3SK288

Silicon N Channel Dual Gate MOS FET

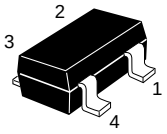
Application

VHF TV tuner RF amplifier

Features

- Low nose figure.
  NF = 1.5 dB typ.at f = 200 MHz
- High gain.
  PG = 28.5 dB typ.at f = 200 MHz

MPAK-4



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

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

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DS}	12	V
Gate1 to source voltage	V_{G1S}	±8	V
Gate2 to source voltage	V_{G2S}	±8	V
Drain current	I_D	25	mA
Channel power dissipation	P_{ch}	150	mW
Channel temperature	Tch	125	°C
Storage temperature	Tstg	–55 to +125	°C

Note: Marking is "ZH–"
Attention: This device is very sensitive to electro static discharge.
It is recommended to adopt appropriate cautions when handing this transistor.

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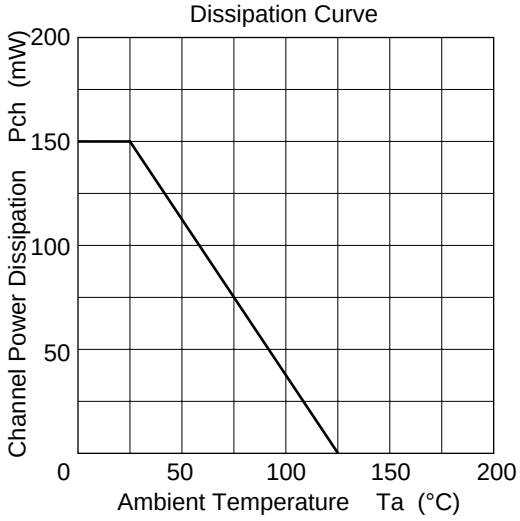
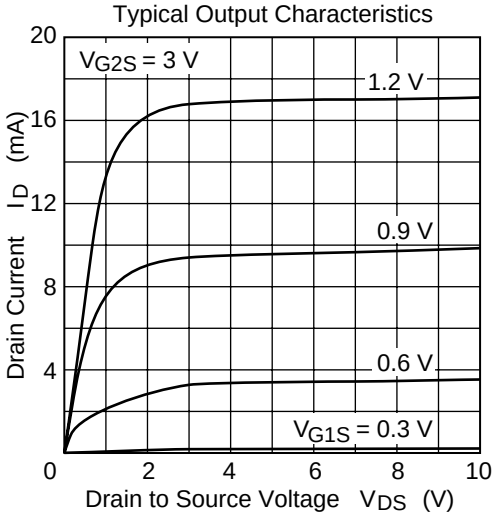
Table 2 Electrical Characteristics (Ta = 25°C)

Item	Symbol	min.	typ.	max.	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSX}$	12	—	—	V	I_D = 200 µA, V_{G1S} = –3 V, V_{G2S} = –3 V
Gate1 to source breakdown voltage	$V_{(BR)G1SS}$	±8	—	—	V	I_{G1} = ±10 µA, V_{G2S} = V_{DS} = 0
Gate2 to source breakdown voltage	$V_{(BR)G2SS}$	±8	—	—	V	I_{G2} = ±10 µA, V_{G1S} = V_{DS} = 0
Gate1 cutoff current	I_{G1SS}	—	—	±100	nA	V_{G1S} = ±6 V, V_{G2S} = V_{DS} = 0
Gate2 cutoff current	I_{G2SS}	—	—	±100	nA	V_{G2S} = ±6 V, V_{G1S} = V_{DS} = 0
Drain current	$I_{DS(on)}$	1	—	10	mA	V_{DS} = 4 V, V_{G1S} = 0.75 V, V_{G2S} = 3 V
Gate1 to source cutoff voltage	$V_{G1S(off)}$	0	—	+0.6	V	V_{DS} = 10 V, V_{G2S} = 3V, I_D = 100 µA
Gate2 to source cutoff voltage	$V_{G2S(off)}$	0	—	+1.0	V	V_{DS} = 10 V, V_{G1S} = 3V, I_D = 100 µA
Forward transfer admittance	$\|y_{fs}\|$	18	23	—	mS	V_{DS} = 4V, V_{G2S} = 3 V, I_D = 10 mA, f = 1 kHz
Input capacitance	Ciss	2.4	3.0	3.6	pF	V_{DS} = 4. V, V_{G2S} = 3 V,I_D = 10 mA, f = 1 MHz
Output capacitance	Coss	1.0	1.4	1.8	pF	
Reverse transfer capacitance	Crss	—	0.022	0.03	pF	
Power gain	PG	23	28.5	—	dB	V_{DS} = 4 V, V_{G2S} = 3 V, I_D = 10 mA, f = 200 MHz
Noise figure	NF	—	1.5	2.5	dB	

