

3SK197

Silicon N Channel Dual Gate MOS FET
VHF RF Amplifier
VHF TV Tuner RF Amplifier, Frequency Converter

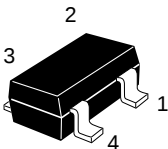
Features

- Compact package
- High conversion gain (24 dB typ.)

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 dissipation	Pch	150	mW
Channel temperature	Tch	125	°C
Storage temperature	Tstg	-55 to +125	°C

MPAK-4



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

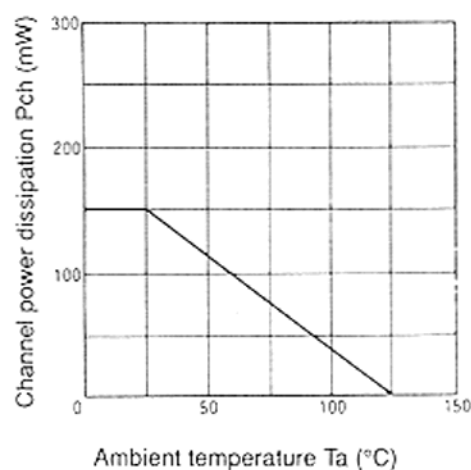
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Table 2 Electrical Characteristics (Ta = 25°C)

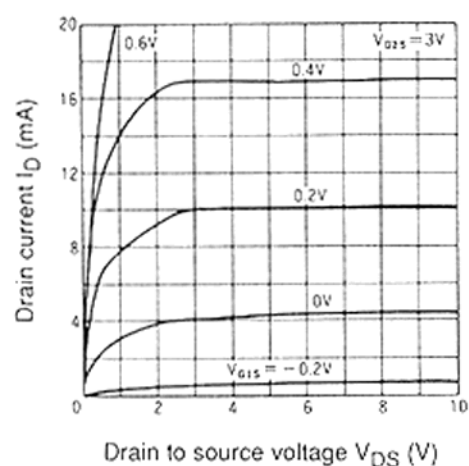
Item	Symbol	Min	Typ	Max	Unit	Test condition
Drain to source breakdown voltage	$V_{(BR)DSX}$	12	—	—	V	$V_{G1S} = V_{G2S} = -5\text{ V}$, $I_D = 200\text{ }\mu\text{A}$
Gate 1 to source breakdown voltage	$V_{(BR)G1SS}$	± 10	—	—	V	$I_{G1} = \pm 10\text{ }\mu\text{A}$, $V_{G2S} = V_{DS} = 0$
Gate 2 to source breakdown voltage	$V_{(BR)G2SS}$	± 10	—	—	V	$I_{G2} = \pm 10\text{ }\mu\text{A}$, $V_{G1S} = V_{DS} = 0$
Gate 1 cutoff current	I_{G1SS}	—	—	± 100	nA	$V_{G1S} = \pm 8\text{ V}$, $V_{G2S} = V_{DS} = 0$
Gate 2 cutoff current	I_{G2SS}	—	—	± 100	nA	$V_{G2S} = \pm 8\text{ V}$, $V_{G1S} = V_{DS} = 0$
Gate 1 to source cutoff voltage	$V_{G1S(off)}$	0	—	-1	V	$V_{DS} = 10\text{ V}$, $V_{G2S} = 3\text{ V}$, $I_D = 100\text{ }\mu\text{A}$
Gate 2 to source cutoff voltage	$V_{G2S(off)}$	0	—	-1	V	$V_{DS} = 10\text{ V}$, $V_{G1S} = 3\text{ V}$, $I_D = 100\text{ }\mu\text{A}$
Drain current	I_{DSS}	1	4	10	mA	$V_{DS} = 6\text{ V}$, $V_{G2S} = 3\text{ V}$, $V_{G1S} = 0$
Forward transfer admittance	$ y_{fs} $	20	27	—	mS	$V_{DS} = 6\text{ V}$, $V_{G2S} = 4.5\text{ V}$, $I_D = 5\text{ mA}$, $f = 1\text{ kHz}$
Input capacitance	C_{iss}	—	4.3	5.5	pF	$V_{DS} = 6\text{ V}$, $V_{G2S} = 3\text{ V}$, $I_D = 10\text{ mA}$, $f = 1\text{ MHz}$
Output capacitance	C_{oss}	—	2.2	3	pF	
Reverse transfer capacitance	C_{rss}	—	0.03	0.04	pF	
Power gain	PG	28	30	—	dB	$V_{DS} = 6\text{ V}$, $V_{G2S} = 3\text{ V}$, $I_D = 10\text{ mA}$, $f = 200\text{ MHz}$
Noise figure	NF	—	1.4	2.5	dB	
Conversion gain	CG	20	24.6	—	dB	$V_{DS} = 6\text{ V}$, $V_{G2S} = 4.5\text{ V}$, $I_D = 2\text{ mA}$, $f = 200\text{ MHz}$, $f_{OSC} = 230\text{ NHz}$

- Marking is "WI-".

