

RF AMPLIFIER FOR UHF TUNER
N-CHANNEL Si DUAL GATE MOS FIELD-EFFECT TRANSISTOR
4 PINS SUPER MINI MOLD

FEATURES

- Low V_{DD} Use : ($V_{DS} = 3.5$ V)
- Driving Battery
- Low Noise Figure : $NF = 1.8$ dB TYP. ($f = 900$ MHz)
- High Power Gain : $G_{PS} = 18.0$ dB TYP. ($f = 900$ MHz)
- Suitable for uses as RF amplifier in UHF TV tuner.
- Automatically Mounting : Embossed Type Taping
- Small Package : 4 Pins Super Mini Mold

ABSOLUTE MAXIMUM RATINGS ($T_A = 25$ °C)

Drain to Source Voltage	V_{DSX}	18	V
Gate1 to Source Voltage	V_{G1S}	$\pm 8^{*1}$	V
Gate2 to Source Voltage	V_{G2S}	$\pm 8^{*1}$	V
Gate1 to Drain Voltage	V_{G1D}	18	V
Gate2 to Drain Voltage	V_{G2D}	18	V
Drain Current	I_D	25	mA
Total Power Dissipation	P_D	130	mW
Channel Temperature	T_{ch}	125	°C
Storage Temperature	T_{stg}	-55 to +125	°C

*1: $R_L \geq 10$ k Ω

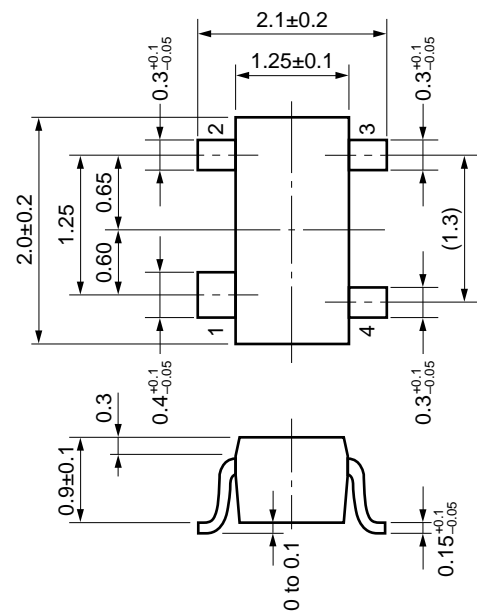
*2: Free air

PRECAUTION

Avoid high static voltages or electric fields so that this device would not suffer from any damage due to those voltage or fields.

PACKAGE DIMENSIONS

(Unit: mm)

