Ordering number:EN4579

NPN Epitaxial Planar Silicon Transistor

2SC4854

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

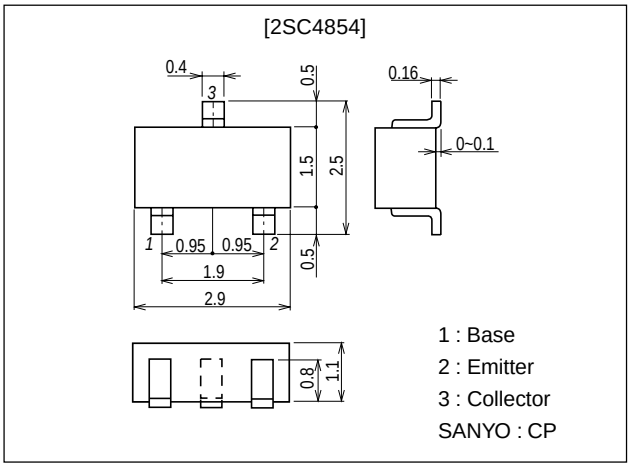
Features

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

Package Dimensions

unit:mm

2018B



Specifications

Absolute Maximum Ratings at Ta = 25˚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	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

Electrical Characteristics at Ta = 25˚C

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

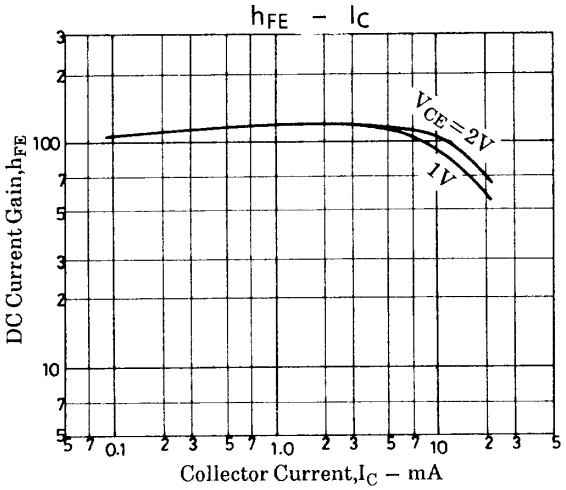
* : The 2SC4854 is classified by 1mA h_{FE} as follows :

