NEC

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

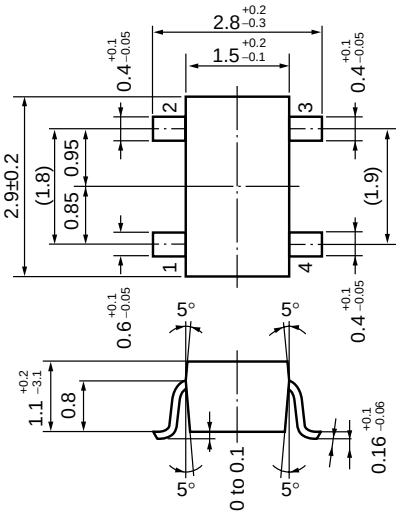
- Low Noise Figure NF = 2.0 dB TYP. (@ = 900 MHz)
- High Power Gain G_{ps} = 17.5 dB TYP. (@ = 900 MHz)
- Enhancement Typ.
- Suitable for use as RF amplifier in UHF TV tuner.
- Automatically Mounting : Embossed Type Taping
- Small Package : 4 Pins Mini Mold Package. (SC-61)

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

*$R_L \geq 10\ k\Omega$

PACKAGE DIMENSIONS
(Unit: mm)



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

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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The mark ★ shows major revised points.

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
Output Capacitance	C_{oss}	0.7	1.0	1.3	pF	f = 1 MHz
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

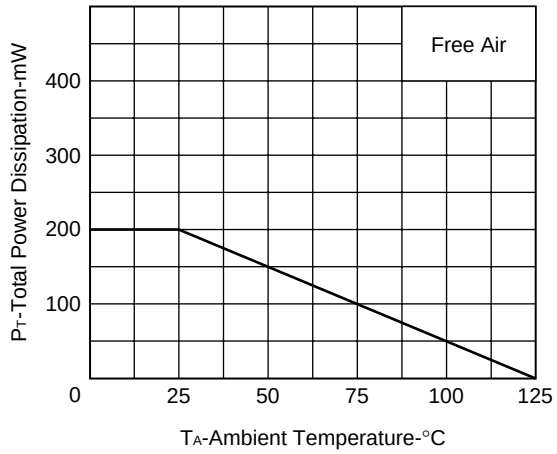
★ **I_{DSX} Classification**

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

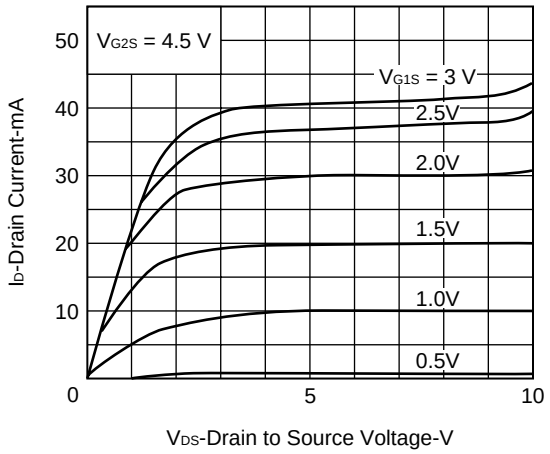
* Old Specification / New Specification

CHARACTERISTICS CURVE (T_A = 25 °C)

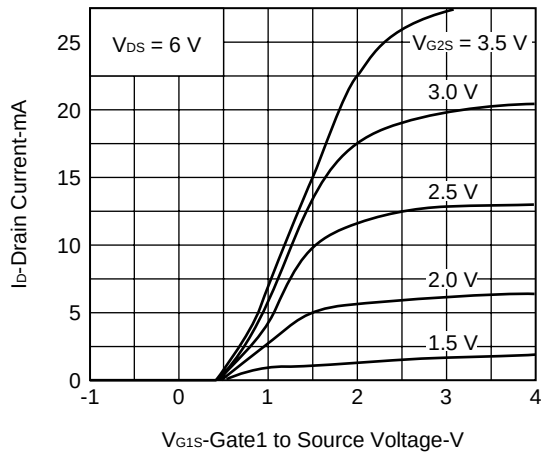
TOTAL POWER DISSIPATION vs.
AMBIENT TEMPERATURE



