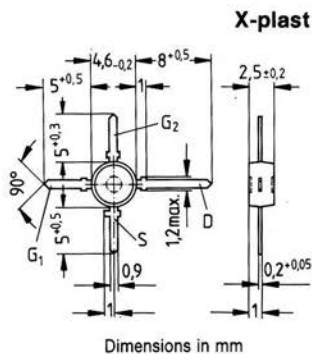


- For VHF applications, especially for input and mixer stages with a wide tuning range, e.g. in CATV tuners



Type	BF 964 S
Ordering code	Q62702-F446

Maximum ratings

Drain-source voltage	V_{DS}	20	V
Drain current	I_D	30	mA
Gate 1/gate 2 peak source current	$\pm I_{G1/2SM}$	10	mA
Total power dissipation	P_{tot}	200	mW
$T_A \leq 60^\circ\text{C}$			
Storage temperature range	T_{stg}	$-55 \dots +150$	$^\circ\text{C}$
Channel temperature	T_{Ch}	150	$^\circ\text{C}$

Thermal resistance

Junction — ambient	R_{thJA}	≤ 450	K/W
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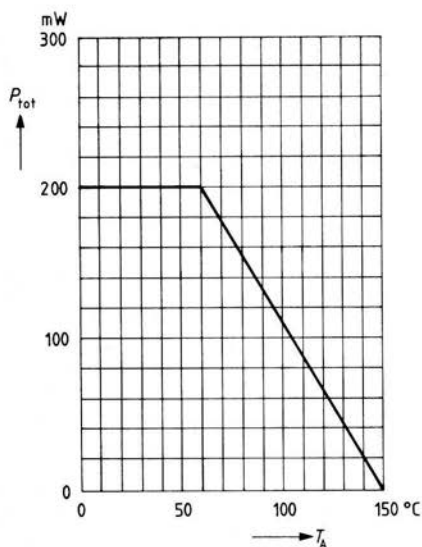
Characteristics ($T_A = 25^\circ\text{C}$)**DC characteristics**

		min	typ	max	
Drain-source breakdown voltage $I_D = 10\ \mu\text{A}$, $-V_{G1S} = -V_{G2S} = 4\ \text{V}$	$V_{(BR)\ DS}$	20	—	—	V
Gate 1 source breakdown voltage $\pm I_{G1S} = 10\ \text{mA}$, $V_{G2S} = V_{DS} = 0$	$\pm V_{(BR)\ G1SS}$	8,5	—	17	V
Gate 2 source breakdown voltage $\pm I_{G2S} = 10\ \text{mA}$, $V_{G1S} = V_{DS} = 0$	$\pm V_{(BR)\ G2SS}$	8,5	—	17	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 $V_{DS} = 15\ \text{V}$, $V_{G1S} = 0$, $V_{G2S} = 4\ \text{V}$	I_{DSS}	2	—	20	mA
Gate 1 source pinch-off voltage $V_{DS} = 15\ \text{V}$, $V_{G2S} = 4\ \text{V}$, $I_D = 20\ \mu\text{A}$	$-V_{G1S\ (p)}$	—	—	2,5	V
Gate 2 source pinch-off voltage $V_{DS} = 15\ \text{V}$, $V_{G1S} = 0$, $I_D = 20\ \mu\text{A}$	$-V_{G2S\ (p)}$	—	—	2,0	V