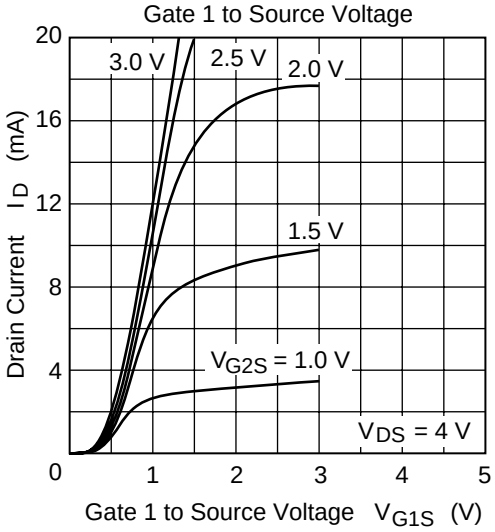
Maximum Channel Power Dissipation Curve



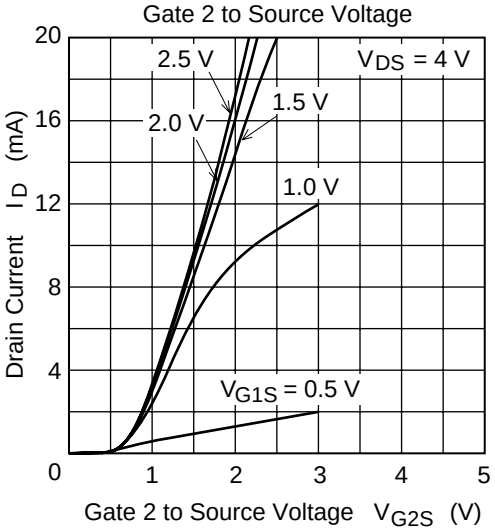
Typical Output Characteristics



Drain Current vs. Gate 1 to Source Voltage



Drain Current vs. Gate 2 to Source Voltage



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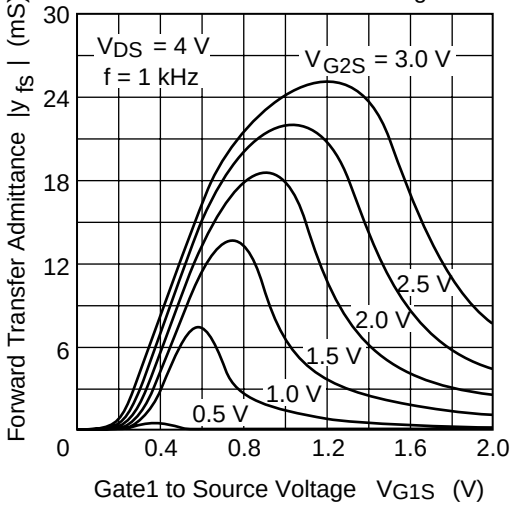
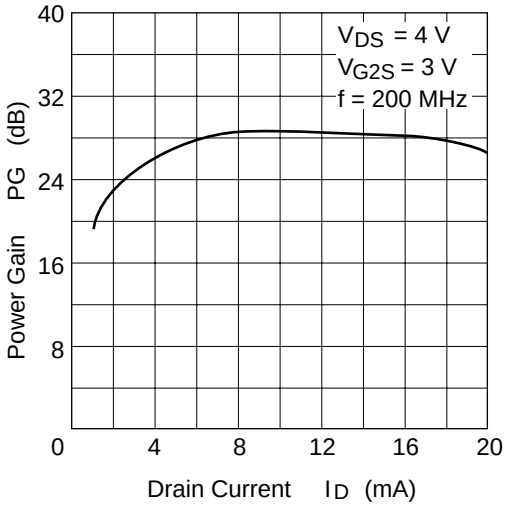
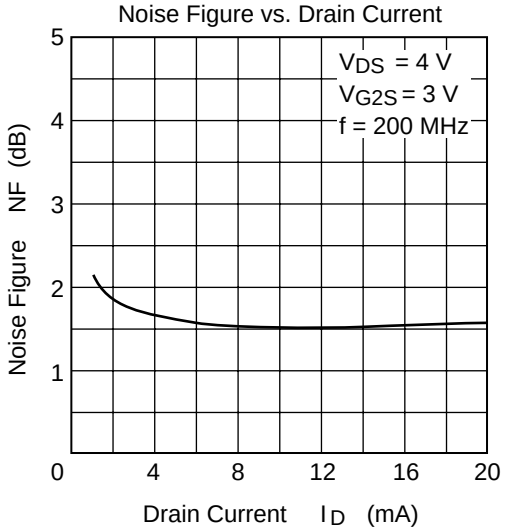
Forward Transfer Admittance vs. Gate 1 to Source Voltage



