



SANYO Semiconductors

DATA SHEET

2SC4673 — NPN Epitaxial Planar Silicon Transistor

UHF Low-Noise Amplifier, Wide-Band Amplifier Applications

Features

- Low noise figure : NF=1.5dB typ (f=0.9GHz).
- High power gain : $|S_{21e}|^2=8.0\text{dB}$ typ (f=0.9GHz).
- High cutoff frequency : $f_T=4.5\text{GHz}$ typ.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CBO}		20	V
Collector-to-Emitter Voltage	V _{CEO}		12	V
Emitter-to-Base Voltage	V _{EBO}		3	V
Collector Current	I _C		100	mA
Base Current	I _B		30	mA
Collector Dissipation	P _C		400	mW
		Mounted on a ceramic board (250mm ² ×0.8mm)	800	mW
Junction Temperature	T _j		150	°C
Storage Temperature	T _{stg}		-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} =12V, I _E =0A			1.0	μA
Emitter Cutoff Current	I _{EBO}	V _{EB} =2V, I _C =0A			10	μA
DC Current Gain	h _{FE}	V _{CE} =10V, I _C =20mA	40*		200*	

Marking : CD

Continued on next page.

*: The 2SC4673 is classified by 20mA h_{FE} as follows:

Rank	C	D	E
h _{FE}	40 to 80	60 to 120	100 to 200

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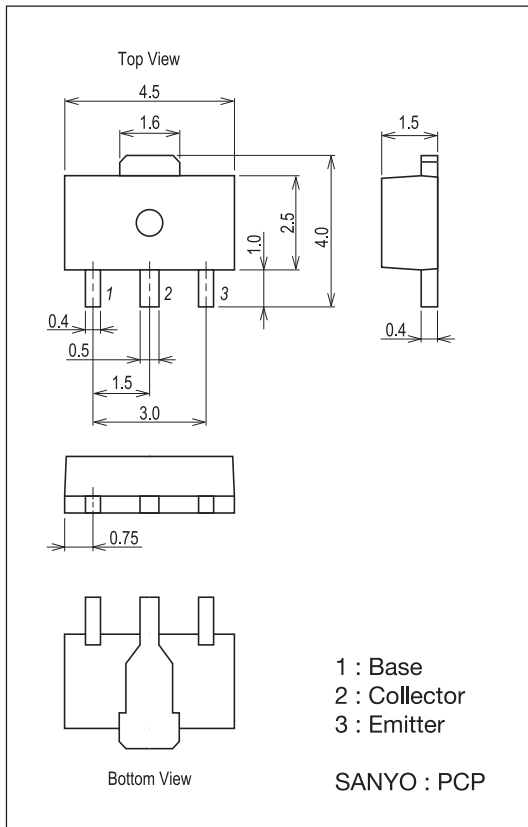
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	f_T	$V_{CE}=10V, I_C=20mA$		4.5		GHz
Output Capacitance	C_{ob}	$V_{CB}=10V, f=1MHz$		1.1		pF
Reverse Transfer Capacitance	C_{re}	$V_{CB}=10V, f=1MHz$		0.75		pF
Forward Transfer Gain	$ S_{21e} ^2$	$V_{CE}=10V, I_C=20mA, f=0.9GHz$		8.0		dB
Noise Figure	NF	$V_{CE}=10V, I_C=5mA, f=0.9GHz$		1.5	3.0	dB

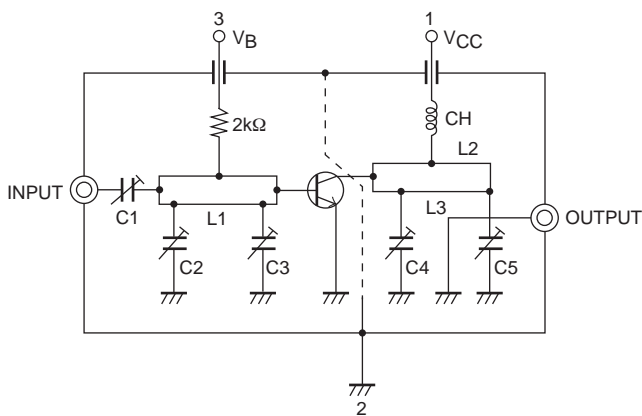
Package Dimensions

unit : mm (typ)