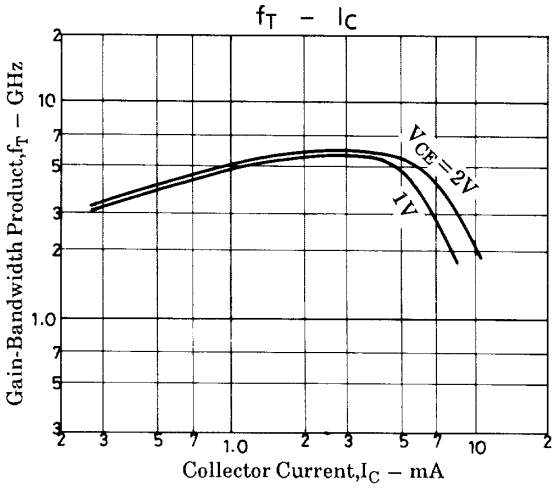
60	3	120	90	4	180	135	5	270

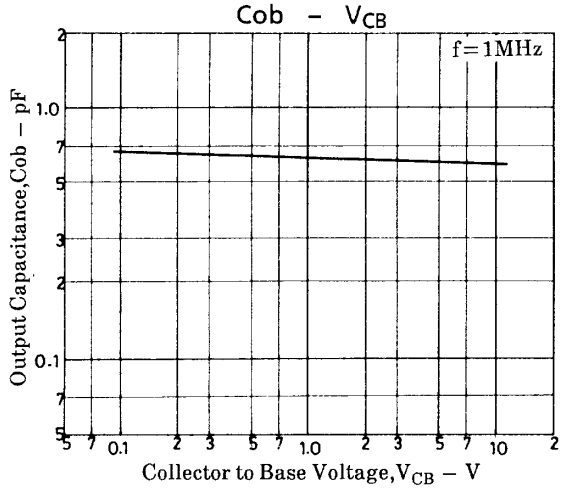
Marking : CN
h_{FE} rank : 3, 4, 5

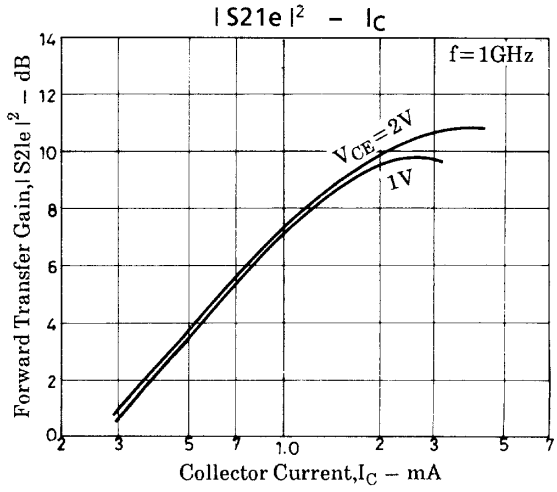
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

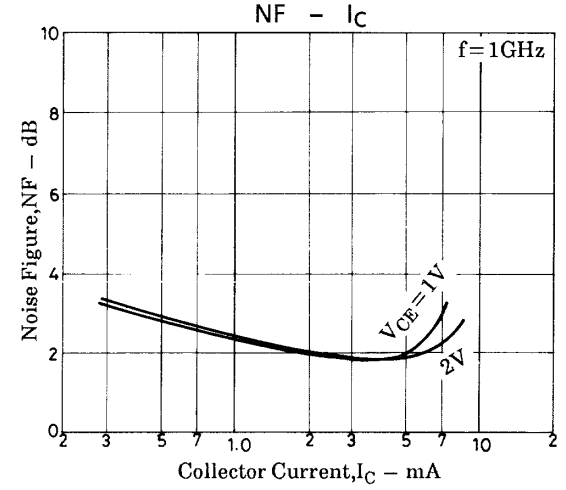
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Gain	| S21e |^2 1	V_{CE}=1V, I_C=1mA, f=1GHz	4.5	7		dB
	| S21e |^2 2	V_{CE}=2V, I_C=3mA, f=1GHz		10.5		dB
Noise Figure	NF1	V_{CE}=1V, I_C=1mA, f=1GHz		2.6	4.5	dB
	NF2	V_{CE}=2V, I_C=3mA, f=1GHz		1.9		dB

