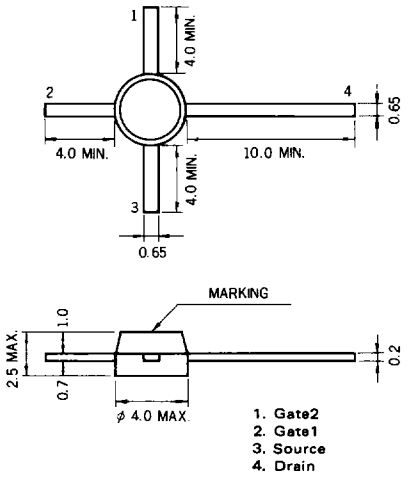
NEC
ELECTRON DEVICE

MOS FIELD EFFECT TRANSISTOR
3SK88

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

PACKAGE DIMENSIONS (Unit : mm)



FEATURES

- Suitable for use as RF amplifier in UHF TV tuner.
- Low C_{rss} : 0.02 pF TYP.
- High G_{ps} : 16 dB TYP.
- Low NF : 3.8 dB TYP.

ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C)

Drain to Source Voltage	V_{DSX}	20	V
Gate1 to Source Voltage	V_{G1S}	±10	V
Gate2 to Source Voltage	V_{G2S}	±10	V
Drain Current	I_D	25	mA
Total Power Dissipation	P_T	200	mW
Channel Temperature	T_{ch}	125	°C
Storage Temperature	T_{stg}	−65 to +125	°C

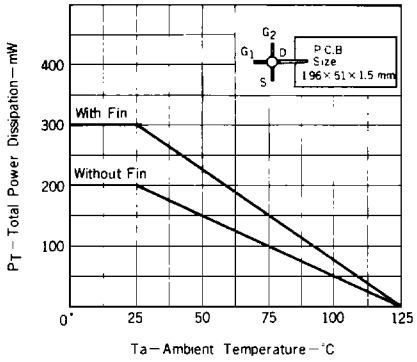
ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain to Source Breakdown Voltage	BV_{DSX}	20			V	$V_{G1S} = V_{G2S} = -2$ V, $I_D = 10$ μA
Drain Current	I_{DSS}	0.01		6	mA	$V_{DS} = 10$ V, $V_{G2S} = 4$ V, $V_{G1S} = 0$
Gate1 to Source Cutoff Voltage	$V_{G1S(off)}$			−2.0	V	$V_{DS} = 10$ V, $V_{G2S} = 4$ V, $I_D = 10$ μA
Gate2 to Source Cutoff Voltage	$V_{G2S(off)}$			−0.7	V	$V_{DS} = 10$ V, $V_{G1S} = 4$ V, $I_D = 10$ μA
Gate1 Reverse Current	I_{G1SS}			20	nA	$V_{DS} = 0$, $V_{G1S} = \pm 10$ V, $V_{G2S} = 0$
Gate2 Reverse Current	I_{G2SS}			20	nA	$V_{DS} = 0$, $V_{G2S} = \pm 10$ V, $V_{G1S} = 0$
Forward Transfer Admittance	$\|Y_{fs}\|$	14	17		mS	$V_{DS} = 10$ V, $V_{G2S} = 4$ V, $I_D = 10$ mA, f = 1 kHz
Input Capacitance	C_{iss}	1.5	2.0	2.5	pF	$V_{DS} = 10$ V, $V_{G2S} = 4$ V, $I_D = 10$ mA f = 1 MHz
Output Capacitance	C_{oss}	0.5	1.0	1.5	pF	
Reverse Transfer Capacitance	C_{rss}		0.02	0.03	pF	
Power Gain	Gps*	14	16	18	dB	$V_{DS} = 10$ V, $V_{G2S} = 4$ V, $I_D = 10$ mA f = 900 MHz
Noise Figure	NF*		3.8	5.5	dB	

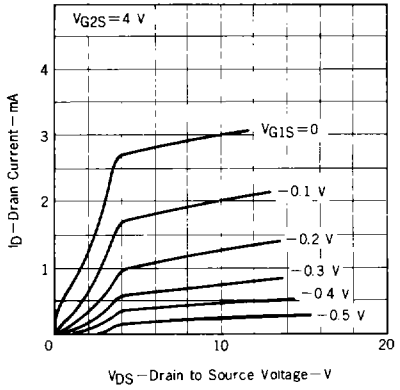
I_{DSS} Classification L: 0.01 − 2 mA K: 1 − 6 mA
*See Test Circuit

