To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

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

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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

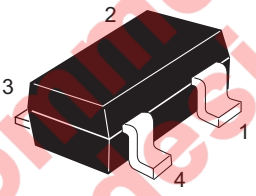
- UHF RF amplifier

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

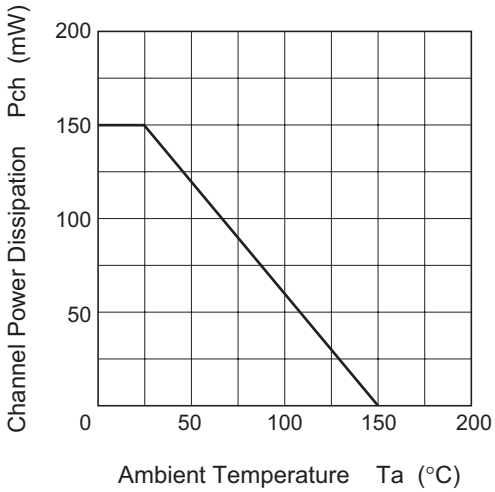
Electrical Characteristics

(Ta = 25°C)

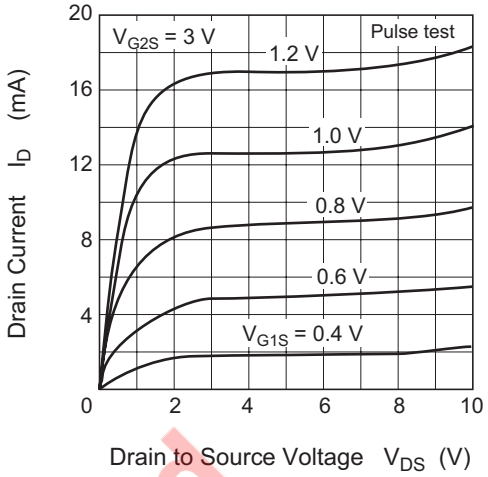
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSX}$	12	—	—	V	I_D = 200 µA , V_{G1S} = –3 V, V_{G2S} = –3 V
Gate 1 to source breakdown voltage	$V_{(BR)G1SS}$	±8	—	—	V	I_{G1} = ±10 µA, V_{G2S} = V_{DS} = 0
Gate 2 to source breakdown voltage	$V_{(BR)\ G2SS}$	±8	—	—	V	I_{G2} = ±10 µA, V_{G1S} = V_{DS} = 0
Gate 1 cutoff current	I_{G1SS}	—	—	±100	nA	V_{G1S} = ±6 V, V_{G2S} = V_{DS} = 0
Gate 2 cutoff current	I_{G2SS}	—	—	±100	nA	V_{G2S} = ±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 µA
Gate 2 to source cutoff voltage	$V_{G2S(off)}$	0	—	+1.0	V	V_{DS} = 10 V, V_{G1S} = 3 V, I_D = 100 µA
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	Ciss	1.2	1.5	2.2	pF	V_{DS} = 6 V, V_{G2S} = 3 V, I_D = 10 mA, f = 1 MHz
Output capacitance	Coss	0.6	0.9	1.2	pF	
Reverse transfer capacitance	Crss	—	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	

