

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

FEATURES

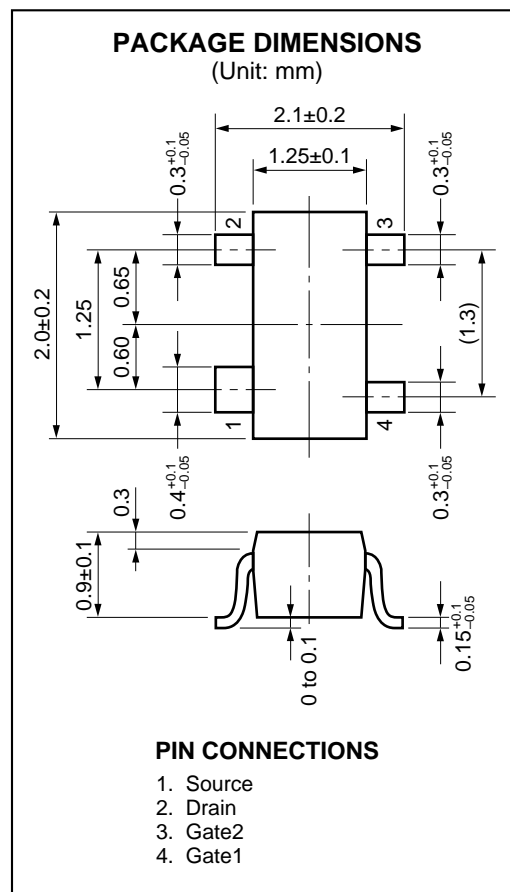
- Low V_{DD} Use : ($V_{DS} = 3.5$ V)
- Driving Battery
- Low Noise Figure : $NF1 = 2.0$ dB TYP. ($f = 470$ MHz)
 $NF2 = 0.8$ dB TYP. ($f = 55$ MHz)
- High Power Gain : $G_{PS} = 19.0$ dB TYP. ($f = 470$ MHz)
- Suitable for use as RF amplifier in CATV tuner.
- Automatically Mounting : Embossed Type Taping