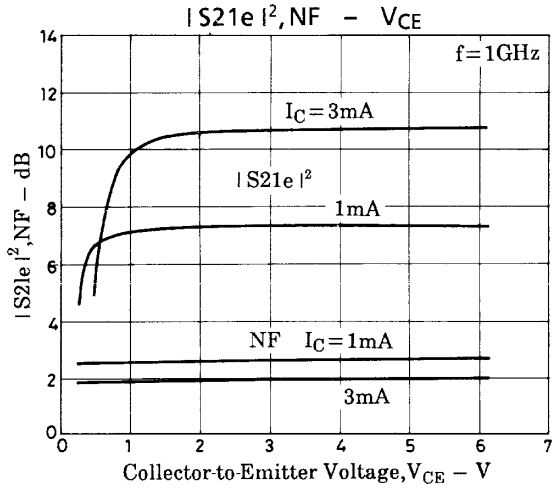


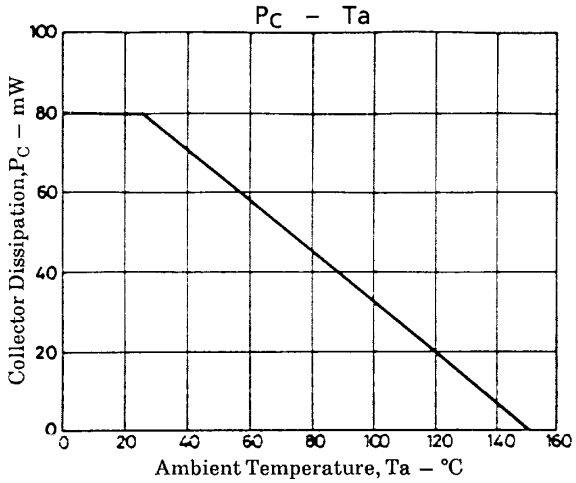






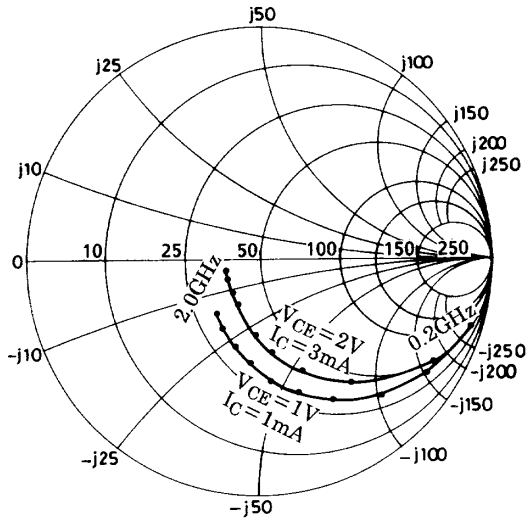




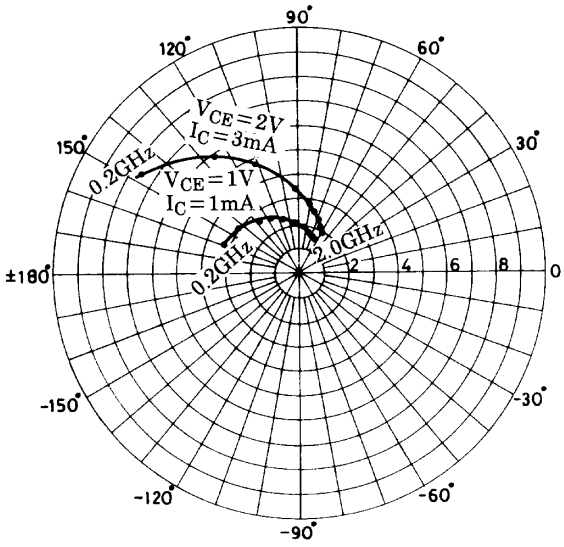


S parameter

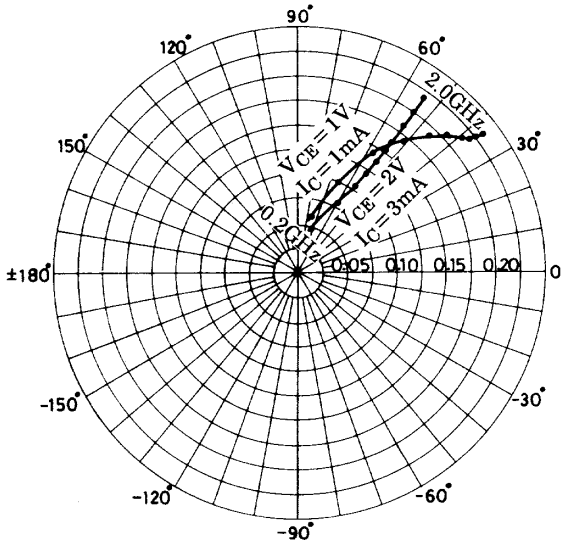
S11e
f=200 to 2000MHz (200MHz step)



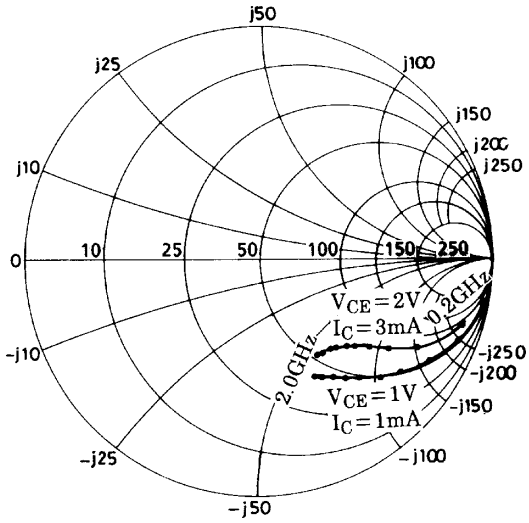
S21e
f=200 to 2000MHz (200MHz step)



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_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