
3SK300

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

HITACHI

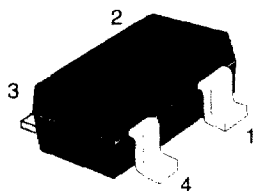
ADE-208-449
1st. Edition

Features

- Low noise figure
NF = 1.0 dB typ. at $f = 200$ MHz
- High gain
PG = 27.6 dB typ. at $f = 200$ MHz

Outline

MPAK-4



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

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DS}	14	V
Gate 1 to source voltage	V_{G1S}	± 8	V
Gate 2 to source voltage	V_{G2S}	± 8	V
Drain current	I_D	25	mA
Channel power dissipation	Pch	150	mW
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

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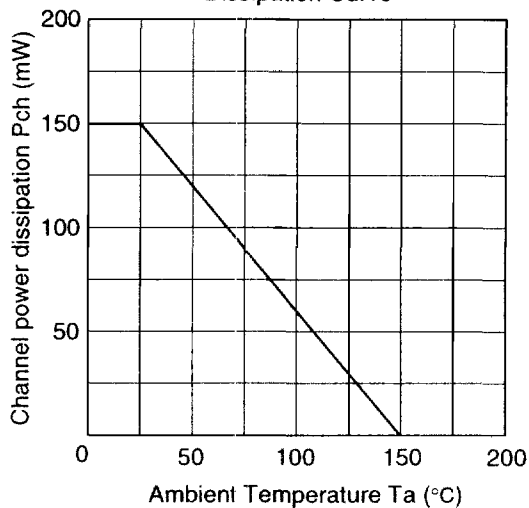
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSX}$	14	—	—	V	$I_D = 200 \mu A, V_{G1S} = -3 V, V_{G2S} = -3 V$
Gate 1 to source breakdown voltage	$V_{(BR)G1SS}$	± 8	—	—	V	$I_{G1} = \pm 10 \mu A, V_{DS} = V_{G2S} = 0$
Gate 2 to source breakdown voltage	$V_{(BR)G2SS}$	± 8	—	—	V	$I_{G2} = \pm 10 \mu A, V_{DS} = V_{G1S} = 0$
Gate 1 cutoff current	I_{G1SS}	—	—	± 100	nA	$V_{G1S} = \pm 6 V, V_{DS} = V_{G2S} = 0$
Gate 2 cutoff current	I_{G2SS}	—	—	± 100	nA	$V_{G2S} = \pm 6 V, V_{DS} = V_{G1S} = 0$
Drain current	$I_{DS(op)}$	4	8	14	mA	$V_{DS} = 6 V, V_{G1S} = 0.75 V, V_{G2S} = 3 V$
Gate 1 to source cutoff voltage	$V_{G1S(off)}$	0	+0.2	+1.0	V	$V_{DS} = 10 V, V_{G2S} = 3 V, I_D = 100 \mu A$
Gate 2 to source cutoff voltage	$V_{G2S(off)}$	0	+0.3	+1.0	V	$V_{DS} = 10 V, V_{G1S} = 3 V, I_D = 100 \mu A$
Forward transfer admittance	$ y_{fs} $	20	25	—	ms	$V_{DS} = 6 V, V_{G2S} = 3 V, I_D = 10 mA, f = 1 kHz$
Input capacitance	Ciss	2.4	3.1	3.5	pF	$V_{DS} = 6 V,$
Output capacitance	Coss	0.8	1.1	1.4	pF	$V_{G2S} = 3 V, I_D = 10 mA$
Reverse transfer capacitance	Crss	—	0.021	0.04	pF	$f = 1 MHz$
Power gain	PG	24	27.6	—	dB	$V_{DS} = 6 V, V_{G2S} = 3 V,$
Noise figure	NF	—	1.0	1.5	dB	$I_D = 10 mA, f = 200 MHz$
Power gain	PG	12	15.6	—	dB	$V_{DS} = 6 V, V_{G2S} = 3 V,$
Noise figure	NF	—	3.0	4.0	dB	$I_D = 10 mA, f = 900 MHz$
Noise figure	NF	—	2.7	3.5	dB	$V_{DS} = 6 V, V_{G2S} = 3 V, I_D = 10 mA, f = 60 MHz$