**PIN CONNECTIONS**

1. Source
2. Drain
3. Gate2
4. Gate1

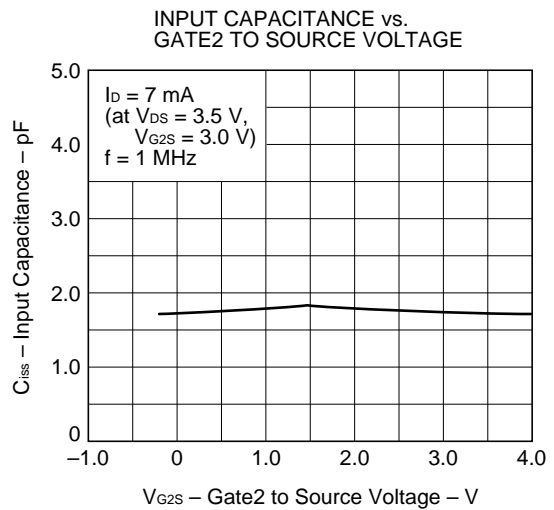
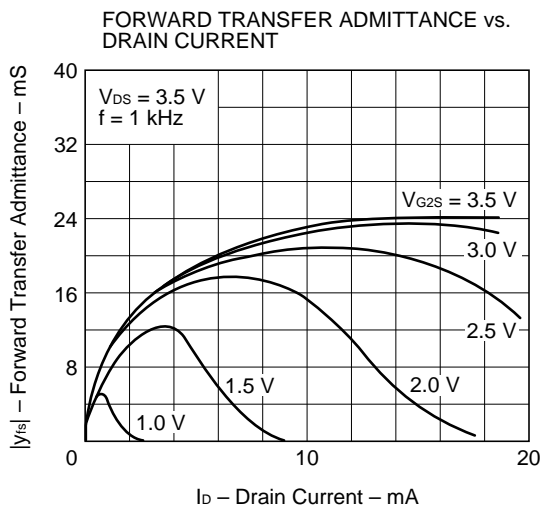
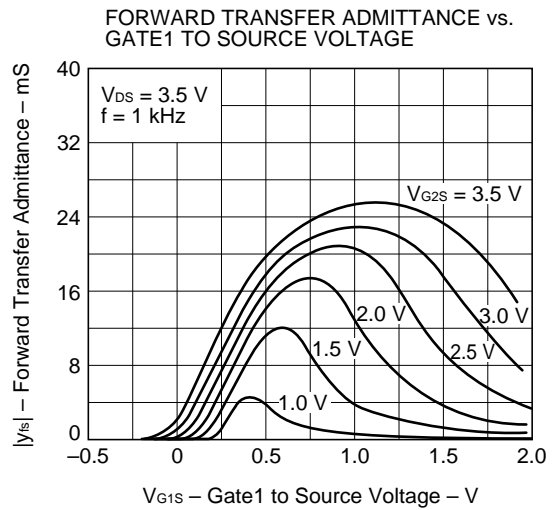
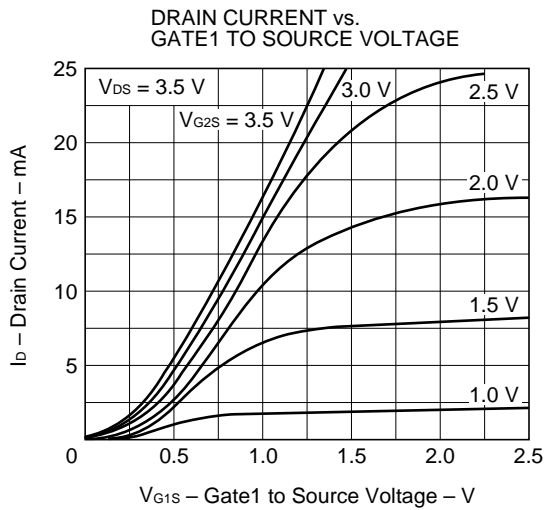
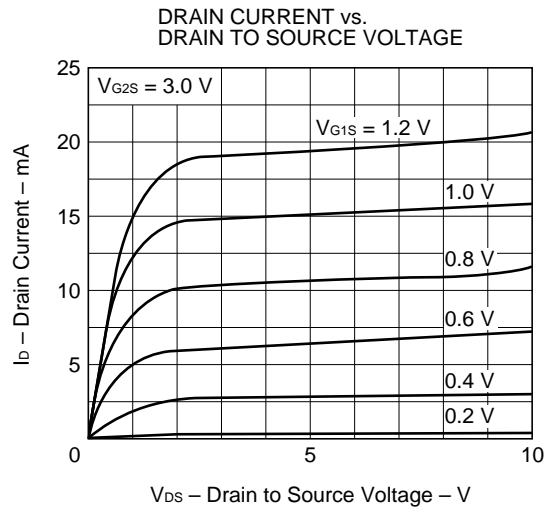
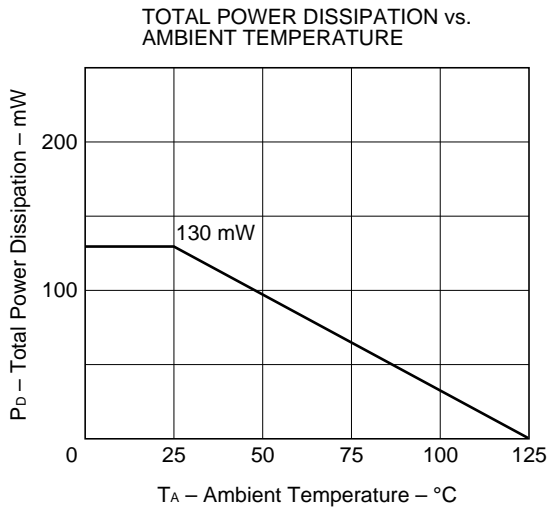
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain to Source Breakdown Voltage	BV _{DSX}	18			V	V _{G1S} = V _{G2S} = -2 V, I _D = 10 μA
Drain Current	I _{DSX}	0.5		7.0	mA	V _{DS} = 3.5 V, V _{G2S} = 3 V, V _{G1S} = 0.75 V
Gate1 to Source Cutoff Voltage	V _{G1S(off)}	-1.0	0	+1.0	V	V _{DS} = 3.5 V, V _{G2S} = 3 V, I _D = 10 μA
Gate2 to Source Cutoff Voltage	V _{G2S(off)}	0	0.5	1.0	V	V _{DS} = 3.5 V, V _{G1S} = 3 V, I _D = 10 μA
Gate1 Reverse Current	I _{G1SS}			±20	nA	V _{DS} = 0, V _{G2S} = 0, V _{G1S} = ±6 V
Gate2 Reverse Current	I _{G2SS}			±20	nA	V _{DS} = 0, V _{G1S} = 0, V _{G2S} = ±6 V
Forward Transfer Admittance	y _{fs}	14	19	24	mS	V _{DS} = 3.5 V, V _{G2S} = 3 V, I _D = 7 mA f = 1 kHz
Input Capacitance	C _{iss}	1.2	1.7	2.2	pF	V _{DS} = 3.5 V, V _{G2S} = 3 V, I _D = 7 mA f = 1 MHz
Output Capacitance	C _{oss}	0.5	1.0	1.5	pF	
Reverse Transfer Capacitance	C _{rss}		0.01	0.03	pF	
Power Gain	G _{ps}	15	18	21	dB	V _{DS} = 3.5 V, V _{G2S} = 3 V, I _D = 7 mA
Noise Figure	NF		1.8	3.0	dB	f = 900 MHz

