NEC

MOS FIELD EFFECT TRANSISTOR

3SK242

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

FEATURES

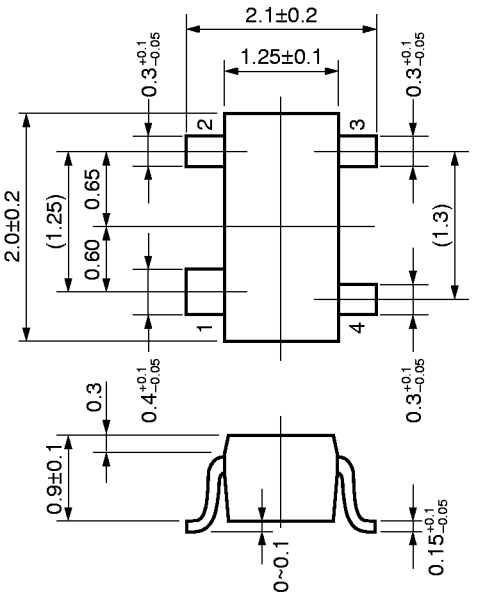
- Low Noise Figure : NF = 1.3 dB TYP.
- High Power Gain : G_{ps} = 24 dB TYP. (f = 200 MHz)
- Suitable for use as RF amplifier in VHF TV tuner.
- Small Package : 4 Pins Super Mini Mold

ORDERING INFORMATION

PART NUMBER	QUANTITY	PACKING STYLE
3SK242-T1	3 Kpcs/Reel.	Embossed tape 8 mm wide. Pin3 (Gate2), Pin4 (Gate1) face to perforation side of the tape.
3SK242-T2	3 Kpcs/Reel.	Embossed tape 8 mm wide. Pin1 (Source), Pin2 (Drain) face to perforation side of the tape.

* Please contact with responsible NEC person, if you require evaluation sample. Unit sample quantity shall be 50 pcs. (Part No.: 3SK242)

PACKAGE DIMENSIONS
(Unit : mm)



PIN CONNECTIONS

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

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

Drain to Source Voltage	V_{DSX}	20	V
Gate1 to Source Voltage	V_{G1S}	±8	V
Gate2 to Source Voltage	V_{G2S}	±8	V
Drain Current	I_D	25	mA
Total Power Dissipation	P_D	130[*1]/250[*2]	mW
Channel Temperature	T_{ch}	125	°C
Storage Temperature	T_{stg}	–55 to +125	°C

***1:** Free air

***2:** 15 mm × 15 mm × 1.2 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.

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Drain to Source Breakdown Voltage	BV_{DSX}	20			V	V_{G1S} = V_{G2S} = –2 V, I_D = 10 μA
Drain Current	I_{DSS}	7.0		25	mA	V_{DS} = 6 V, V_{G2S} = 3 V, V_{G1S} = 0
Gate1 to Source Cutoff Voltage	$V_{G1S(off)}$			–2.0	V	V_{DS} = 8 V, V_{G2S} = 0 , I_D = 5 μA
Gate2 to Source Cutoff Voltage	$V_{G2S(off)}$			–1.5	V	V_{DS} = 8 V, V_{G1S} = 0, I_D = 5 μA
Gate1 Reverse Current	I_{G1SS}			±20	nA	V_{DS} = 0, V_{G2S} = 0, V_{G1S} = ±8 V
Gate2 Reverse Current	I_{G2SS}			±20	nA	V_{DS} = 0, V_{G1S} = 0, V_{G2S} = ±8 V
Forward Transfer Admittance	$\|y_{fs}\|$	22	28		mS	V_{DS} = 6 V, V_{G2S} = 3 V, I_D = 10 mA f = 1 kHz
Input Capacitance	C_{iss}	4.0	5.0	6.5	pF	V_{DS} = 6 V, V_{G2S} = 3 V, I_D = 10 mA f = 1 MHz
Output Capacitance	C_{oss}	2.2	2.9	3.7	pF	
Reverse Transfer Capacitance	C_{rss}		0.05	0.08	pF	
Power Gain	G_{ps}	21	24		dB	V_{DS} = 10 V, V_{G2S} = 5 V, I_D = 10 mA f = 200 MHz
Noise Figure	NF		1.3	2.5	dB	

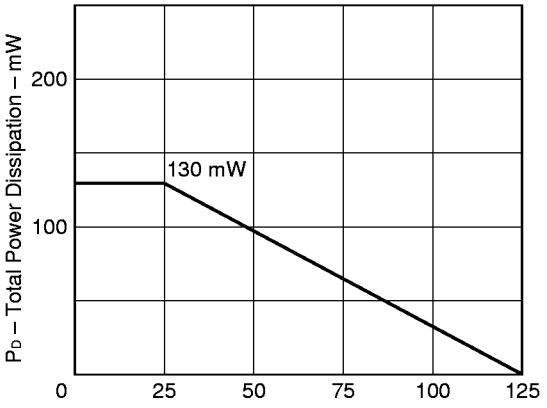
I_{DSX} Classification

Rank	V11/VAA*	V12/VAB*	V13/VAC*
Marking	V11	V12	V13
I_{DSS} (mA)	7.0 to 13.0	11.0 to 19.0	17.0 to 25.0

