

## 2SC4926

Silicon NPN Epitaxial

REJ03G0735-0300  
 (Previous ADE-208-1128A)  
 Rev.3.00  
 Aug.10.2005

### Application

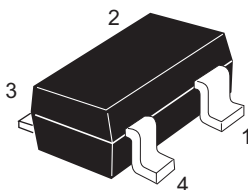
VHF / UHF wide band amplifier

### Features

- High gain bandwidth product  
 $f_T = 11 \text{ GHz Typ}$
- High gain, low noise figure  
 $PG = 16.5 \text{ dB Typ, NF} = 1.1 \text{ dB Typ at } f = 900 \text{ MHz}$

### Outline

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



1. Collector
2. Emitter
3. Base
4. Emitter

Note: Marking is "YD-".

Attention: This is electrostatic sensitive device.

### Absolute Maximum Ratings

( $T_a = 25^\circ\text{C}$ )

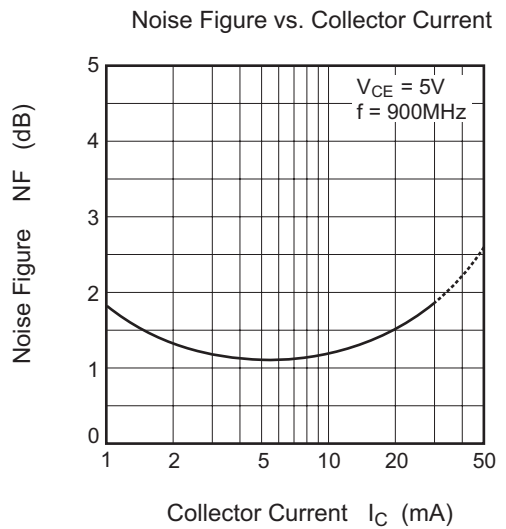
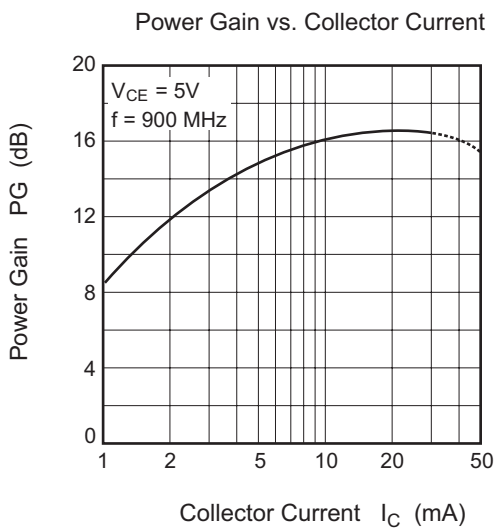
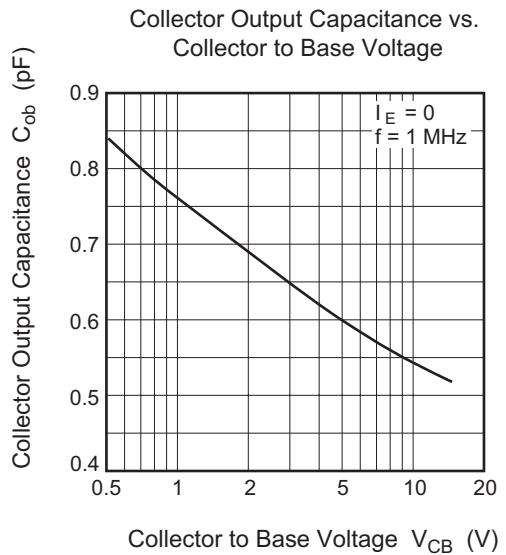
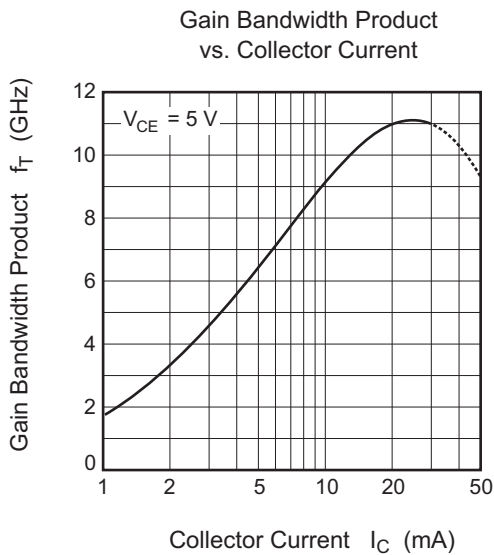
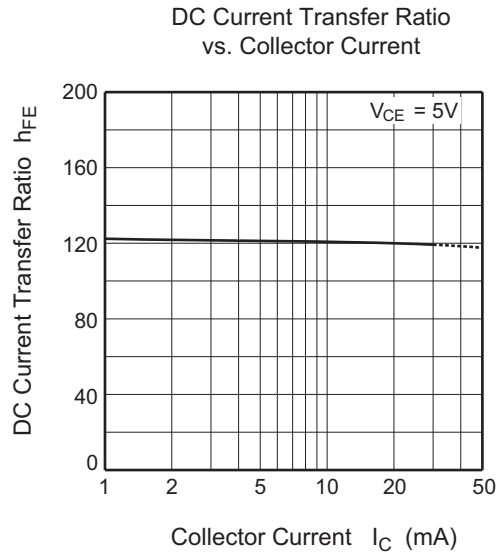
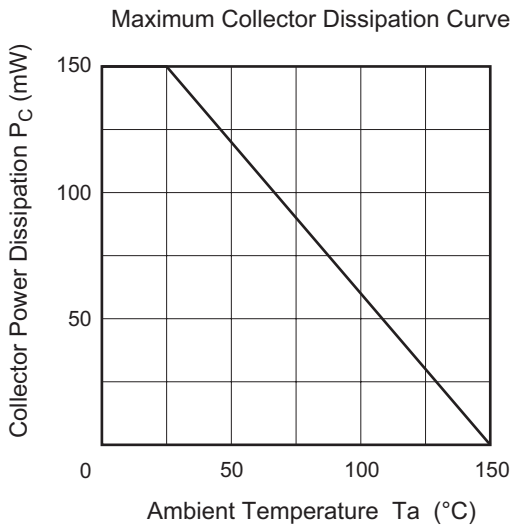
Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{CBO}$	15	V
Collector to emitter voltage	$V_{CEO}$	8	V
Emitter to base voltage	$V_{EBO}$	1.5	V
Collector current	$I_C$	50	mA
Collector power dissipation	$P_C$	150	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

