

## 3SK295

### Silicon N-Channel Dual Gate MOS FET

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

#### Application

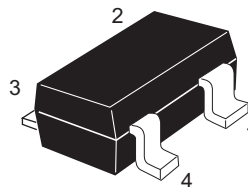
- UHF RF amplifier

#### 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)

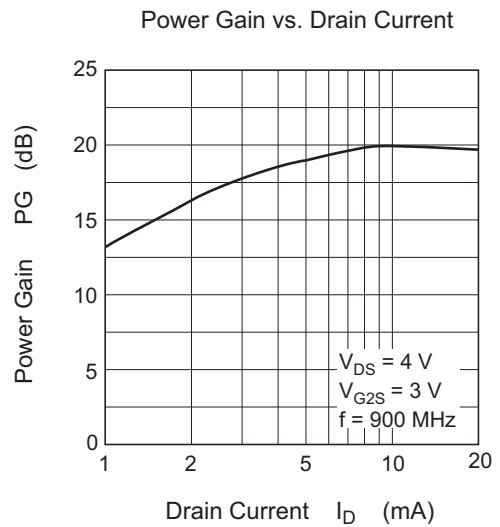
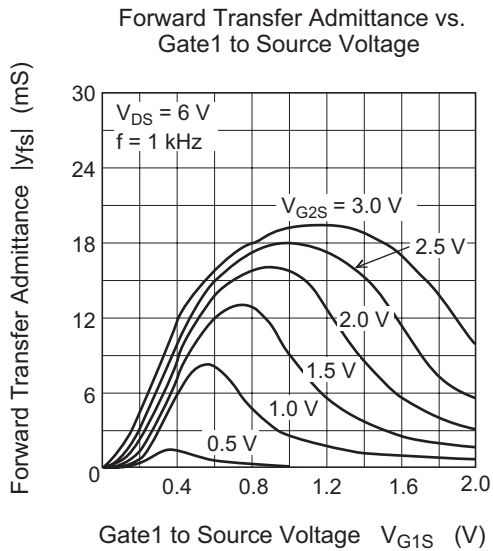
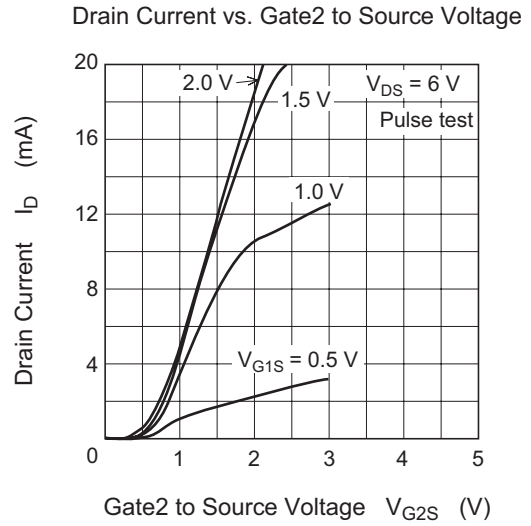
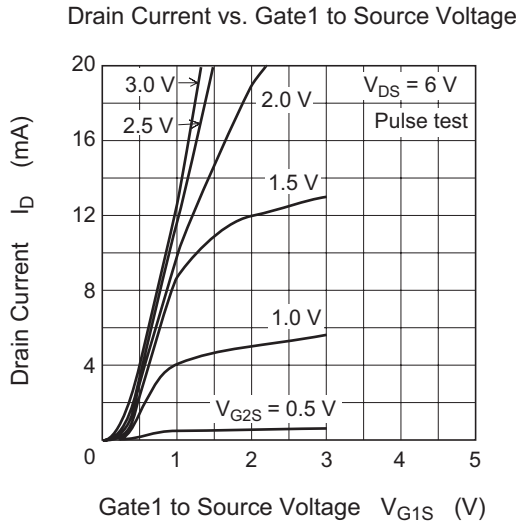
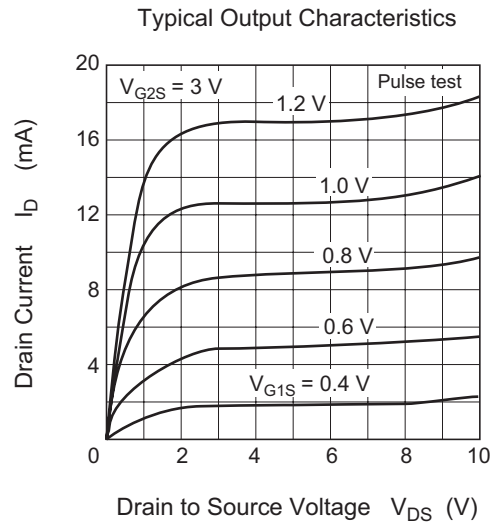
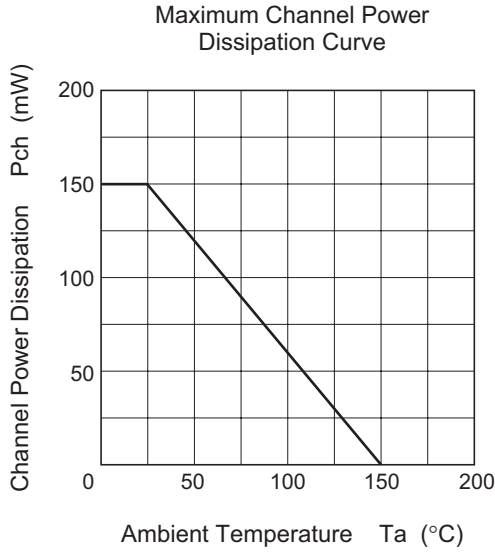
Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DS}$	12	V
Gate 1 to source voltage	$V_{G1S}$	$\pm 8$	V
Gate 2 to source voltage	$V_{G2S}$	$\pm 8$	V
Drain current	$I_D$	25	mA
Channel power dissipation	Pch	150	mW
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

