

## 2SC4807

Silicon NPN Epitaxial

REJ03G0731-0300  
 (Previous ADE-208-1122A)  
 Rev.3.00  
 Aug.10.2005

### Application

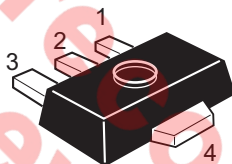
VHF / UHF wide band amplifier

### Features

- High gain bandwidth product  
 $f_T = 4.4$  GHz Typ
- High output power  
 1 dB Power compression point  $P_{cp} = 24$  dBm Typ at  $V_{CE} = 5V$ ,  $I_C = 100$  mA,  $f = 900$  MHz

### Outline

RENESAS Package code: PLZZ0004CA-A  
 (Package name: UPAK<sup>®</sup>)



1. Base
2. Collector
3. Emitter
4. Collector (Flange)

Note: Marking is "ER".

\*UPAK is a trademark of Renesas Technology Corp.

### Absolute Maximum Ratings

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

Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{CBO}$	20	V
Collector to emitter voltage	$V_{CEO}$	15	V
Emitter to base voltage	$V_{EBO}$	2	V
Collector current	$I_C$	200	mA
Collector power dissipation	$P_C^{*1}$	800	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Note: 1. Value on the alumina ceramics board (12.5 x 20 x 0.7 mm)

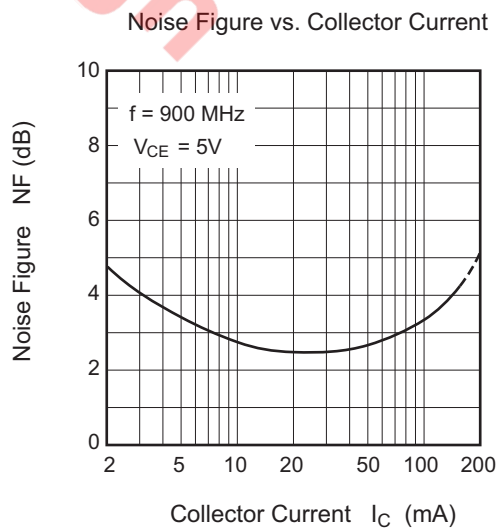
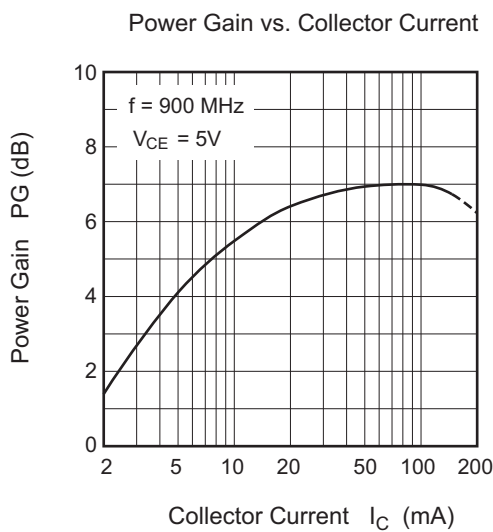
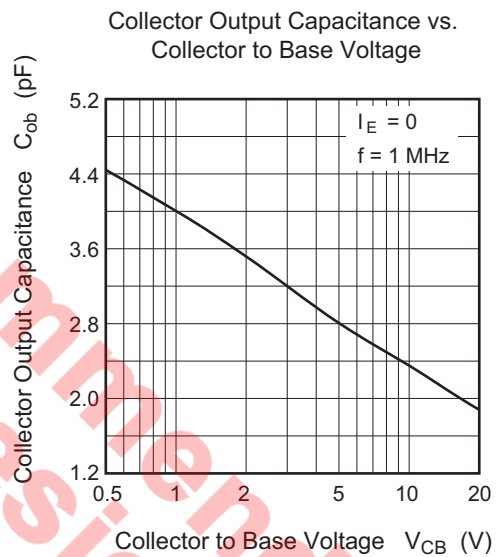
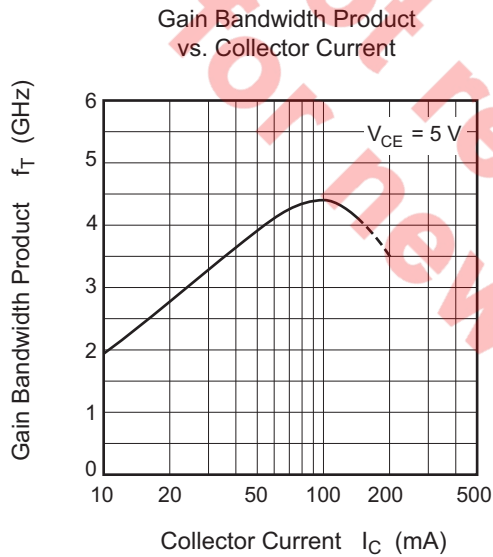
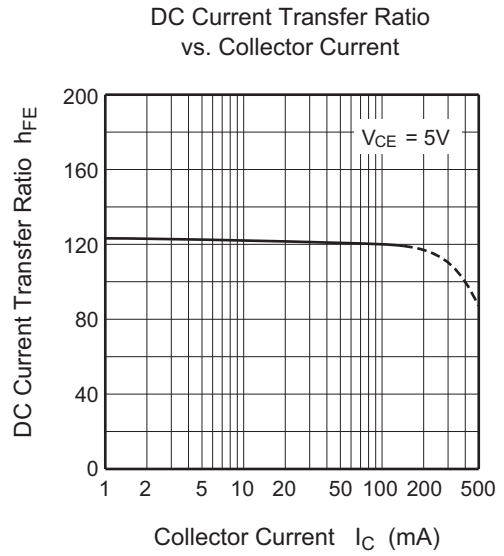
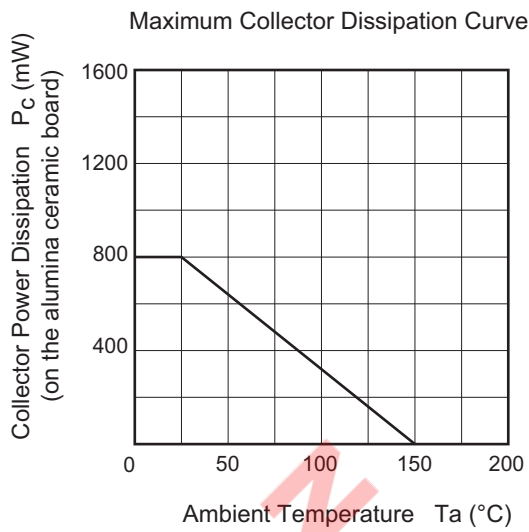
## Electrical Characteristics

