Ordering number: EN 4579

SANYO

No.4579

2SC4854

NPN Epitaxial Planar Silicon Transistor

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

Features

- Low-voltage, low-current operation : $f_T = 5$GHz typ.
  ($V_{CE} = 1$V, $I_C = 1$mA) : $|S21e|^2 = 7$dB typ ($f = 1$GHz).
  : NF = 2.6dB typ ($f = 1$GHz).

Absolute Maximum Ratings at Ta = 25°C

			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	Tj	150	°C
Storage Temperature	Tstg	−55 to +150	°C

Electrical Characteristics at Ta = 25°C

			min	typ	max	unit
Collector Cutoff Current	I_{CBO}	$V_{CB} = 5$V, $I_E = 0$			1.0	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 1$V, $I_C = 0$			10	μA
DC Current Gain	h_{FE}	$V_{CE} = 1$V, $I_C = 1$mA	60※		270※	
Gain-Bandwidth Product	f_T	$V_{CE} = 1$V, $I_C = 1$mA		5		GHz
Output Capacitance	Cob	$V_{CB} = 1$V, $f = 1$MHz		0.6	1.0	pF
Forward Transfer Gain	$\|S21e\|^2$(1)	$V_{CE} = 1$V, $I_C = 1$mA, $f = 1$GHz	4.5	7		dB
	$\|S21e\|^2$(2)	$V_{CE} = 2$V, $I_C = 3$mA, $f = 1$GHz		10.5		dB
Noise Figure	NF(1)	$V_{CE} = 1$V, $I_C = 1$mA, $f = 1$GHz		2.6	4.5	dB
	NF(2)	$V_{CE} = 2$V, $I_C = 3$mA, $f = 1$GHz		1.9		dB

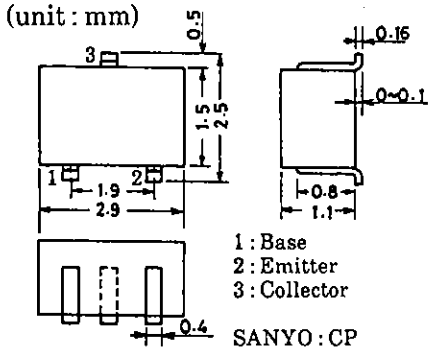
※ : The 2SC4854 is classified by 1mA h_{FE} as follows :

60 3 120	90 4 180	135 5 270

Marking : CN
h_{FE} rank : 3, 4, 5

Package Dimensions 2018B

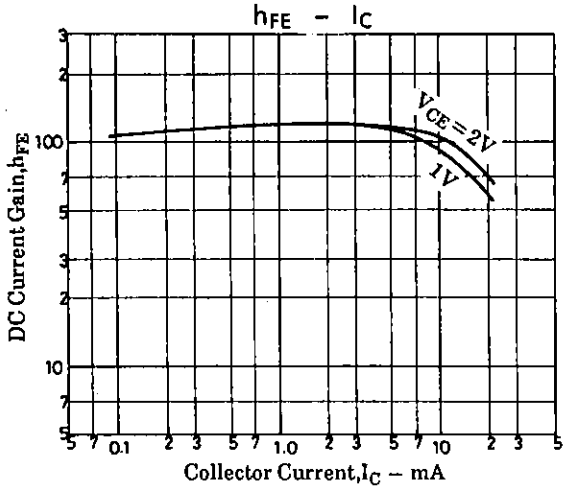
(unit : mm)



