

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

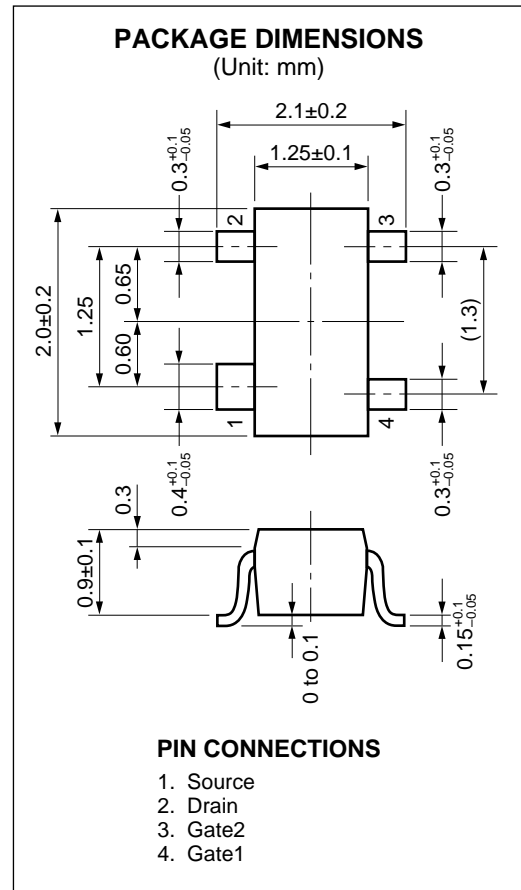
#### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25 \text{ }^\circ\text{C}$ )

Drain to Source Voltage	$V_{DSX}$	18	V
Gate1 to Source Voltage	$V_{G1S}$	$\pm 8(\pm 10)^{*1}$	V
Gate2 to Source Voltage	$V_{G2S}$	$\pm 8(\pm 10)^{*1}$	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	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to +125	$^\circ\text{C}$

\*1:  $R_L \geq 10 \text{ k}\Omega$

\*2: Free air

\*3:  $15 \text{ mm} \times 15 \text{ mm} \times 1.2 \text{ mm}$  board by epoxy glass



#### 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<sub>A</sub> = 25 °C)**

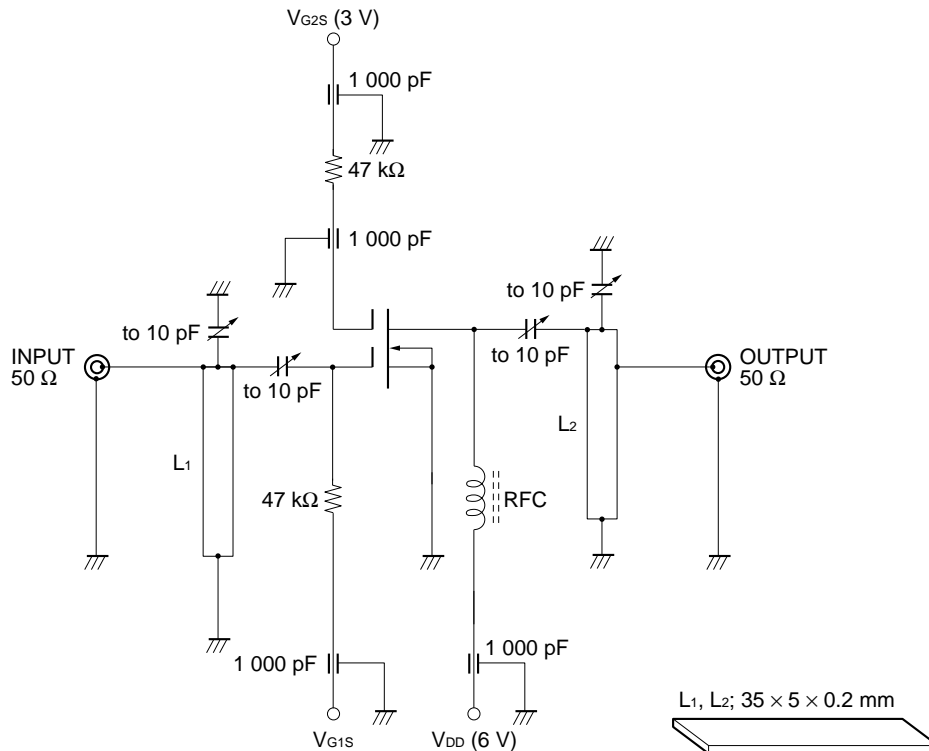
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain to Source Breakdown Voltage	BV <sub>DSX</sub>	18			V	V <sub>G1S</sub> = V <sub>G2S</sub> = -2 V, I <sub>D</sub> = 10 μA
Drain Current	I <sub>DSX</sub>	0.5		15	mA	V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 3 V, V <sub>G1S</sub> = 0.5 V
Gate1 to Source Cutoff Voltage	V <sub>G1S(off)</sub>	-1.5		+0.5	V	V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 3 V, I <sub>D</sub> = 10 μA
Gate2 to Source Cutoff Voltage	V <sub>G2S(off)</sub>	-1.0		+1.0	V	V <sub>DS</sub> = 6 V, V <sub>G1S</sub> = 3 V, I <sub>D</sub> = 10 μA
Gate1 Reverse Current	I <sub>G1SS</sub>			±20	nA	V <sub>DS</sub> = 0, V <sub>G2S</sub> = 0, V <sub>G1S</sub> = ±8 V
Gate2 Reverse Current	I <sub>G2SS</sub>			±20	nA	V <sub>DS</sub> = 0, V <sub>G1S</sub> = 0, V <sub>G2S</sub> = ±8 V
Forward Transfer Admittance	y <sub>fs</sub>	18.0	22.0		mS	V <sub>DS</sub> = 5 V, V <sub>G2S</sub> = 4 V, I <sub>D</sub> = 10 mA f = 1 kHz
Input Capacitance	C <sub>iss</sub>	1.2	1.7	2.2	pF	V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 3 V, I <sub>D</sub> = 10 mA f = 1 MHz
Output Capacitance	C <sub>oss</sub>	0.6	0.9	1.2	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>		0.015	0.025	pF	
Power Gain	G <sub>ps</sub>	15.0	17.0		dB	V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 3 V, I <sub>D</sub> = 10 mA
Noise Figure	NF		2.2	3.2	dB	f = 900 MHz