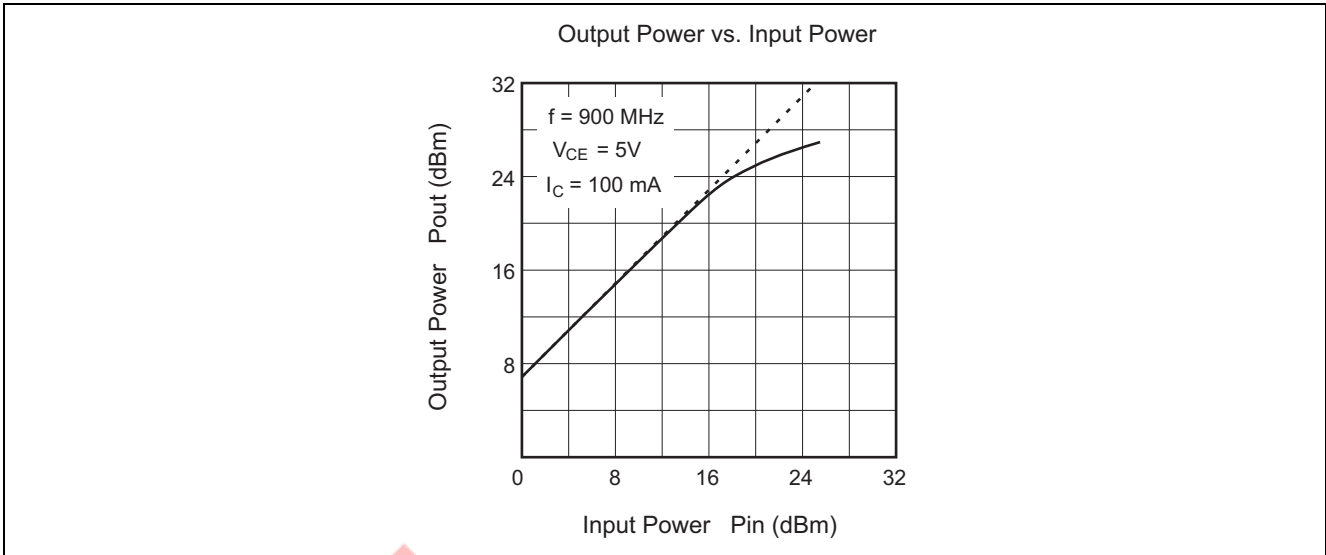
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	20	30	—	V	$I_C = 10 \mu A, I_E = 0$
Collector cutoff current	$I_{CBO}$	—	—	1	$\mu A$	$V_{CB} = 15 V, I_E = 0$
	$I_{CEO}$	—	—	1	mA	$V_{CE} = 15 V, R_{BE} = \infty$
Emitter cutoff current	$I_{EBO}$	—	—	10	$\mu A$	$V_{EB} = 2 V, I_C = 0$
DC current transfer ratio	$h_{FE}$	50	120	250		$V_{CE} = 5 V, I_C = 100 mA$
Collector output capacitance	$C_{ob}$	—	2.8	4.0	pF	$V_{CB} = 5 V, I_E = 0, f = 1 MHz$
Gain bandwidth product	$f_T$	3.0	4.4	—	GHz	$V_{CE} = 5 V, I_C = 100 mA$
Power gain	PG	5.0	7.0	—	dB	$V_{CE} = 5 V, I_C = 100 mA,$ $f = 900 MHz$
Noise figure	NF	—	2.5	4.0	dB	$V_{CE} = 5 V, I_C = 20 mA,$ $f = 900 MHz$

