
3SK194

Silicon N-Channel Dual Gate MOS FET

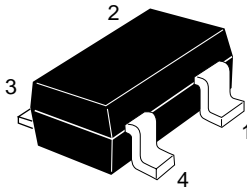
HITACHI

Application

VHF/UHF TV tuner RF amplifier

Outline

MPAK-4



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

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

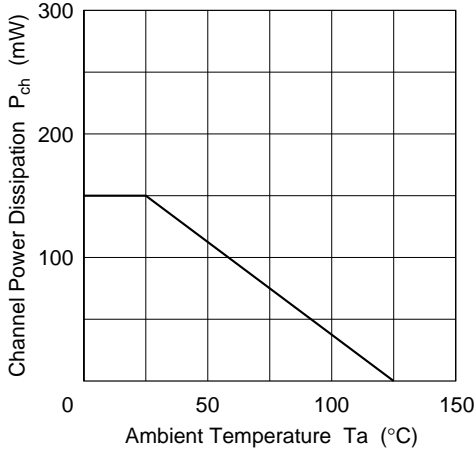
Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DS}	15	V
Gate 1 to source voltage	V_{G1S}	± 10	V
Gate 2 to source voltage	V_{G2S}	± 10	V
Drain current	I_D	35	mA
Channel power dissipation	Pch	150	mW
Channel temperature	Tch	125	$^\circ\text{C}$
Storage temperature	Tstg	-55 to +125	$^\circ\text{C}$

Electrical Characteristics (Ta = 25°C)

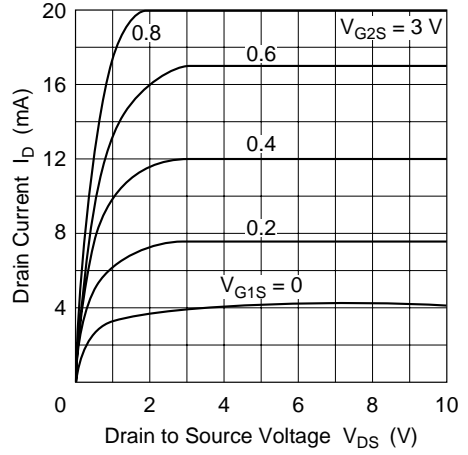
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSX}$	15	—	—	V	$I_D = 200 \mu A$, $V_{G1S} = V_{G2S} = -5 V$
Gate 1 to source breakdown voltage	$V_{(BR)G1SS}$	± 10	—	—	V	$I_{G1} = \pm 10 \mu A$, $V_{G2S} = V_{DS} = 0$
Gate 2 to source breakdown voltage	$V_{(BR)G2SS}$	± 10	—	—	V	$I_{G2} = \pm 10 \mu A$, $V_{G1S} = V_{DS} = 0$
Gate 1 cutoff current	I_{G1SS}	—	—	± 100	nA	$V_{G1S} = \pm 8 V$, $V_{G2S} = V_{DS} = 0$
Gate 2 cutoff current	I_{G2SS}	—	—	± 100	nA	$V_{G2S} = \pm 8 V$, $V_{G1S} = V_{DS} = 0$
Gate 1 to source cutoff voltage	$V_{G1S(off)}$	—	—	-1.0	V	$V_{DS} = 10 V$, $V_{G2S} = 3 V$, $I_D = 100 \mu A$
Gate 2 to source cutoff voltage	$V_{G2S(off)}$	—	—	-1.5	V	$V_{DS} = 10 V$, $V_{G1S} = 3 V$, $I_D = 100 \mu A$
Drain current	I_{DSS}	0	—	10	mA	$V_{DS} = 6 V$, $V_{G1S} = 0$, $V_{G2S} = 3 V$
Forward transfer admittance	$ y_{fs} $	17	—	—	mS	$V_{DS} = 6 V$, $V_{G2S} = 3 V$, $I_D = 10 mA$, $f = 1 kHz$
Input capacitance	Ciss	—	2.8	3.5	pF	$V_{DS} = 6 V$, $V_{G2S} = 3 V$, $I_D = 10 mA$, $f = 1 MHz$
Output capacitance	Coss	—	1.8	2.5	pF	
Reverse transfer capacitance	Crss	—	0.02	—	pF	
Power gain	PG	12	15	—	dB	$V_{DS} = 6 V$, $V_{G2S} = 3 V$, $I_D = 10 mA$, $f = 900 MHz$
Noise figure	NF	—	3.0	4.5	dB	
Noise figure	NF	—	3.0	4.0	dB	$V_{DD} = 12 V$, $V_{AGC} = 10.5 V$, $f = 60 MHz$
Power gain	PG	27	30	—	dB	$V_{DS} = 6 V$, $V_{G2S} = 3 V$, $I_D = 10 mA$, $f = 200 MHz$
Noise figure	NF	—	1.0	2.5	dB	

Note: Marking is "1Y-".

