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April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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Not recommended
for new design

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3SK295

Silicon N-Channel Dual Gate MOS FET

REJ03G0814-0300
(Previous ADE-208-387A)
Rev.3.00
Aug. 10, 2005

Application

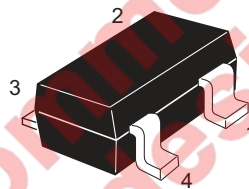
- UHF RF amplifier

Features

- Low noise figure.
NF = 2.0 dB typ. at f = 900 MHz
- Capable of low voltage operation

Outline

RENESAS Package code: PLSP0004ZA-A
(Package name: MPAK-4)



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

Note: Marking is "ZQ-"

Attention:

This device is very sensitive to electro static discharge.

It is recommended to adopt appropriate cautions when handling this transistor.

Absolute Maximum Ratings

(Ta = 25°C)

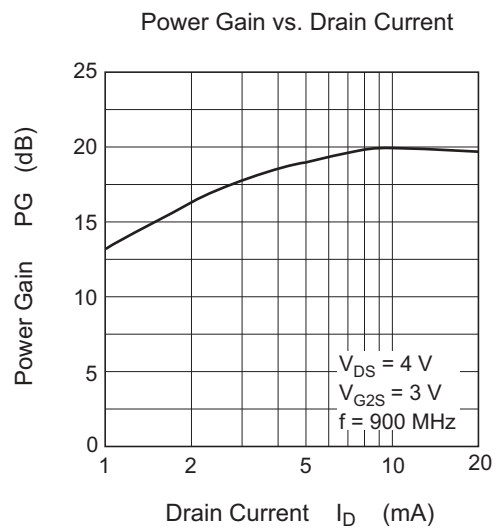
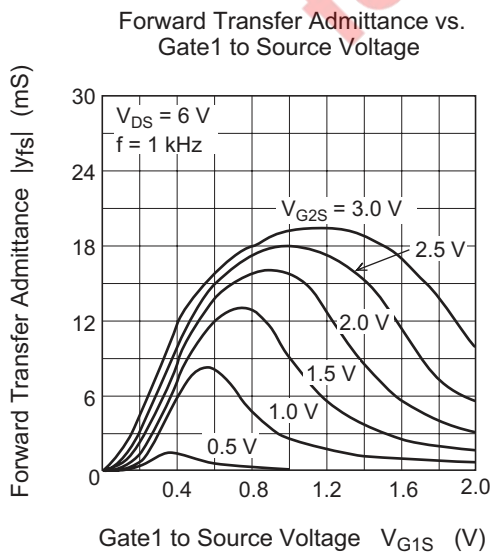
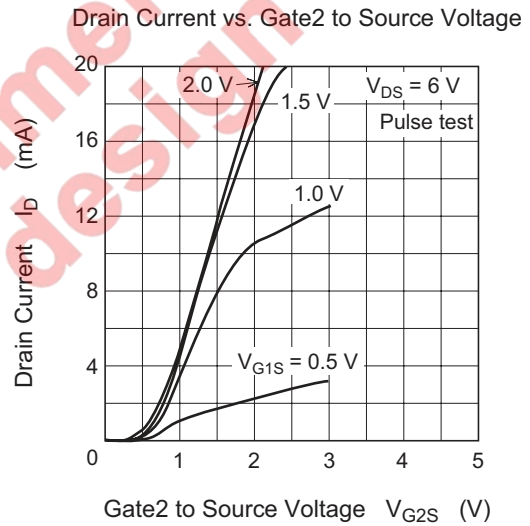
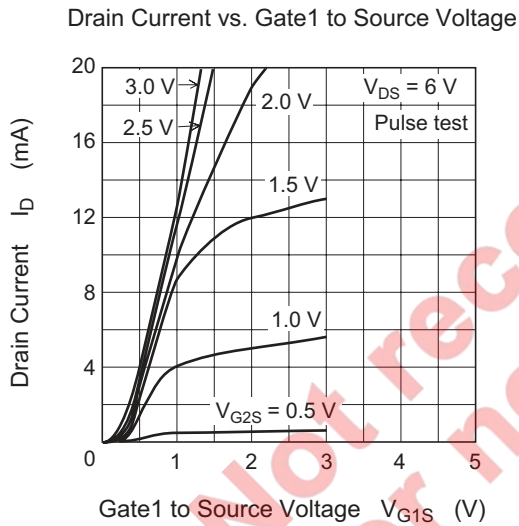
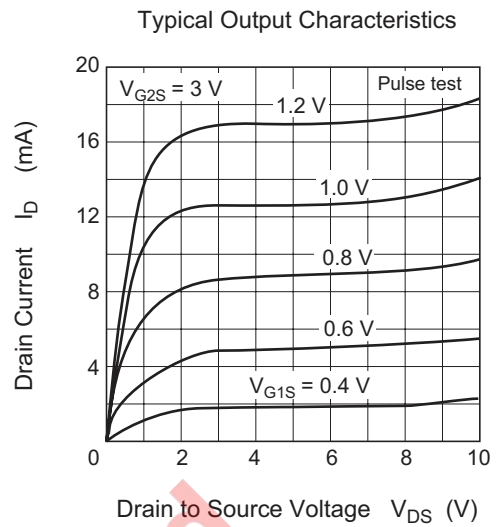
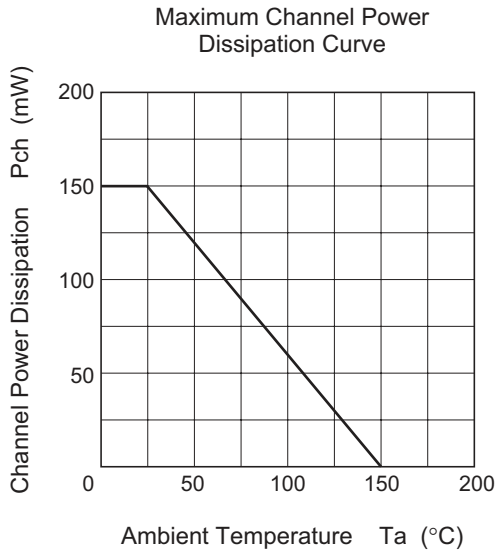
Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DS}	12	V
Gate 1 to source voltage	V_{G1S}	± 8	V
Gate 2 to source voltage	V_{G2S}	± 8	V
Drain current	I_D	25	mA
Channel power dissipation	Pch	150	mW
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Electrical Characteristics