**I<sub>DSX</sub> Classification**

Rank	U94/UID*	U95/UIE*
Marking	U94	U95
I <sub>DSX</sub> (mA)	0.5 to 7.0	5.0 to 15.0

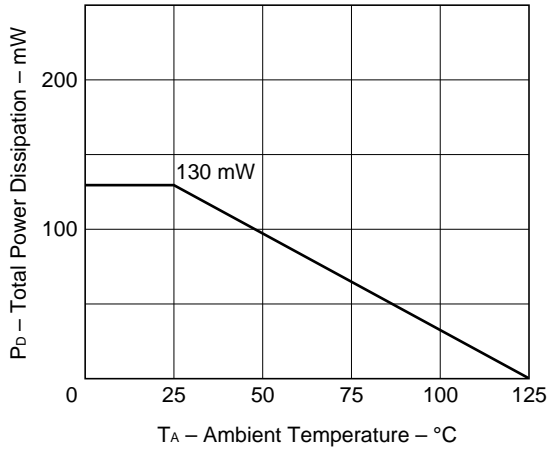
\* Old Specification / New Specification

**G<sub>PS</sub> AND NF TEST CIRCUIT AT f = 900 MHz**

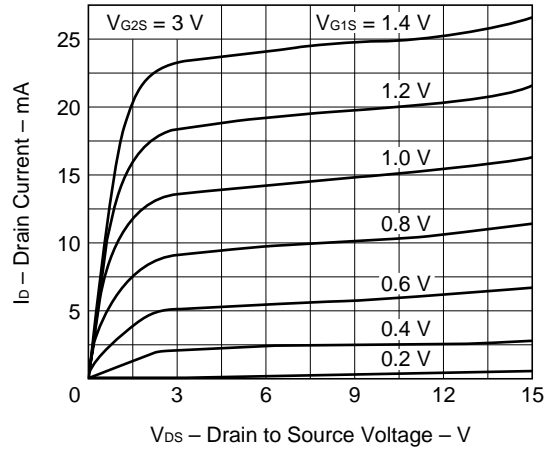


TYPICAL CHARACTERISTICS (TA = 25 °C)

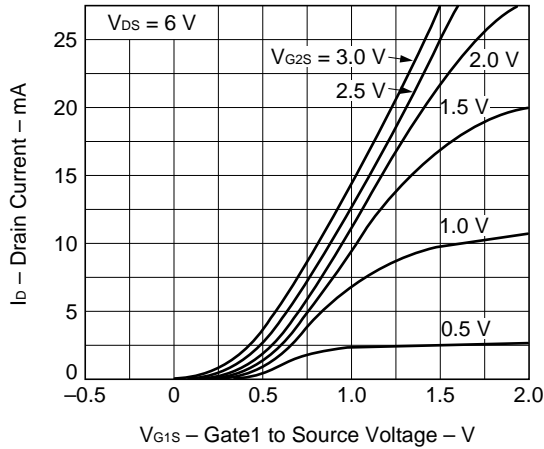
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