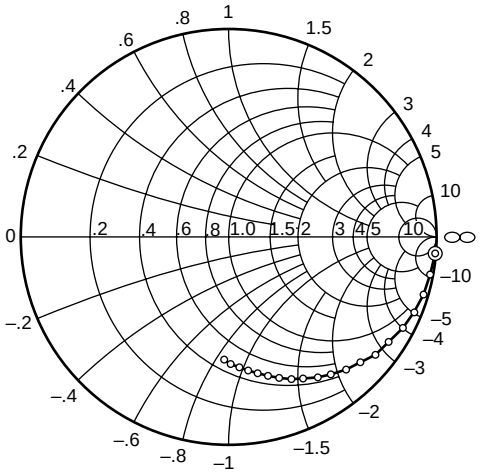
Power Gain vs. Drain Current



Noise Figure vs. Drain Current

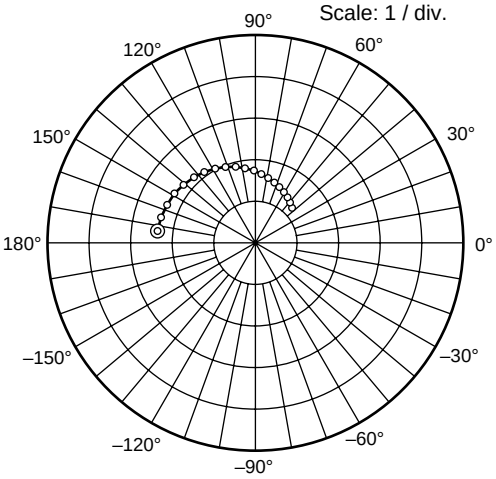


S11 Parameter vs. Frequency



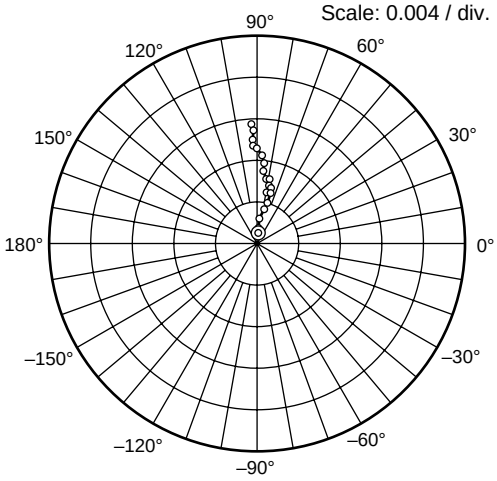
Condition: V_{DS}= 4 V , V_{G2S} = 3 V
I_D= 10 mA , Zo = 50 Ω
50 to 1000 MHz (50 MHz step)

S21 Parameter vs. Frequency



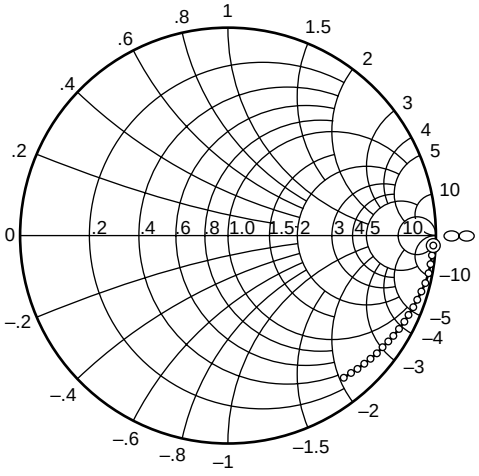
Condition: V_{DS}= 4 V , V_{G2S} = 3 V
I_D= 10 mA , Zo = 50 Ω
50 to 1000 MHz (50 MHz step)