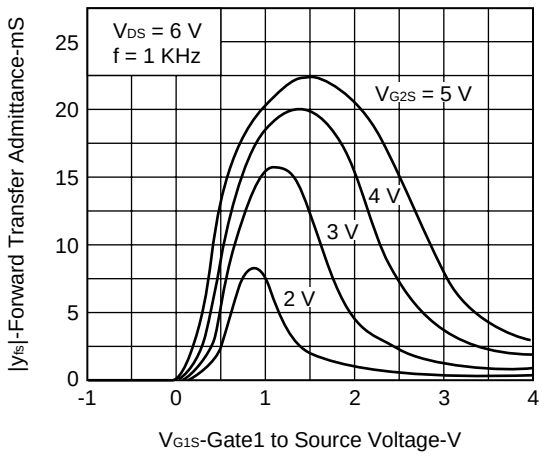
DRAIN CURRENT vs.
DRAIN TO SOURCE VOLTAGE



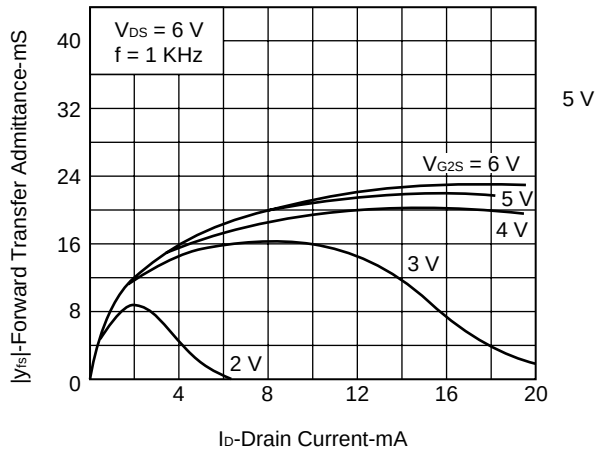
DRAIN CURRENT vs.
GATE1 TO SOURCE VOLTAGE



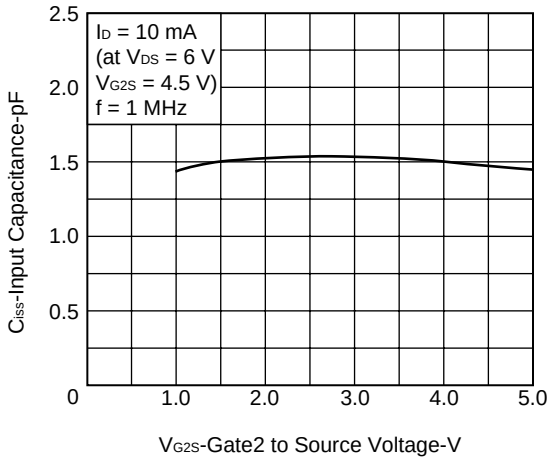
FORWARD TRANSFER ADMITTANCE vs.
GATE1 TO SOURCE VOLTAGE



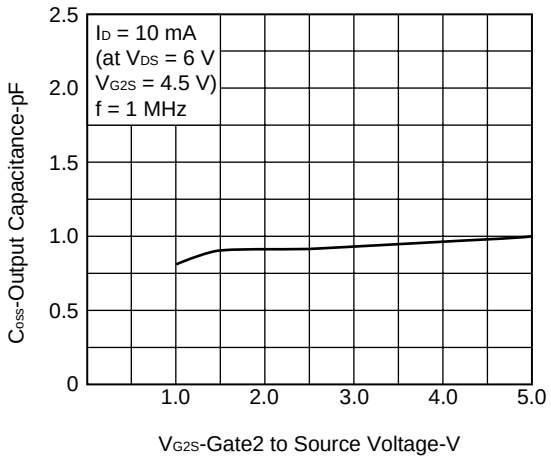
FORWARD TRANSFER ADMITTANCE vs.
DRAIN CURRENT



