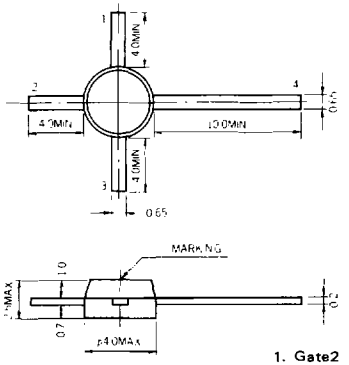
NEC
ELECTRON DEVICE

MOS FIELD EFFECT TRANSISTOR
3SK74

RF AMPLIFIER & MIXER FOR VHF TV
N-CHANNEL SILICON DUAL-GATE MOS FIELD-EFFECT TRANSISTOR
"DISKMOLD"

PACKAGE DIMENSIONS (Unit : mm)



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

FEATURES

- Suitable for Use as RF Amplifier & Mixer in VHF TV Tuner.
- Low C_{rss} : 0.03pF TYP.
- High PG : 22dB TYP.
- Low NF : 2.0dB 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

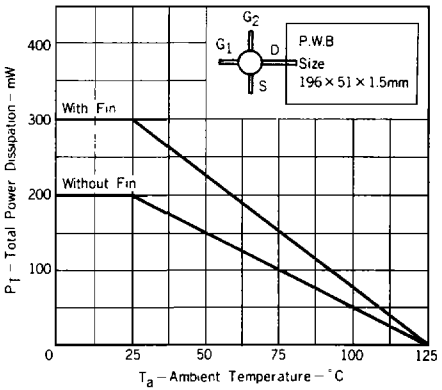
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain to Source Breakdown Voltage	BV_{DSX}	20			V	V_{G1S} = -3.0V, V_{G2S} = 3.0V, I_D = 500nA
Drain Current	I_{DSS}	7.0		25	mA	V_{DS} = 6.0V, V_{G1S} = 0, V_{G2S} = 3.0V
Gate1 to Source Cutoff Voltage	$V_{G1S(off)}$			-3.0	V	V_{DS} = 6.0V, V_{G2S} = 0, I_D = 5.0μA
Gate2 to Source Cutoff Voltage	$V_{G2S(off)}$			-3.0	V	V_{DS} = 6.0V, V_{G1S} = 0, I_D = 5.0μA
Gate1 Reverse Current	I_{G1SS}			±0.1	μA	V_{DS} = 0, V_{G1S} = ±10V, V_{G2S} = 0
Gate2 Reverse Current	I_{G2SS}			±0.1	μA	V_{DS} = 0, V_{G1S} = 0, V_{G2S} = ±10V
Forward Transfer Admittance	$\|Y_{fs}\|$	17	20		m℧	V_{DS} = 6.0V, I_D = 10mA, V_{G2S} = 3.0V f = 1kHz
Input Capacitance	C_{iss}		4.8	6.0	pF	V_{DS} = 6.0V, I_D = 10mA, V_{G2S} = 3.0V f = 1MHz
Output Capacitance	C_{oss}		2.5	3.5	pF	
Reverse Transfer Capacitance	C_{rss}		0.03	0.05	pF	
Power Gain	G_{ps}	20	22		dB	V_{DS} = 10V, I_D = 10mA, f = 200MHz * V_{G2} = 5.0V
Noise Figure	NF		2.0	3.0	dB	

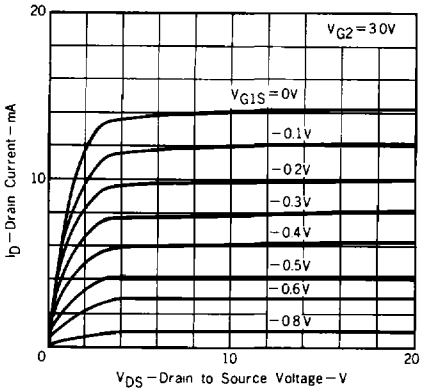
I_{DSS} Classification M : 7.0 – 13mA L : 11 – 19mA K : 17 – 25mA
*See Test Circuit

TYPICAL CHARACTERISTICS (Ta = 25°C)

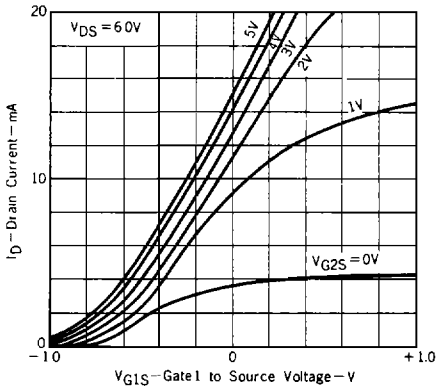
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