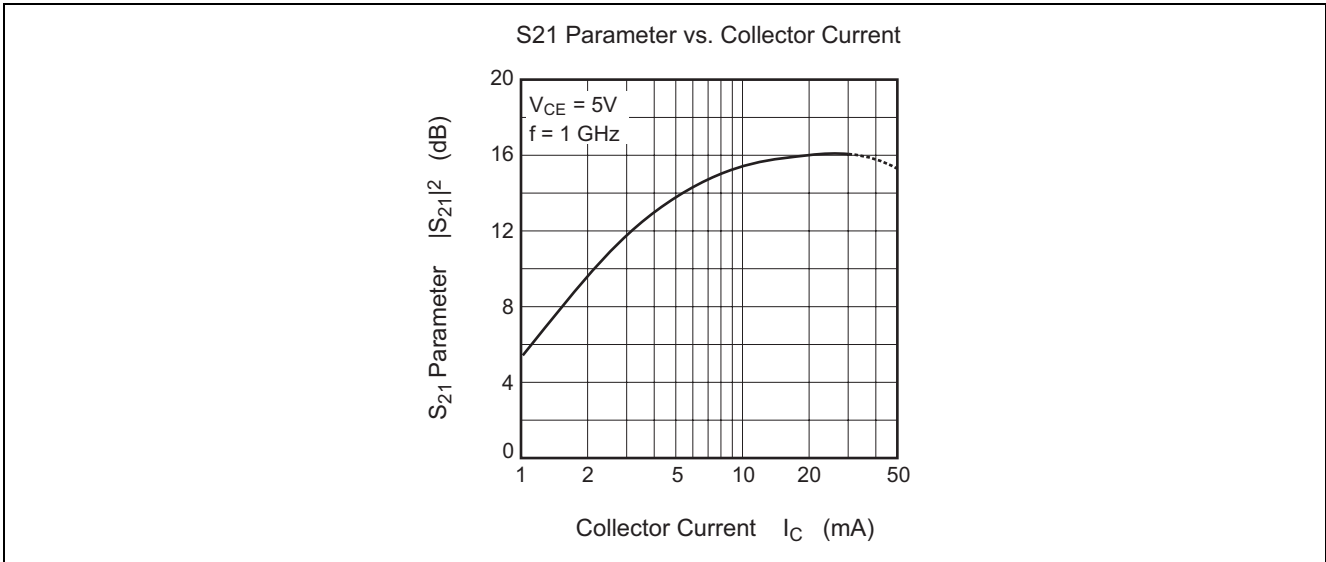
## Electrical Characteristics

(Ta = 25°C)

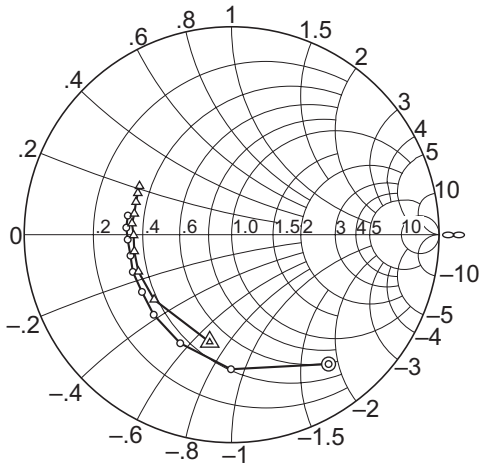
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	15	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector cutoff current	$I_{CBO}$	—	—	10	$\mu A$	$V_{CB} = 12 V, I_E = 0$
	$I_{CEO}$	—	—	1	mA	$V_{CE} = 8 V, R_{BE} = \infty$
Emitter cutoff current	$I_{EBO}$	—	—	10	$\mu A$	$V_{EB} = 1.5 V, I_C = 0$
DC current transfer ratio	$h_{FE}$	50	120	250		$V_{CE} = 5 V, I_C = 20 mA$
Collector output capacitance	$C_{ob}$	—	0.6	1.1	pF	$V_{CB} = 5 V, I_E = 0,$ $f = 1 MHz$
Gain bandwidth product	$f_T$	8.0	11.0	—	GHz	$V_{CE} = 5 V, I_C = 20 mA$
$S_{21}$ Parameter	$ S_{21} ^2$	—	16	—	dB	$V_{CE} = 5 V, I_C = 20 mA,$ $f = 1000 MHz$
Power gain	PG	13.5	16.5	—	dB	$V_{CE} = 5 V, I_C = 20 mA,$ $f = 900 MHz$
Noise figure	NF	—	1.1	2.0	dB	$V_{CE} = 5 V, I_C = 5 mA,$ $f = 900 MHz$

