



2SC4855

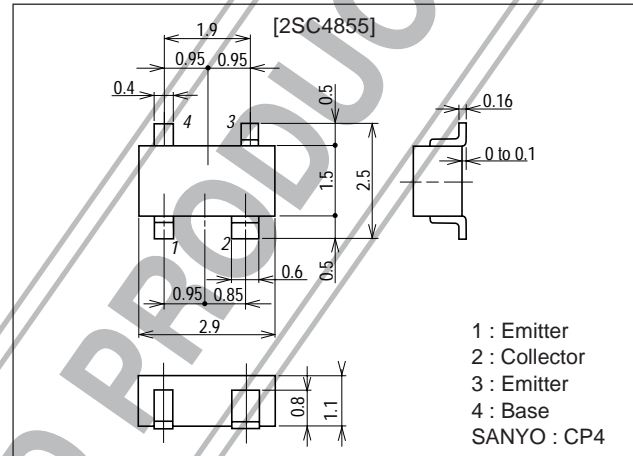
Low-Voltage, Low-Current High-Frequency Amplifier Applications

Features

- Low-voltage, low-current operation : $f_T=5\text{GHz}$ typ.
 $(V_{CE}=1\text{V}, I_C=1\text{mA}) : |S_{21e}|^2=7.5\text{dB}$ typ
 $(f=1\text{GHz}).$
 : $NF=2.6\text{dB}$ typ ($f=1\text{GHz}$).

Package Dimensions

unit:mm
2110A



Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		12	V
Collector-to-Emitter Voltage	V_{CEO}		6	V
Emitter-to-Base Voltage	V_{EBO}		1.5	V
Collector Current	I_C		15	mA
Collector Dissipation	P_C		80	mW
Junction Temperature	T_J		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=5\text{V}, I_E=0$			1.0	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=1\text{V}, I_C=0$			10	μA
DC Current Gain	h_{FE}	$V_{CE}=1\text{V}, I_C=1\text{mA}$	60*		270*	
Gain-Bandwidth Product	f_T	$V_{CE}=1\text{V}, I_C=1\text{mA}$		5		GHz
Output Capacitance	C_{ob}	$V_{CB}=1\text{V}, f=1\text{MHz}$	0.6		1.0	pF

* : The 2SC4855 is classified by $1\text{mA } h_{FE}$ as follows :

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Rank	3	4	5
h_{FE}	60 to 120	90 to 180	135 to 270

