

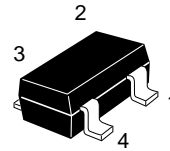
3SK228

GaAs Dual Gate MES FET UHF TV Tuner RF Amplifier

Table 1 Absolute Maximum Ratings
($T_a = 25^\circ\text{C}$)

Item	Symbol	Rating	Unit
Drain to source voltage	V_{DS}	12	V
Gate 1 to source voltage	V_{G1S}	-6	V
Gate 2 to source voltage	V_{G2S}	-6	V
Drain current	I_D	50	mA
Channel power dissipation	P_{ch}	150	mW
Channel temperature	T_{ch}	125	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +125	$^\circ\text{C}$

MPAK-4



1. Source
2. Gate 1
3. Gate 2
4. Drain

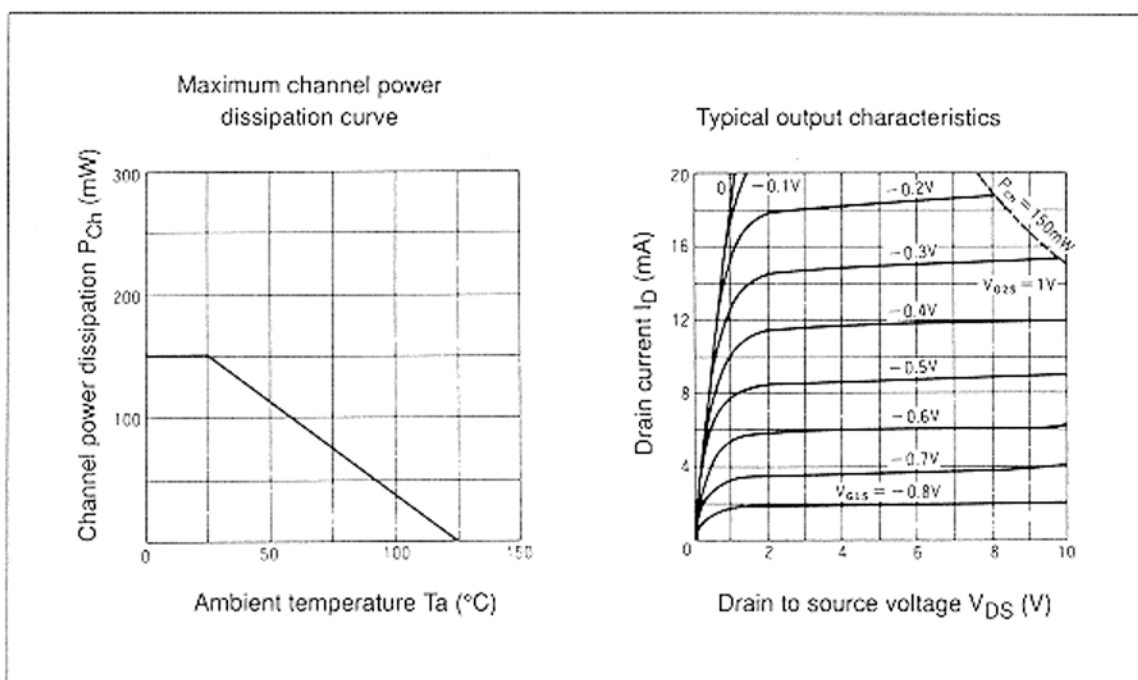
Table 2 Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Item	Symbol	Min	Typ	Max	Unit	Test condition
Drain to source cutoff current	I_{DSX}	—	—	50	μA	$V_{DS} = 12\text{ V}$, $V_{G1S} = -3\text{ V}$, $V_{G2S} = 0$
Gate 1 to source breakdown voltage	$V_{(BR)G1SS}$	-6	—	—	V	$I_{G1} = -10\ \mu\text{A}$, $V_{G2S} = V_{DS} = 0$
Gate 2 to source breakdown voltage	$V_{(BR)G2SS}$	-6	—	—	V	$I_{G2} = -10\ \mu\text{A}$, $V_{G1S} = V_{DS} = 0$
Gate 1 cutoff current	I_{G1SS}	—	—	-5	μA	$V_{G1S} = -5\text{ V}$, $V_{G2S} = V_{DS} = 0$
Gate 2 cutoff current	I_{G2SS}	—	—	-5	μA	$V_{G2S} = -5\text{ V}$, $V_{G1S} = V_{DS} = 0$
Drain current	I_{DSS}	10	17	32	mA	$V_{DS} = 5\text{ V}$, $V_{G1S} = V_{G2S} = 0$
Gate 1 to source cutoff voltage	$V_{G1S(off)}$	—	-1.1	-1.5	V	$V_{DS} = 5\text{ V}$, $V_{G2S} = 0$, $I_D = 100\ \mu\text{A}$
Gate 2 to source cutoff voltage	$V_{G2S(off)}$	—	-1.1	-1.5	V	$V_{DS} = 5\text{ V}$, $V_{G1S} = 0$, $I_D = 100\ \mu\text{A}$

