_{dg1}	–	25	–	fF
Output capacitance $V_{DS} = 8\text{ V}$, $I_D = 10\text{ mA}$, $V_{G2S} = 4\text{ V}$ $f = 1\text{ MHz}$	C_{dss}	–	1.05	–	pF
Power gain (test circuit 1) $V_{DS} = 8\text{ V}$, $I_D = 10\text{ mA}$, $f = 200\text{ MHz}$, $G_G = 2\text{ mS}$, $G_L = 0.5\text{ mS}$, $V_{G2S} = 4\text{ V}$	G_{ps}	–	28	–	dB
(Test circuit 2) $V_{DS} = 8\text{ V}$, $I_D = 10\text{ mA}$, $f = 800\text{ MHz}$, $G_G = 3.3\text{ mS}$, $G_L = 1\text{ mS}$, $V_{G2S} = 4\text{ V}$	–	–	20	–	dB

AC characteristics	Symbol	min.	typ.	max.	Unit
Noise figure (test circuit 1) $V_{DS} = 8\text{ V}, I_D = 10\text{ mA}, f = 200\text{ MHz},$ $G_G = 2\text{ mS}, G_L = 0.5\text{ mS}, V_{G2S} = 4\text{ V}$ (test circuit 2) $V_{DS} = 8\text{ V}, I_D = 10\text{ mA}, f = 800\text{ MHz},$ $G_G = 3.3\text{ mS}, G_L = 1\text{ mS}, V_{G2S} = 4\text{ V}$	F	—	0.6	—	dB
Control range (test circuit 2) $V_{DS} = 8\text{ V}, V_{G2S} = 4 \dots -2\text{ V}$ $f = 800\text{ MHz}$	ΔG_{ps}	40	—	—	dB

Total power dissipation $P_{tot} = f(T_A)$

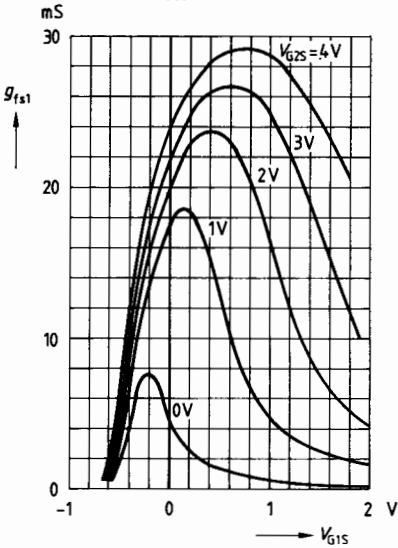


Output characteristics $I_D = f(V_{DS})$
 $V_{G2S} = 4\text{ V}$



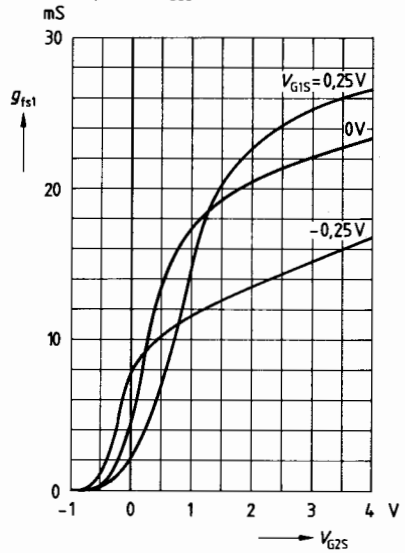
Gate 1 forward transconductance

$g_{fs1} = f(V_{G1S})$
 $V_{DS} = 8\text{ V}, I_{DSS} = 10\text{ mA}, f = 1\text{ kHz}$



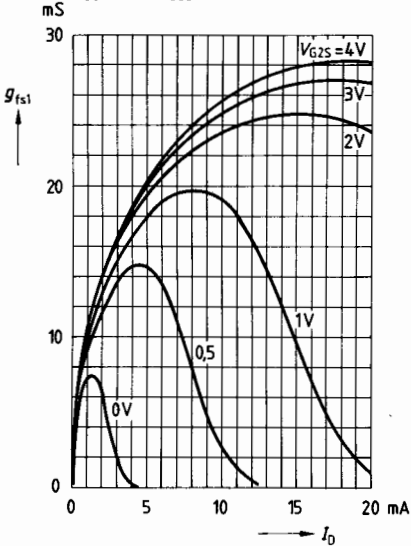
Gate 1 forward transconductance

$g_{fs1} = f(V_{G2S})$
 $V_{DS} = 8\text{ V}, I_{DSS} = 10\text{ mA}, f = 1\text{ kHz}$