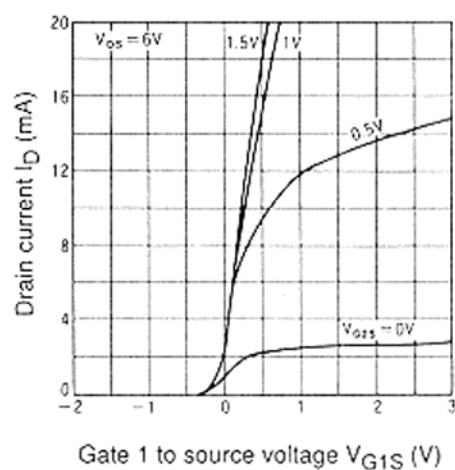
Maximum channel power dissipation curve



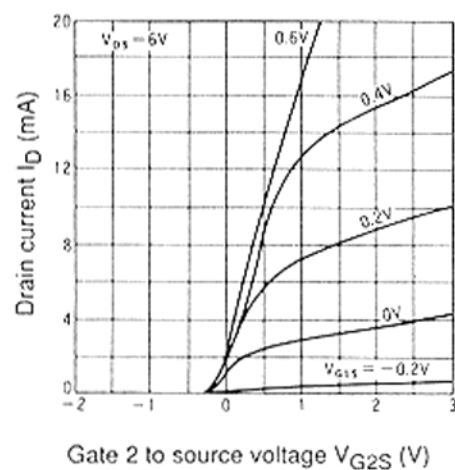
Typical output characteristics

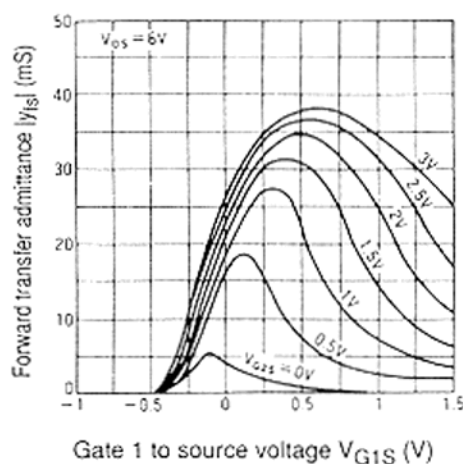


Drain current vs. gate 1 to source voltage

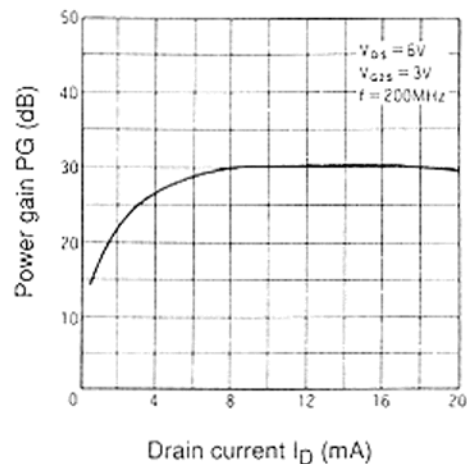


Drain current vs. gate 2 to source voltage

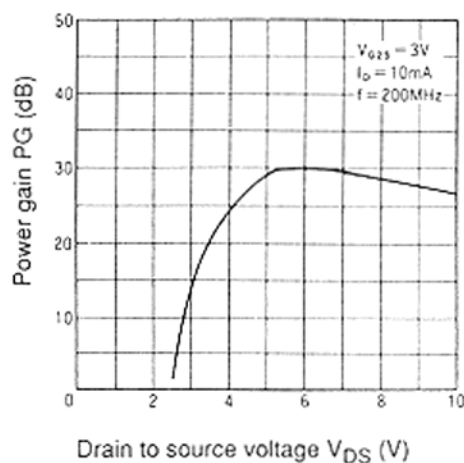


Forward transfer admittance
vs. gate 1 to source voltage

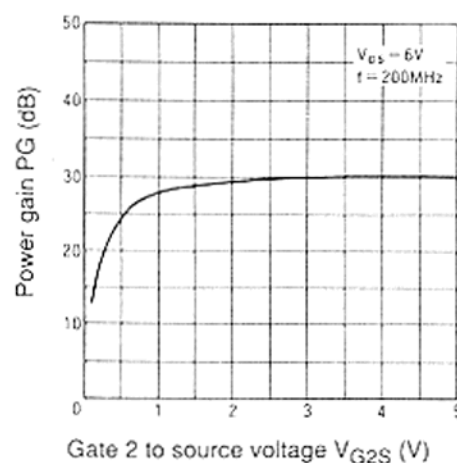
Power gain vs. drain current



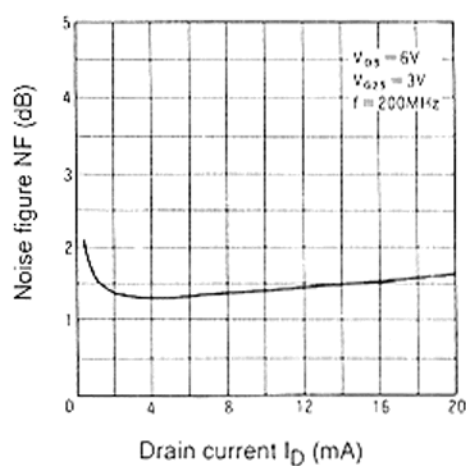
Power gain vs. drain to source voltage



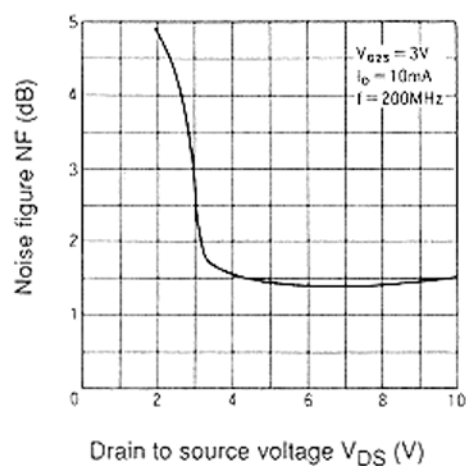
Power gain vs. gate 2 source voltage



Noise figure vs. drain current



Noise figure vs. drain to source voltage



Conversion gain vs. drain current