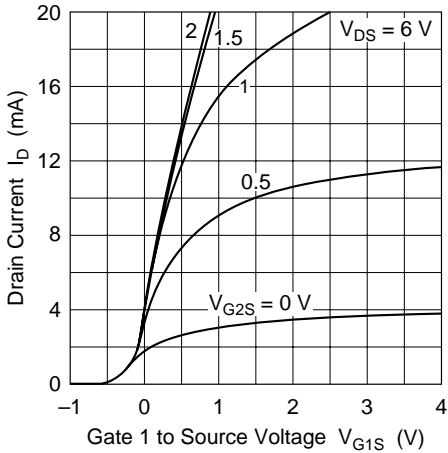
Maximum Channel Power Dissipation Curve



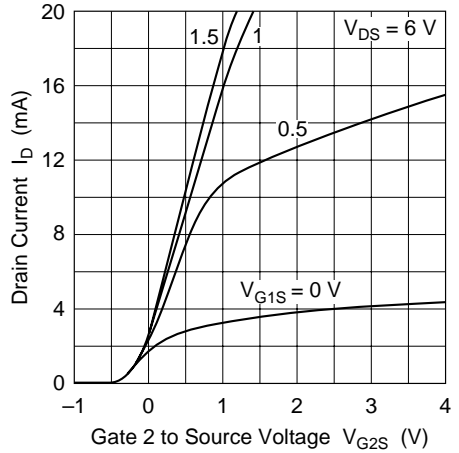
Typical Output Characteristics



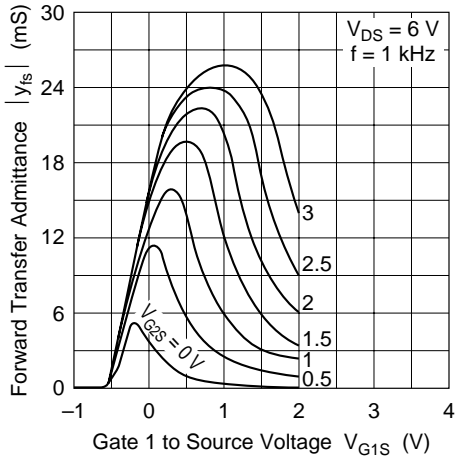
Drain Current vs. Gate 1 to Source Voltage



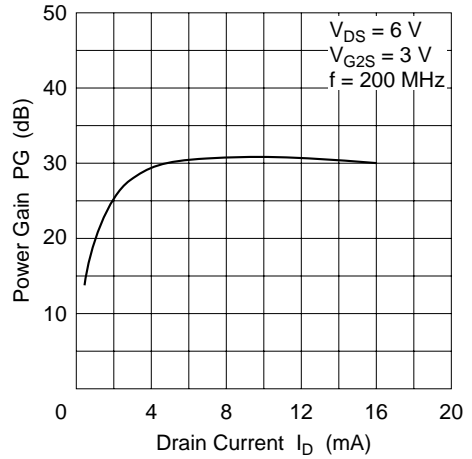
Drain Current vs. Gate 2 to Source Voltage



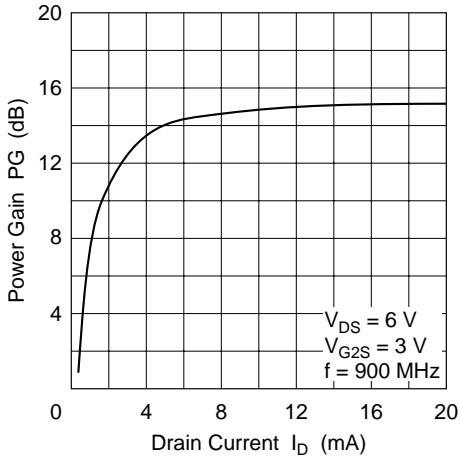
Forward Transfer Admittance vs. Gate 1 to Source Voltage