Marking : CN

h_{FE} rank : 3, 4, 5

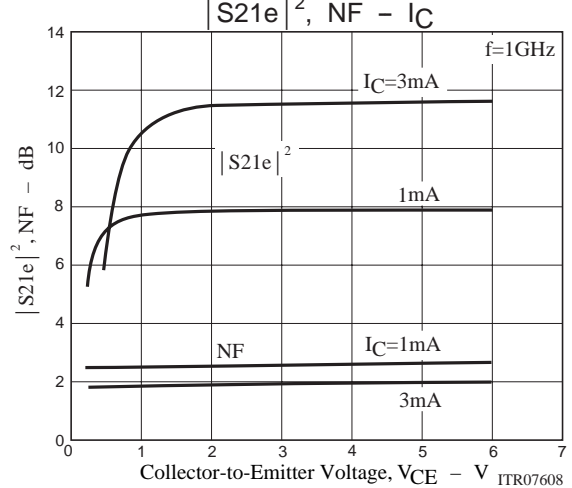
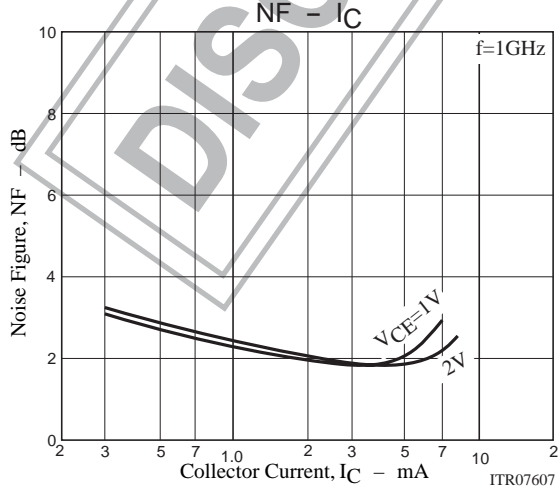
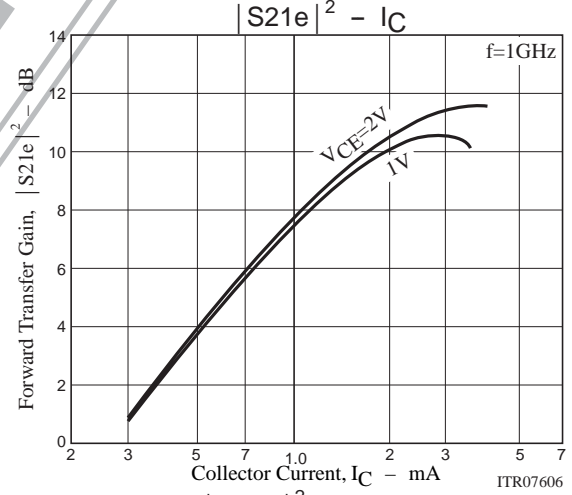
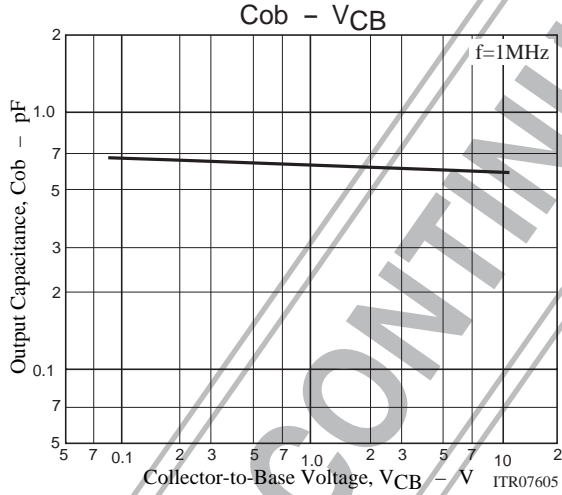
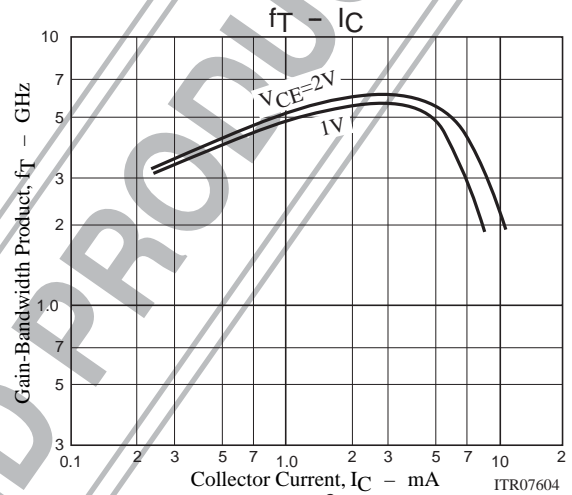
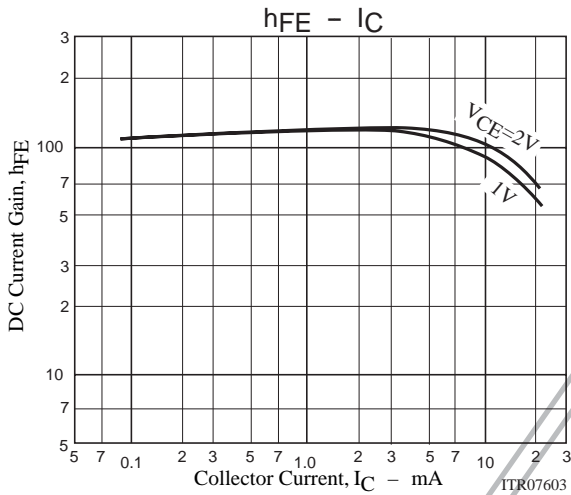
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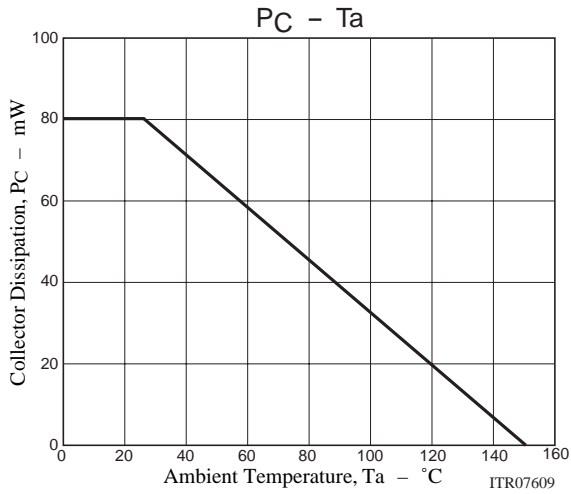
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Gain	$ S_{21e} ^2 1$	$V_{CE}=1V, I_C=1mA, f=1GHz$	5	7.5		dB
	$ S_{21e} ^2 2$	$V_{CE}=2V, I_C=3mA, f=1GHz$		11.5		dB
Noise Figure	NF1	$V_{CE}=1V, I_C=1mA, f=1GHz$		2.6	4.5	dB
	NF2	$V_{CE}=2V, I_C=3mA, f=1GHz$		1.9		dB