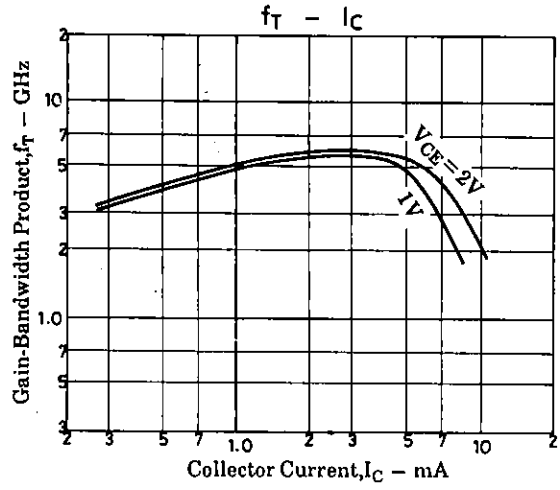
1 : Base
2 : Emitter
3 : Collector

SANYO : CP

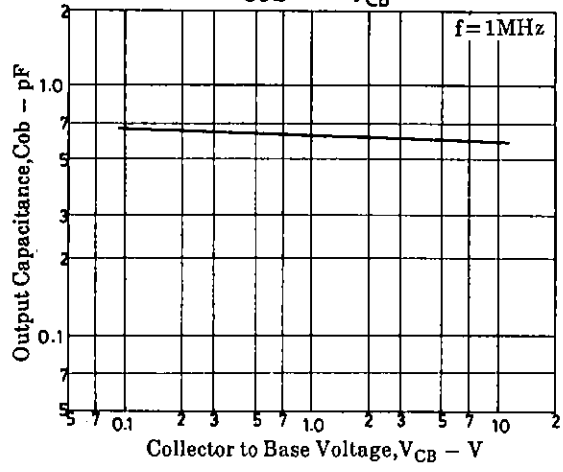
h_{FE} – I_C



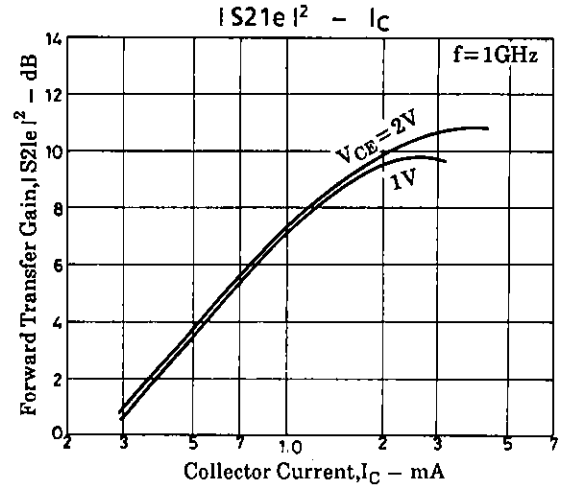
f_T – I_C



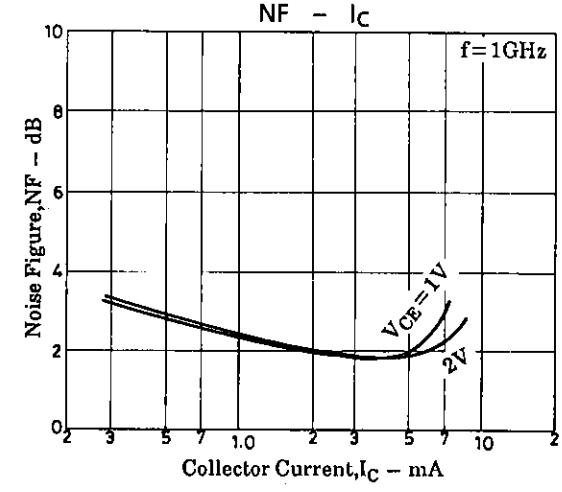
Cob – V_{CB}



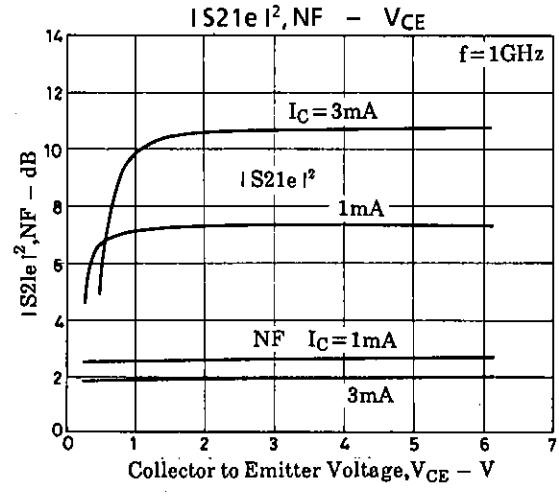