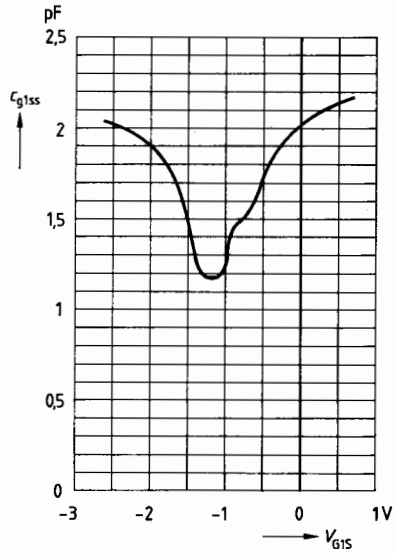
Gate 1 forward transconductance

$g_{fs1} = f(I_D)$
 $V_{DS} = 8\text{ V}, I_{DSS} = 10\text{ mA}, f = 1\text{ kHz}$



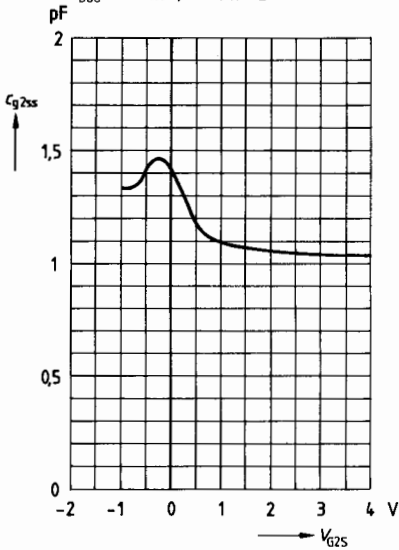
Gate 1 input capacitance $c_{g1ss} = f(V_{G1S})$

$V_{G2S} = 4\text{ V}, V_{DS} = 8\text{ V}, I_{DSS} = 10\text{ mA}$
 $f = 1\text{ MHz}$



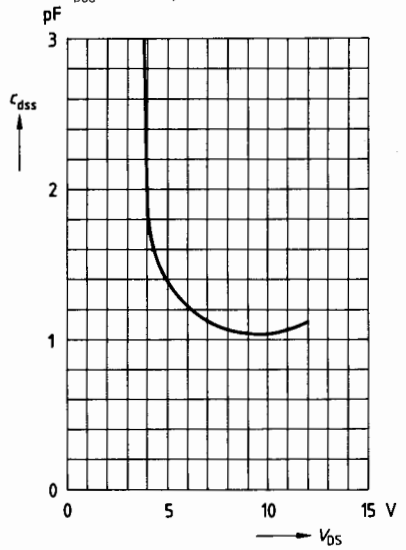
Gate 2 input capacitance $c_{g2ss} = f(V_{G2S})$

$V_{G1S} = 0, V_{DS} = 8 \text{ V}$
 $I_{DSS} = 10 \text{ mA}, f = 1 \text{ MHz}$



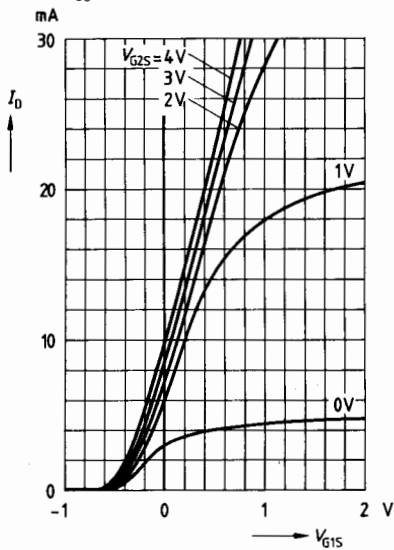
Output capacitance $c_{dss} = f(V_{DS})$

