NEC

MOS FIELD EFFECT TRANSISTOR

3SK244

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

FEATURES

- Ultra Low Noise Figure : NF = 2.2 dB TYP. (f = 900 MHz)
- High Power Gain : G_{PS} = 17 dB TYP. (f = 900 MHz)
- Low Reverse Transfer Capacitance C_{rss} = 0.015 pF TYP.
- Suitable for use as RF amplifier in UHF TV tuner.
- Automatically Mounting: Embossed Type Taping
- Small Package : 4 Pins Super Mini Mold

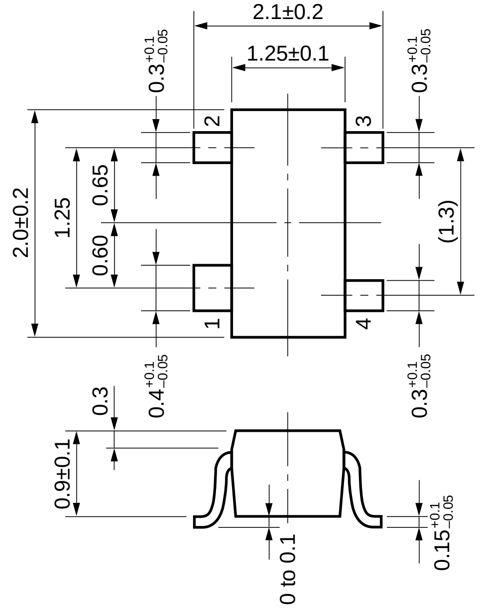
ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

Drain to Source Voltage	V_{DSX}	18	V
Gate1 to Source Voltage	V_{G1S}	±8(±10)*1	V
Gate2 to Source Voltage	V_{G2S}	±8(±10)*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*2/250*3	mW
Channel Temperature	T_{ch}	125	°C
Storage Temperature	T_{stg}	–55 to +125	°C

***1:** $R_L \geq 10$ kΩ
***2:** Free air
***3:** 15 mm × 15 mm × 1.2 mm board by epoxy glass

PACKAGE DIMENSIONS

(Unit: mm)



PIN CONNECTIONS

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

PRECAUTION

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

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

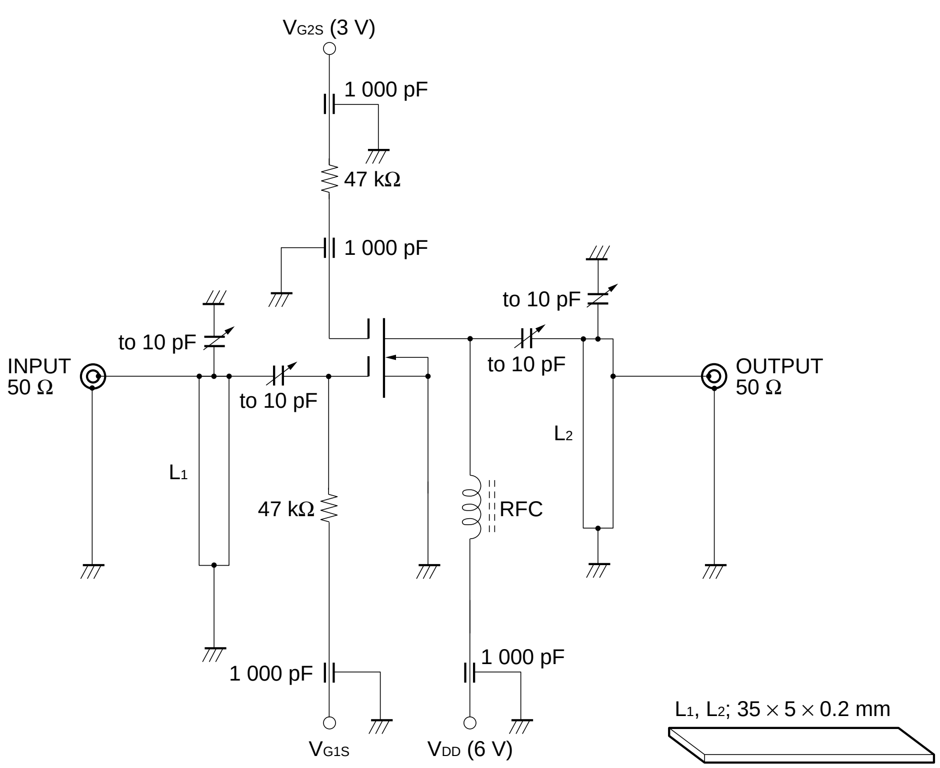
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain to Source Breakdown Voltage	BV_{DSX}	18			V	$V_{G1S} = V_{G2S} = -2$ V, $I_D = 10\ \mu A$
Drain Current	I_{DSX}	0.5		15	mA	$V_{DS} = 6$ V, $V_{G2S} = 3$ V, $V_{G1S} = 0.5$ V
Gate1 to Source Cutoff Voltage	$V_{G1S(off)}$	–1.5		+0.5	V	$V_{DS} = 6$ V, $V_{G2S} = 3$ V, $I_D = 10\ \mu A$
Gate2 to Source Cutoff Voltage	$V_{G2S(off)}$	–1.0		+1.0	V	$V_{DS} = 6$ V, $V_{G1S} = 3$ V, $I_D = 10\ \mu A$
Gate1 Reverse Current	I_{G1SS}			±20	nA	$V_{DS} = 0$, $V_{G2S} = 0$, $V_{G1S} = \pm 8$ V
Gate2 Reverse Current	I_{G2SS}			±20	nA	$V_{DS} = 0$, $V_{G1S} = 0$, $V_{G2S} = \pm 8$ V
Forward Transfer Admittance	$\|y_{fs}\|$	18.0	22.0		mS	$V_{DS} = 5$ V, $V_{G2S} = 4$ V, $I_D = 10$ mA f = 1 kHz
Input Capacitance	C_{iss}	1.2	1.7	2.2	pF	$V_{DS} = 6$ V, $V_{G2S} = 3$ V, $I_D = 10$ mA f = 1 MHz
Output Capacitance	C_{oss}	0.6	0.9	1.2	pF	
Reverse Transfer Capacitance	C_{rss}		0.015	0.025	pF	
Power Gain	G_{ps}	15.0	17.0		dB	$V_{DS} = 6$ V, $V_{G2S} = 3$ V, $I_D = 10$ mA f = 900 MHz
Noise Figure	NF		2.2	3.2	dB	

