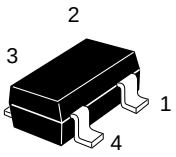
3SK196

Silicon N Channel Dual Gate MOS FET
VHF/UHF TV Tuner RF Amplifier

Features

- Compact package.
- Low noise amplifier for VHF to UHF band, capable of RF amplifier for CATV wide band tuner.

MPAK-4



1. Source
2. Gate 1
3. Gate 2
4. Drain

Table 1 Absolute Maximum Ratings
(Ta = 25°C)

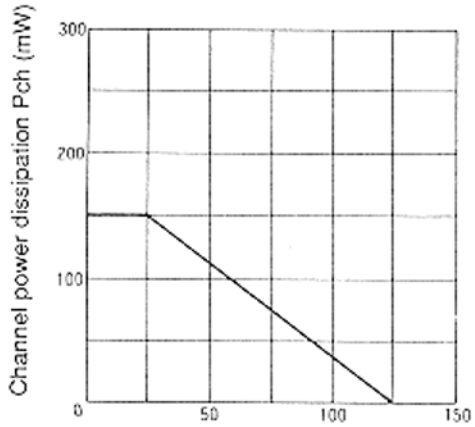
Item	Symbol	Rating	Unit
Drain to source voltage	V_{DS}	12	V
Gate 1 to source voltage	V_{G1S}	±10	V
Gate 2 to source voltage	V_{G2S}	±10	V
Drain current	I_D	35	mA
Channel power dissipation	Pch	150	mW
Channel temperature	Tch	125	°C
Storage temperature	Tstg	–55 to +125	°C

Table 2 Electrical Characteristics (Ta = 25°C)

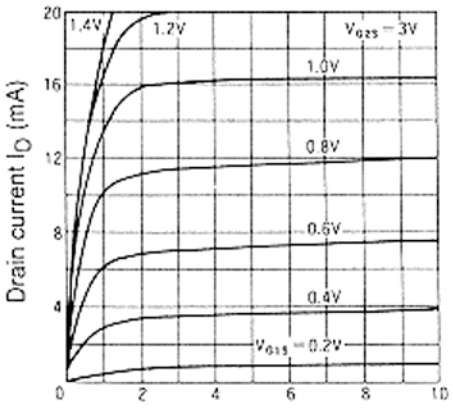
Item	Symbol	Min	Typ	Max	Unit	Test condition
Drain to source breakdown voltage	$V_{(BR)DSX}$	12	—	—	V	$V_{G1S} = V_{G2S} = -5$ V, $I_D = 200$ µA
Gate 1 to source breakdown voltage	$V_{(BR)G1SS}$	±10	—	—	V	$I_{G1} = \pm10$ µA, $V_{G2S} = V_{DS} = 0$
Gate 2 to source breakdown voltage	$V_{(BR)G2SS}$	±10	—	—	V	$I_{G2} = \pm10$ µA, $V_{G1S} = V_{DS} = 0$
Gate 1 cutoff current	I_{G1SS}	—	—	±100	nA	$V_{G1S} = \pm8$ V, $V_{G2S} = V_{DS} = 0$
Gate 2 cutoff current	I_{G2SS}	—	—	±100	nA	$V_{G2S} = \pm8$ V, $V_{G1S} = V_{DS} = 0$
Gate 1 to source cutoff voltage	$V_{G1S(off)}$	–0.5	—	+1.5	V	$V_{DS} = 10$ V, $V_{G2S} = 3$ V, $I_D = 100$ µA
Gate 2 to source cutoff voltage	$V_{G2S(off)}$	+0.5	—	+1.5	V	$V_{DS} = 10$ V, $V_{G1S} = 3$ V, $I_D = 100$ µA
Drain current	I_{DSS}	0	0.16	1	mA	$V_{DS} = 6$ V, $V_{G2S} = 3$ V, $V_{G1S} = 0$
Forward transfer admittance	$\|y_{fs}\|$	14	21	—	mS	$V_{DS} = 6$ V, $V_{G2S} = 3$ V, $I_D = 10$ mA, f = 1 kHz
Input capacitance	Ciss	—	2.4	3.5	pF	$V_{DS} = 6$ V, $V_{G2S} = 3$ V, $I_D = 10$ mA, f = 1 MHz
Output capacitance	Coss	—	1.1	2.5	pF	
Reverse transfer capacitance	Crss	—	0.02	—	pF	
Power gain	PG	12	14	—	dB	$V_{DS} = 6$ V, $V_{G2S} = 3$ V, $I_D = 10$ mA, f = 900 MHz
Noise figure	NF	—	3.6	4.5	dB	
Noise figure	NF	—	3.3	4	dB	$V_{DD} = 12$ V, $V_{AGC} = 10.5$ V, f = 60 MHz
Power gain	PG	25	32	—	dB	$V_{DS} = 6$ V, $V_{G2S} = 3$ V, $I_D = 10$ mA, f = 200 MHz
Noise figure	NF	—	1.0	2	dB	

- Marking is “XI-”.