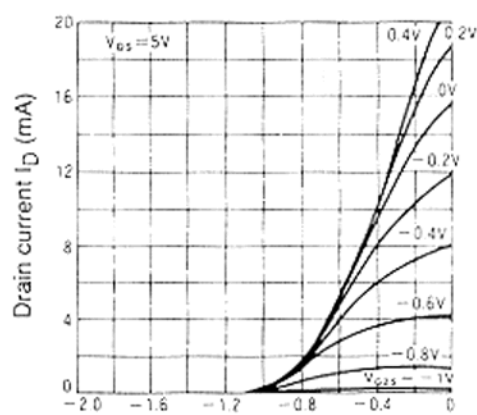
Table 2 Electrical Characteristics ($T_a = 25^\circ\text{C}$) (cont)

Item	Symbol	Min	Typ	Max	Unit	Test condition
Forward transfer admittance	$ y_{fs} $	20	34	—	mS	$V_{DS} = 5\text{ V}$, $V_{G2S} = 1\text{ V}$, $I_D = 10\text{ mA}$, $f = 1\text{ kHz}$
Input capacitance	C_{iss}	—	0.58	1.0	pF	$V_{DS} = 5\text{ V}$, $V_{G1S} = V_{G2S}$ $= -3\text{ V}$, $f = 1\text{ MHz}$
Output capacitance	C_{oss}	—	0.36	0.6	pF	
Reverse transfer capacitance	C_{rss}	—	0.028	0.05	pF	
Power gain	PG	17	19.6	—	dB	$V_{DS} = 5\text{ V}$, $V_{G2S} = 1\text{ V}$, $I_D = 10\text{ mA}$, $f = 900\text{ MHz}$
Noise figure	NF	—	1.3	2.0	dB	

• Marking is "XR-".

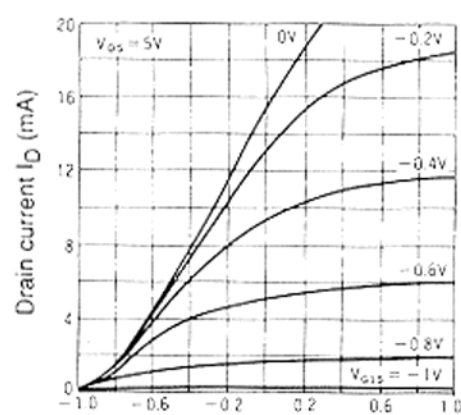


Drain current vs. gate 1 to source voltage



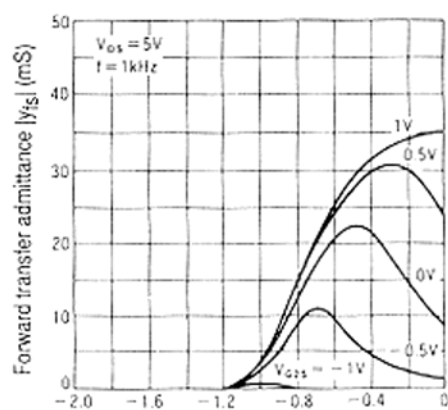
Gate 1 to source voltage V_{G1S} (V)

Drain current vs. gate 2 to source voltage



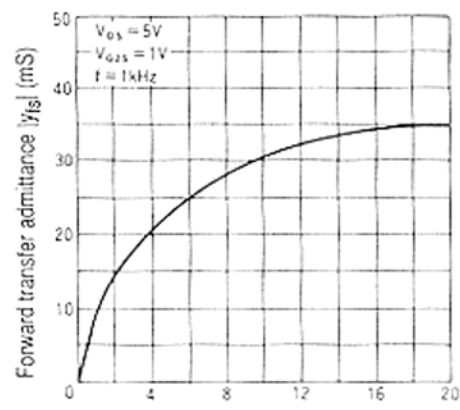
Gate 2 to source voltage V_{G2S} (V)

Forward transfer admittance vs. gate 1 to source voltage



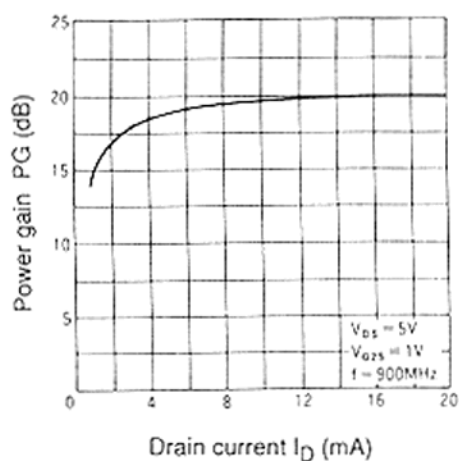
Gate 1 to source voltage V_{G1S} (V)