I_{DSX} Classification

Rank	U94/UID*	U95/UIE*
Marking	U94	U95
I_{DSX} (mA)	0.5 to 7.0	5.0 to 15.0

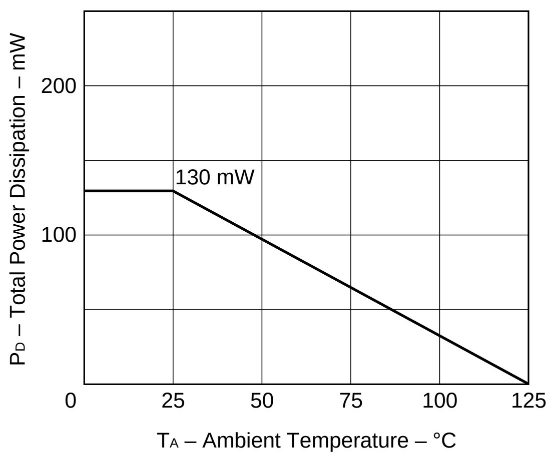
* Old Specification / New Specification

G_{PS} AND NF TEST CIRCUIT AT f = 900 MHz

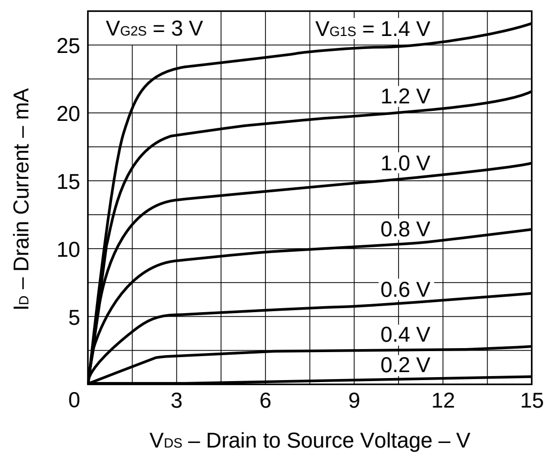


TYPICAL CHARACTERISTICS (T_A = 25 °C)

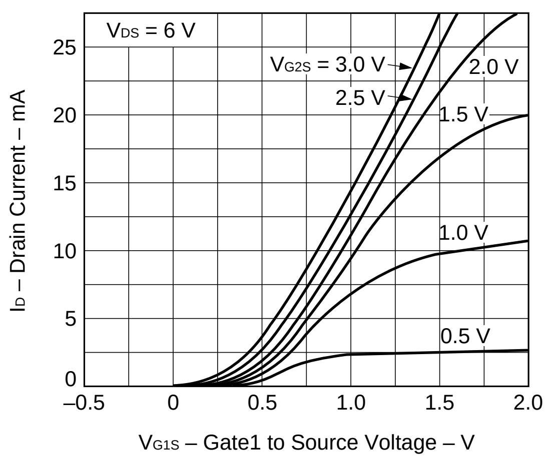
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