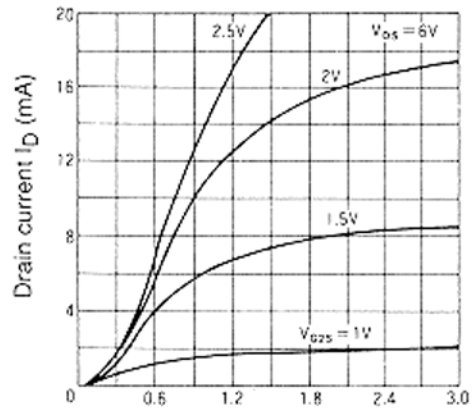
Maximum channel power dissipation curve



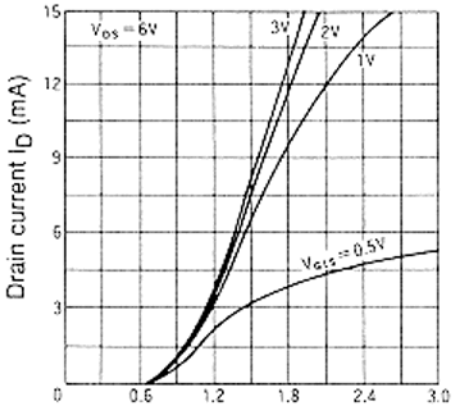
Typical output characteristics



Drain current vs. gate 1 to source voltage



Drain current vs. gate 2 to source voltage



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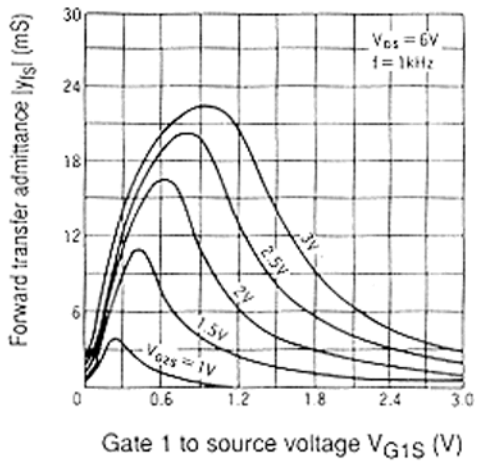
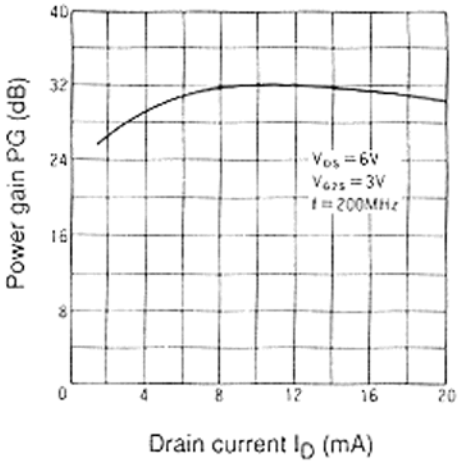
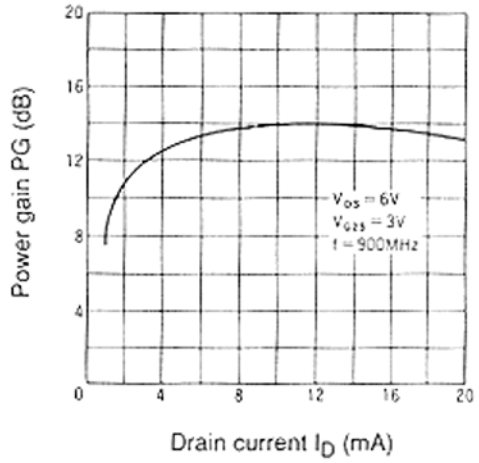
Forward transfer admittance vs. gate 1 to source voltage