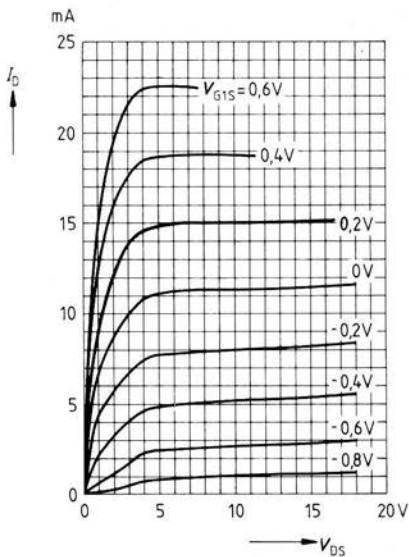
AC characteristics

Forward transconductance $V_{DS} = 15\ \text{V}$, $I_D = 10\ \text{mA}$, $V_{G2S} = 4\ \text{V}$, $f = 1\ \text{kHz}$	g_{fs}	15	18	—	mS
Gate 1 input capacitance $V_{DS} = 15\ \text{V}$, $I_D = 10\ \text{mA}$, $V_{G2S} = 4\ \text{V}$, $f = 1\ \text{MHz}$	C_{g1ss}	—	2,5	—	pF
Gate 2 input capacitance $V_{DS} = 15\ \text{V}$, $I_D = 10\ \text{mA}$, $V_{G2S} = 4\ \text{V}$, $f = 1\ \text{MHz}$	C_{g2ss}	—	1,2	—	pF
Feedback capacitance $V_{DS} = 15\ \text{V}$, $I_D = 10\ \text{mA}$, $V_{G2S} = 4\ \text{V}$, $f = 1\ \text{MHz}$	C_{dg1}	—	25	—	fF
Output capacitance $V_{DS} = 15\ \text{V}$, $I_D = 10\ \text{mA}$, $V_{G2S} = 4\ \text{V}$, $f = 1\ \text{MHz}$	C_{dss}	—	1	—	pF
Power gain $V_{DS} = 15\ \text{V}$, $I_D = 10\ \text{mA}$, $f = 200\ \text{MHz}$, $G_G = 2\ \text{mS}$, $G_L = 0,5\ \text{mS}$ (test circuit)	G_{ps}	—	25	—	dB
Noise figure $V_{DS} = 15\ \text{V}$, $I_D = 10\ \text{mA}$, $f = 200\ \text{MHz}$, $G_G = 2\ \text{mS}$, $G_L = 0,5\ \text{mS}$ (test circuit)	F	—	1	—	dB
Gain control range $V_{DS} = 15\ \text{V}$, $V_{G2S} = 4 \dots -2\ \text{V}$, $f = 200\ \text{MHz}$ (test circuit)	ΔG_{ps}	50	—	—	dB

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

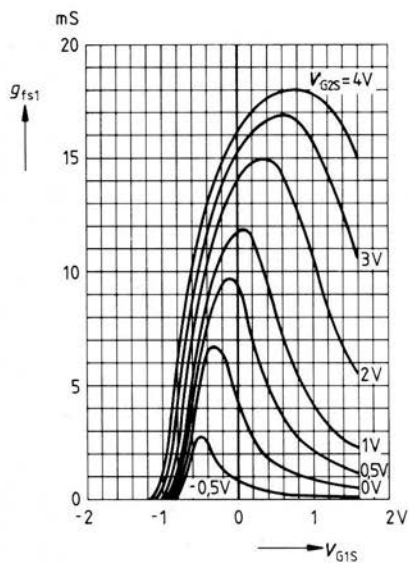


Output characteristics $I_D = f(V_{DS})$



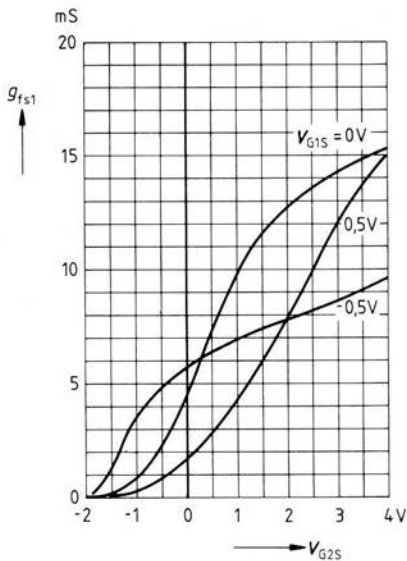
Gate 1 forward transconductance

$g_{fs1} = f(V_{G1S})$
 $V_{DS} = 15 \text{ V}$
 $I_{DSS} = 10 \text{ mA}, f = 1 \text{ kHz}$



