

NEC

MOS FIELD EFFECT TRANSISTOR
3SK253

RF AMPLIFIER FOR UHF TUNER
N-CHANNEL Si DUAL GATE MOS FIELD-EFFECT TRANSISTOR
4 PINS 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 use as RF amplifier in UHF TV tuner.
- Automatically Mounting : Embossed Type Taping
- Package : 4 Pins Mini Mold

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$)

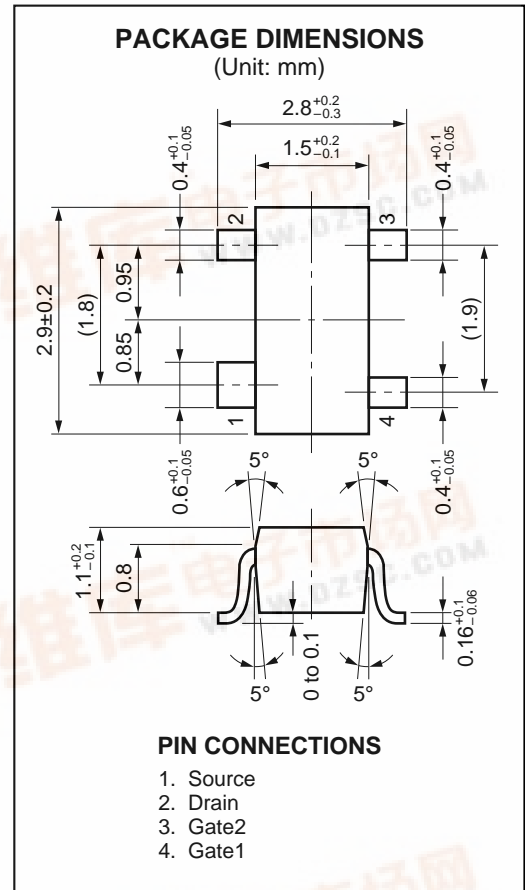
Drain to Source Voltage	V_{DSX}	18	V
Gate1 to Source Voltage	V_{G1S}	$\pm 8^{*1}$	V
Gate2 to Source Voltage	V_{G2S}	$\pm 8^{*1}$	V
Gate1 to Drain Voltage	V_{G1D}	18	V
Gate2 to Drain Voltage	V_{G2D}	18	V
Drain Current	I_D	25	mA
Total Power Dissipation	P_D	200^{*2}	mW
Channel Temperature	T_{ch}	125	$^\circ C$
Storage Temperature	T_{stg}	-55 to +125	$^\circ C$

*1: $R_L \geq 10 k\Omega$

*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 fields.



ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

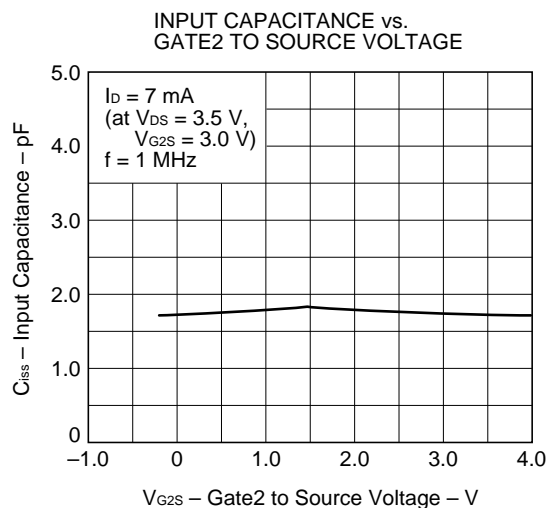
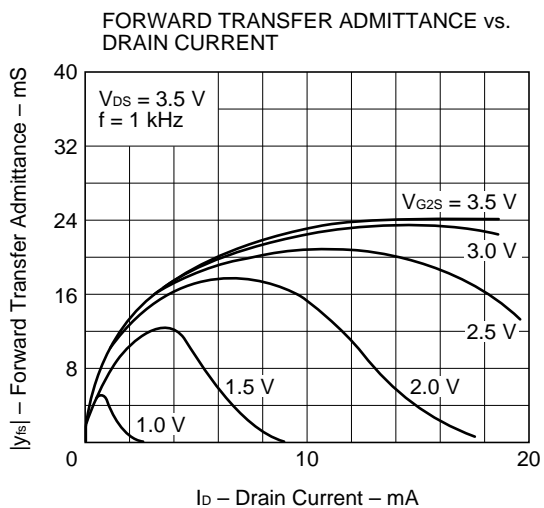
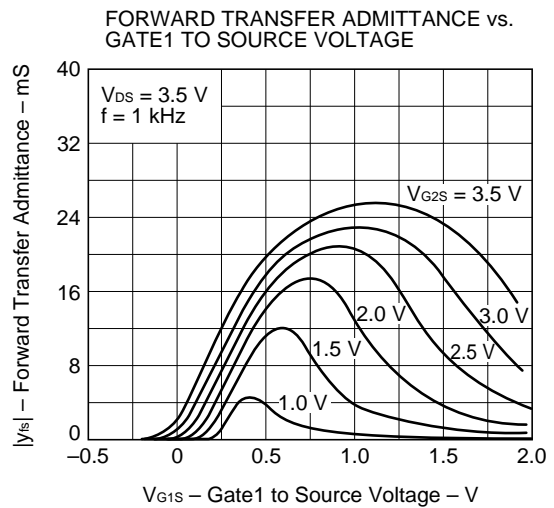
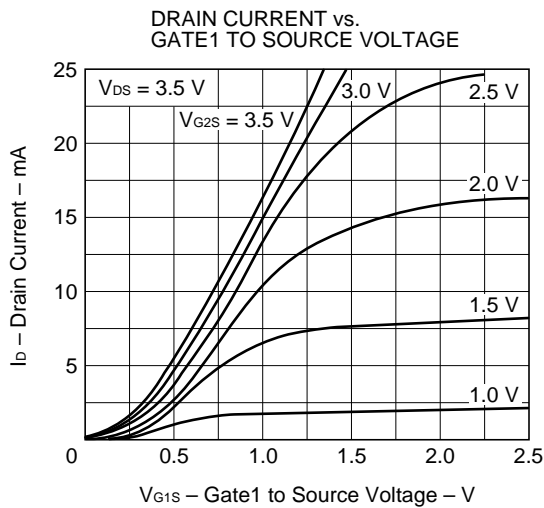
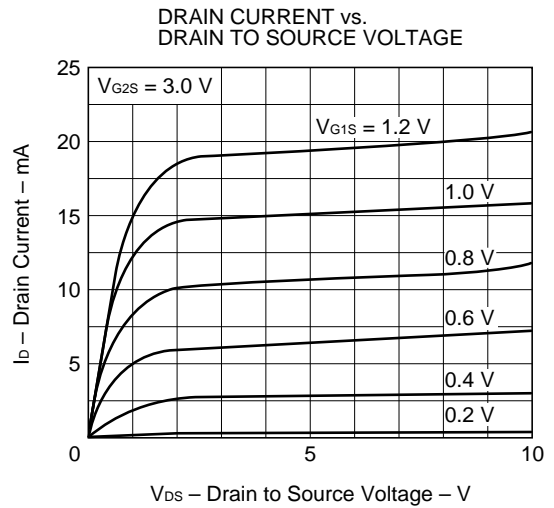
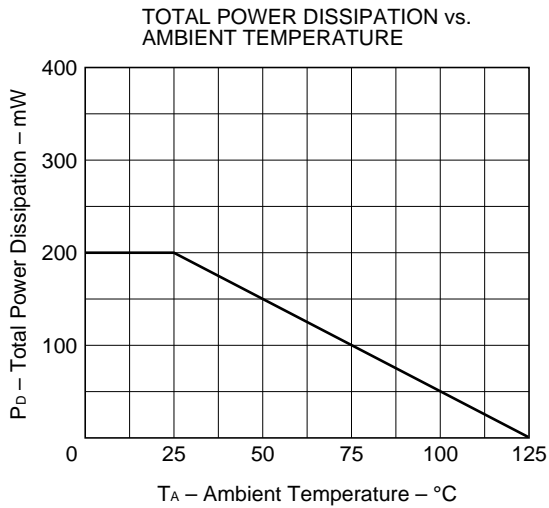
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain to Source Breakdown Voltage	BV _{DSX}	18			V	V _{G1S} = V _{G2S} = -2 V, I _D = 10 μA
Drain Current	I _{DSX}	0.5		7.0	mA	V _{DS} = 3.5 V, V _{G2S} = 3 V, V _{G1S} = 0.75 V
Gate1 to Source Cutoff Voltage	V _{G1S(off)}	-1.0	0	+1.0	V	V _{DS} = 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}	1.5	2.0	2.5	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