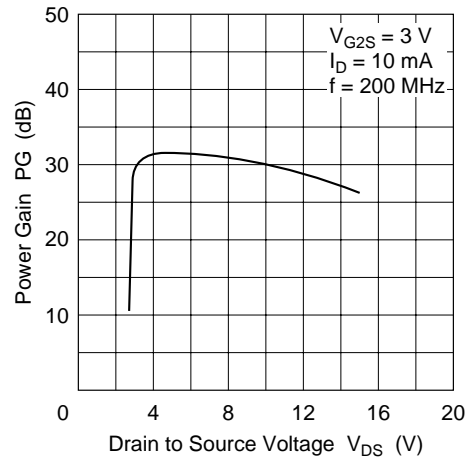
Power Gain vs. Drain Current

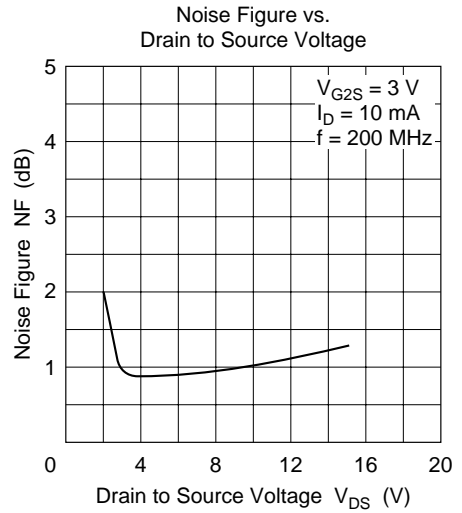
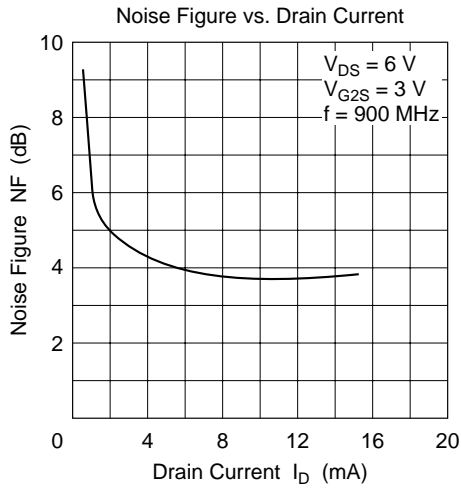
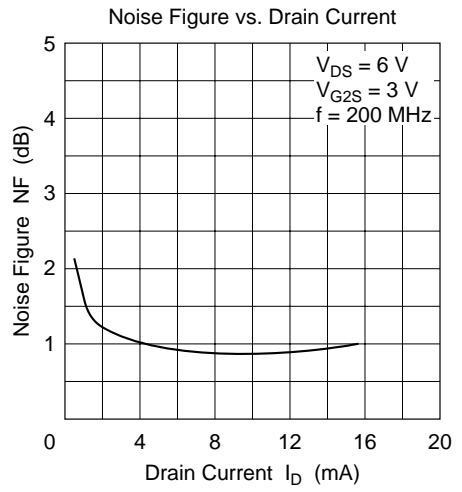
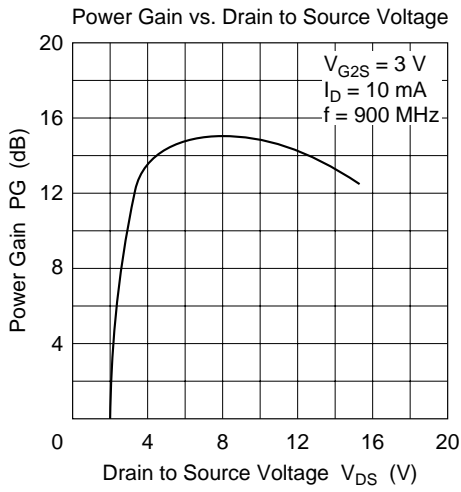


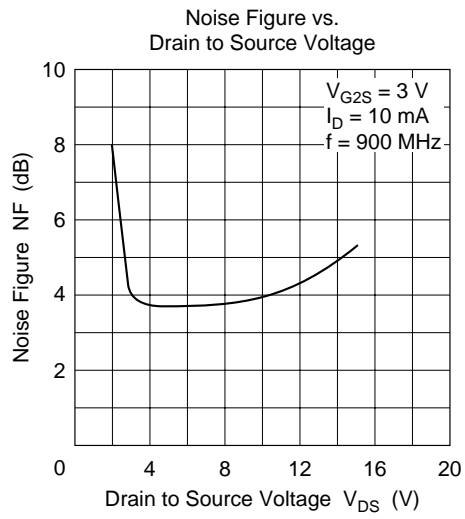
Power Gain vs. Drain Current

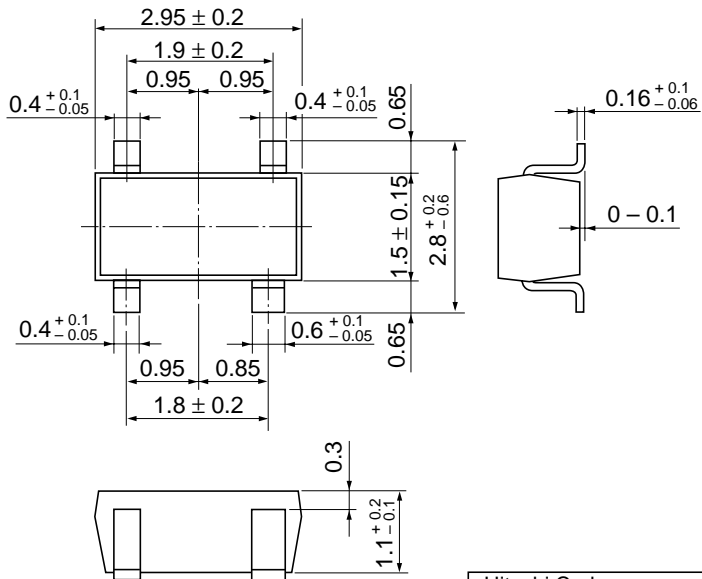


Power Gain vs. Drain to Source Voltage









Hitachi Code	MPAK-4
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.013 g

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