$V_{G1S} = 0, V_{G2S} = 4 \text{ V}$
 $I_{DSS} = 10 \text{ mA}, f = 1 \text{ MHz}$



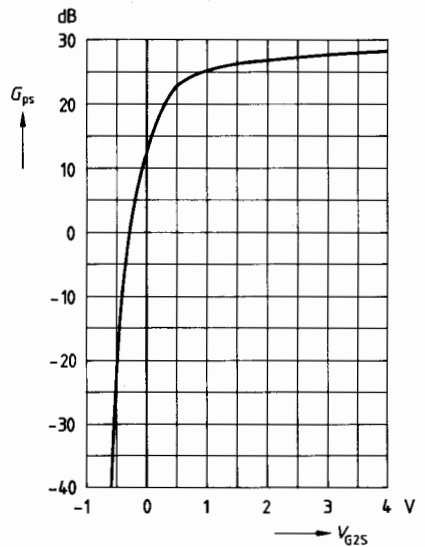
Drain current $I_D = f(V_{G1S})$

$V_{DS} = 8 \text{ V}$



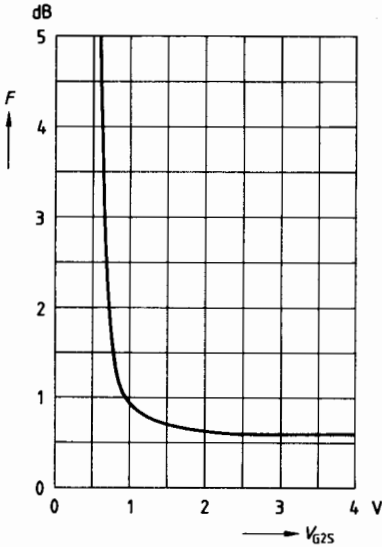
Power gain $G_{ps} = f(V_{G2S})$

$V_{DS} = 8 \text{ V}, V_{G1S} = 0$
 $I_{DSS} = 10 \text{ mA}, f = 200 \text{ MHz}$
 (s. test circuit 1)



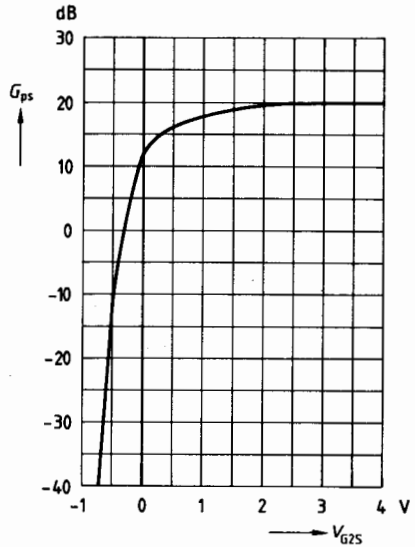
Noise figure $F = f(V_{G2S})$

$V_{DS} = 8\text{ V}$, $V_{G1S} = 0$, $I_{DSS} = 10\text{ mA}$,
 $f = 200\text{ MHz}$, (s. test circuit 1)



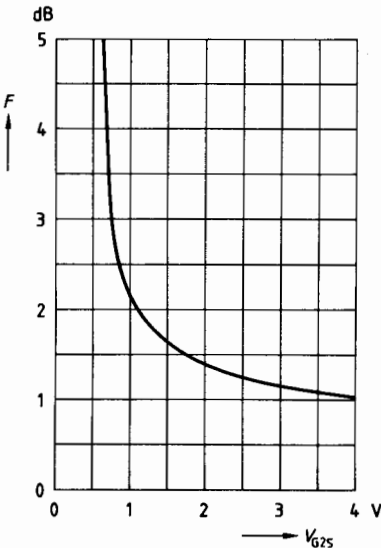
Power gain $G_{ps} = f(V_{G2S})$

$V_{DS} = 8\text{ V}$, $V_{G1S} = 0$, $I_{DSS} = 10\text{ mA}$,
 $f = 800\text{ MHz}$, (s. test circuit 2)