Main Characteristics

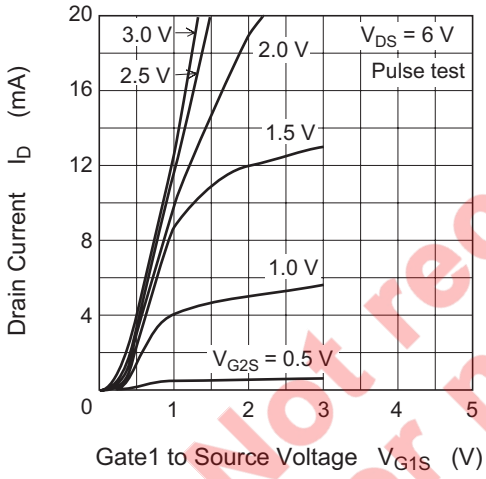
Maximum Channel Power Dissipation Curve



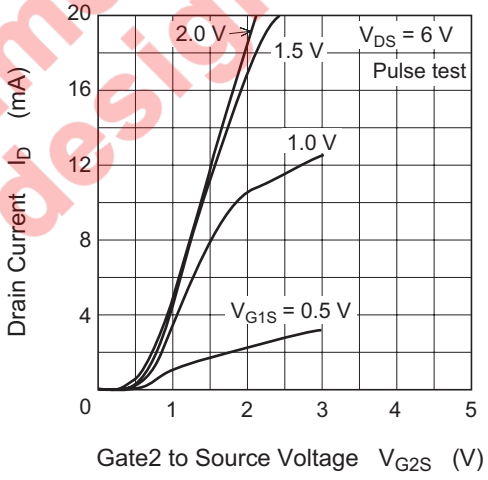
Typical Output Characteristics



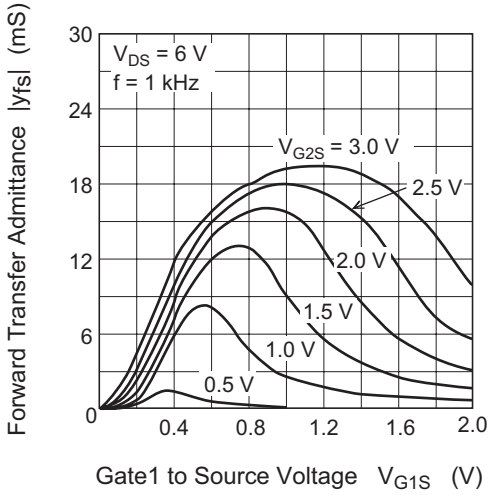
Drain Current vs. Gate1 to Source Voltage



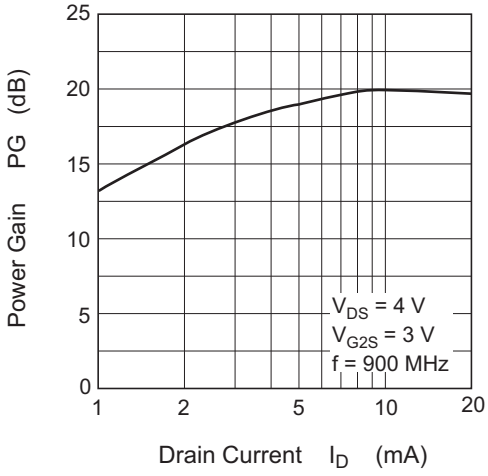
Drain Current vs. Gate2 to Source Voltage



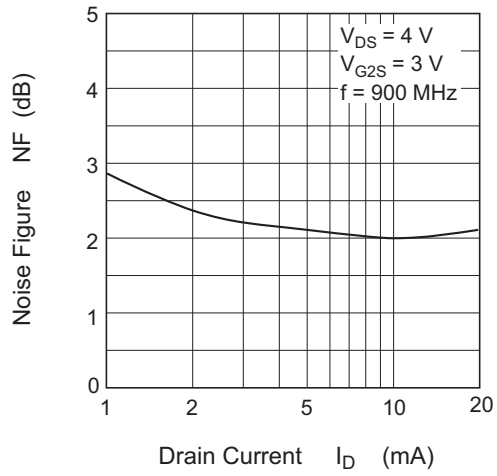
Forward Transfer Admittance vs. Gate1 to Source Voltage