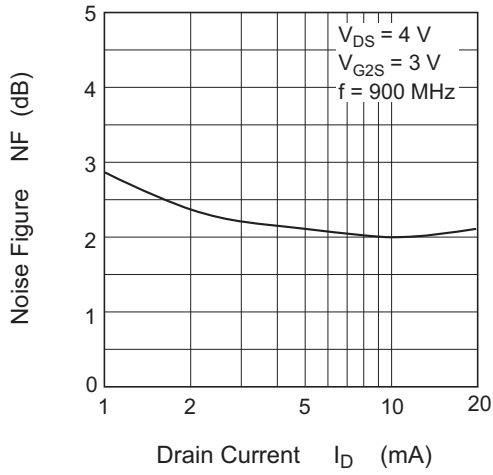
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSX}$	12	—	—	V	$I_D = 200 \mu A$, $V_{G1S} = -3 V$, $V_{G2S} = -3 V$
Gate 1 to source breakdown voltage	$V_{(BR)G1SS}$	± 8	—	—	V	$I_{G1} = \pm 10 \mu A$, $V_{G2S} = V_{DS} = 0$
Gate 2 to source breakdown voltage	$V_{(BR)G2SS}$	± 8	—	—	V	$I_{G2} = \pm 10 \mu A$, $V_{G1S} = V_{DS} = 0$
Gate 1 cutoff current	I_{G1SS}	—	—	± 100	nA	$V_{G1S} = \pm 6 V$, $V_{G2S} = V_{DS} = 0$
Gate 2 cutoff current	I_{G2SS}	—	—	± 100	nA	$V_{G2S} = \pm 6 V$, $V_{G1S} = V_{DS} = 0$
Drain current	$I_{DS(on)}$	0.5	—	10	mA	$V_{DS} = 6 V$, $V_{G1S} = 0.5 V$, $V_{G2S} = 3 V$
Gate 1 to source cutoff voltage	$V_{G1S(off)}$	-0.5	—	+0.5	V	$V_{DS} = 10 V$, $V_{G2S} = 3 V$, $I_D = 100 \mu A$
Gate 2 to source cutoff voltage	$V_{G2S(off)}$	0	—	+1.0	V	$V_{DS} = 10 V$, $V_{G1S} = 3 V$, $I_D = 100 \mu A$
Forward transfer admittance	$ y_{fs} $	16	20.8	—	mS	$V_{DS} = 6 V$, $V_{G2S} = 3 V$, $I_D = 10 mA$, $f = 1 kHz$
Input capacitance	C_{iss}	1.2	1.5	2.2	pF	$V_{DS} = 6 V$, $V_{G2S} = 3 V$, $I_D = 10 mA$, $f = 1 MHz$
Output capacitance	C_{oss}	0.6	0.9	1.2	pF	$I_D = 10 mA$, $f = 1 MHz$
Reverse transfer capacitance	C_{rss}	—	0.01	0.03	pF	
Power gain	PG	16	19.5	—	dB	$V_{DS} = 4 V$, $V_{G2S} = 3 V$, $I_D = 10 mA$, $f = 900 MHz$
Noise figure	NF	—	2.0	3	dB	$I_D = 10 mA$, $f = 900 MHz$