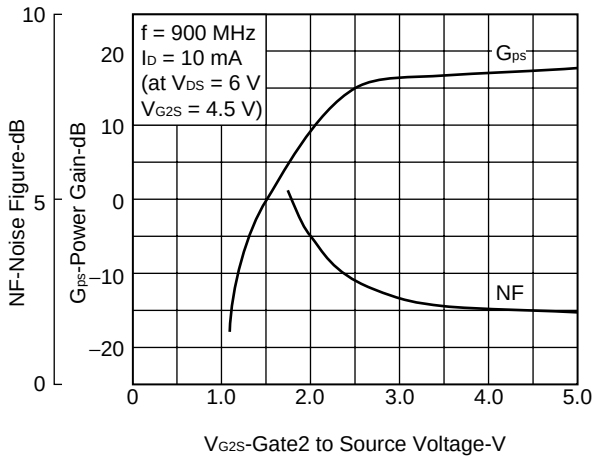
INPUT CAPACITANCE vs.
GATE2 TO SOURCE VOLTAGE



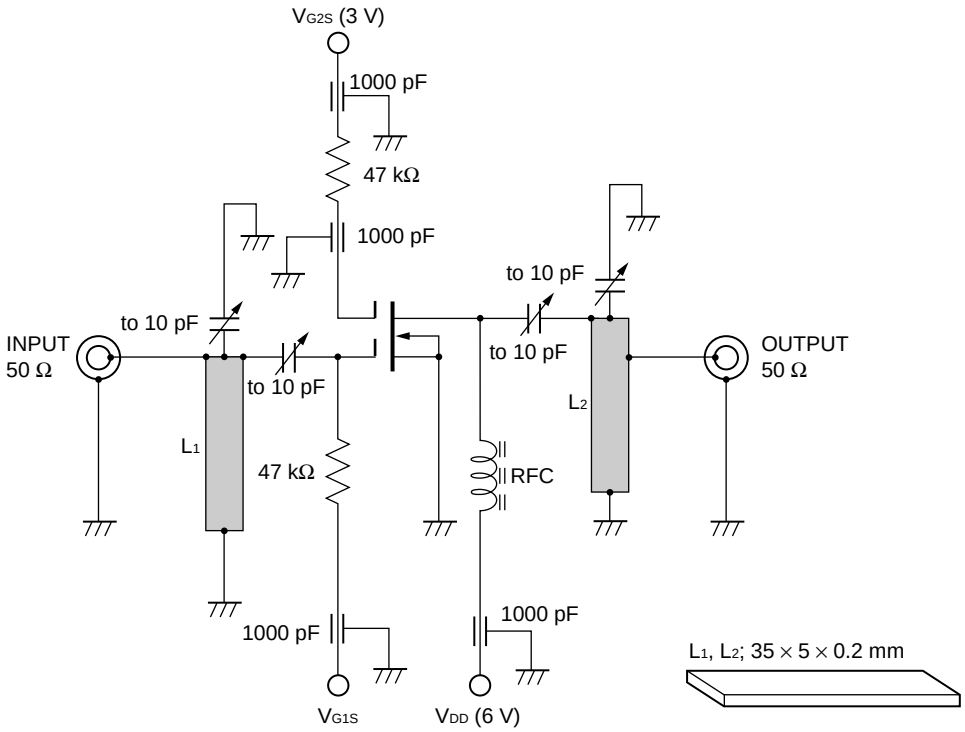
OUTPUT CAPACITANCE vs.
GATE2 TO SOURCE VOLTAGE



POWER GAIN AND NOISE FIGURE vs.
GATE2 TO SOURCE VOLTAGE



Gps AND NF TEST CIRCUIT AT f = 900 MHz



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▶**Technical issue**

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