## Electrical Characteristics

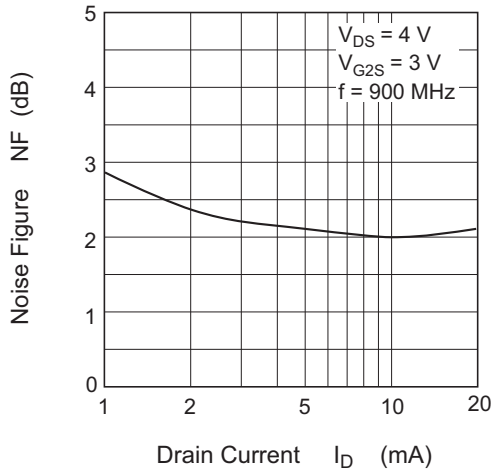
(Ta = 25°C)

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	$V_{(BR)G1SS}$	$\pm 8$	—	—	V	$I_{G1} = \pm 10 \mu A$ , $V_{G2S} = V_{DS} = 0$
Gate 2 to source breakdown voltage	$V_{(BR)G2SS}$	$\pm 8$	—	—	V	$I_{G2} = \pm 10 \mu A$ , $V_{G1S} = V_{DS} = 0$
Gate 1 cutoff current	$I_{G1SS}$	—	—	$\pm 100$	nA	$V_{G1S} = \pm 6 V$ , $V_{G2S} = V_{DS} = 0$
Gate 2 cutoff current	$I_{G2SS}$	—	—	$\pm 100$	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	
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	