$|S21e|^2$ – I_C



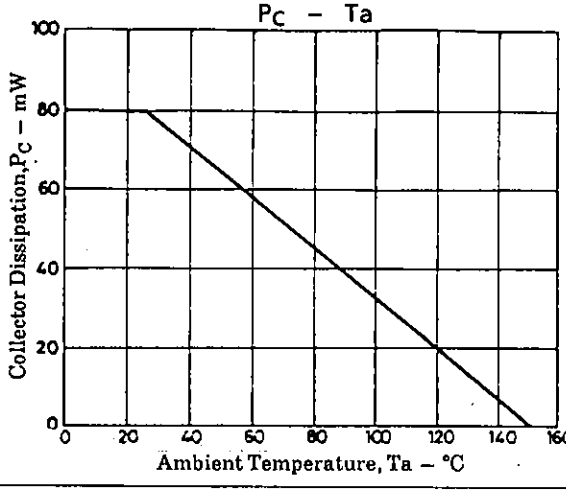
NF – I_C



$|S21e|^2$, NF – V_{CE}

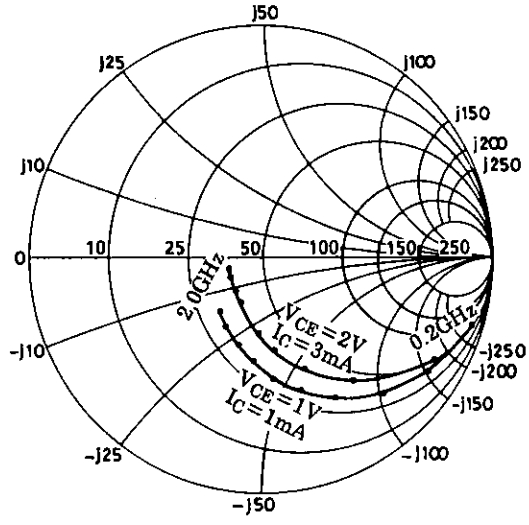


P_C – Ta

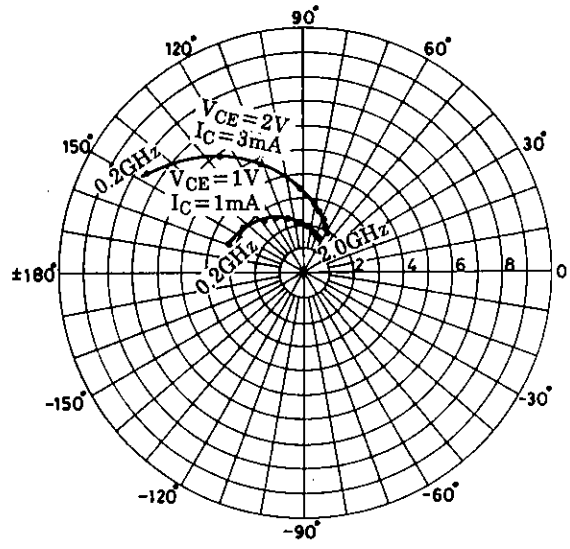


S Parameter

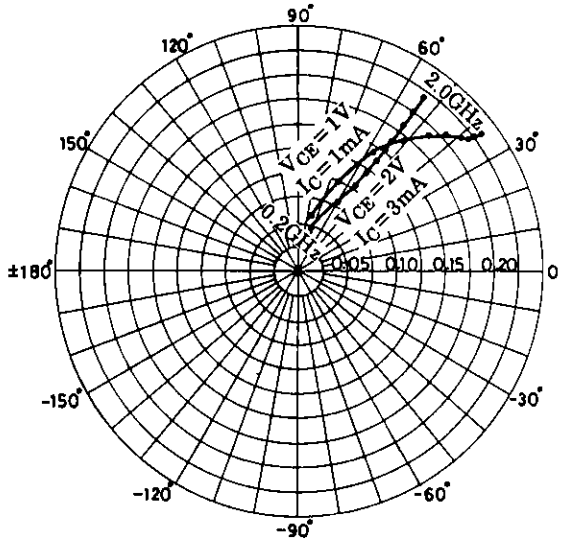
S11e
f=200~2000MHz (200MHz step)