Main Characteristics



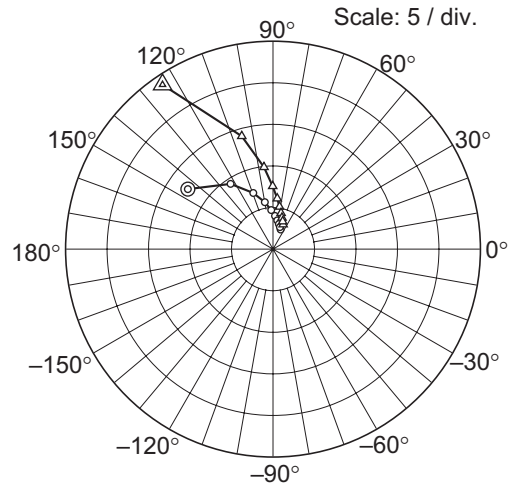


S11 Parameter vs. Frequency



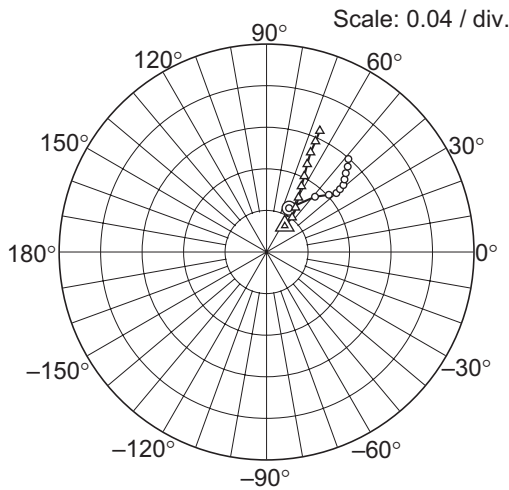
Condition:  $V_{CE} = 5\text{ V}$ ,  $Z_o = 50\ \Omega$   
 200 to 2000 MHz (200 MHz step)  
 ○ (  $I_C = 5\text{ mA}$  )  
 △ (  $I_C = 20\text{ mA}$  )

S21 Parameter vs. Frequency



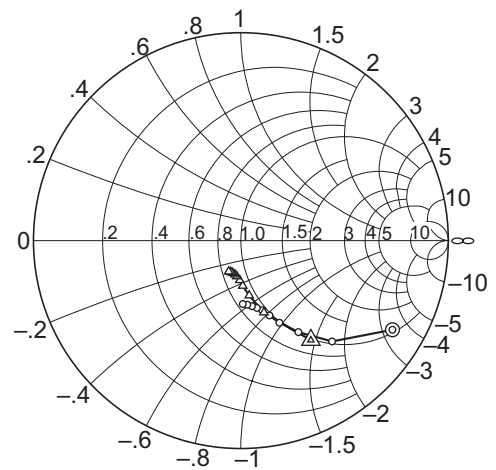
Condition:  $V_{CE} = 5\text{ V}$ ,  $Z_o = 50\ \Omega$   
 200 to 2000 MHz (200 MHz step)  
 ○ (  $I_C = 5\text{ mA}$  )  
 △ (  $I_C = 20\text{ mA}$  )

S12 Parameter vs. Frequency



Condition:  $V_{CE} = 5\text{ V}$ ,  $Z_o = 50\ \Omega$   
 200 to 2000 MHz (200 MHz step)  
 ○ (  $I_C = 5\text{ mA}$  )  
 △ (  $I_C = 20\text{ mA}$  )

S22 Parameter vs. Frequency



Condition:  $V_{CE} = 5\text{ V}$ ,  $Z_o = 50\ \Omega$   
 200 to 2000 MHz (200 MHz step)  
 ○ (  $I_C = 5\text{ mA}$  )  
 △ (  $I_C = 20\text{ mA}$  )