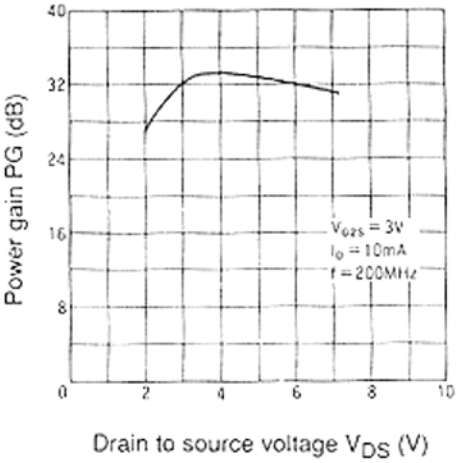
Power gain vs. drain current



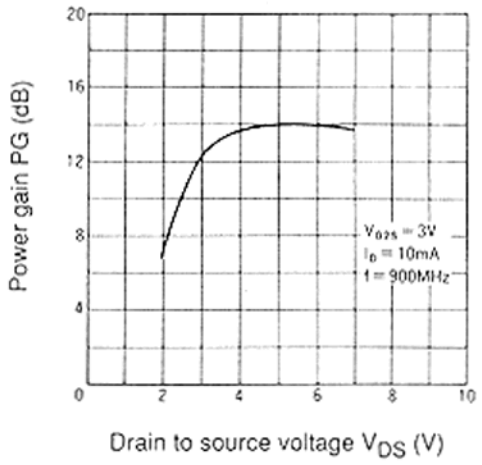
Power gain vs. drain current



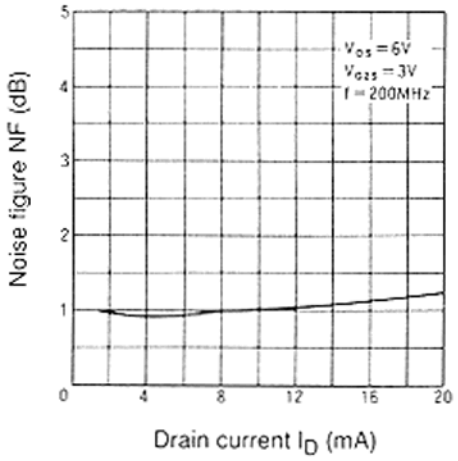
Power gain vs. drain to source voltage



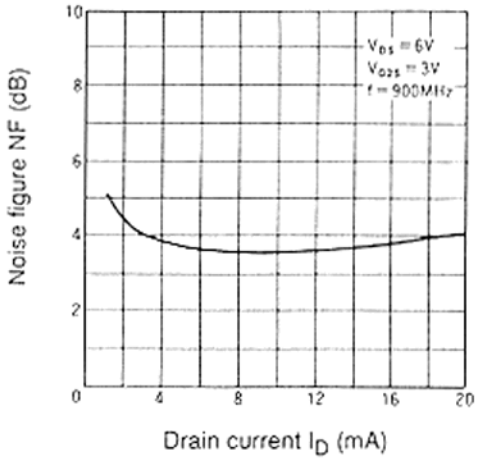
Power gain vs. drain to source voltage



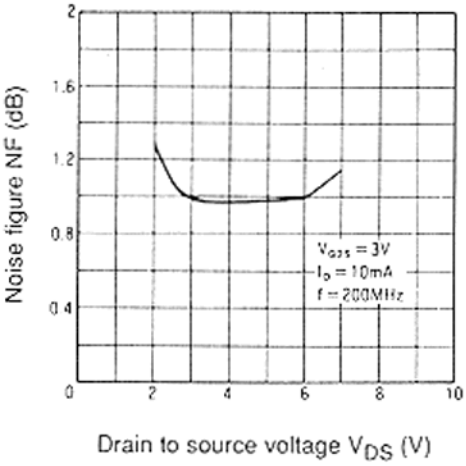
Noise figure vs. drain current



Noise figure vs. drain current



Noise figure vs. drain to source voltage



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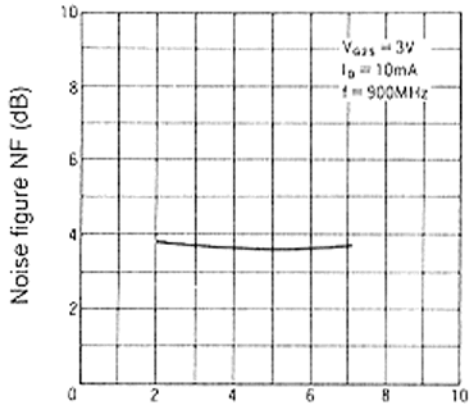
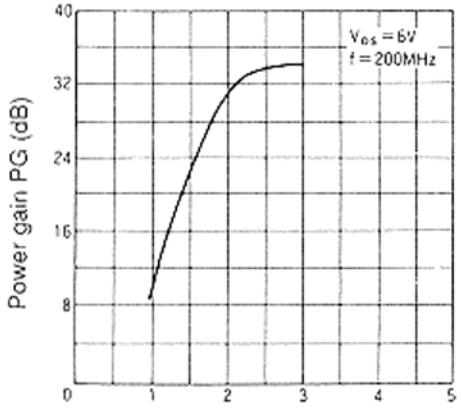
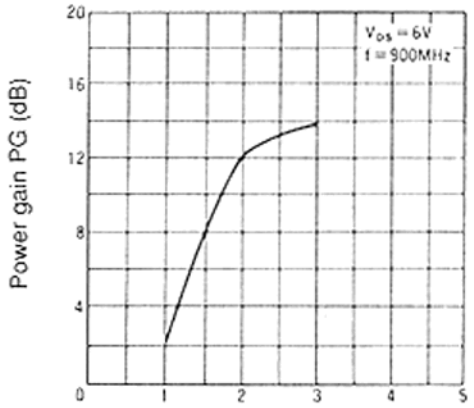
Noise figure vs. drain to source voltage



Power gain vs. gate 2 source voltage



Power gain vs. gate 2 source voltage



Gain reduction
vs. gate 2 to source voltage