3SK186

Silicon N-Channel Dual Gate MOS FET

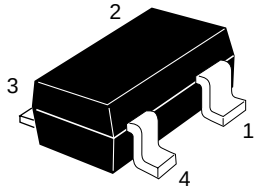
HITACHI

Application

UHF TV tuner RF amplifier

Outline

MPAK-4



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

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Absolute Maximum Ratings (Ta = 25°C)

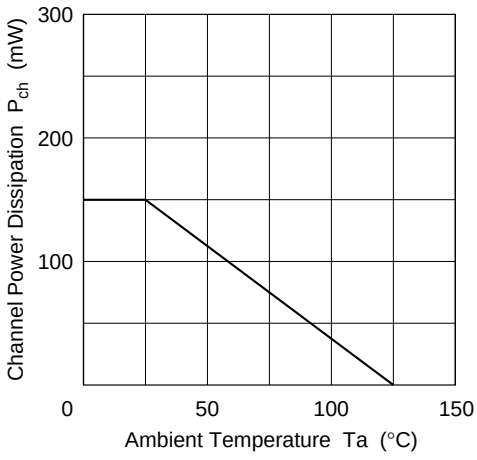
Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DS}	12	V
Gate 1 to source voltage	V_{G1S}	±10	V
Gate 2 to source voltage	V_{G2S}	±10	V
Drain current	I_D	35	mA
Channel power dissipation	Pch	150	mW
Channel temperature	Tch	125	°C
Storage temperature	Tstg	–55 to +125	°C

Electrical Characteristics (Ta = 25°C)

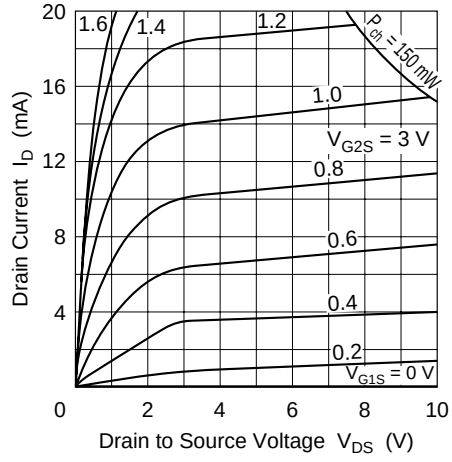
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSX}$	12	—	—	V	$V_{G1S} = V_{G2S} = –5$ V, $I_D = 200$ µA
Gate 1 to source breakdown voltage	$V_{(BR)G1SS}$	±10	—	—	V	$I_{G1} = ±10$ µA, $V_{G2S} = V_{DS} = 0$
Gate 2 to source breakdown voltage	$V_{(BR)\ G2SS}$	±10	—	—	V	$I_{G2} = ±10$ µA, $V_{G1S} = V_{DS} = 0$
Gate 1 cutoff current	I_{G1SS}	—	—	±100	nA	$V_{G1S} = ±8$ V, $V_{G2S} = V_{DS} = 0$
Gate 2 cutoff current	I_{G2SS}	—	—	±100	nA	$V_{G2S} = ±8$ V, $V_{G1S} = V_{DS} = 0$
Gate 1 to source cutoff voltage	$V_{G1S(off)}$	+0.5	—	–0.8	V	$V_{DS} = 6$ V, $V_{G2S} = 3$V, $I_D = 100$ µA
Gate 2 to source cutoff voltage	$V_{G2S(off)}$	+0.5	—	–0.8	V	$V_{DS} = 6$ V, $V_{G1S} = 3$V, $I_D = 100$ µA
Drain current	I_{DSS}	0	—	4	mA	$V_{DS} = 6$ V, $V_{G2S} = 3$V, $V_{G1S} = 0$
Forward transfer admittance	$\|y_{fs}\|$	15	—	—	mS	$V_{DS} = 6$ V, $V_{G2S} = 3$V, $I_D = 10$ mA, f = 1 kHz
Input capacitance	Ciss	—	1.7	2.2	pF	$V_{DS} = 6$ V, $V_{G2S} = 3$V, $I_D = 10$ mA, f = 1 MHz
Output capacitance	Coss	—	1.0	1.4	pF	
Reverse transfer capacitance	Crss	—	0.017	0.03	pF	
Power gain	PG	16	19	—	dB	$V_{DS} = 4$ V, $V_{G2S} = 3$V, $I_D = 10$ mA, f = 900 MHz
Noise figure	NF	—	3.0	4.5	dB	

Note: Marking is “FI–”.