TYPICAL CHARACTERISTICS (Ta = 25 °C)

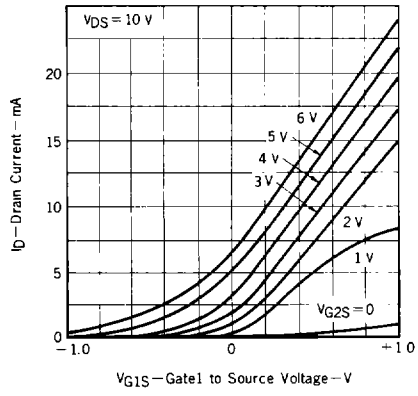
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



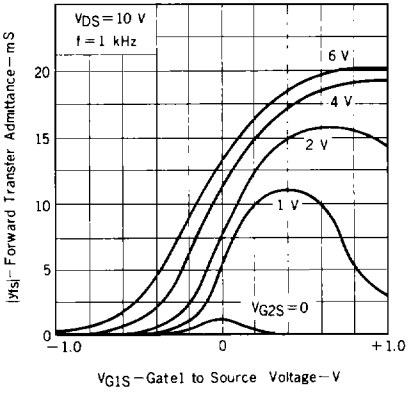
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



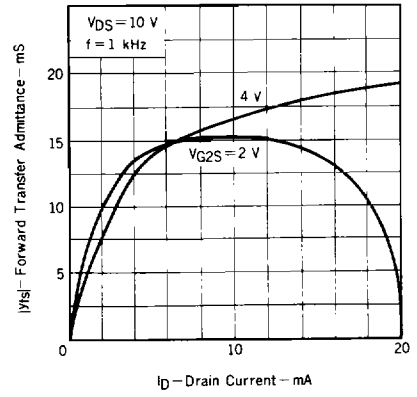
DRAIN CURRENT vs. GATE1 TO SOURCE VOLTAGE



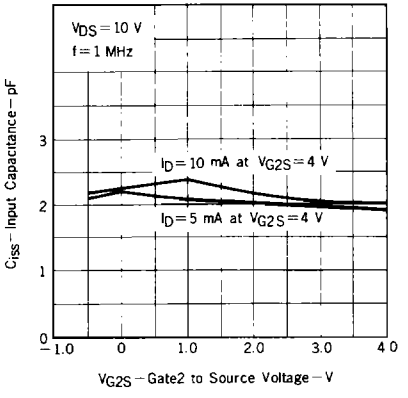
FORWARD TRANSFER ADMITTANCE vs. GATE1 TO SOURCE VOLTAGE



FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



INPUT CAPACITANCE vs. GATE2 TO SOURCE VOLTAGE



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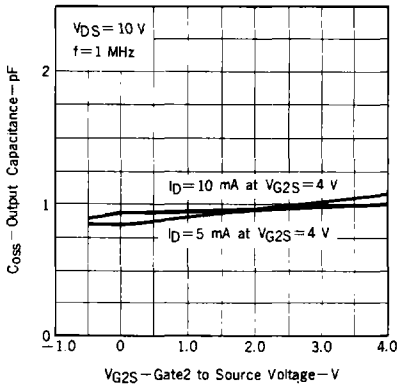
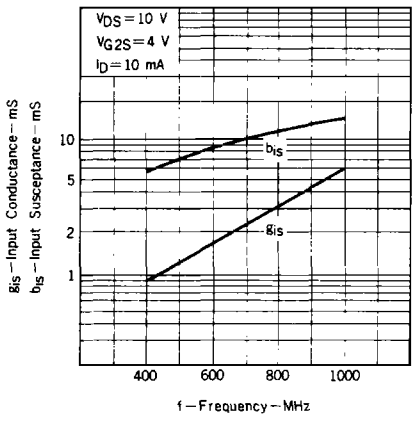
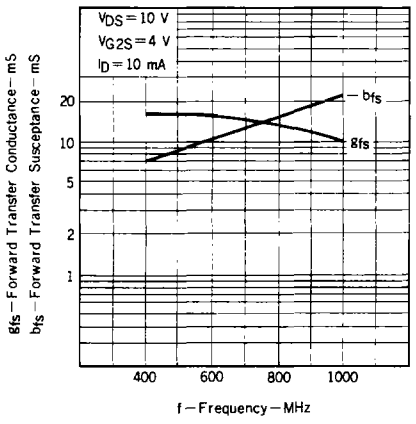
OUTPUT CAPACITANCE vs. GATE2 TO SOURCE VOLTAGE