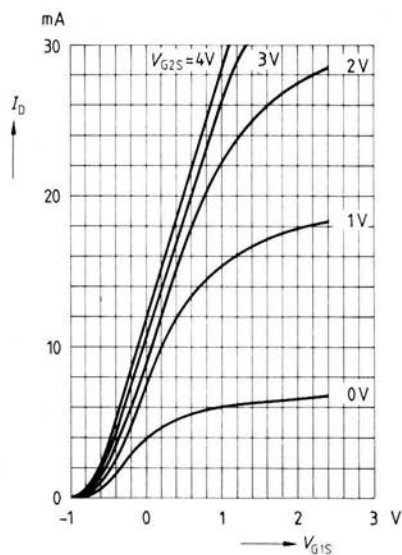
Gate 1 forward transconductance

$g_{fs1} = f(V_{G2S})$
 $V_{DS} = 15 \text{ V}$
 $I_{DSS} = 10 \text{ mA}, f = 1 \text{ kHz}$



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

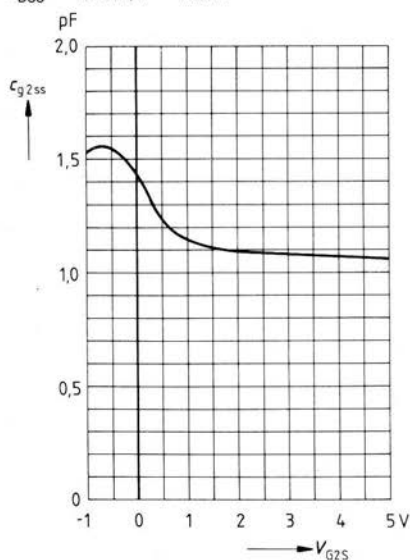
$V_{DS} = 15 \text{ V}$



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

$V_{G1S} = 0 \text{ V}, V_{DS} = 15 \text{ V}$

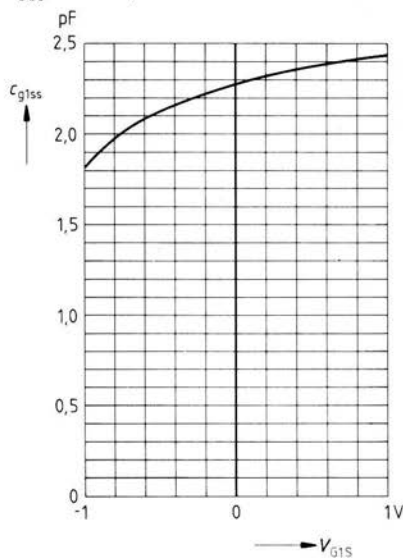
$I_{DSS} = 10 \text{ mA}, f = 1 \text{ MHz}$



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

$V_{G2S} = 4 \text{ V}, V_{DS} = 15 \text{ V}$

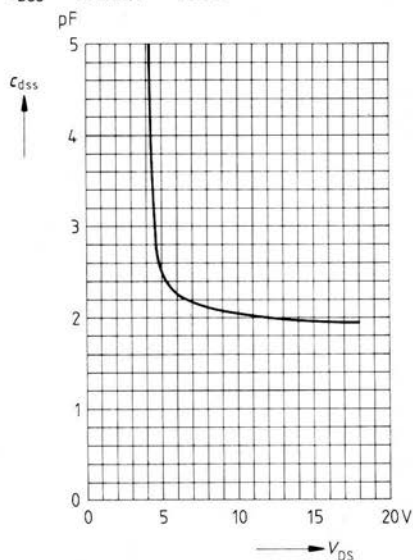
$I_{DSS} = 10 \text{ mA}, f = 1 \text{ MHz}$



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

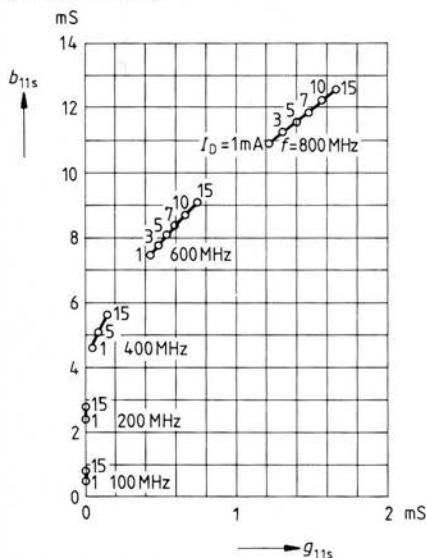
$V_{G1S} = 0 \text{ V}, V_{G2S} = 4 \text{ V}$

