

MOS FIELD EFFECT TRANSISTOR
3SK231

RF AMP. FOR UHF TV TUNER
 N-CHANNEL SILICON DUAL-GATE MOS FIELD-EFFECT TRANSISTOR
 4 PINS MINI MOLD

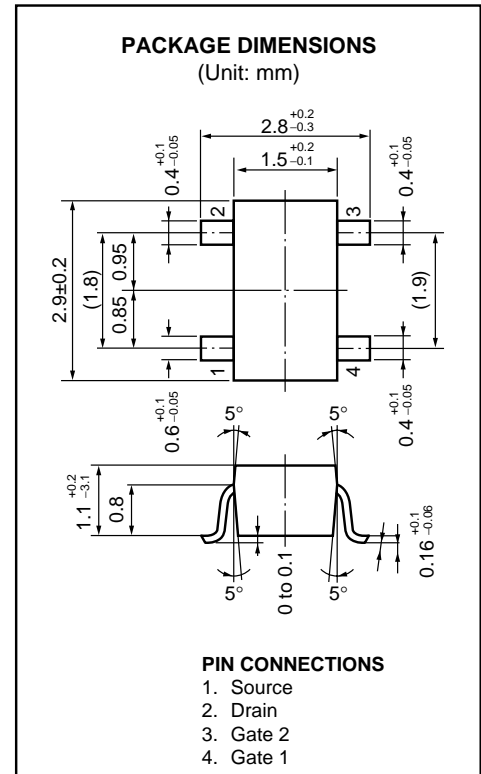
FEATURES

- Low Noise Figure NF = 2.0 dB TYP. (@ = 900 MHz)
- High Power Gain $G_{ps} = 17.5$ dB TYP. (@ = 900 MHz)
- Enhancement Typ.
- Suitable for use as RF amplifier in UHF TV tuner.
- Automatically Mounting : Embossed Type Taping
- Small Package : 4 Pins Mini Mold Package. (SC-61)

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

Drain to Source Voltage	V _{DSX}	18	V
Gate1 to Source Voltage	V _{G1S}	±8 (±10)*	V
Gate2 to Source Voltage	V _{G2S}	±8 (±10)*	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	mW
Channel Temperature	T _{ch}	125	°C
Storage Temperature	T _{stg}	-55 to +125	°C

*R_L ≥ 10 kΩ



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

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 Not all devices/types available in every country. Please check with local NEC Compound Semiconductor Devices representative for availability and additional information.

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}	0.01		10.0	mA	V _{DS} = 6 V, V _{G2S} = 4.5 V, V _{G1S} = 0.75 V
Gate1 to Source Cutoff Voltage	V _{G1S(off)}	-1.0		+1.0	V	V _{DS} = 6 V, V _{G2S} = 3 V, I _D = 10 μA
Gate2 to Source Cutoff Voltage	V _{G2S(off)}	+0.6	+1.1	+1.6	V	V _{DS} = 6 V, V _{G1S} = 3 V, I _D = 10 μA
Gate1 Reverse Current	I _{G1SS}			±20	nA	V _{DS} = V _{G2S} = 0 V, V _{G1S} = ±8 V
Gate2 Reverse Current	I _{G2SS}			±20	nA	V _{DS} = V _{G1S} = 0 V, V _{G2S} = ±8 V
Forward Transfer Admittance	y _{fs}	15	19.5	24	mS	V _{DS} = 6 V, V _{G2S} = 4.5 V, I _D = 10 mA f = 1 kHz
Input Capacitance	C _{iss}	1.0	1.5	2.0	pF	V _{DS} = 6 V, V _{G2S} = 4.5 V, I _D = 10 mA f = 1 MHz
Output Capacitance	C _{oss}	0.7	1.0	1.3	pF	
Reverse Transfer Capacitance	C _{rss}		0.015	0.03	pF	
Power Gain	G _{ps}	14.0	17.5	21.0	dB	V _{DS} = 6 V, V _{G2S} = 4.5 V, I _D = 10 mA
Noise Figure	NF1		2.0	3.0	dB	f = 900 MHz