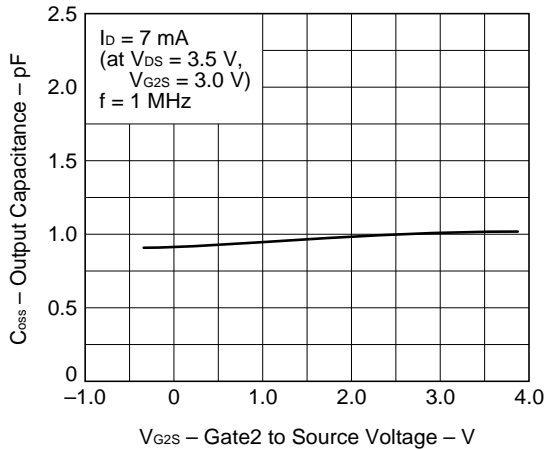
I_{DSX} Classification

Rank	U1G
Marking	U1G
I _{DSX} (mA)	0.5 to 7.0

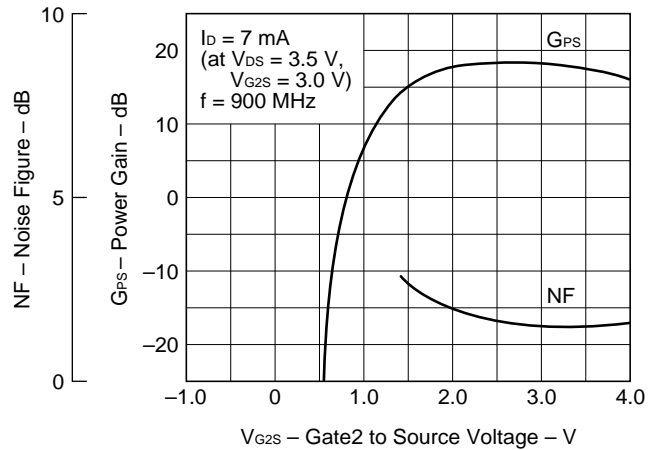
TYPICAL CHARACTERISTICS (TA = 25 °C)