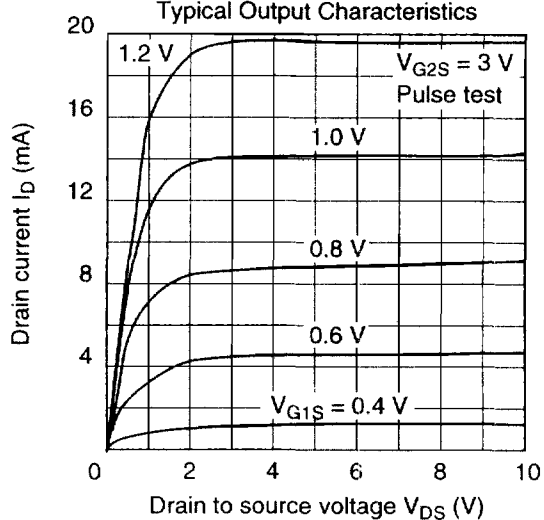
Note: Marking is "ZR—"

Main Characteristics

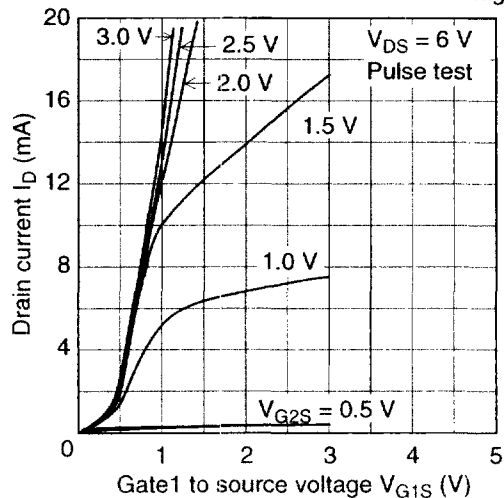
Maximum Channel Power Dissipation Curve



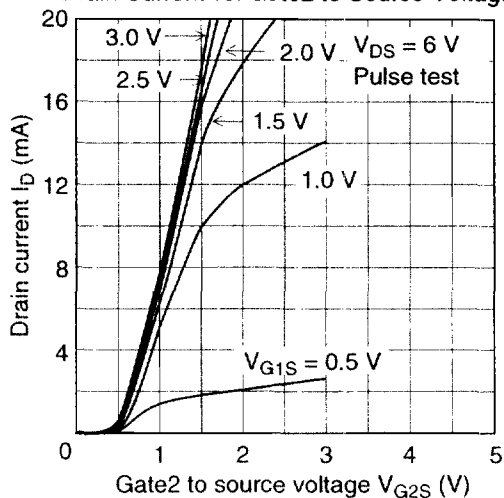
Typical Output Characteristics

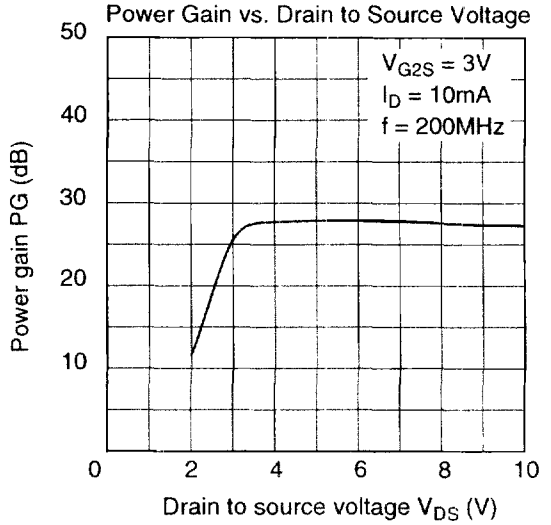
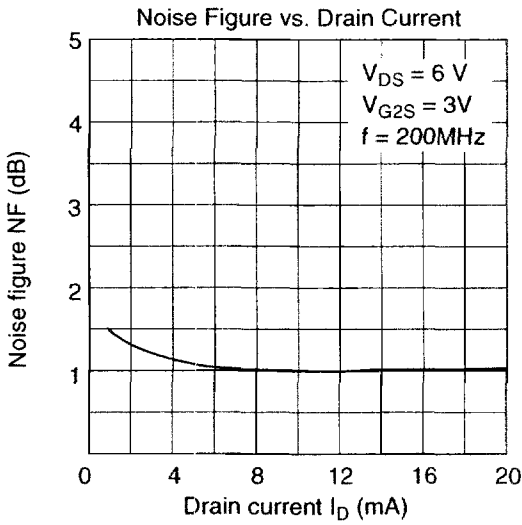
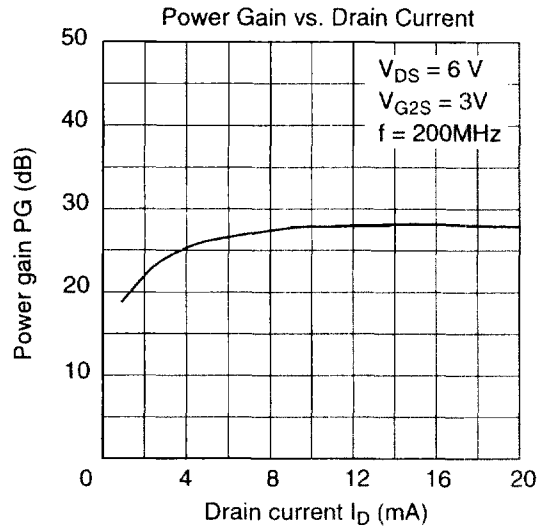
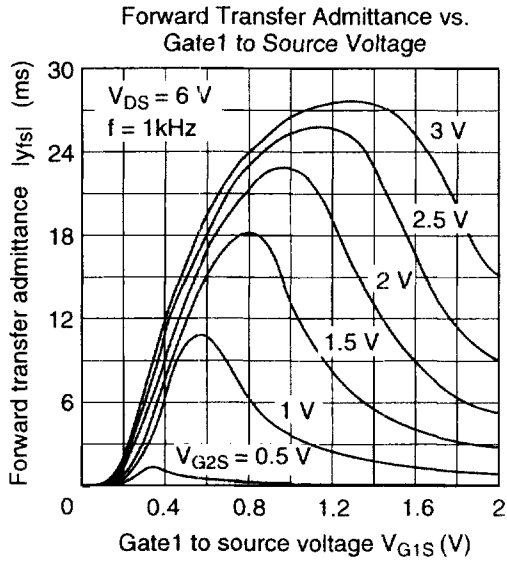