- 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^{*2}	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.

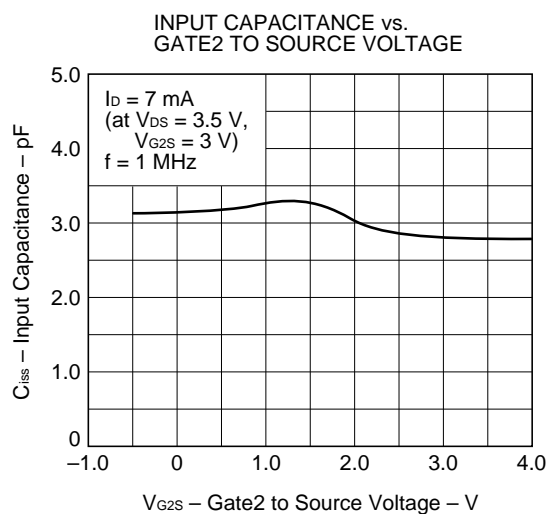
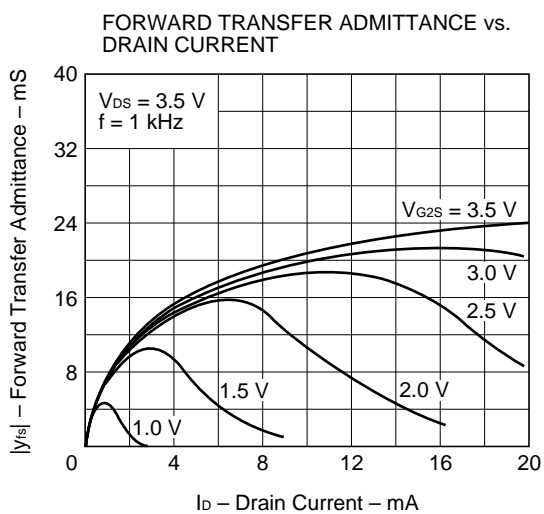
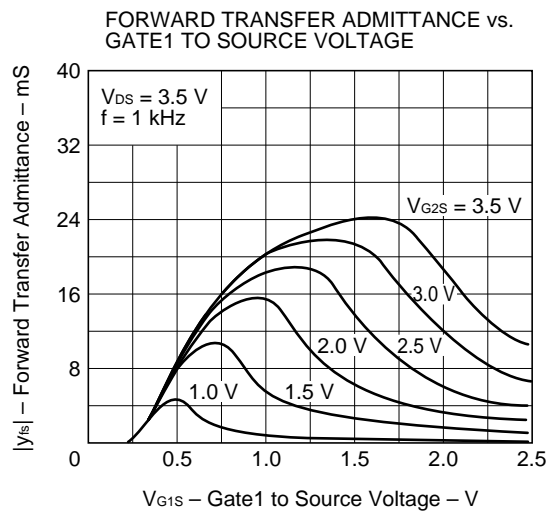
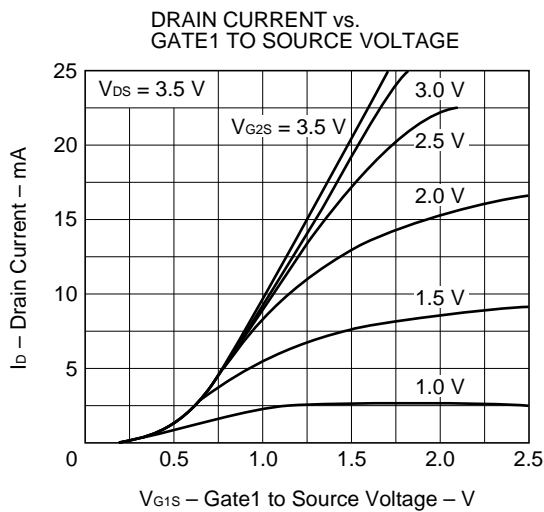
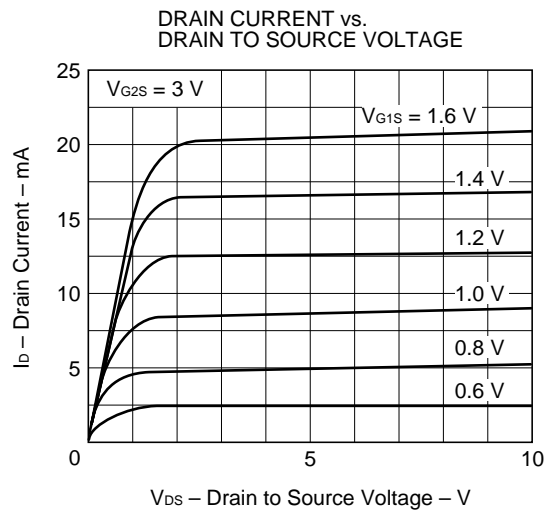
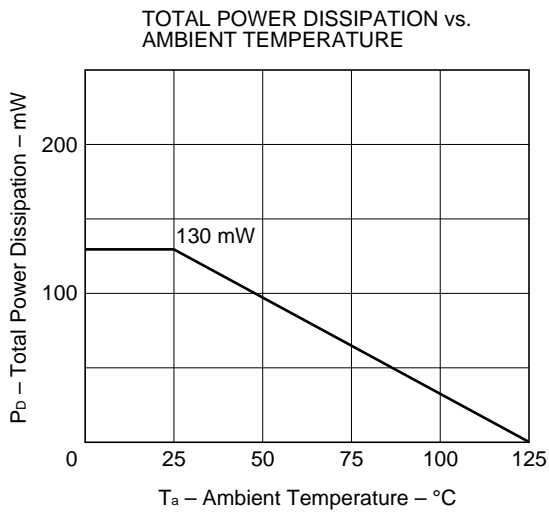
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

