

3SK233

Silicon N Channel Dual Gate MOS FET
UHF TV Tuner RF Amplifier

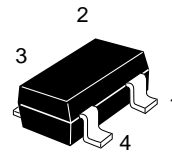
Feature

- Low voltage operation.
- Superior cross modulation characteristics.

Table 1 Absolute Maximum Ratings
(Ta = 25°C)

Item	Symbol	Rating	Unit
Drain to source voltage	V_{DS}	12	V
Gate 1 to source voltage	V_{G1S}	± 10	V
Gate 2 to source voltage	V_{G2S}	± 10	V
Drain current	I_D	35	mA
Channel power dissipation	Pch	150	mW
Channel temperature	Tch	125	°C
Storage temperature	Tstg	-55 to +125	°C

MPAK-4



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

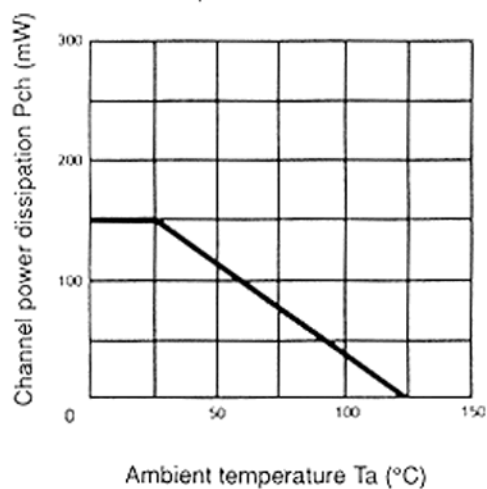
3SK233

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

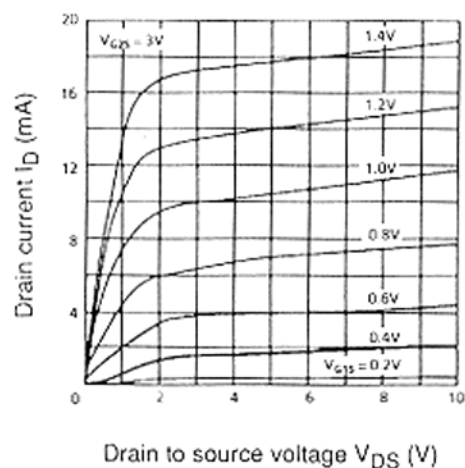
Item	Symbol	Min	Typ	Max	Unit	Test condition
Drain to source breakdown voltage	$V_{(BR)DSX}$	12	—	—	V	$I_D = 200 \mu\text{A}$, $V_{G1S} = -5 \text{ V}$, $V_{G2S} = -5 \text{ V}$
Gate 1 to source breakdown voltage	$V_{(BR)G1SS}$	± 10	—	—	V	$I_{G1} = \pm 10 \mu\text{A}$, $V_{G2S} = V_{DS} = 0$
Gate 2 to source breakdown voltage	$V_{(BR)G2SS}$	± 10	—	—	V	$I_{G2} = \pm 10 \mu\text{A}$, $V_{G1S} = V_{DS} = 0$
Gate 1 cutoff current	I_{G1SS}	—	—	± 100	nA	$V_{G1S} = \pm 8 \text{ V}$, $V_{G2S} = V_{DS} = 0$
Gate 2 cutoff current	I_{G2SS}	—	—	± 100	nA	$V_{G2S} = \pm 8 \text{ V}$, $V_{G1S} = V_{DS} = 0$
Drain current	I_{DSS}	0	—	2	mA	$V_{DS} = 6 \text{ V}$, $V_{G1S} = 0$, $V_{G2S} = 3 \text{ V}$
Gate 1 to source cutoff voltage	$V_{G1S(off)}$	-0.7	—	+0.7	V	$V_{DS} = 10 \text{ V}$, $V_{G2S} = 3 \text{ V}$, $I_D = 100 \mu\text{A}$
Gate 2 to source cutoff voltage	$V_{G2S(off)}$	-0.1	—	+0.8	V	$V_{DS} = 10 \text{ V}$, $V_{G1S} = 3 \text{ V}$, $I_D = 100 \mu\text{A}$
Forward transfer admittance	$ y_{fs} $	14	—	—	mS	$V_{DS} = 6 \text{ V}$, $V_{G2S} = 3 \text{ V}$, $I_D = 10 \text{ mA}$, $f = 1 \text{ kHz}$
Input capacitance	C_{iss}	0.9	1.25	1.8	pF	$V_{DS} = 6 \text{ V}$, $V_{G2S} = 3 \text{ V}$, $I_D = 10 \text{ mA}$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	0.4	0.7	1.2	pF	
Reverse transfer capacitance	C_{rss}	—	0.015	0.03	pF	
Power gain	PG	16	19.4	—	dB	$V_{DS} = 4 \text{ V}$, $V_{G2S} = 3 \text{ V}$, $I_D = 10 \text{ mA}$, $f = 900 \text{ MHz}$
Noise figure	NF	—	2.8	4	dB	