Drain Current vs. Gate1 to Source Voltage

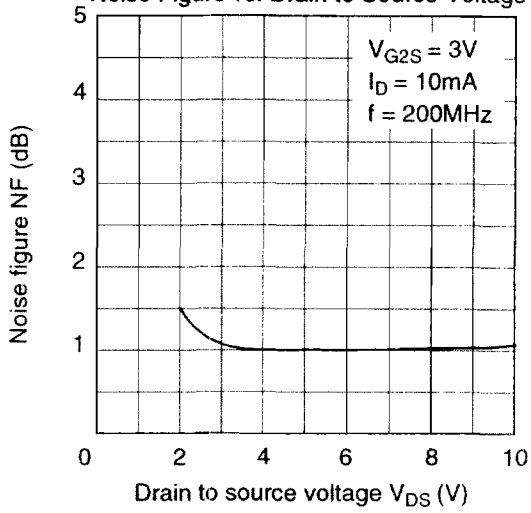


Drain Current vs. Gate2 to Source Voltage

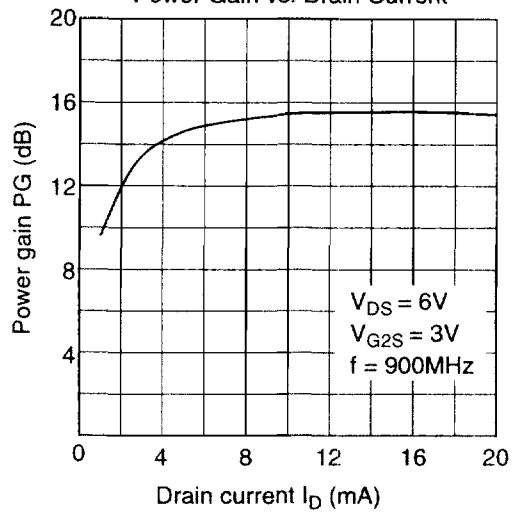




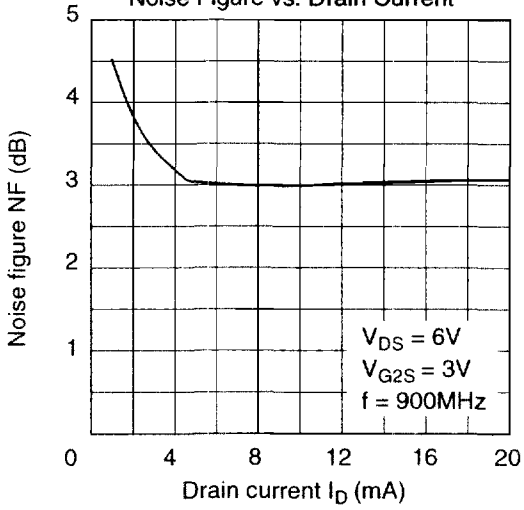
Noise Figure vs. Drain to Source Voltage



Power Gain vs. Drain Current



Noise Figure vs. Drain Current



Power Gain vs. Drain to Source Voltage