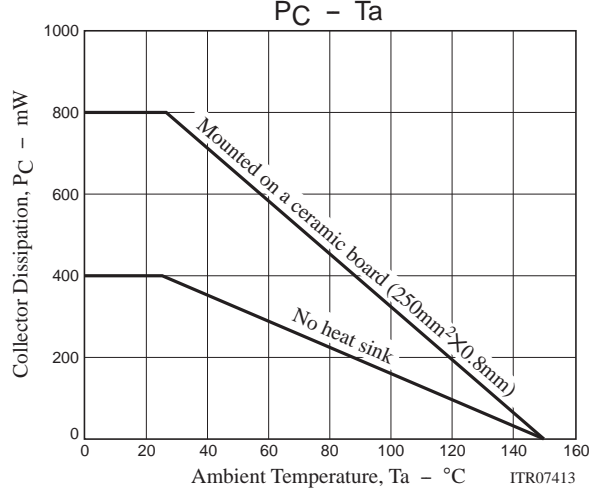
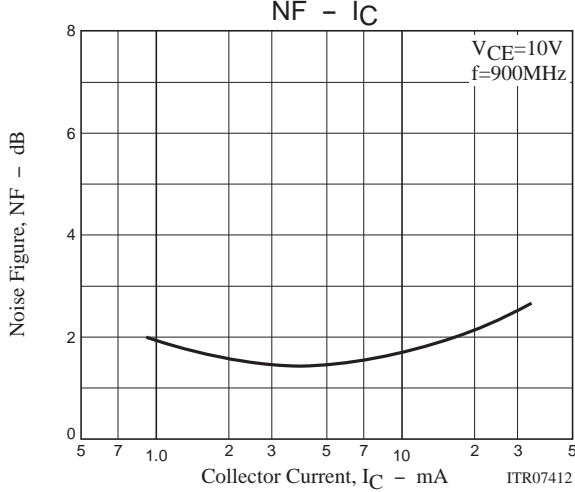
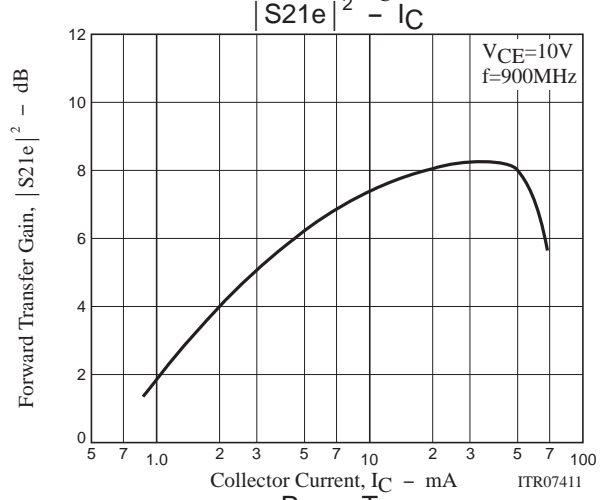
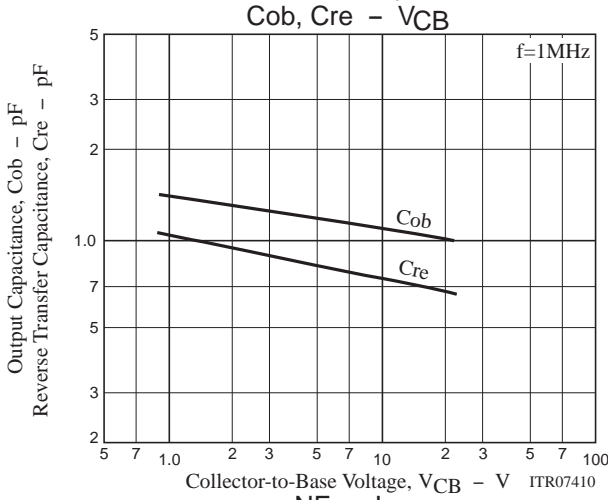
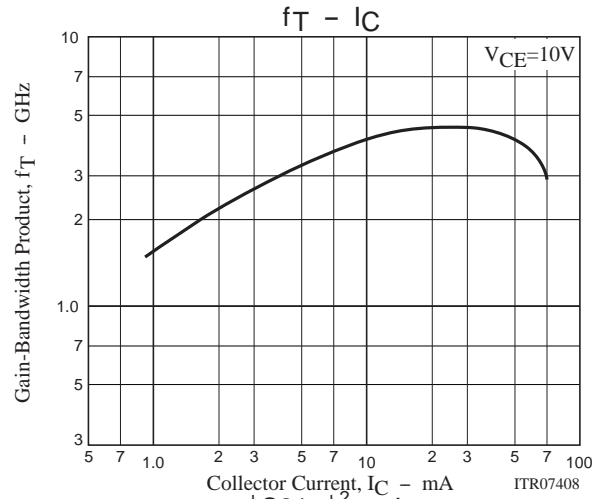
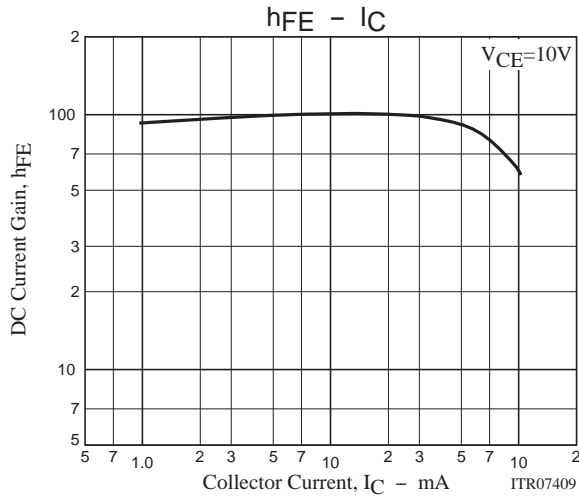
7007B-004