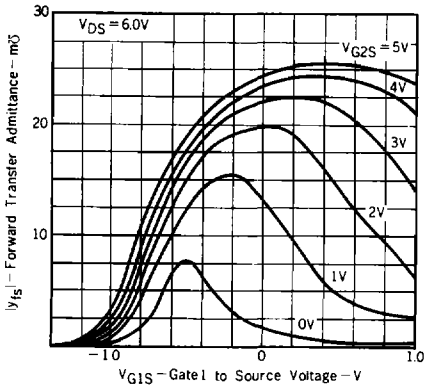
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



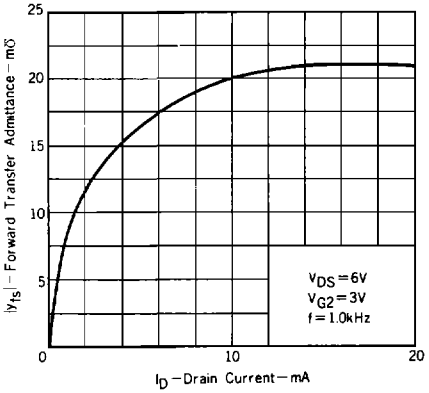
DRAIN CURRENT vs. GATE1 TO SOURCE VOLTAGE



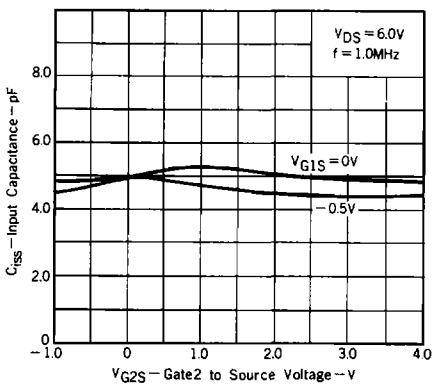
FORWARD TRANSFER ADMITTANCE vs. GATE1 TO SOURCE VOLTAGE



FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



INPUT CAPACITANCE vs. GATE2 TO SOURCE VOLTAGE



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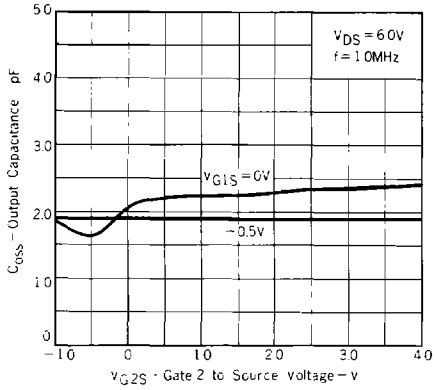
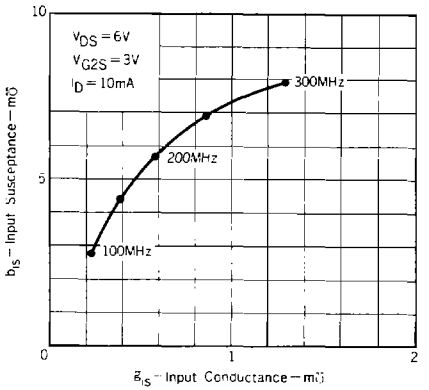
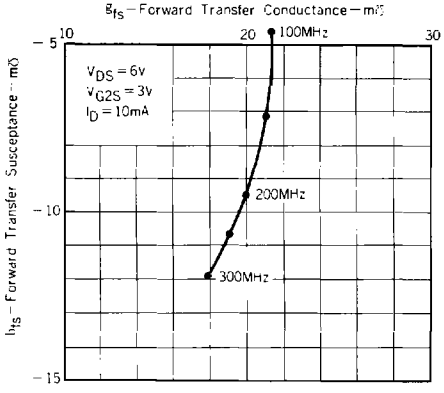
OUTPUT CAPACITANCE vs.
GATE2 TO SOURCE VOLTAGE