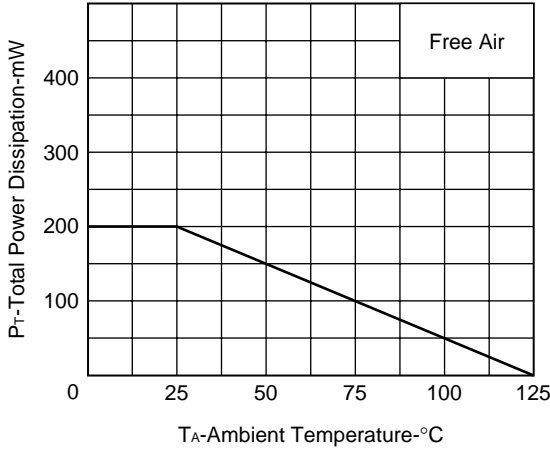
★ **I_{DSX} Classification**

Rank	U1C/UAC *	U1D/UAD *
Marking	U1C	U1D
I _{DSX} (mA)	0.01 to 4.0	2.0 to 10.0

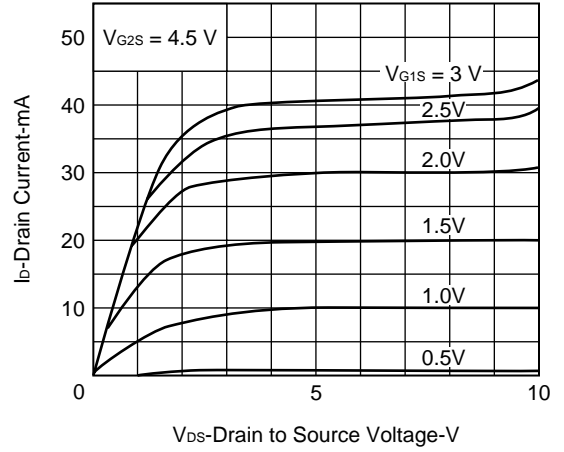
* Old Specification / New Specification

CHARACTERISTICS CURVE (T_A = 25 °C)

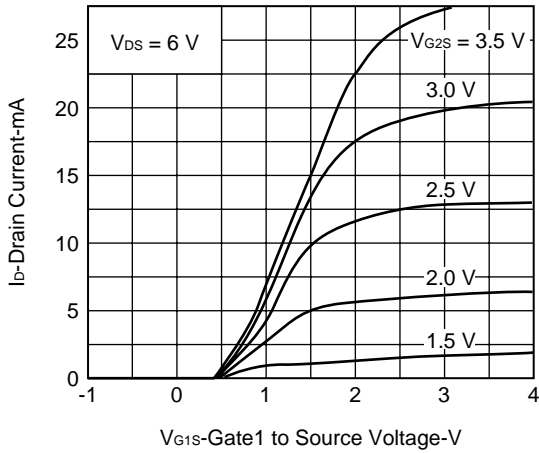
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



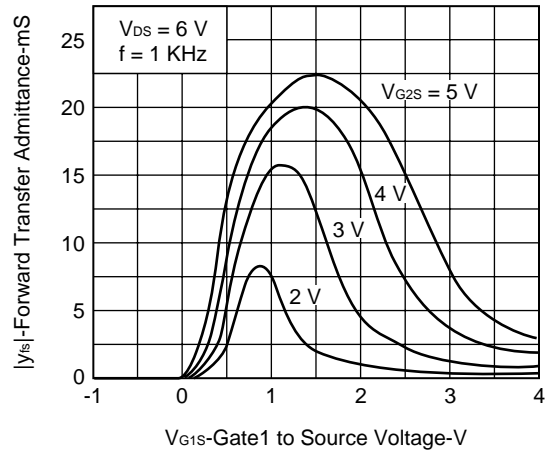
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



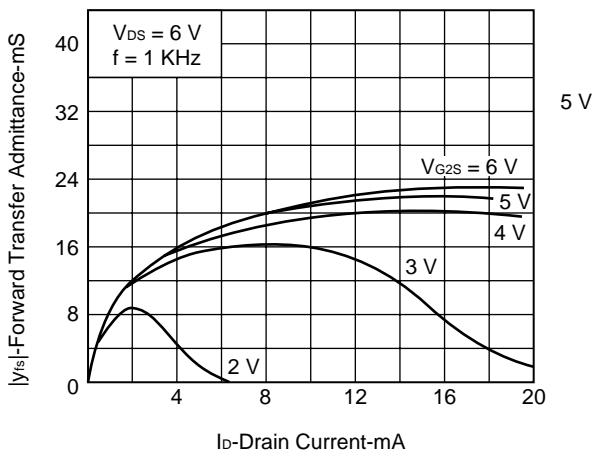
DRAIN CURRENT vs. GATE1 TO SOURCE VOLTAGE



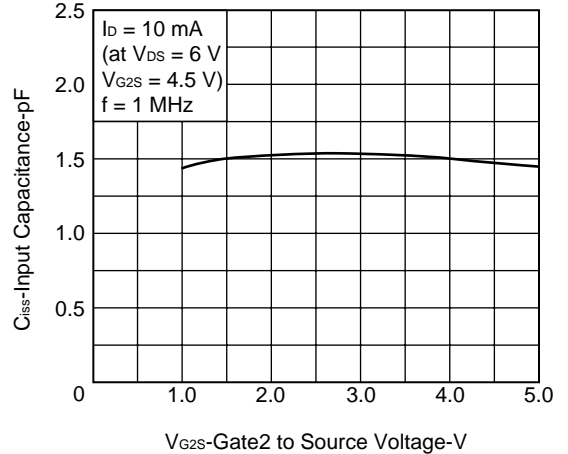
FORWARD TRANSFER ADMITTANCE vs. GATE1 TO SOURCE VOLTAGE