3SK233

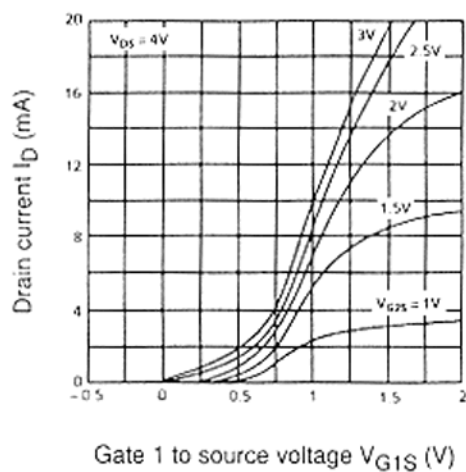
Maximum channel power dissipation curve



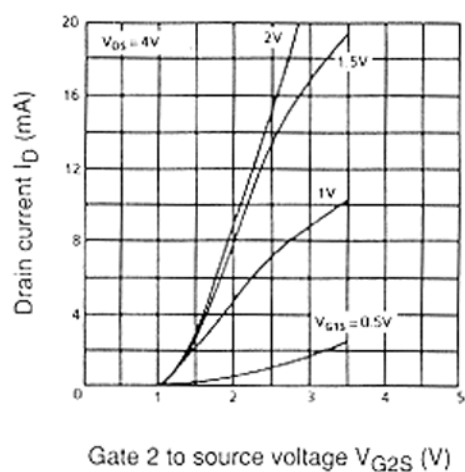
Typical output characteristics



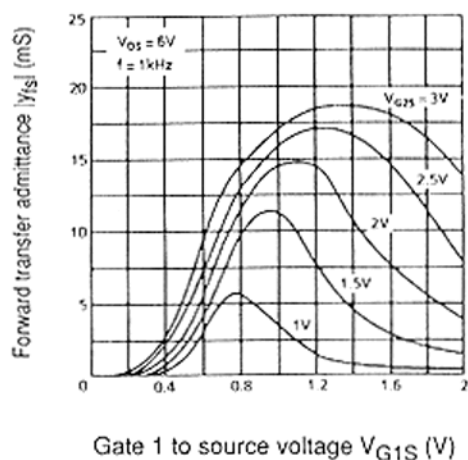
Drain current vs. gate 1 to source voltage



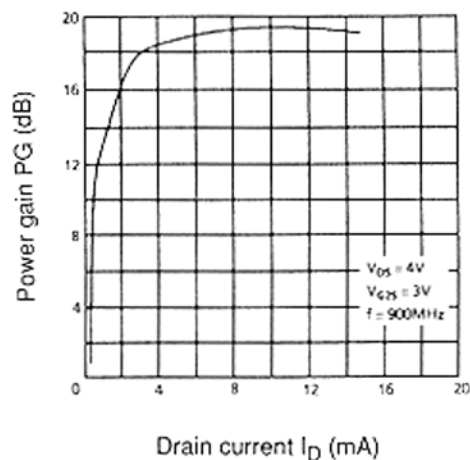
Drain current vs. gate 2 to source voltage



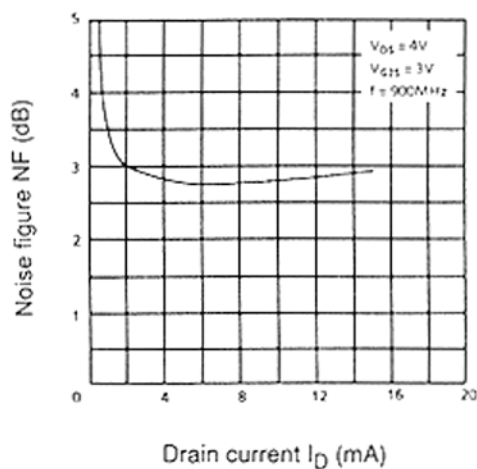
Forward transfer admittance vs. gate 1 to source voltage