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}	0.1		5.0	mA	V _{DS} = 3.5 V, V _{G2S} = 3 V, V _{G1S} = 0.5 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	18	23	mS	V _{DS} = 3.5 V, V _{G2S} = 3 V, I _D = 7 mA f = 1 kHz
Input Capacitance	C _{iss}	2.4	2.9	3.4	pF	V _{DS} = 3.5 V, V _{G2S} = 3 V, I _D = 7 mA f = 1 MHz
Output Capacitance	C _{oss}	0.9	1.2	1.5	pF	
Reverse Transfer Capacitance	C _{rss}		0.01	0.03	pF	
Power Gain	G _{ps}	16	19	22	dB	V _{DS} = 3.5 V, V _{G2S} = 3 V, I _D = 7 mA f = 470 MHz
Noise Figure 1	NF1		2.0	3.0	dB	V _{DS} = 3.5 V, V _{G2S} = 3 V, I _D = 7 mA f = 55 MHz
Noise Figure 2	NF2		0.8	2.3	dB	

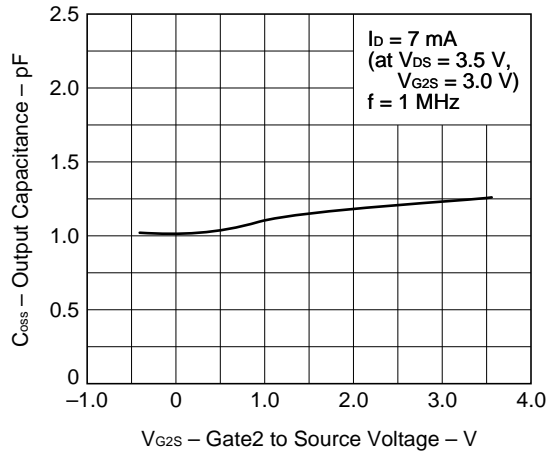
I_{DSX} Classification

Rank	U1E
Marking	U1E
I _{DSX} (mA)	0.1 to 0.5

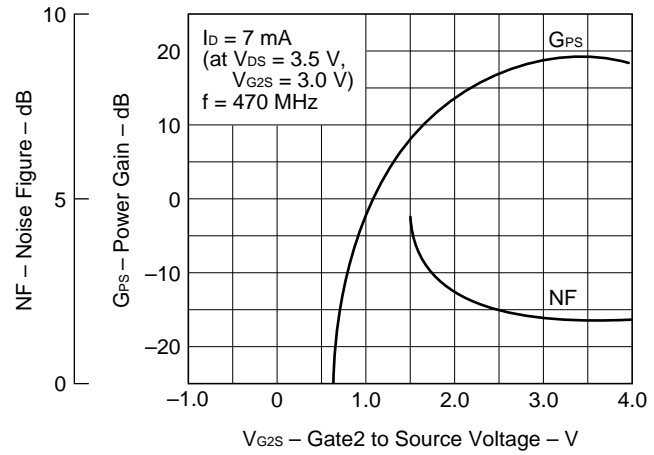
TYPICAL CHARACTERISTICS (T_A = 25 °C)



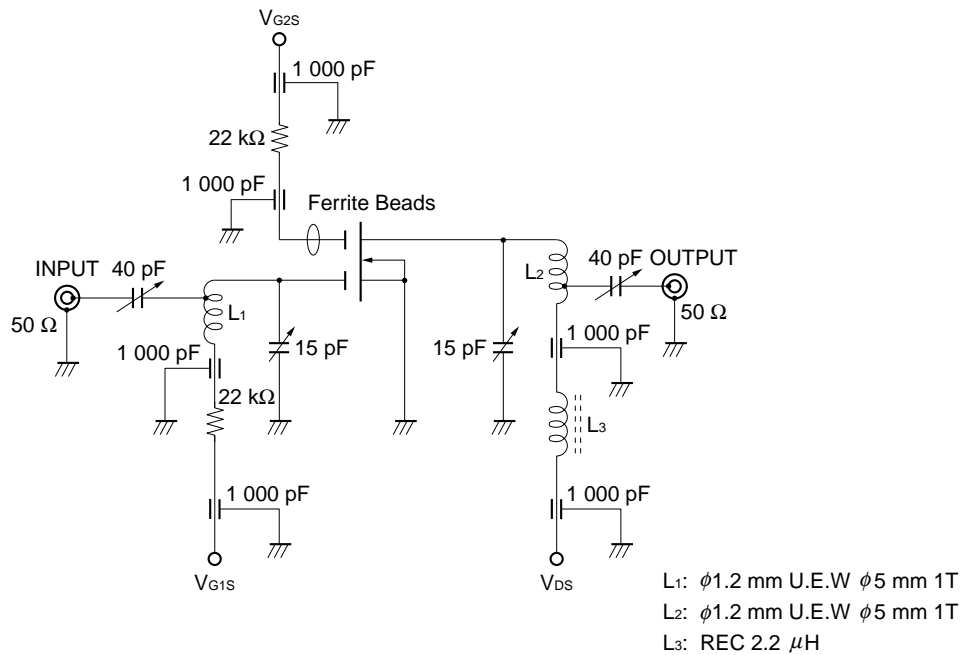
OUTPUT CAPACITANCE vs.
GATE2 TO SOURCE VOLTAGE



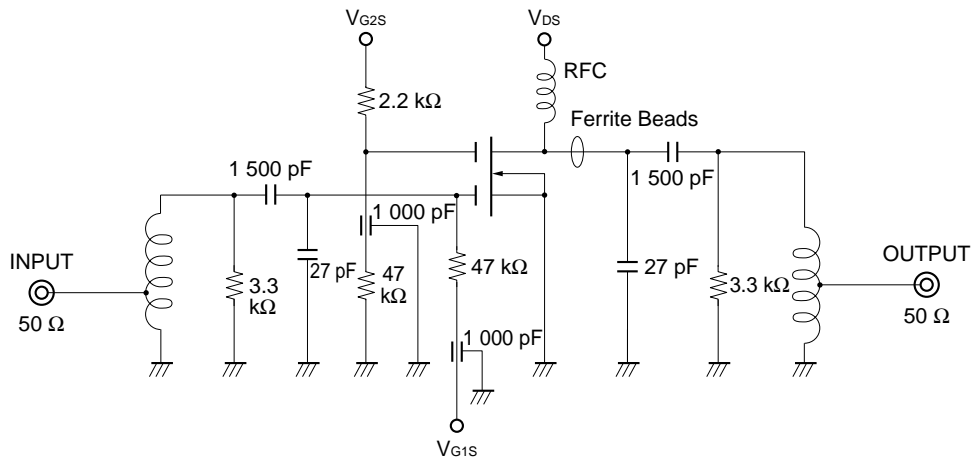
POWER GAIN AND NOISE FIGURE vs.
GATE2 TO SOURCE VOLTAGE



GPS AND NF TEST CIRCUIT AT $f = 470 \text{ MHz}$



NF TEST CIRCUIT AT $f = 55 \text{ MHz}$



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Anti-radioactive design is not implemented in this product.