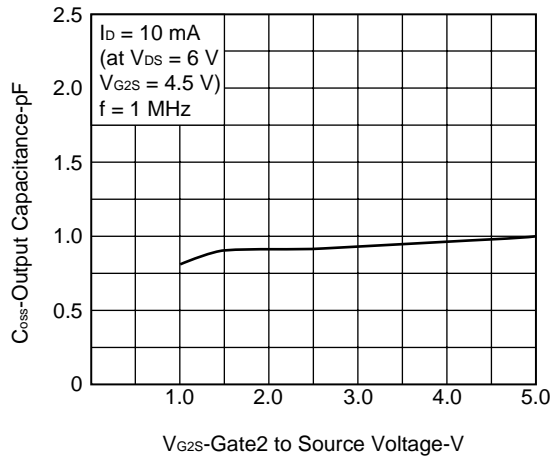
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



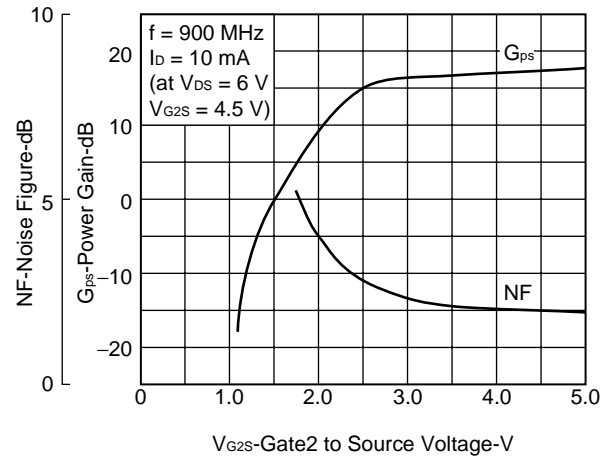
INPUT CAPACITANCE vs. GATE2 TO SOURCE VOLTAGE



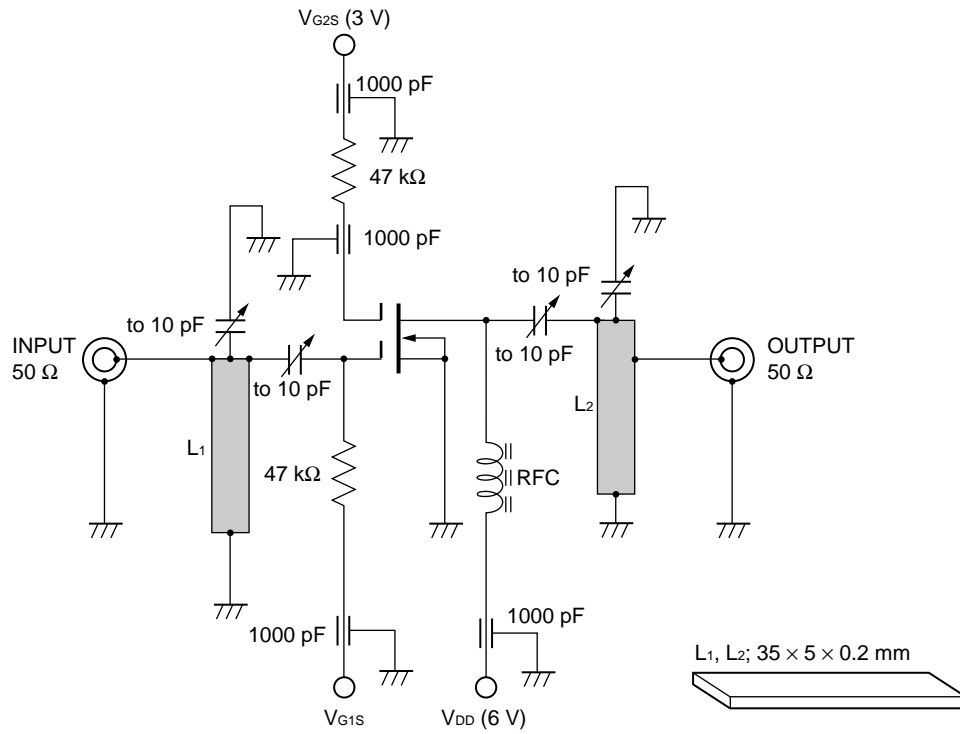
OUTPUT CAPACITANCE vs.
GATE2 TO SOURCE VOLTAGE



POWER GAIN AND NOISE FIGURE vs.
GATE2 TO SOURCE VOLTAGE



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



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► **Technical issue**

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