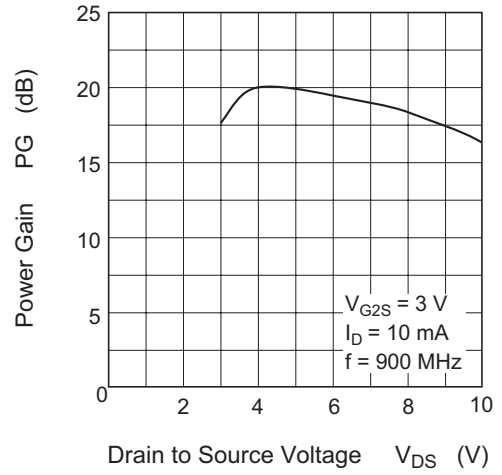
Main Characteristics



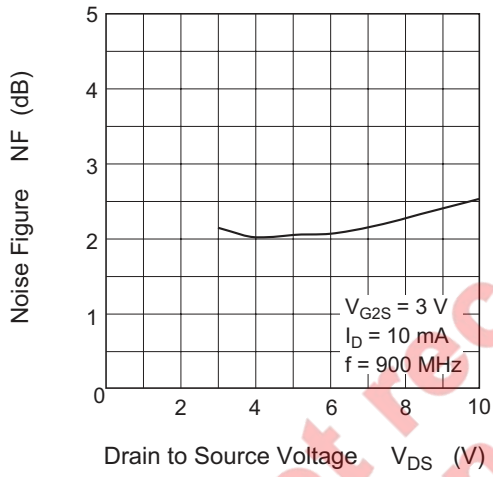
Noise Figure vs. Drain Current



Power Gain vs. Drain to Source Voltage

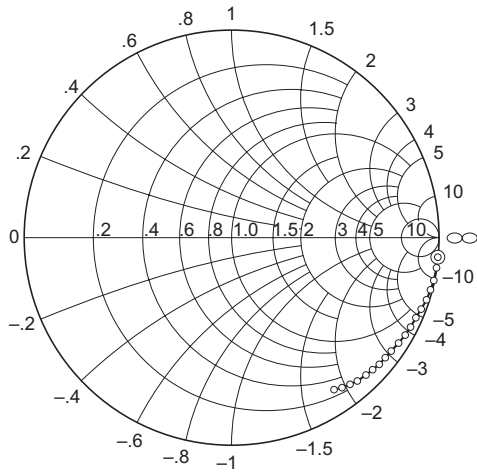


Noise Figure vs. Drain to Source Voltage



Not recommended for new design

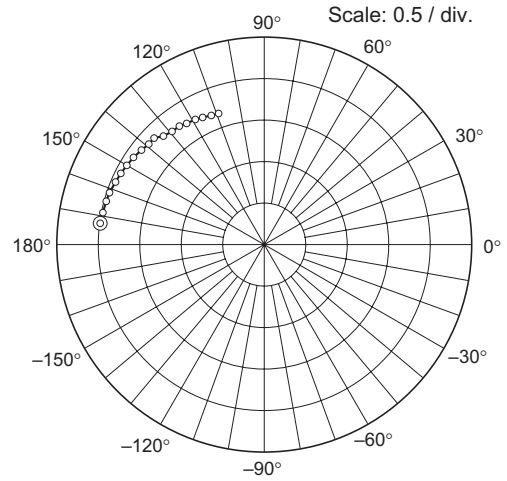
S11 Parameter vs. Frequency



Condition: $V_{DS} = 4\text{ V}$, $V_{GS} = 3\text{ V}$
 $I_D = 10\text{ mA}$, $Z_o = 50\ \Omega$
 100 to 1000 MHz (50 MHz step)



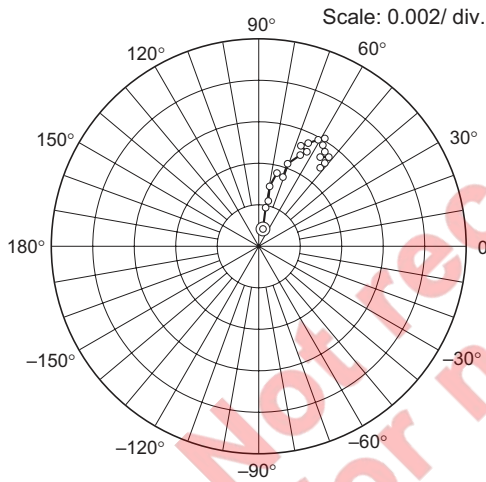
S21 Parameter vs. Frequency



Condition: $V_{DS} = 4\text{ V}$, $V_{GS} = 3\text{ V}$
 $I_D = 10\text{ mA}$, $Z_o = 50\ \Omega$
 100 to 1000 MHz (50 MHz step)



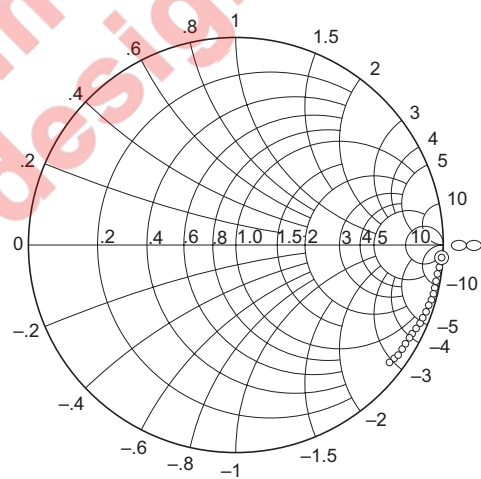
S12 Parameter vs. Frequency



Condition: $V_{DS} = 4\text{ V}$, $V_{GS} = 3\text{ V}$
 $I_D = 10\text{ mA}$, $Z_o = 50\ \Omega$
 100 to 1000 MHz (50 MHz step)