OUTPUT CAPACITANCE vs. GATE2 TO SOURCE VOLTAGE



POWER GAIN AND NOISE FIGURE vs. GATE2 TO SOURCE VOLTAGE

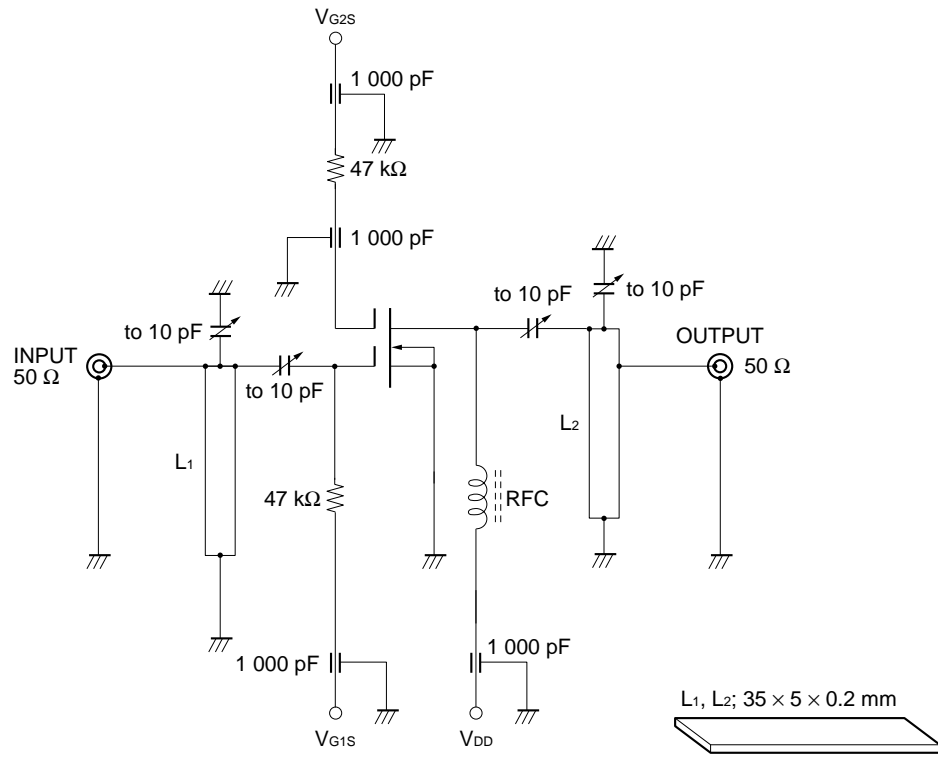


S-Parameter

$V_{DS} = 3.5 \text{ V}, V_{GS2S} = 3 \text{ V}, I_D = 7 \text{ mA}$

Frequency (MHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	1.017	-6.5	2.057	173.3	0.035	-88.2	0.985	-2.9
200	1.000	-13.4	2.034	163.6	0.014	-121.6	0.987	-6.9
300	0.999	-19.8	1.991	155.5	0.006	67.0	0.988	-10.4
400	0.993	-26.6	1.996	146.8	0.006	71.3	0.983	-13.8
500	0.984	-32.6	1.956	136.7	0.005	117.8	0.985	-17.1
600	0.966	-39.1	1.930	130.4	0.002	-23.3	0.983	-20.8
700	0.948	-45.5	1.901	122.7	0.002	-162.4	0.979	-24.6
800	0.934	-51.4	1.897	114.5	0.003	37.8	0.986	-27.9
900	0.908	-57.5	1.897	105.6	0.011	-146.3	0.991	-32.1
1000	0.901	-83.8	1.984	96.6	0.010	-144.3	1.024	-36.4

GPS AND NF TEST CIRCUIT AT $f = 900 \text{ MHz}$



[MEMO]

[MEMO]

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Anti-radioactive design is not implemented in this product.