Forward transfer admittance vs. drain current

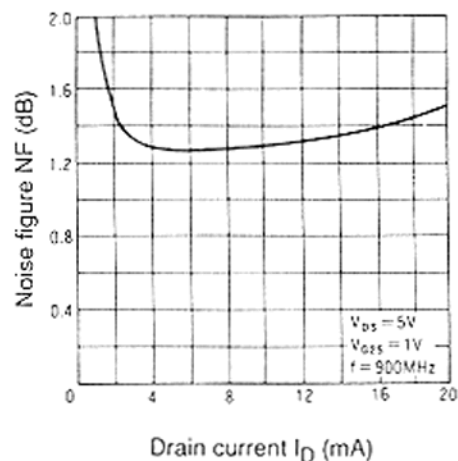


Drain current I_D (mA)

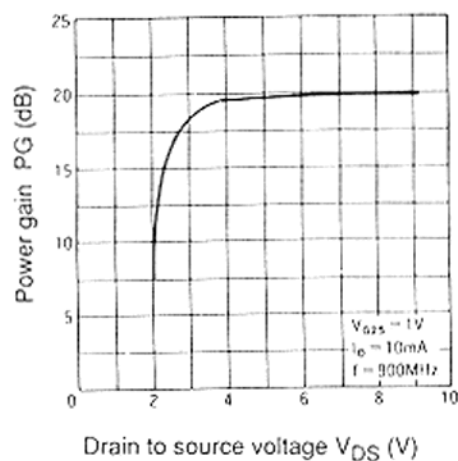
Power gain vs. drain current



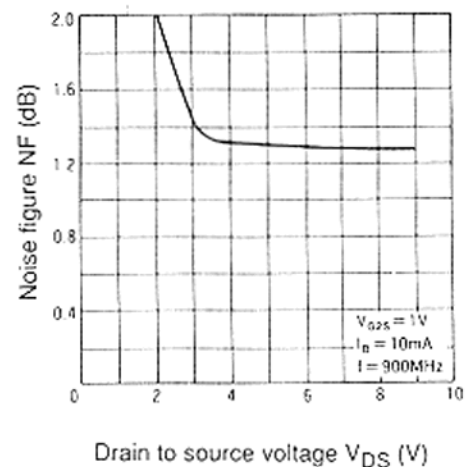
Noise figure vs. drain current