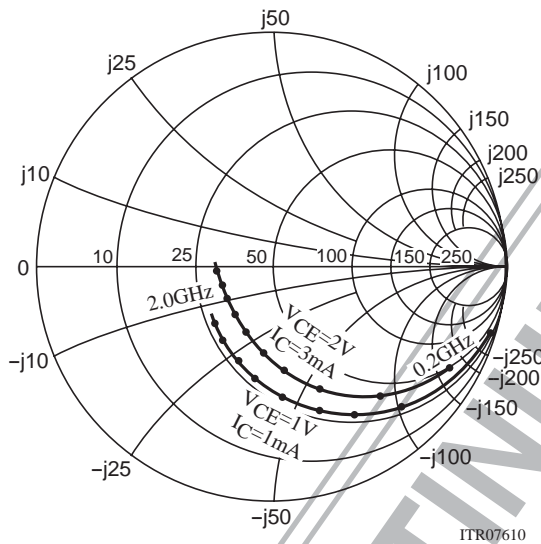
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S parameter

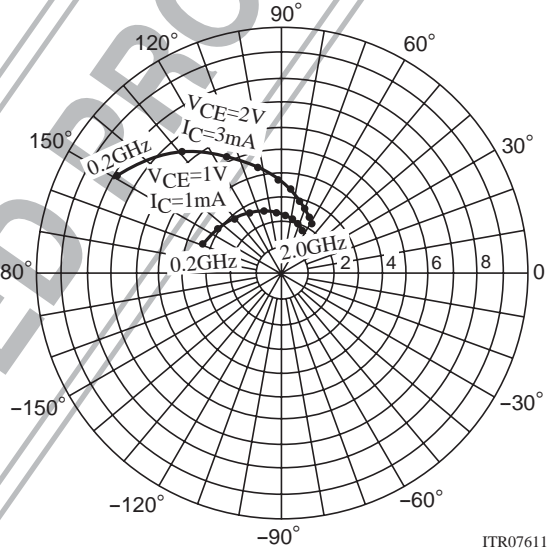
S11e

f=200 to 2000MHz(200MHz Step)