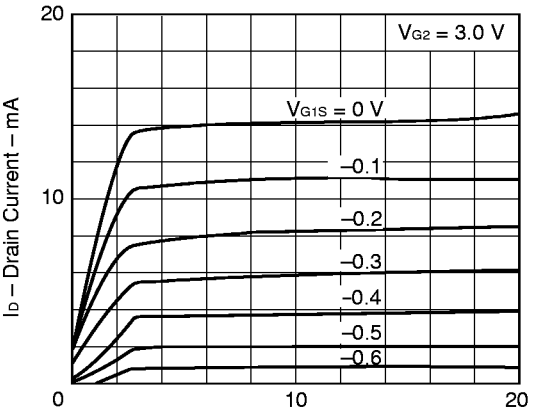
* Old Specification / New Specification

TYPICAL CHARACTERISTICS (T_A = 25 °C)

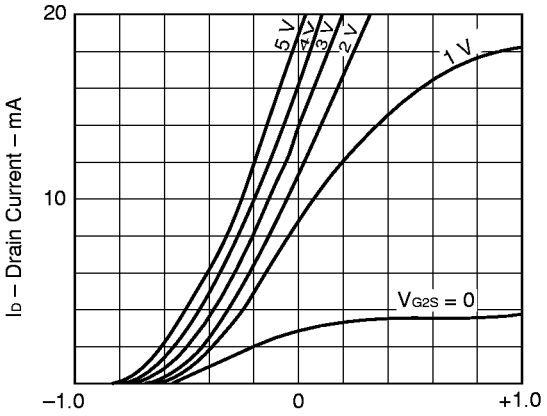
TOTAL POWER DISSIPATION vs.
AMBIENT TEMPERATURE



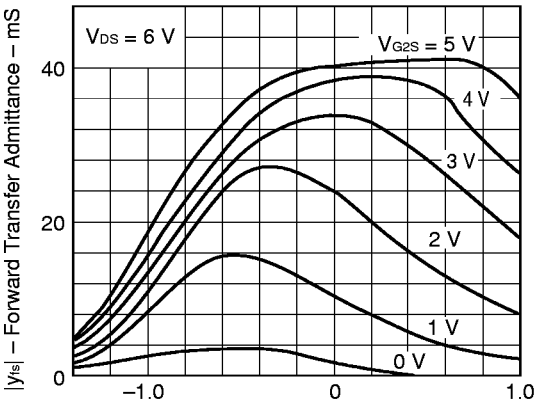
DRAIN CURRENT vs.
DRAIN TO SOURCE VOLTAGE



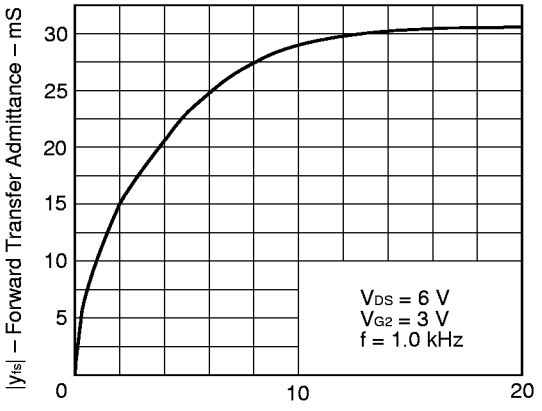
DRAIN CURRENT vs.
GATE1 TO SOURCE VOLTAGE



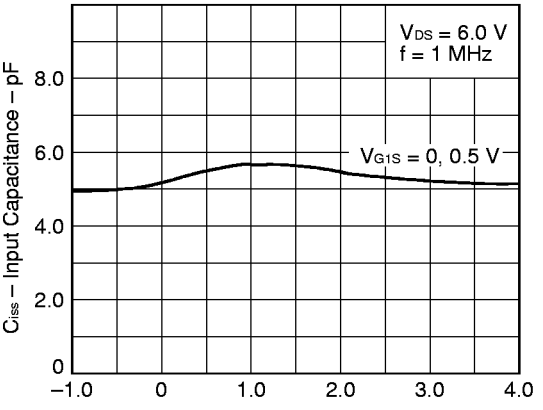
FORWARD TRANSFER ADMITTANCE vs.
GATE1 TO SOURCE VOLTAGE