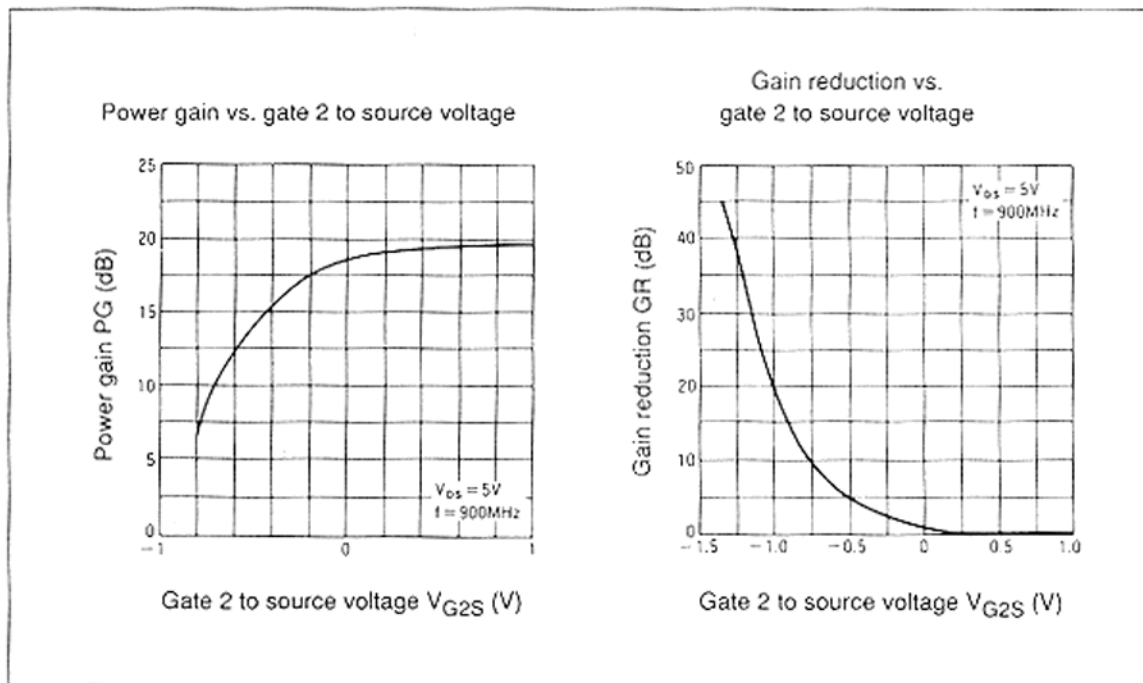
Power gain vs. drain to source voltage



Noise figure vs. drain to source voltage



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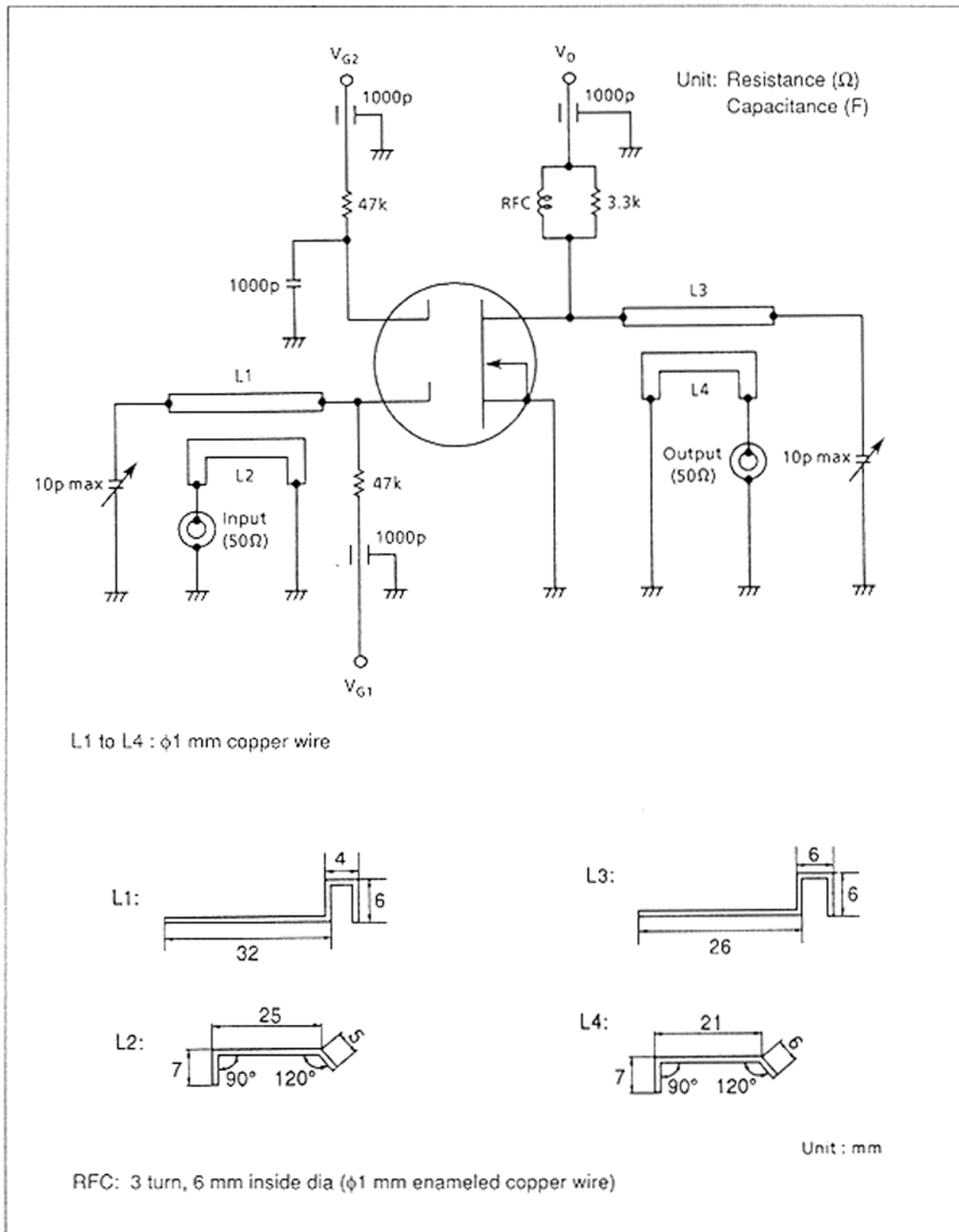


Figure 1 Power Gain, Noise Figure Test Circuit