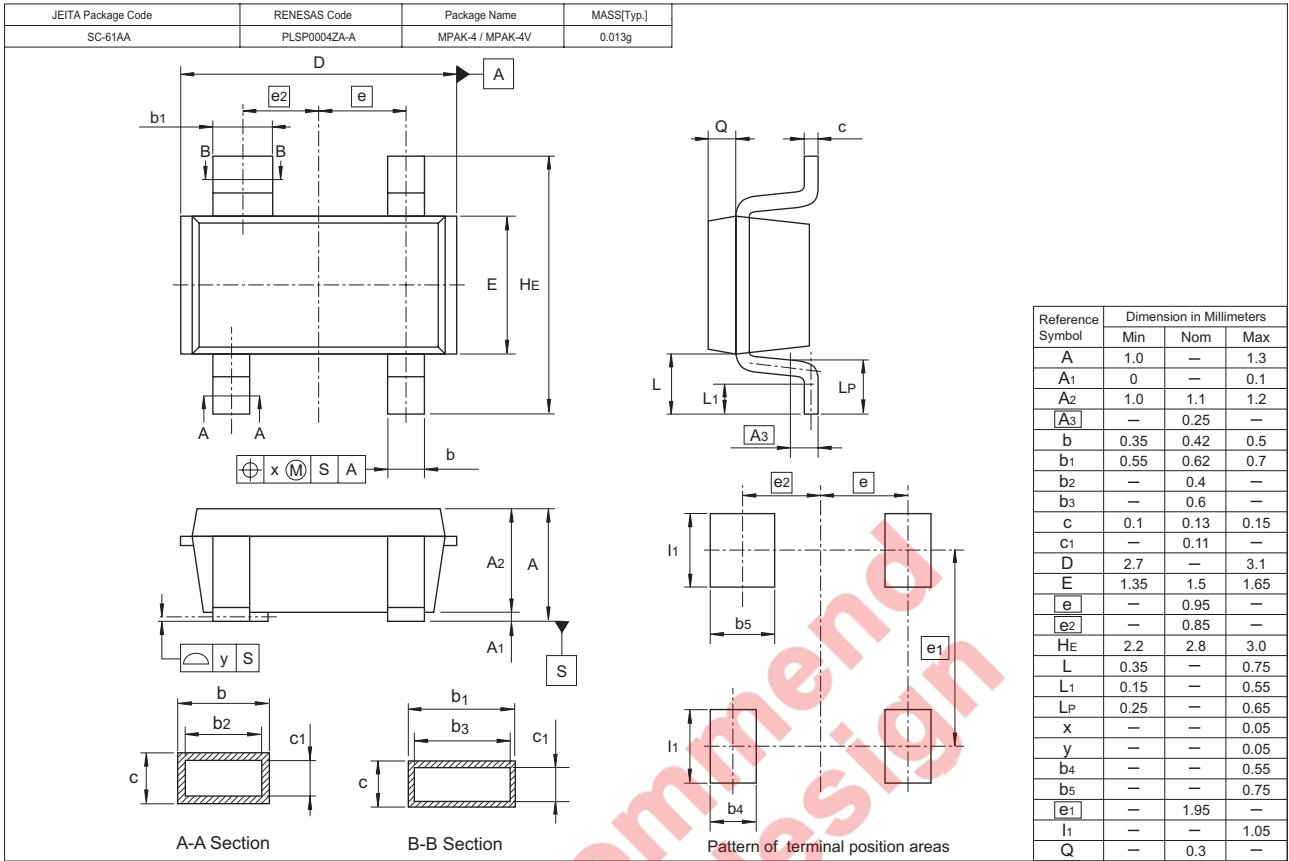
S22 Parameter vs. Frequency



Condition: $V_{DS} = 4\text{ V}$, $V_{GS} = 3\text{ V}$
 $I_D = 10\text{ mA}$, $Z_o = 50\ \Omega$
 100 to 1000 MHz (50 MHz step)



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
3SK295ZQ-TL-E	3000	φ178 mm Reel, 8 mm Emboss Taping

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