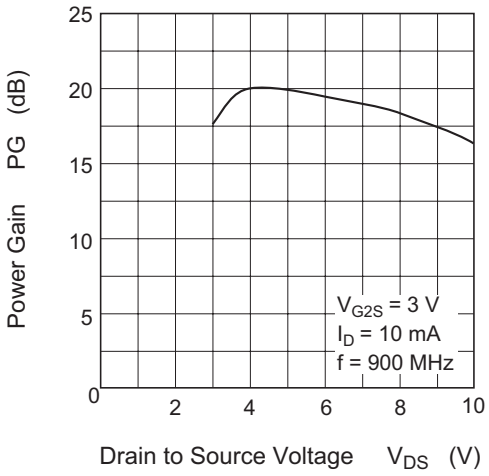
Power Gain vs. Drain Current



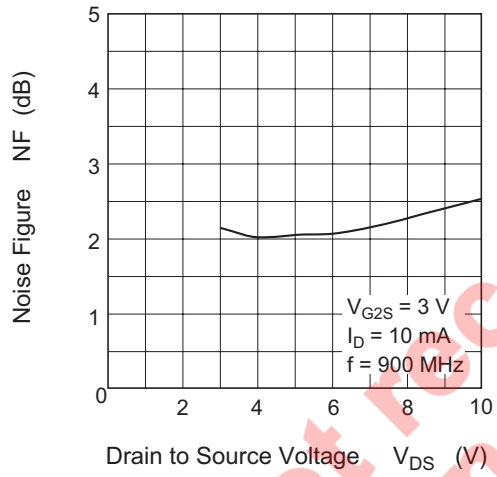
Noise Figure vs. Drain Current



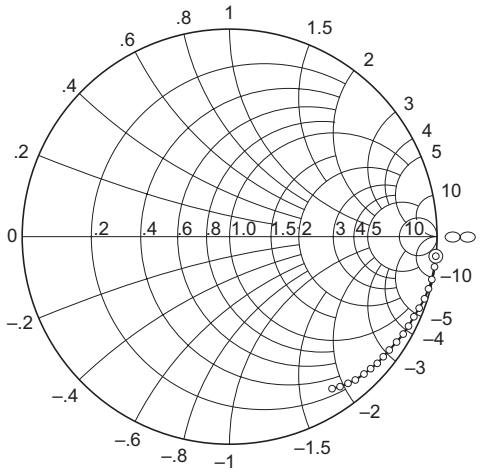
Power Gain vs. Drain to Source Voltage



Noise Figure vs. Drain to Source Voltage

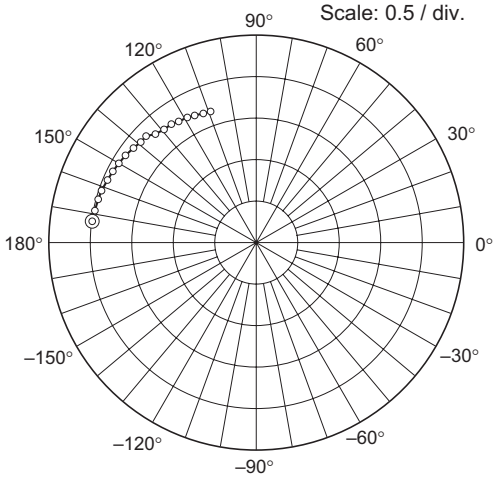


S11 Parameter vs. Frequency



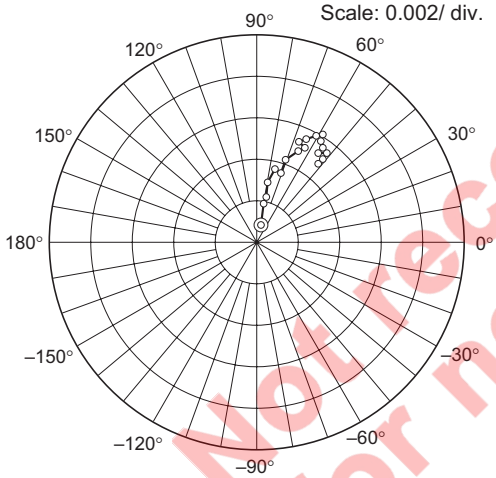
Condition: V_{DS} = 4 V, V_{G2S} = 3 V
I_D = 10 mA, Zo = 50 Ω
100 to 1000 MHz (50 MHz step)