$I_{DSS} = 10 \text{ mA}, f = 1 \text{ MHz}$

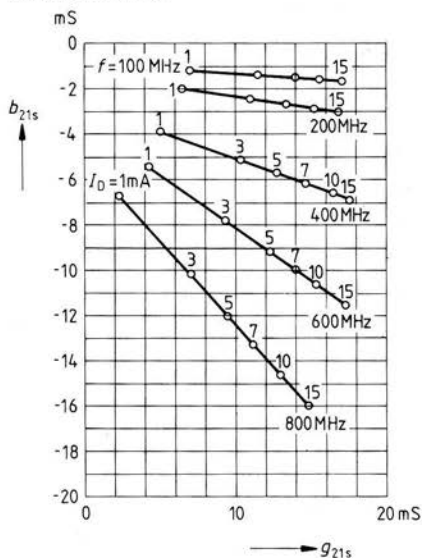


Gate 1 input admittance y_{11s}

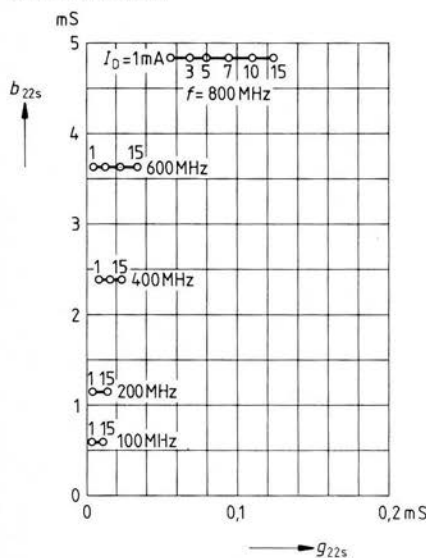
$V_{DS} = 15 \text{ V}$, $V_{G2S} = 4 \text{ V}$
(common source)

**Gate 1 forward transfer admittance y_{21s}**

$V_{DS} = 15 \text{ V}$, $V_{G2S} = 4 \text{ V}$
(common source)

**Output admittance y_{22s}**

$V_{DS} = 15 \text{ V}$, $V_{G2S} = 4 \text{ V}$
(common source)

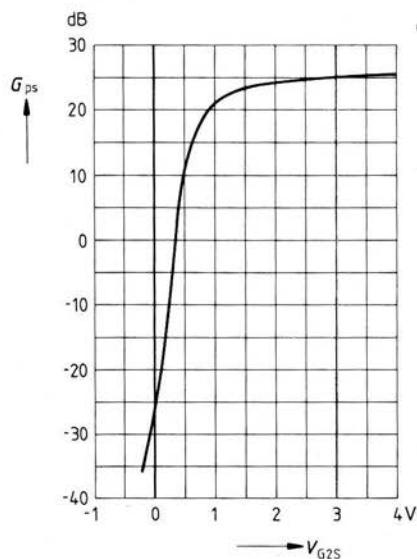


Power gain $G_{ps} = f(V_{G2S})$

$V_{DS} = 15\text{ V}$, $V_{G1S} = 0\text{ V}$

$I_{DSS} = 10\text{ mA}$, $f = 200\text{ MHz}$

(see test circuit)

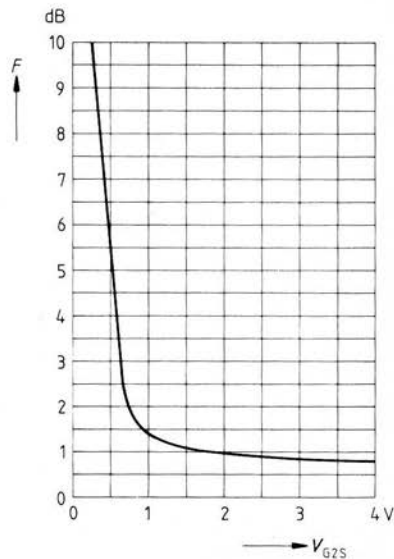


Noise figure $F = f(V_{G2S})$

$V_{DS} = 15\text{ V}$, $V_{G1S} = 0\text{ V}$

$I_{DSS} = 10\text{ mA}$, $f = 200\text{ MHz}$

(see test circuit)



Test circuit for power gain and noise figure

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