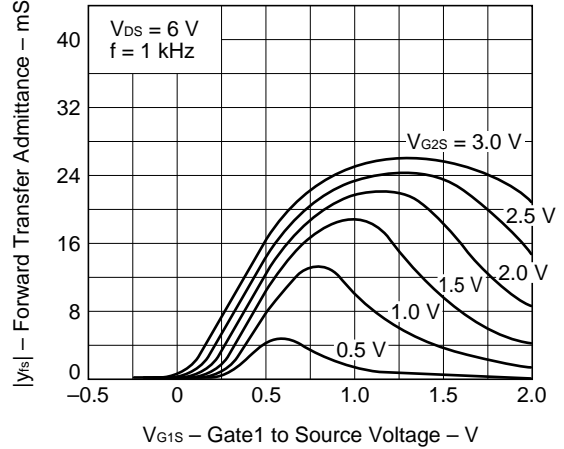
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



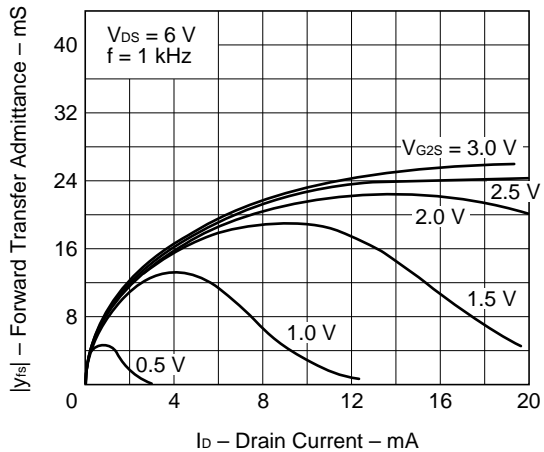
DRAIN CURRENT vs. GATE1 TO SOURCE VOLTAGE



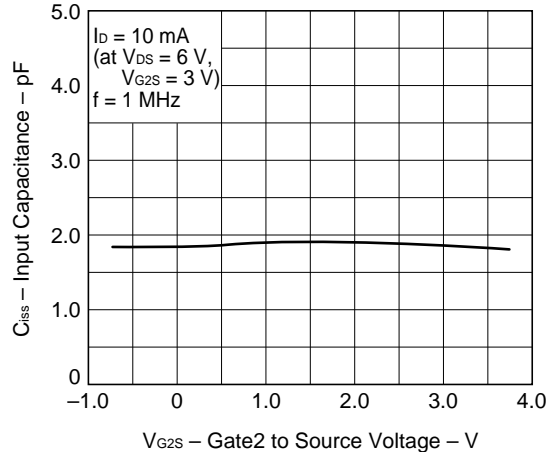
FORWARD TRANSFER ADMITTANCE vs. GATE1 TO SOURCE VOLTAGE



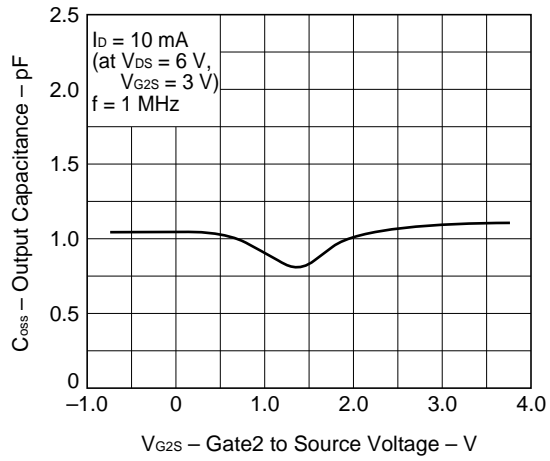
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



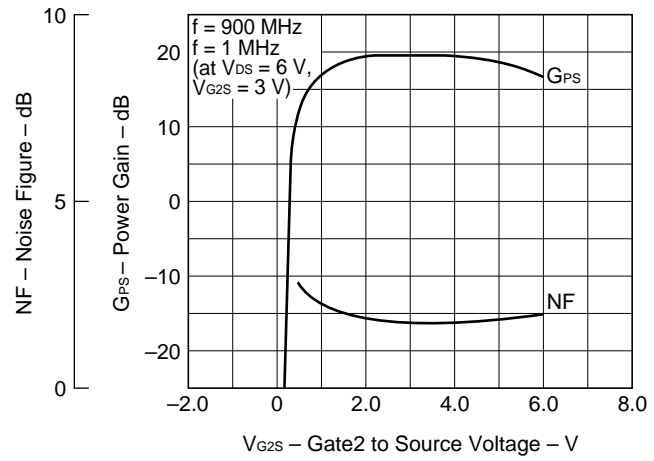
INPUT CAPACITANCE vs. GATE2 TO SOURCE VOLTAGE



OUTPUT CAPACITANCE vs.  
GATE2 TO SOURCE VOLTAGE



POWER GAIN AND NOISE FIGURE vs.  
GATE2 TO SOURCE VOLTAGE



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Anti-radioactive design is not implemented in this product.