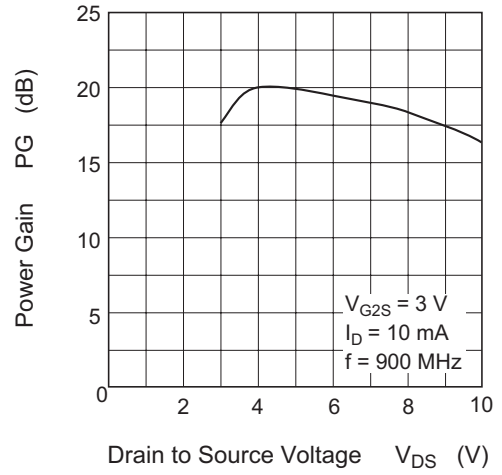
Main Characteristics



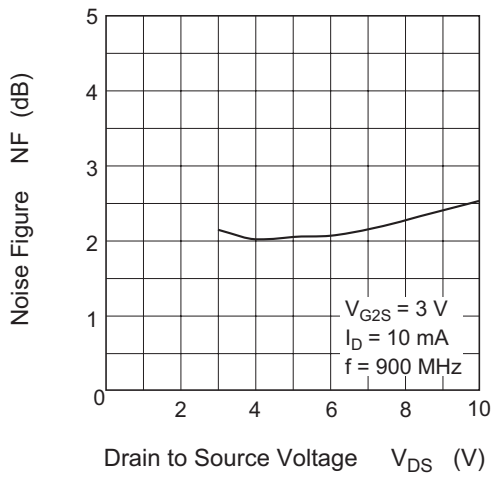
Noise Figure vs. Drain Current



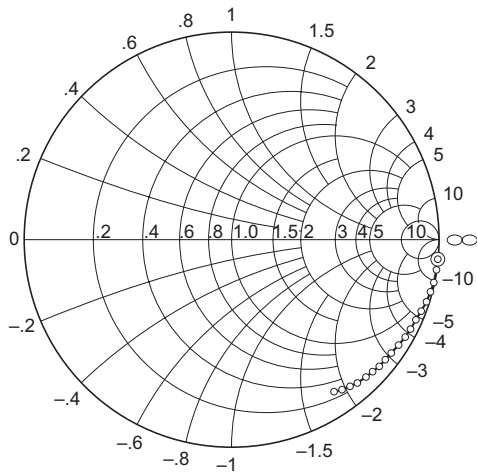
Power Gain vs. Drain to Source Voltage



Noise Figure vs. Drain to Source Voltage



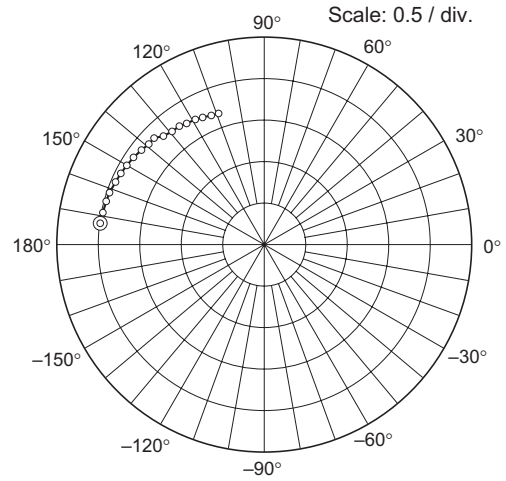
S11 Parameter vs. Frequency



Condition:  $V_{DS} = 4\text{ V}$ ,  $V_{G2S} = 3\text{ V}$   
 $I_D = 10\text{ mA}$ ,  $Z_o = 50\ \Omega$   
 100 to 1000 MHz (50 MHz step)



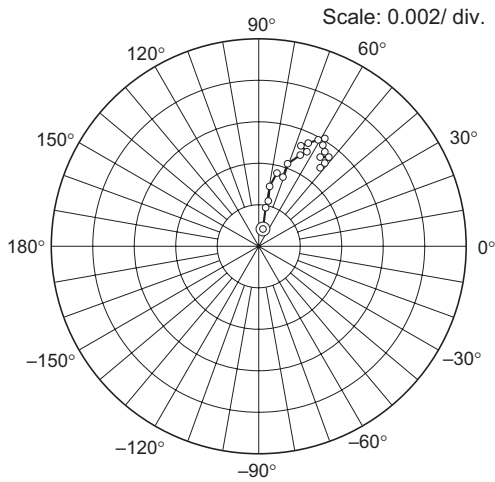
S21 Parameter vs. Frequency



Condition:  $V_{DS} = 4\text{ V}$ ,  $V_{G2S} = 3\text{ V}$   
 $I_D = 10\text{ mA}$ ,  $Z_o = 50\ \Omega$   
 100 to 1000 MHz (50 MHz step)



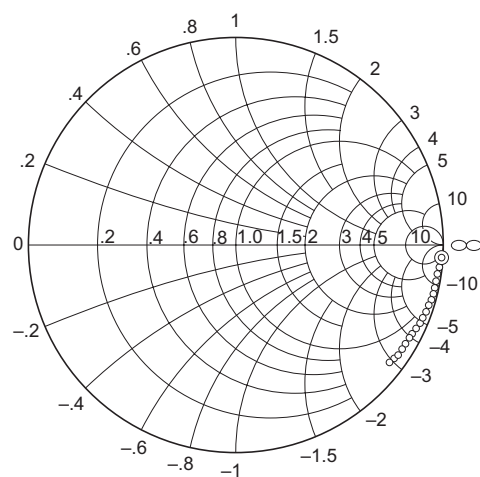
S12 Parameter vs. Frequency



Condition:  $V_{DS} = 4\text{ V}$ ,  $V_{G2S} = 3\text{ V}$   
 $I_D = 10\text{ mA}$ ,  $Z_o = 50\ \Omega$   
 100 to 1000 MHz (50 MHz step)