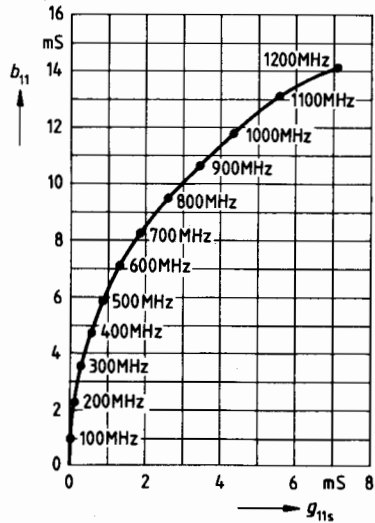
Noise figure $F = f(V_{G2S})$

$V_{DS} = 8\text{ V}$, $V_{G1S} = 0$, $I_{DSS} = 10\text{ mA}$,
 $f = 800\text{ MHz}$, (s. test circuit 2)



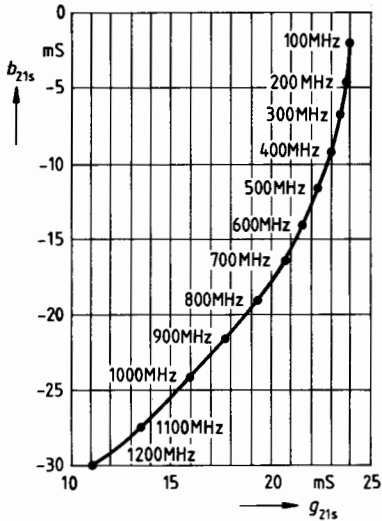
Gate 1 input admittance y_{11s}

$V_{DS} = 8\text{ V}$, $V_{G2S} = 4\text{ V}$, $V_{G1S} = 4\text{ V}$,
 $I_{DSS} = 10\text{ mA}$, (common source)



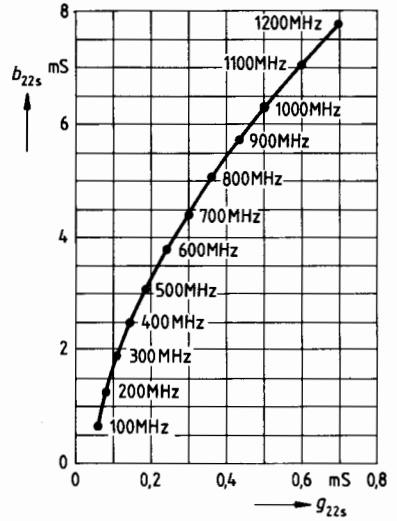
Gate 1 forward transfer admittance y_{21s}

$V_{DS} = 8 \text{ V}$, $V_{G2S} = 4 \text{ V}$, $V_{G1S} = 0$
 $I_{DSS} = 10 \text{ mA}$, (common source)



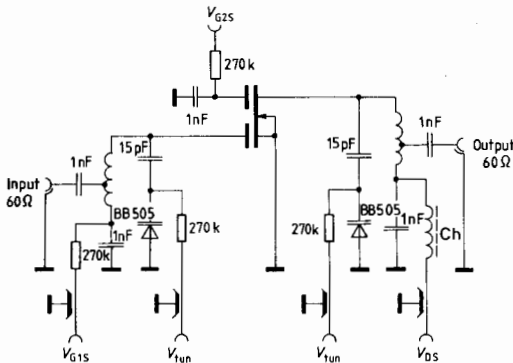
Output admittance y_{22s}

$V_{DS} = 8 \text{ V}$, $V_{G2S} = 4 \text{ V}$, $V_{G1S} = 0$
 $I_{DSS} = 10 \text{ mA}$, (common source)



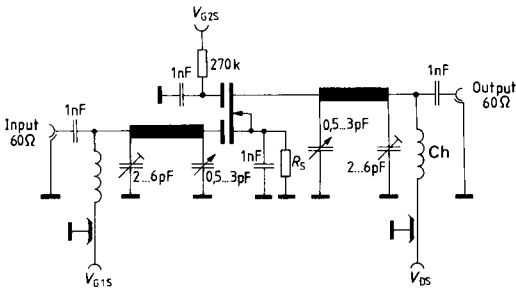
Test circuit 1, power gain and noise figure

$f = 200 \text{ MHz}$, $G_G = 2 \text{ mS}$, $G_L = 0.5 \text{ mS}$



Test circuit 2, power gain and noise figure

$f = 800 \text{ MHz}$, $G_G = 3.3 \text{ mS}$, $G_L = 1 \text{ mS}$



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