

2SC4854

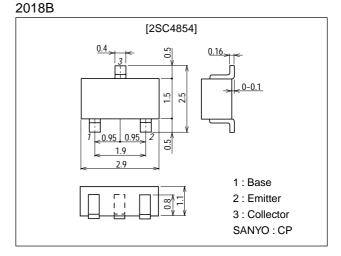
Low-Voltage, Low-Current High-Frequency Amplifier Applications

Features

 $\begin{array}{l} \cdot \text{Low-voltage, low-current operation}: f_T \!\!=\!\! 5\text{GHz typ.} \\ (V_{CE} \!\!=\!\! 1\text{V, I}_C \!\!=\!\! 1\text{mA}): \left| \text{S21e} \right|^2 \!\!=\!\! 7\text{dB typ (f=1GHz).} \\ : NF \!\!=\!\! 2.6\text{dB typ (f=1GHz).} \end{array}$

Package Dimensions

unit:mm



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	VCEO		6	V
Emitter-to-Base Voltage	V _{EBO}		1.5	V
Collector Current	IC		15	mA
Collector Dissipation	PC		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
	Symbol	Conditions		typ	max	Offic
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	hFE	V _{CE} =1V, I _C =1mA	60*		270*	
Gain-Bandwidth Product	fT	V _{CE} =1V, I _C =1mA		5		GHz
Output Capacitance	C _{ob}	V _{CB} =1V, f=1MHz		0.6	1.0	pF

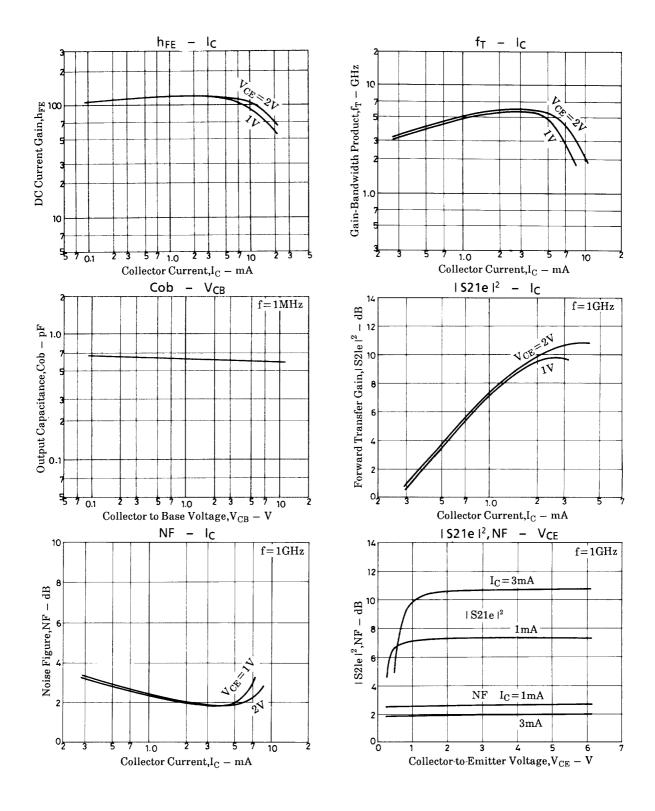
 \ast : The 2SC4854 is classified by 1mA $h_{\mbox{\scriptsize FE}}$ as follows :

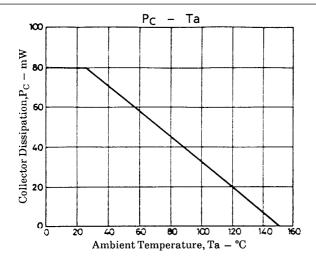
60 3 120 90 4 180 135 5 270

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

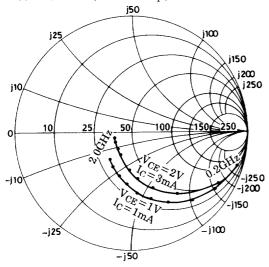
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Parameter	Symbol	Conditions		Ratings		
i arameter	Symbol			typ	max	Unit
Forward Transfer Gain	S21e ² 1	V _{CE} =1V, I _C =1mA, f=1GHz	4.5	7		dB
	S21e ² 2	V _{CE} =2V, I _C =3mA, f=1GHz		10.5		dB
Noise Figure	NF1	V _{CE} =1V, I _C =1mA, f=1GHz		2.6	4.5	dB
	NF2	V _{CE} =2V, I _C =3mA, f=1GHz		1.9		dB

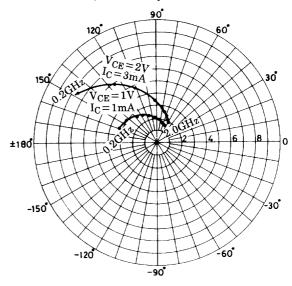




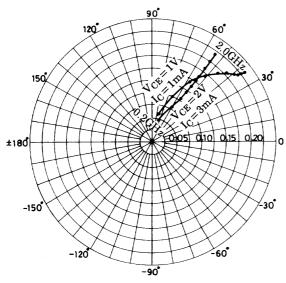
S parameter



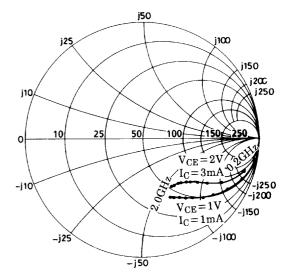
 $\begin{array}{l} S21e \\ f\!=\!200 \text{ to } 2000 MHz \text{ (200MHz step)} \end{array}$



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



\$S22e\$ f=200 to 2000MHz (200MHz step)



S parameter (Common emitter)

 $V_{CE}=1V$, $I_{C}=1mA$, $Z_{O}=50\Omega$

Freq (MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠ 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

 $V_{CE}=2V$, $I_{C}=3mA$, $Z_{O}=50\Omega$

Freq (MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠ 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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