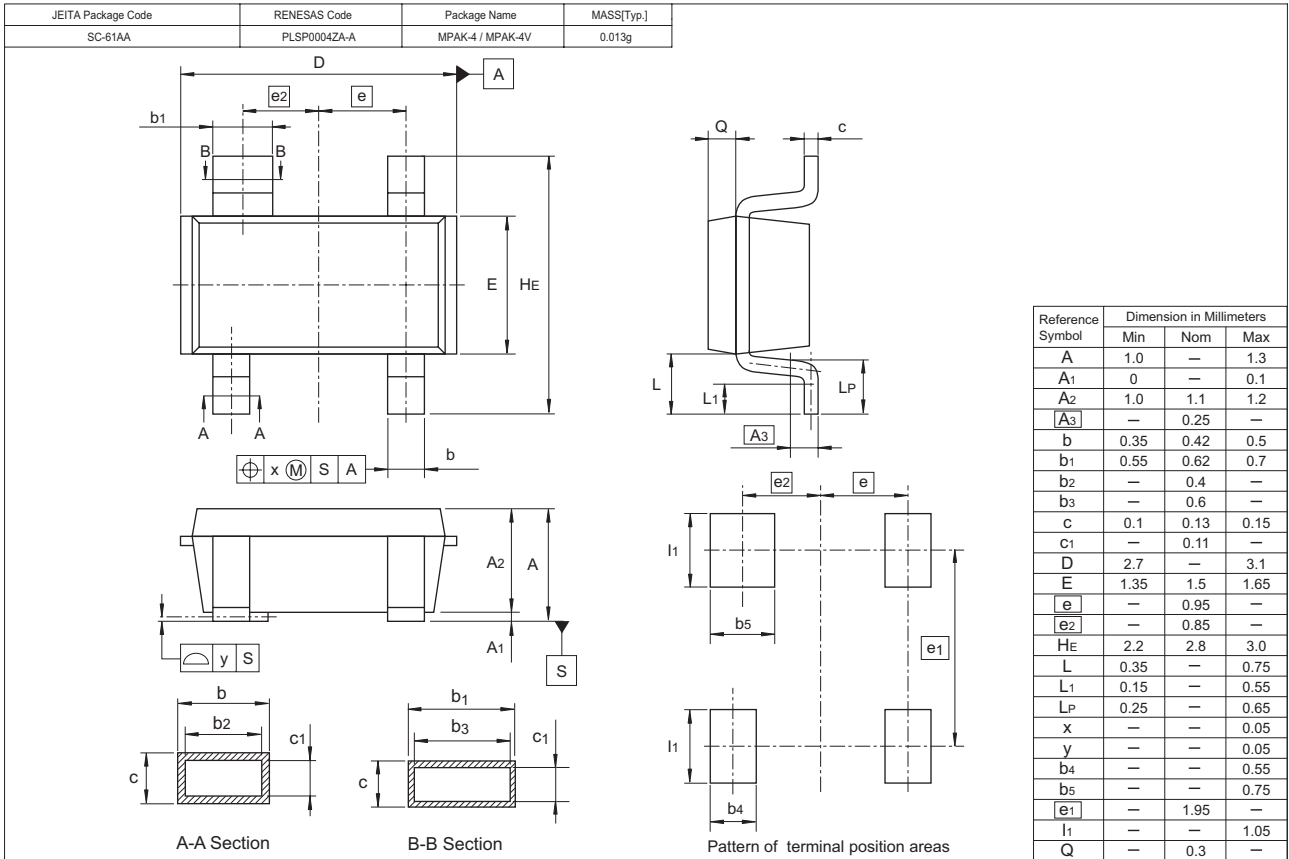
**S Parameter** $(V_{CE} = 5 \text{ V}, I_C = 5 \text{ mA}, Z_O = 50 \Omega, \text{Emitter common})$ 

Freq. (MHz)	S11		S21		S12		S22	
	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
200	0.777	-53.1	12.52	144.9	0.0475	62.8	0.849	-30.4
400	0.647	-90.3	9.36	123.1	0.0708	48.7	0.655	-47.8
600	0.579	-115.4	7.16	109.4	0.0817	42.5	0.522	-57.8
800	0.538	-134.3	5.73	99.9	0.0880	40.1	0.438	-64.8
1000	0.513	-147.5	4.70	92.6	0.0933	40.5	0.386	-69.0
1200	0.508	-159.4	4.00	86.5	0.0980	41.0	0.350	-72.9
1400	0.500	-168.3	3.49	81.6	0.102	42.9	0.333	-76.6
1600	0.501	-177.3	3.09	76.8	0.108	44.8	0.319	-80.4
1800	0.508	176.2	2.78	72.5	0.113	46.4	0.310	-84.3
2000	0.510	169.6	2.53	68.7	0.119	48.6	0.305	-88.3

**S Parameter** $(V_{CE} = 5 \text{ V}, I_C = 20 \text{ mA}, Z_O = 50 \Omega, \text{Emitter common})$ 

Freq. (MHz)	S11		S21		S12		S22	
	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
200	0.527	-101.6	23.79	124.0	0.0307	55.1	0.587	-54.9
400	0.488	-140.1	14.12	105.5	0.0413	53.4	0.363	-72.2
600	0.482	-158.4	9.89	96.3	0.0510	56.8	0.267	-81.4
800	0.478	-170.3	7.56	90.3	0.0606	59.5	0.218	-87.6
1000	0.474	-179.6	6.10	85.2	0.0716	62.0	0.191	-91.7
1200	0.484	173.6	5.14	81.2	0.0817	63.5	0.174	-96.5
1400	0.481	167.9	4.44	77.4	0.0931	65.1	0.166	-100.0
1600	0.486	161.2	3.92	74.0	0.105	66.1	0.161	-104.4
1800	0.496	156.2	3.52	70.7	0.117	66.1	0.159	-107.9
2000	0.502	152.3	3.20	67.7	0.127	66.2	0.161	-111.9

### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
2SC4926YD-TL-E	3000	φ 178 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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