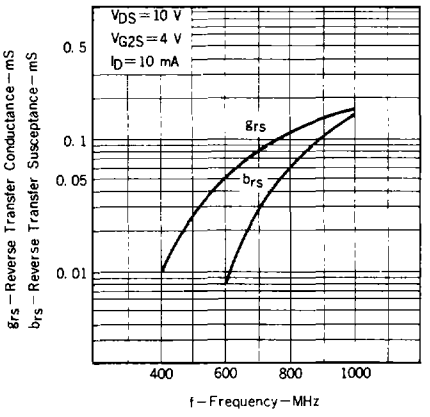
INPUT ADMITTANCE vs. FREQUENCY



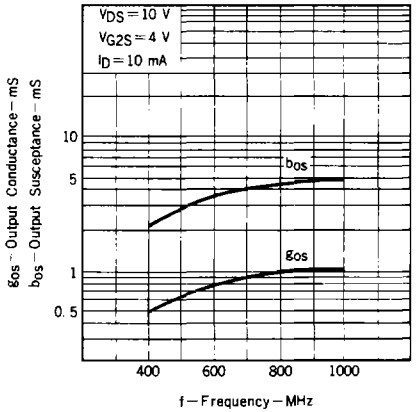
FORWARD TRANSFER ADMITTANCE vs. FREQUENCY



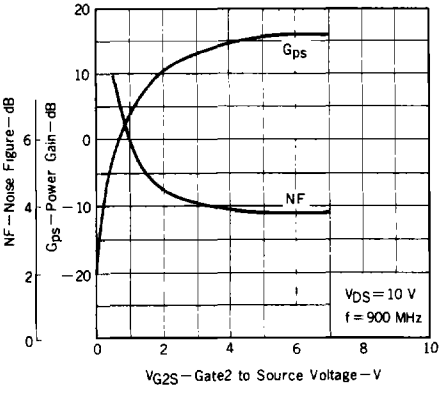
REVERSE TRANSFER ADMITTANCE vs. FREQUENCY



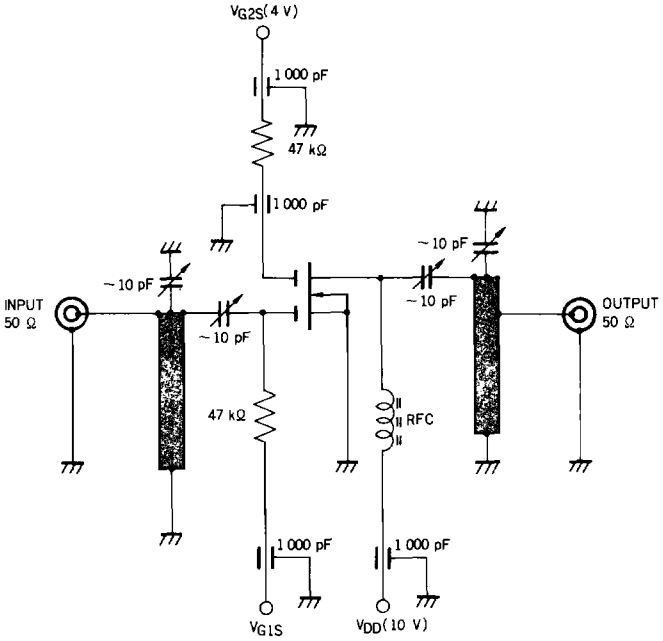
OUTPUT ADMITTANCE vs. FREQUENCY



POWER GAIN AND NOISE FIGURE vs. GATE2 TO SOURCE VOLTAGE



900 MHz G_{ps} AND NF TEST CIRCUIT



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