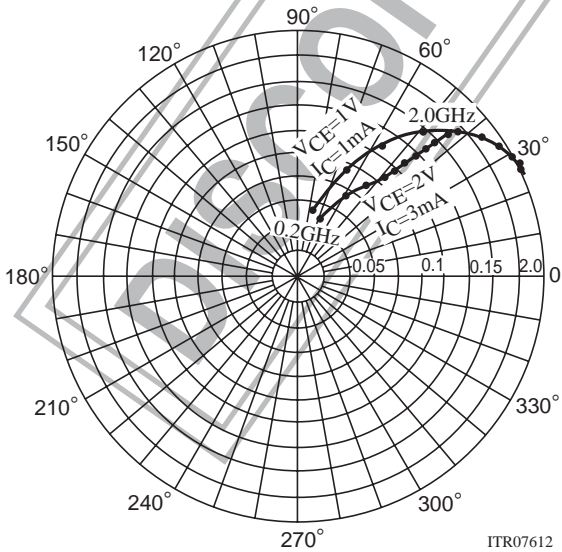
S21e

f=200 to 2000MHz(200MHz Step)



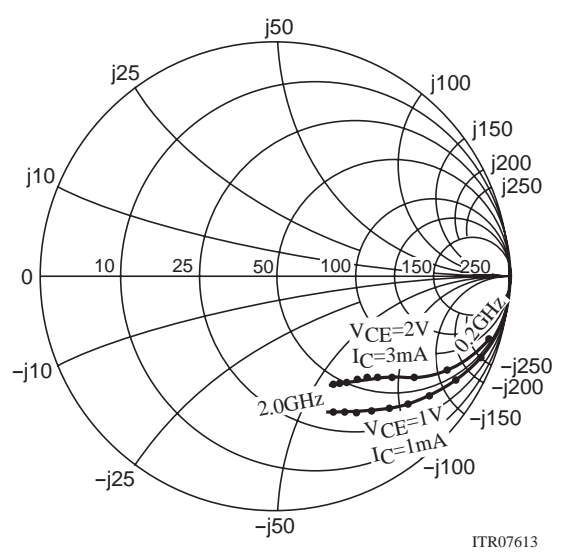
S12e

f=200 to 2000MHz(200MHz Step)



S22e

f=200 to 2000MHz(200MHz Step)



S parameter (Common emitter)

$V_{CE}=1V, I_C=1mA, Z_0=50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
200	0.944	-18.0	3.276	159.9	0.050	76.8	0.981	-12.0
400	0.869	-34.2	3.037	143.8	0.093	65.5	0.928	-22.2
600	0.786	-48.9	2.778	130.2	0.128	56.5	0.865	-31.1
800	0.706	-62.0	2.550	117.6	0.155	48.8	0.808	-38.6
1000	0.619	-75.4	2.379	106.1	0.173	42.3	0.753	-45.7
1200	0.547	-87.4	2.165	95.7	0.186	36.9	0.712	-51.2
1400	0.473	-100.1	2.022	85.9	0.194	32.4	0.675	-56.1
1600	0.417	-111.7	1.840	77.4	0.198	28.9	0.639	-60.4
1800	0.371	-125.2	1.745	69.9	0.202	26.4	0.614	-64.1
2000	0.343	-139.3	1.639	62.2	0.201	25.2	0.595	-67.6

$V_{CE}=2V, I_C=3mA, Z_0=50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
200	0.844	-30.5	7.785	149.6	0.043	71.0	0.933	-17.4
400	0.688	-53.7	6.308	129.2	0.072	59.3	0.808	-28.8
600	0.545	-72.1	5.182	113.8	0.091	52.6	0.705	-36.3
800	0.451	-86.7	4.315	102.3	0.104	49.2	0.632	-41.6
1000	0.374	-102.0	3.713	95.2	0.117	47.0	0.590	-46.0
1200	0.308	-115.4	3.225	83.5	0.127	45.9	0.564	-49.5
1400	0.260	-130.6	2.823	75.5	0.137	45.0	0.541	-53.1
1600	0.230	-145.2	2.515	68.8	0.146	44.5	0.525	-56.8
1800	0.215	-160.5	2.296	63.0	0.155	44.2	0.510	-60.3
2000	0.213	-177.0	2.143	56.9	0.166	43.8	0.506	-63.4

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