S21 Parameter vs. Frequency



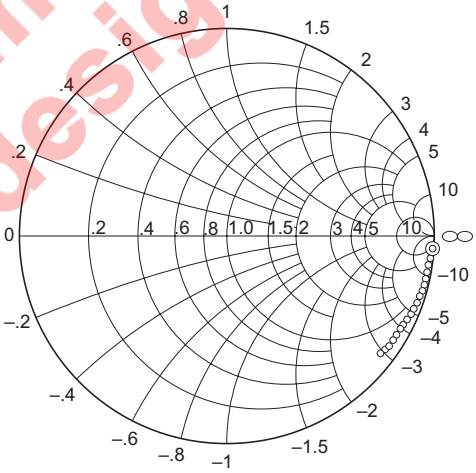
Condition: V_{DS} = 4 V, V_{G2S} = 3 V
I_D = 10 mA, Zo = 50 Ω
100 to 1000 MHz (50 MHz step)

S12 Parameter vs. Frequency



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

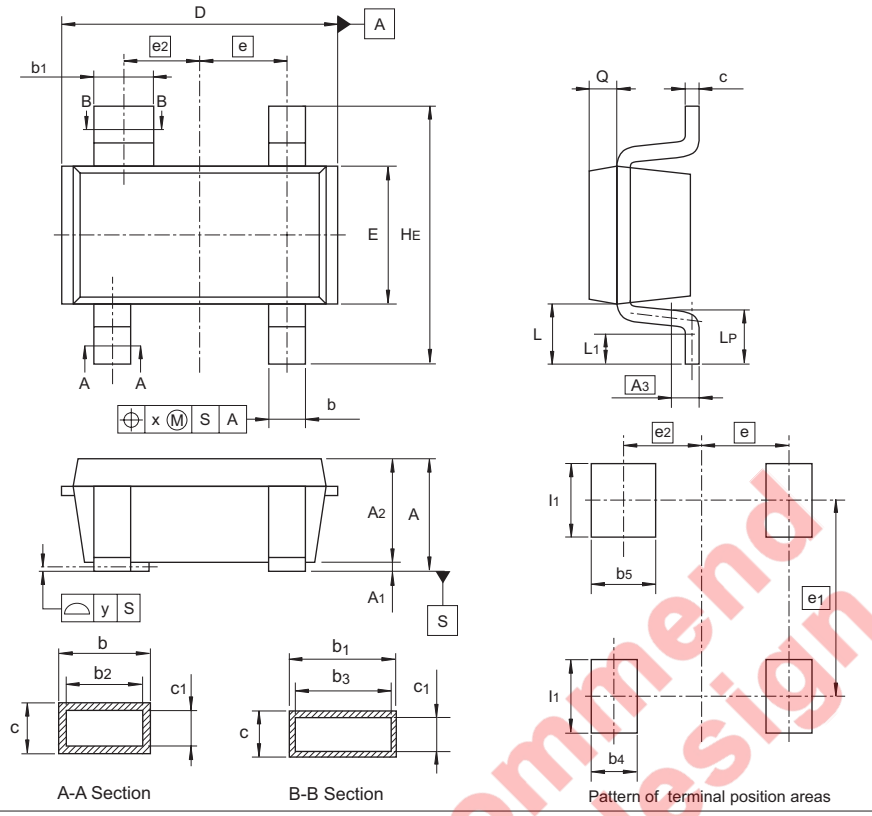
S22 Parameter vs. Frequency



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

Package Dimensions

JEITA Package Code	RENESAS Code	Package Name	MASS[Typ.]
SC-61AA	PLSP0004ZA-A	MPAK-4 / MPAK-4V	0.013g



Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
A	1.0	–	1.3
A_1	0	–	0.1
A_2	1.0	1.1	1.2
A_3	–	0.25	–
b	0.35	0.42	0.5
b_1	0.55	0.62	0.7
b_2	–	0.4	–
b_3	–	0.6	–
c	0.1	0.13	0.15
c_1	–	0.11	–
D	2.7	–	3.1
E	1.35	1.5	1.65
e	–	0.95	–
e_2	–	0.85	–
H_E	2.2	2.8	3.0
L	0.35	–	0.75
L_1	0.15	–	0.55
L_P	0.25	–	0.65
x	–	–	0.05
y	–	–	0.05
b_4	–	–	0.55
b_5	–	–	0.75
e_1	–	1.95	–
I_1	–	–	1.05
Q	–	0.3	–

Ordering Information

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

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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Colophon .3.0