NF Test Circuit

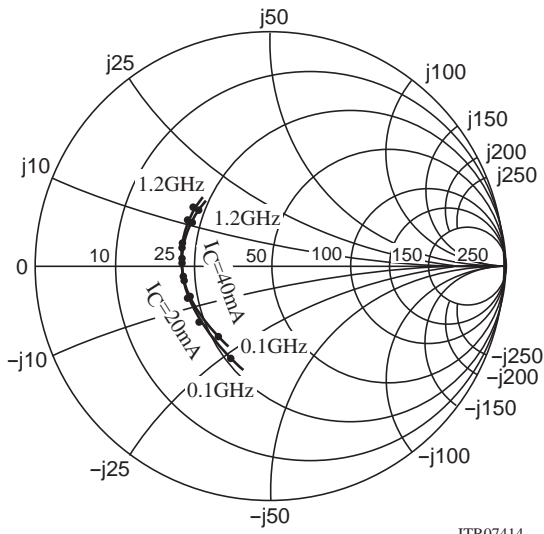


	900MHz
C1	up to 5pF
C2	up to 10pF
C3	up to 10pF
C4	up to 10pF
C5	up to 10pF
L1	$W \approx 1.5mm, 1 \approx 25mm$ Strip line
L2	$W \approx 4mm, 1 \approx 25mm$ Strip line
L3	$0.5\phi, 1 \approx 4mm$
CH	2t+ bead core



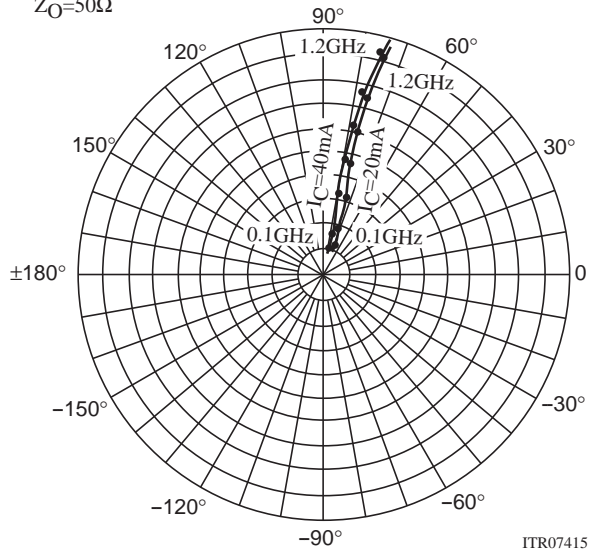
S parameter

S11e : $V_{CE} = -10V$
 $f = 100MHz, 200 \text{ to } 1200MHz (200MHz \text{ step})$