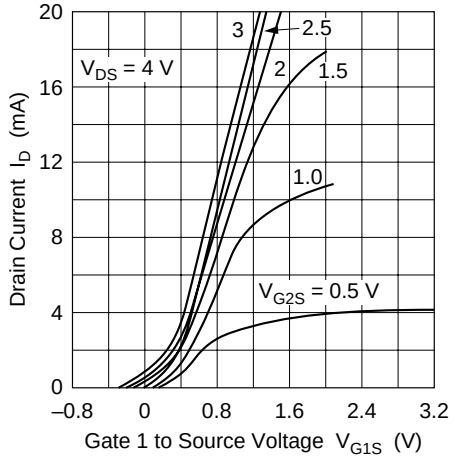
Maximum Channel Power Dissipation Curve



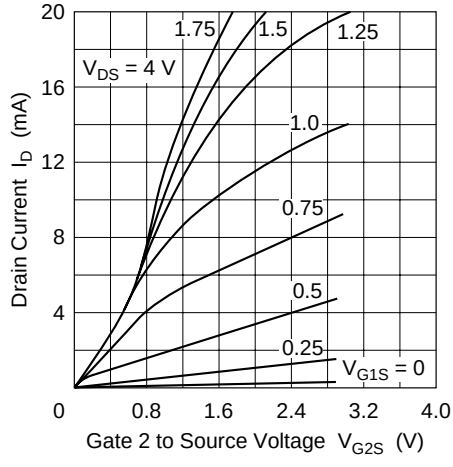
Typical Output Characteristics



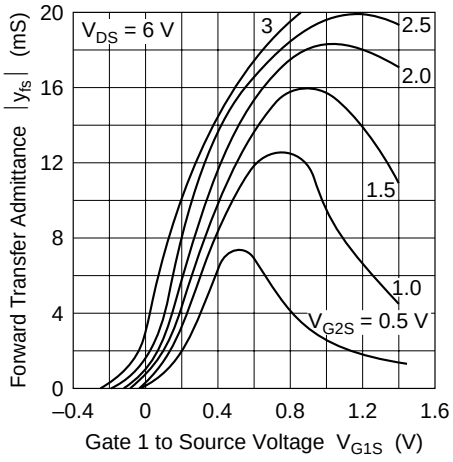
Drain Current vs. Gate 1 to Source Voltage



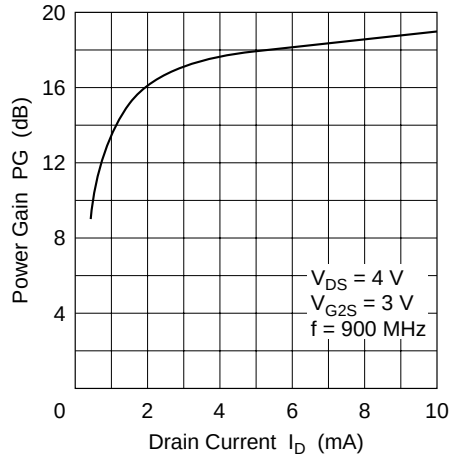
Drain Current vs. Gate 2 to Source Voltage



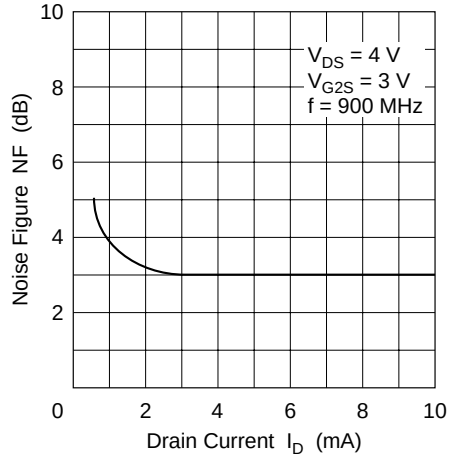
Forward Transfer Admittance vs. Gate 1 to Source Voltage



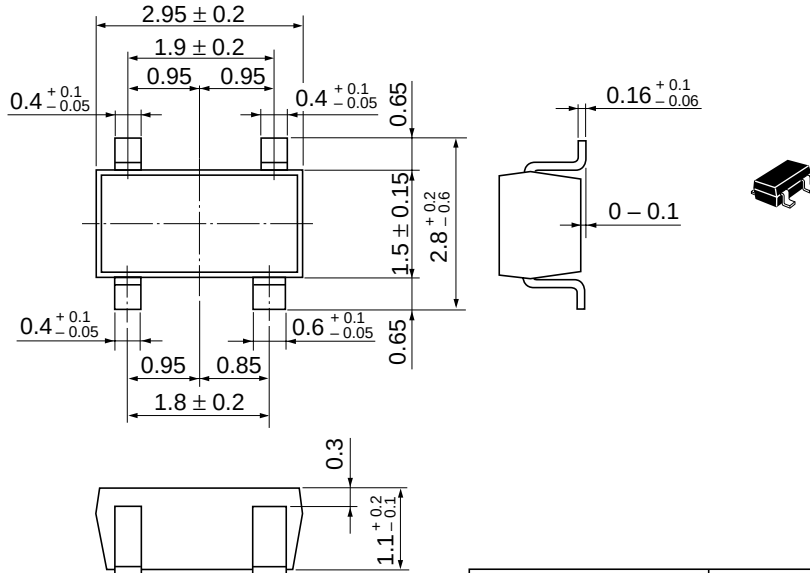
Power Gain vs. Drain Current



Noise Figure vs. Drain Current



Unit: mm



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

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