Not recommend  
for new design

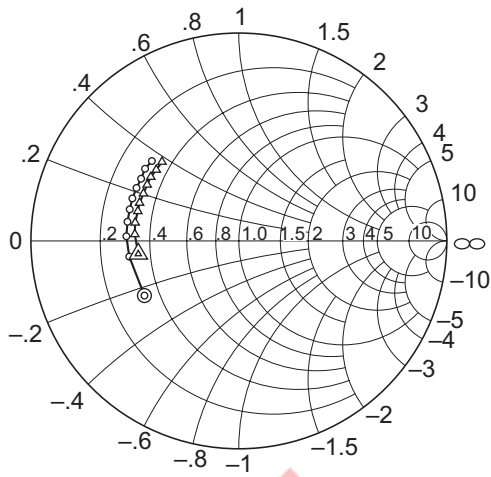
Main Characteristics





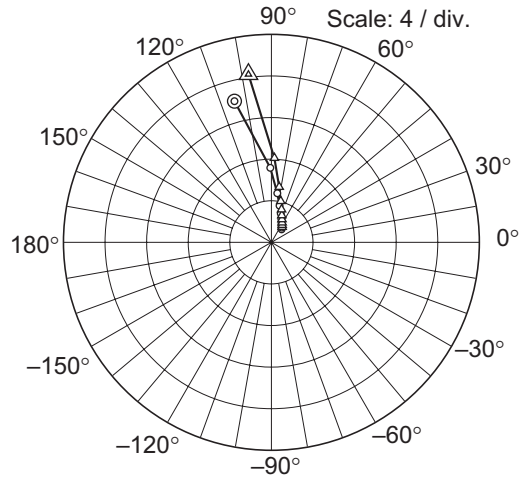
Not recommend  
for new design

S11 Parameter vs. Frequency



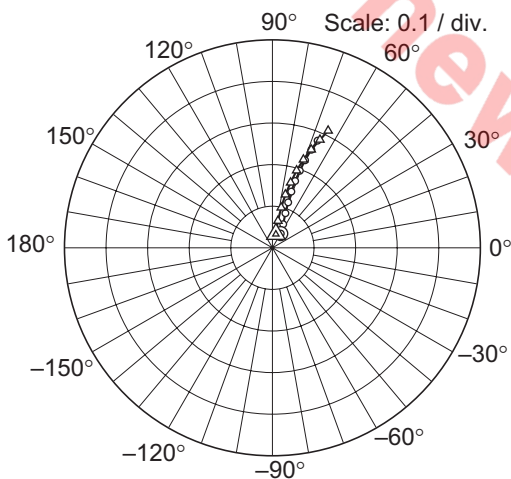
Condition:  $V_{CE} = 5\text{ V}$ ,  $Z_o = 50\ \Omega$   
 100 to 1000 MHz (100 MHz step)  
 ○ — ○ ( $I_C = 20\text{ mA}$ )  
 △ — △ ( $I_C = 100\text{ mA}$ )

S21 Parameter vs. Frequency



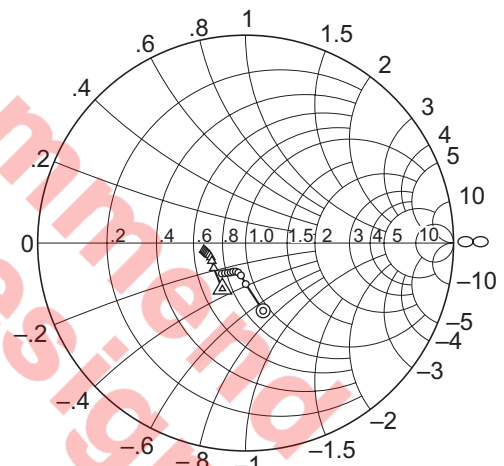
Condition:  $V_{CE} = 5\text{ V}$ ,  $Z_o = 50\ \Omega$   
 100 to 1000 MHz (100 MHz step)  
 ○ — ○ ( $I_C = 20\text{ mA}$ )  
 △ — △ ( $I_C = 100\text{ mA}$ )

S12 Parameter vs. Frequency



Condition:  $V_{CE} = 5\text{ V}$ ,  $Z_o = 50\ \Omega$   
 100 to 1000 MHz (100 MHz step)  
 ○ — ○ ( $I_C = 20\text{ mA}$ )  
 △ — △ ( $I_C = 100\text{ mA}$ )

S22 Parameter vs. Frequency



Condition:  $V_{CE} = 5\text{ V}$ ,  $Z_o = 50\ \Omega$   
 100 to 1000 MHz (100 MHz step)  
 ○ — ○ ( $I_C = 20\text{ mA}$ )  
 △ — △ ( $I_C = 100\text{ mA}$ )