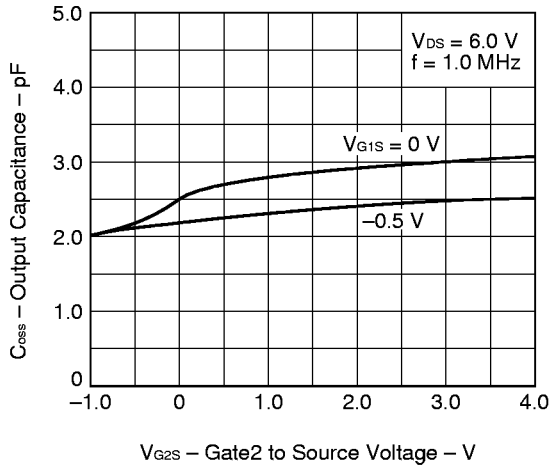
FORWARD TRANSFER ADMITTANCE vs.
DRAIN CURRENT



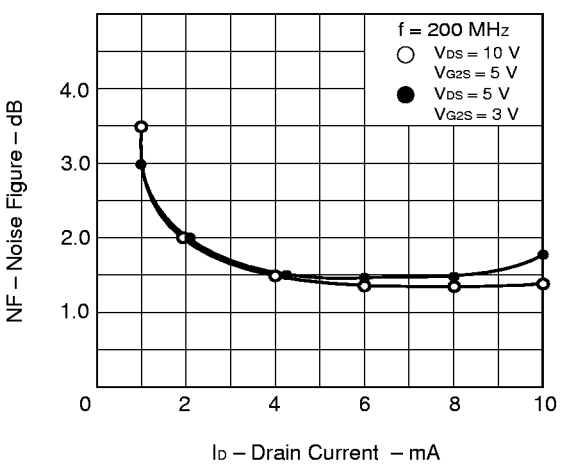
INPUT CAPACITANCE vs.
GATE2 TO SOURCE VOLTAGE



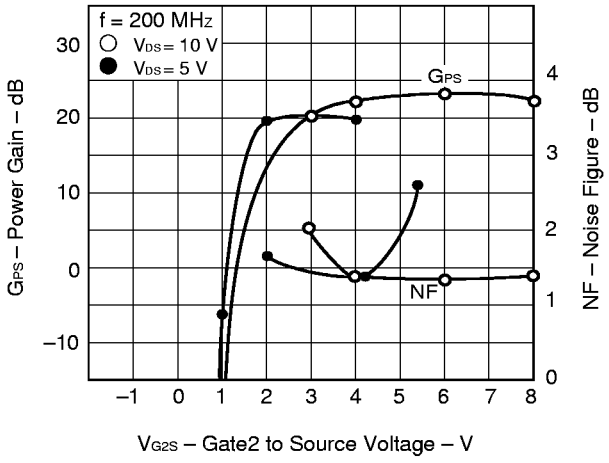
OUTPUT CAPACITANCE vs.
GATE2 TO SOURCE VOLTAGE



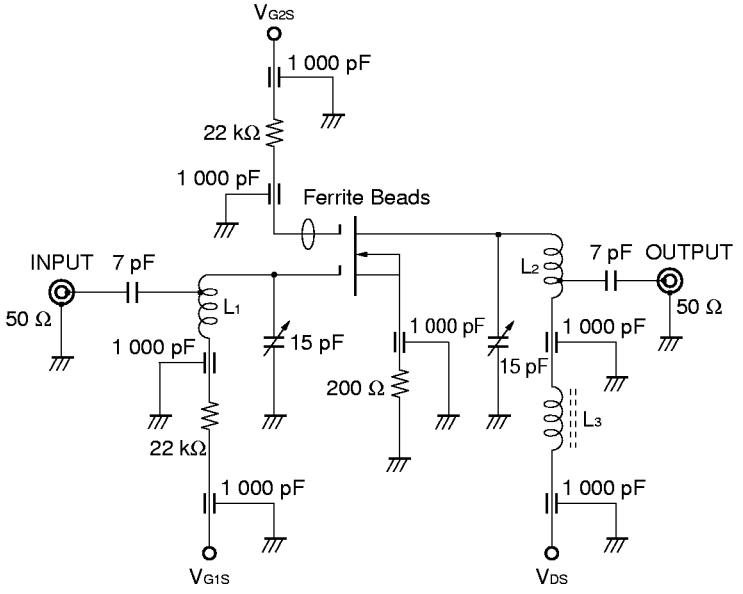
NOISE FIGURE vs. DRAIN CURRENT



NOISE FIGURE, POWER GAIN vs.
GATE2 TO SOURCE VOLTAGE



Gps AND NF TEST CIRCUIT AT f = 200 MHz



TEST CONDITION

V_{DS} = 10 V, V_{G2S} = 5 V, I_D = 10 mA
f = 200 MHz
L_1: ϕ0.6 mm U.E.W. 7 mm 3T
L_2: ϕ0.6 mm U.E.W. 7 mm 3T
L_3: RFC 2.2 μH