Power gain vs. drain current



Noise figure vs. drain current



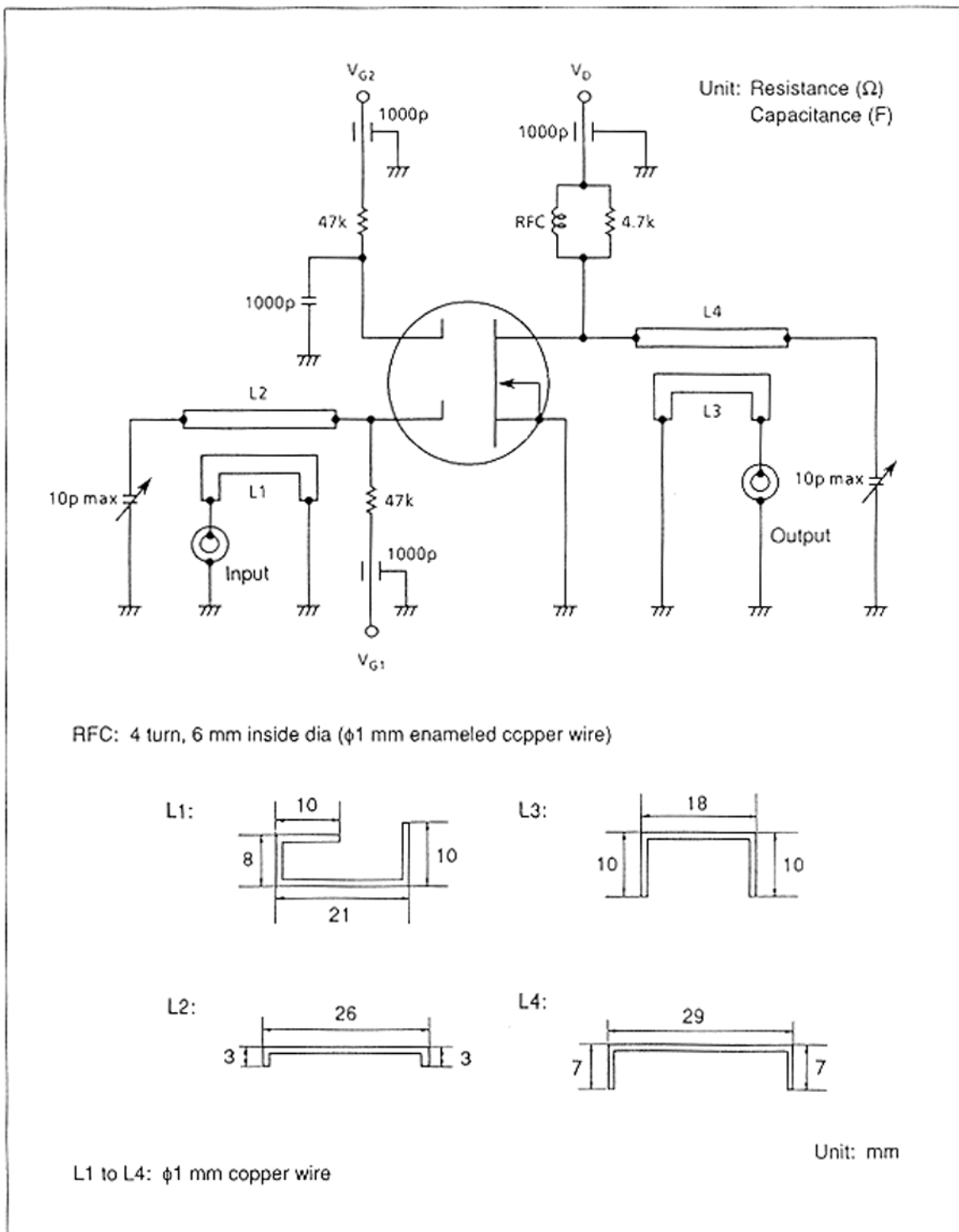


Figure 1 900 MHz Power Gain, Noise Figure Test Circuit