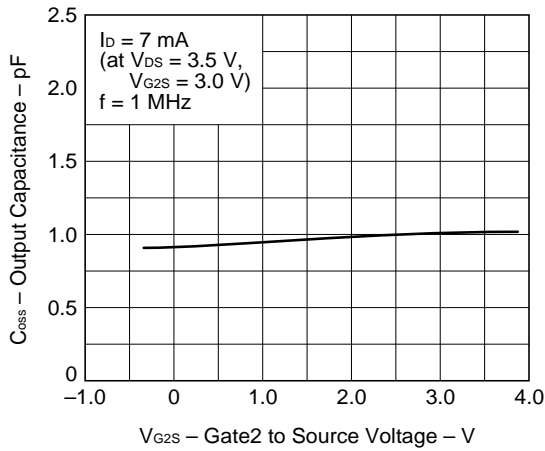
Rank	U1G/UAG*
Marking	U1G
I _{DSX} (mA)	0.5 to 7.0

* Old specification / New specification

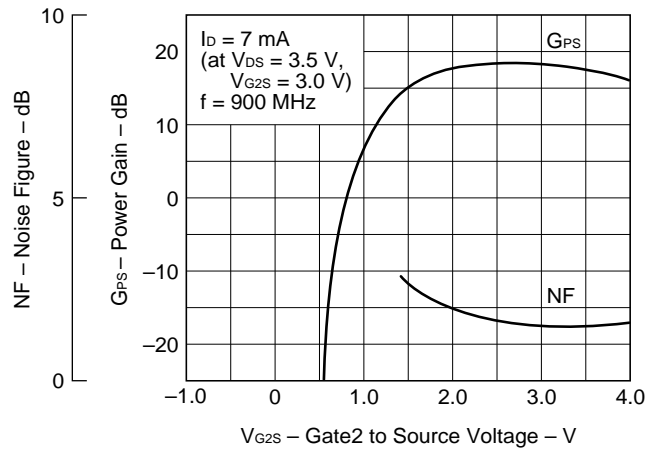
TYPICAL CHARACTERISTICS (T_A = 25 °C)



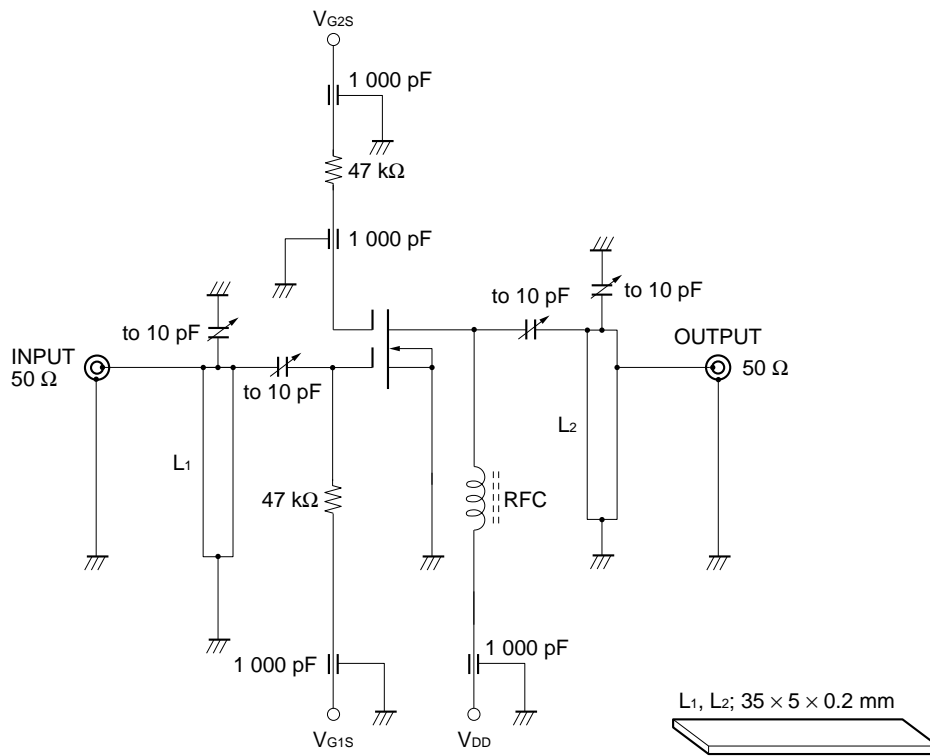
OUTPUT CAPACITANCE vs. GATE2 TO SOURCE VOLTAGE



POWER GAIN AND NOISE FIGURE vs. GATE2 TO SOURCE VOLTAGE



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



[MEMO]

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Anti-radioactive design is not implemented in this product.