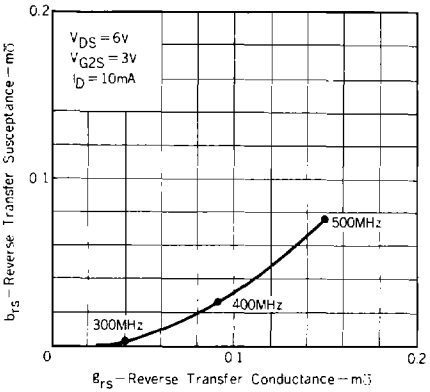
INPUT ADMITTANCE (Y_{is})
vs. FREQUENCY



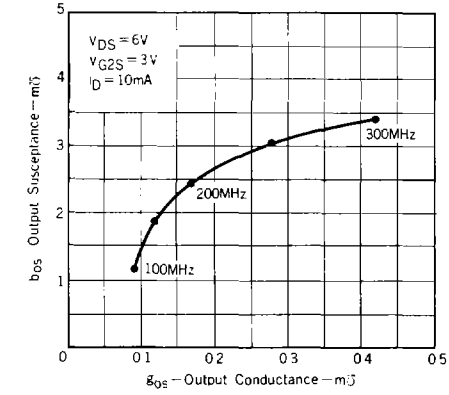
FORWARD TRANSFER ADMITTANCE (Y_{fs})
vs. FREQUENCY



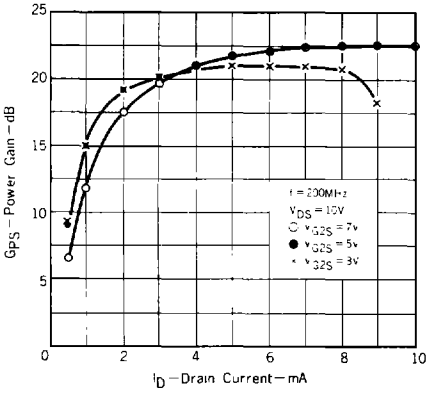
REVERSE TRANSFER ADMITTANCE (Y_{rs})
vs. FREQUENCY



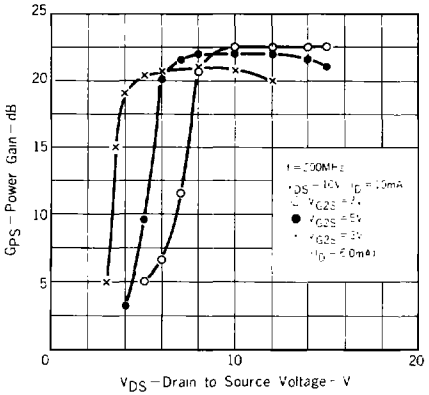
OUTPUT ADMITTANCE (Y_{os})
vs. FREQUENCY



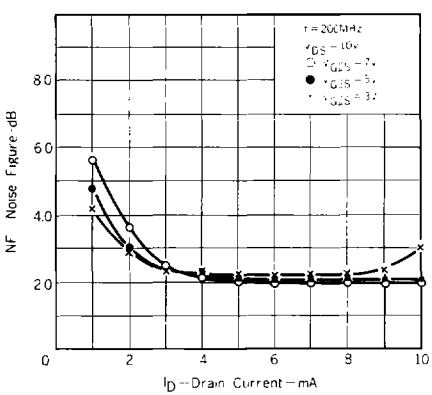
POWER GAIN vs. DRAIN CURRENT



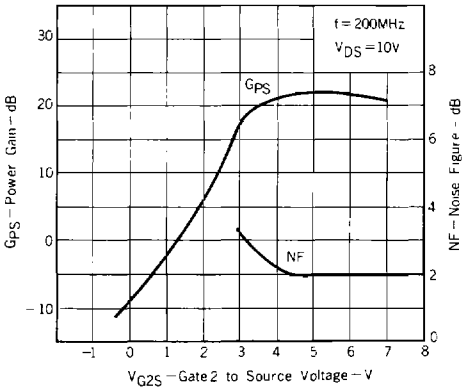
POWER GAIN vs.
DRAIN TO SOURCE VOLTAGE



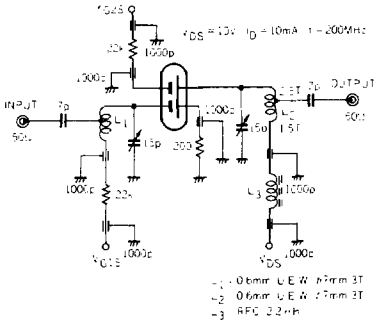
NOISE FIGURE vs.
DRAIN CURRENT



NOISE FIGURE, POWER GAIN vs.
GATE2 TO SOURCE VOLTAGE



200MHz Power Gain & Noise Figure Test Circuit



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