S12 Parameter vs. Frequency



Condition: V_{DS}= 4 V , V_{G2S} = 3 V
I_D= 10 mA , Zo = 50 Ω
50 to 1000 MHz (50 MHz step)

S22 Parameter vs. Frequency



Condition: V_{DS}= 4 V , V_{G2S} = 3 V
I_D= 10 mA , Zo = 50 Ω
50 to 1000 MHz (50 MHz step)

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Table 3 S Parameter (V_{DS} = 4 V, V_{G2S} = 3 V, I_D = 10 mA, Z_O = 50 Ω)

	S11		S21		S12		S22	
f (MHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
50	0.997	–4.6	2.37	173	0.001	83.2	0.989	–2.8
100	0.986	–10.6	2.35	165	0.002	84.7	0.986	–5.6
150	0.978	–16.5	2.31	157	0.002	84.6	0.984	–8.1
200	0.964	–22.1	2.28	149	0.003	78.1	0.982	–10.7
250	0.946	–27.6	2.22	141	0.004	75.6	0.977	–13.6
300	0.921	–33.3	2.16	133	0.005	74.9	0.969	–16.2
350	0.906	–38.8	2.10	126	0.005	79.4	0.962	–18.8
400	0.875	–43.6	2.03	118	0.006	75.8	0.956	–21.2
450	0.853	–48.5	1.96	112	0.006	78.3	0.950	–23.8
500	0.824	–53.4	1.89	105	0.006	78.9	0.945	–26.1
550	0.801	–57.6	1.81	97.9	0.006	81.9	0.938	–28.7
600	0.770	–62.3	1.74	91.1	0.007	85.0	0.931	–31.3
650	0.748	–66.2	1.66	85.0	0.008	84.9	0.925	–33.5
700	0.721	–70.3	1.59	78.8	0.008	86.7	0.918	–35.9
750	0.695	–74.2	1.52	72.5	0.009	90.5	0.914	–38.4
800	0.671	–78.0	1.46	66.7	0.009	90.1	0.907	–40.9
850	0.650	–81.7	1.40	60.6	0.009	92.3	0.901	–43.3
900	0.630	–85.3	1.34	54.7	0.010	92.4	0.895	–45.9
950	0.612	–89.1	1.28	49.3	0.011	91.8	0.888	–48.2
1000	0.519	–92.1	1.22	43.6	0.012	92.7	0.883	–50.9

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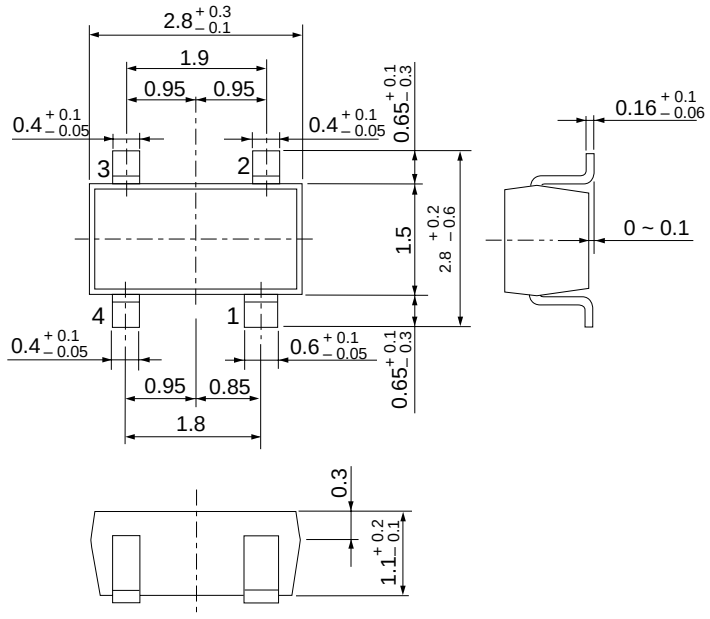
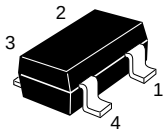
Package Dimensions

Unit : mm





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

Hitachi Code	MPAK–4
EIAJ	SC-61AA
JEDEC	—