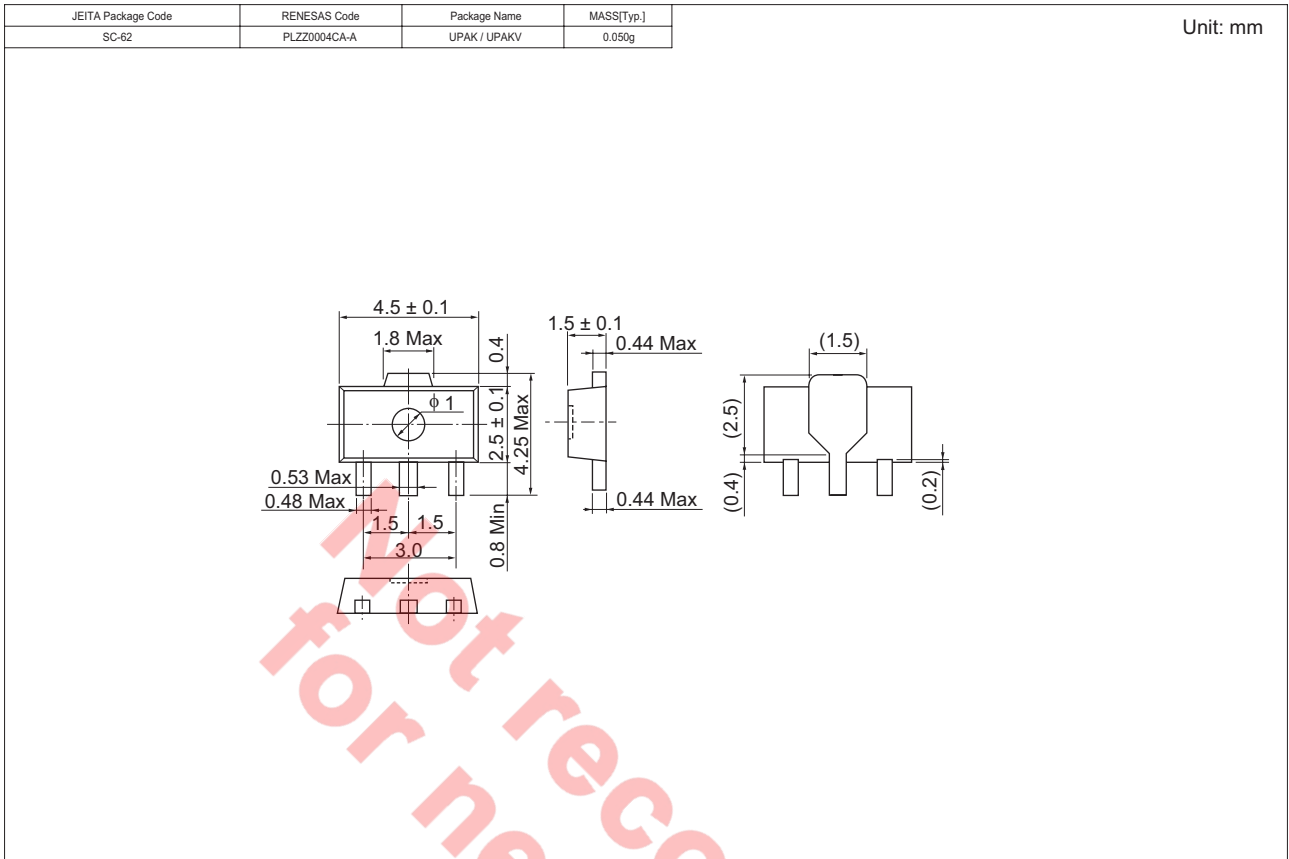
**S Parameter** $(V_{CE} = 5 \text{ V}, I_C = 20 \text{ mA}, Z_O = 50 \Omega, \text{Emitter Common})$ 

Freq. (MHz)	S11		S21		S12		S22	
	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
100	0.525	-150.0	14.03	104.7	0.039	58.4	0.336	-75.5
200	0.533	-171.9	7.16	90.9	0.063	65.7	0.197	-89.9
300	0.542	177.6	4.75	83.2	0.089	69.6	0.157	-98.3
400	0.544	170.2	3.60	77.5	0.116	71.0	0.146	-104.0
500	0.547	163.8	2.91	72.1	0.143	71.5	0.145	-109.0
600	0.552	158.2	2.46	67.4	0.170	71.3	0.150	-113.7
700	0.555	152.6	2.14	63.3	0.197	70.5	0.158	-117.1
800	0.558	147.5	1.90	59.3	0.225	69.6	0.166	-121.0
900	0.570	142.4	1.72	55.2	0.254	68.4	0.175	-124.6
1000	0.569	137.4	1.58	51.9	0.280	67.2	0.186	-128.1

**S Parameter** $(V_{CE} = 5 \text{ V}, I_C = 100 \text{ mA}, Z_O = 50 \Omega, \text{Emitter Common})$ 

Freq. (MHz)	S11		S21		S12		S22	
	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
100	0.488	-172.8	16.32	97.8	0.034	76.2	0.248	-116.9
200	0.502	176.3	8.08	88.0	0.066	78.6	0.195	-141.9
300	0.507	170.0	5.34	82.0	0.099	77.8	0.184	-152.2
400	0.507	163.6	4.03	77.2	0.132	76.4	0.181	-157.9
500	0.514	159.0	3.27	72.8	0.163	74.5	0.184	-161.8
600	0.513	153.6	2.75	68.8	0.195	72.7	0.189	-164.0
700	0.518	148.5	2.40	65.1	0.225	70.7	0.192	-165.8
800	0.524	144.0	2.13	61.3	0.254	68.5	0.196	-167.6
900	0.525	139.3	1.93	57.8	0.284	66.3	0.200	-169.4
1000	0.531	134.2	1.77	54.6	0.312	64.6	0.205	-170.8

### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
2SC4807ERTR-E	1000	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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