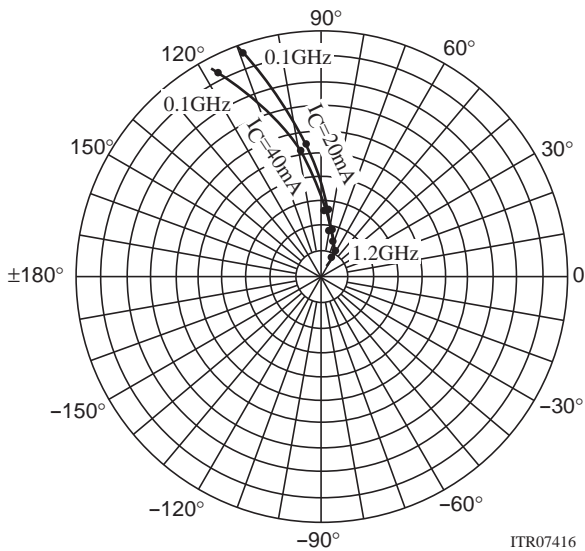
ITR07414

S12e : $V_{CE} = 10V$
 $f = 100MHz, 200 \text{ to } 1200MHz (200MHz \text{ step})$
 $Z_0 = 50\Omega$



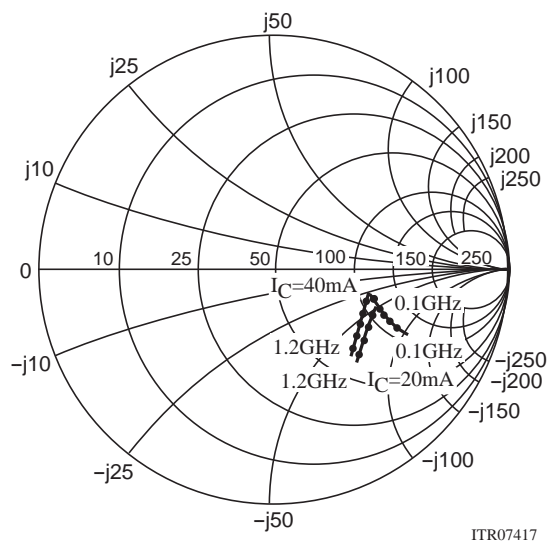
ITR07415

S21e : $V_{CE} = 10V$
 $f = 100MHz, 200 \text{ to } 1200MHz (200MHz \text{ step})$



ITR07416

S22e : $V_{CE} = 10V$
 $f = 100MHz, 200 \text{ to } 1200MHz (200MHz \text{ step})$



ITR07417

S parameters (Common emitter)V_{CE}=10V, I_C=20mA, Z_O=50Ω

Freq(MHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.414	-112.1	18.300	115.9	0.024	61.1	0.605	-26.4
200	0.372	-147.5	10.148	99.2	0.037	66.4	0.492	-23.5
400	0.364	-175.7	5.274	84.8	0.064	72.9	0.458	-23.0
600	0.369	170.1	3.619	75.6	0.093	75.3	0.460	-27.3
800	0.379	158.7	2.764	67.8	0.123	76.6	0.468	-32.6
900	0.366	153.6	2.504	66.4	0.139	75.4	0.475	-35.7
1000	0.388	148.5	2.279	60.8	0.152	75.1	0.478	-38.5
1200	0.399	140.5	1.914	54.2	0.184	74.0	0.487	-44.4

V_{CE}=10V, I_C=40mA, Z_O=50Ω

Freq(MHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.730	-133.7	19.714	109.3	0.021	66.4	0.535	-25.3
200	0.363	-161.5	10.534	95.3	0.035	72.5	0.452	-20.6
400	0.366	177.6	5.411	82.8	0.064	77.3	0.438	-21.1
600	0.371	166.7	3.690	74.3	0.094	77.9	0.444	-25.9
800	0.380	156.9	2.823	66.8	0.125	77.3	0.454	-31.7
900	0.389	153.1	2.562	63.5	0.142	76.8	0.462	-35.1
1000	0.391	148.3	2.329	59.9	0.155	76.1	0.465	-37.7
1200	0.404	141.3	1.982	53.6	0.186	74.7	0.474	-43.8

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