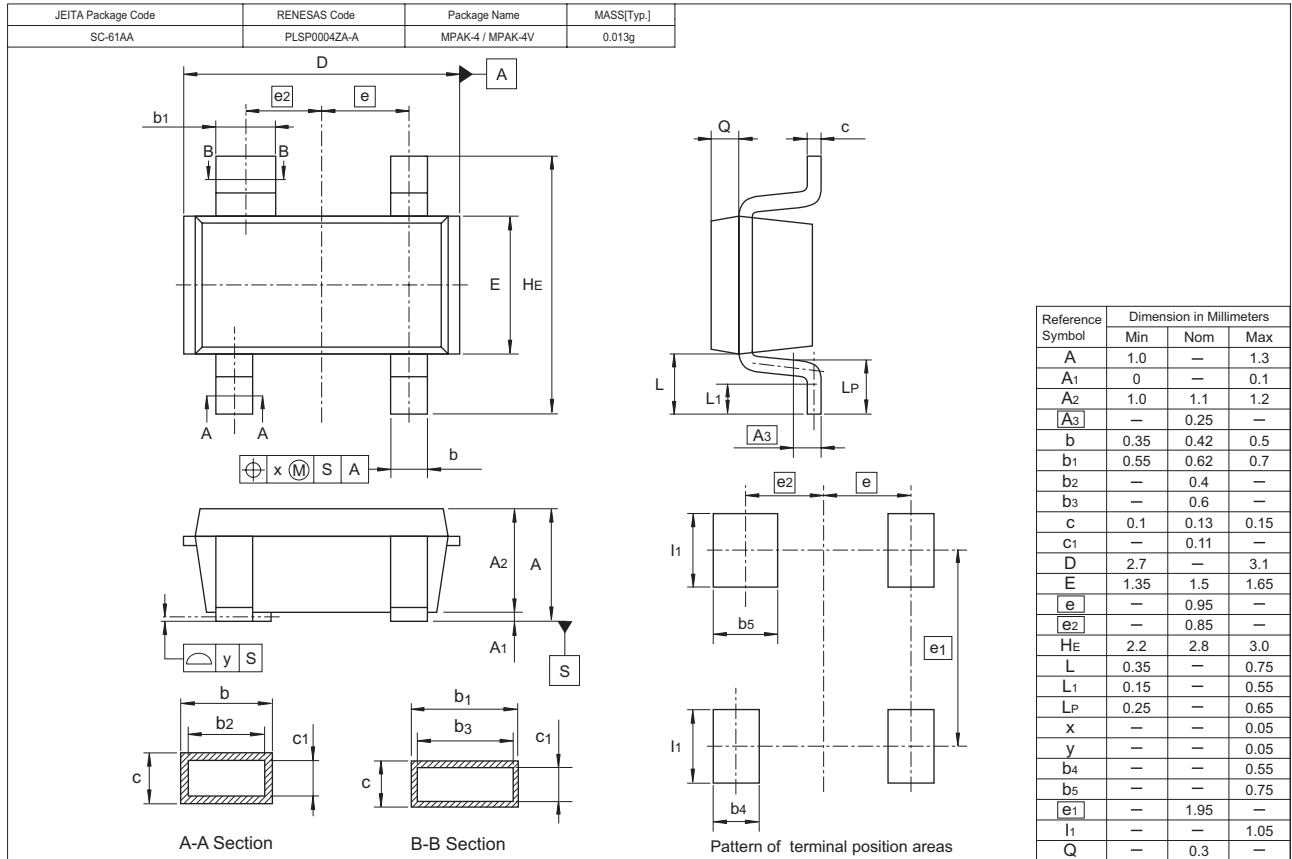
S22 Parameter vs. Frequency



Condition:  $V_{DS} = 4\text{ V}$ ,  $V_{G2S} = 3\text{ V}$   
 $I_D = 10\text{ mA}$ ,  $Z_o = 50\ \Omega$   
 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

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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