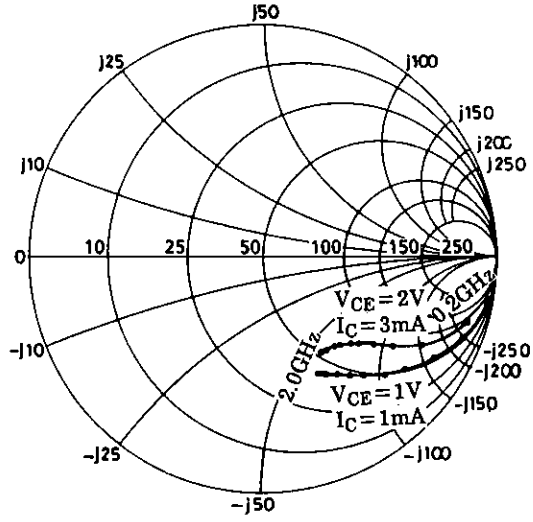
S21e
f=200~2000MHz (200MHz step)



S12e
f=200~2000MHz (200MHz step)



S22e
f=200~2000MHz (200MHz step)



S Parameter (Common emitter)

V_{CE}=1V, I_C=1mA, Z_O=50Ω

Freq (MHz)	$\|S_{11}\|$	$\angle S_{11}$	$\|S_{21}\|$	$\angle S_{21}$	$\|S_{12}\|$	$\angle S_{12}$	$\|S_{22}\|$	$\angle S_{22}$
200	0.934	−18.2	3.251	158.9	0.057	76.7	0.965	−12.3
400	0.847	−34.7	3.003	142.1	0.105	66.2	0.904	−23.0
600	0.761	−48.9	2.680	128.3	0.142	57.9	0.835	−31.7
800	0.659	−62.8	2.524	114.7	0.169	51.4	0.765	−38.8
1000	0.576	−74.5	2.283	103.7	0.191	46.0	0.717	−44.7
1200	0.509	−85.9	2.078	93.7	0.204	42.3	0.658	−50.1
1400	0.432	−96.9	1.922	84.6	0.214	39.3	0.625	−54.5
1600	0.377	−107.6	1.785	76.2	0.219	37.3	0.591	−58.5
1800	0.332	−120.7	1.680	69.1	0.225	37.1	0.566	−62.3
2000	0.297	−131.1	1.588	62.9	0.231	36.8	0.552	−65.2

V_{CE}=2V, I_C=3mA, Z_O=50Ω

Freq (MHz)	$\|S_{11}\|$	$\angle S_{11}$	$\|S_{21}\|$	$\angle S_{21}$	$\|S_{12}\|$	$\angle S_{12}$	$\|S_{22}\|$	$\angle S_{22}$
200	0.816	−31.3	7.561	147.5	0.049	71.7	0.903	−18.4
400	0.636	−53.9	5.976	125.9	0.081	61.2	0.763	−29.7
600	0.496	−70.3	4.789	111.3	0.102	57.0	0.663	−35.6
800	0.389	−83.8	3.976	99.3	0.120	55.4	0.593	−39.5
1000	0.318	−95.4	3.365	90.1	0.136	54.6	0.551	−43.0
1200	0.257	−108.4	2.940	81.9	0.153	54.3	0.523	−46.1
1400	0.212	−119.6	2.600	75.1	0.168	54.3	0.503	−49.4
1600	0.180	−133.1	2.340	68.5	0.183	54.1	0.491	−52.8
1800	0.171	−147.9	2.135	63.5	0.199	54.2	0.477	−56.4
2000	0.159	−159.9	1.989	58.6	0.217	54.0	0.476	−59.5

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