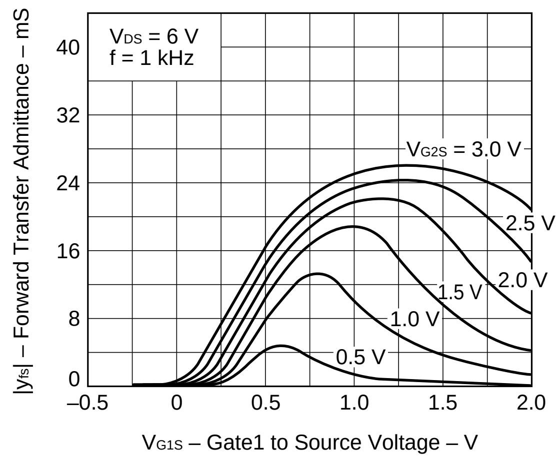
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



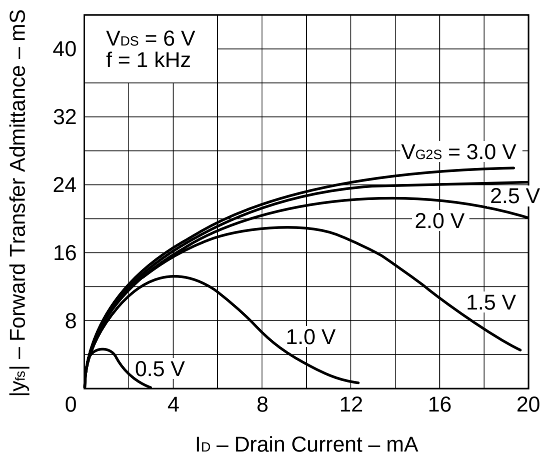
DRAIN CURRENT vs. GATE1 TO SOURCE VOLTAGE



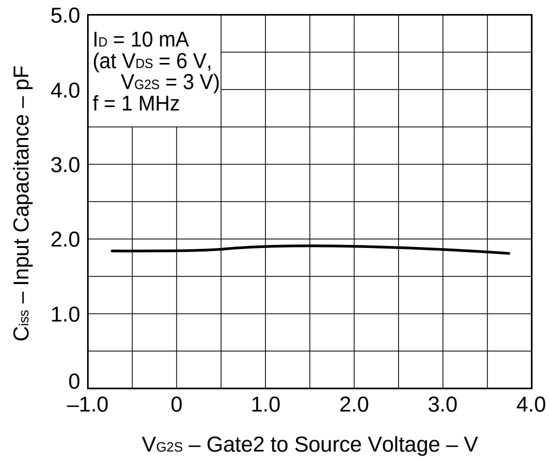
FORWARD TRANSFER ADMITTANCE vs. GATE1 TO SOURCE VOLTAGE



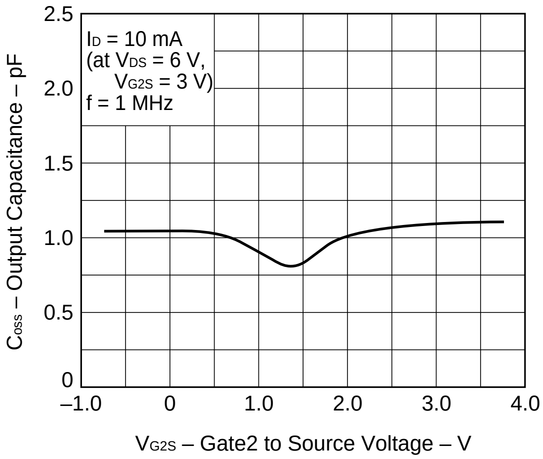
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



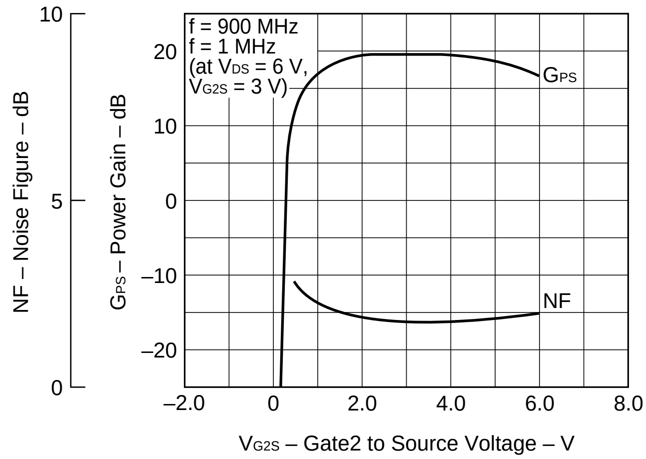
INPUT CAPACITANCE vs. GATE2 TO SOURCE VOLTAGE



OUTPUT CAPACITANCE vs.
GATE2 TO SOURCE VOLTAGE



POWER GAIN AND NOISE FIGURE vs.
GATE2 TO SOURCE VOLTAGE



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