Ordering number:ENN1954C

NPN Epitaxial Planar Silicon Transistor

2SC3779

UHF Low-Noise Amplifier, Wide-Band Amplifier Applications

Applications

· UHF low-noise amplifiers, wide-band amplifiers.

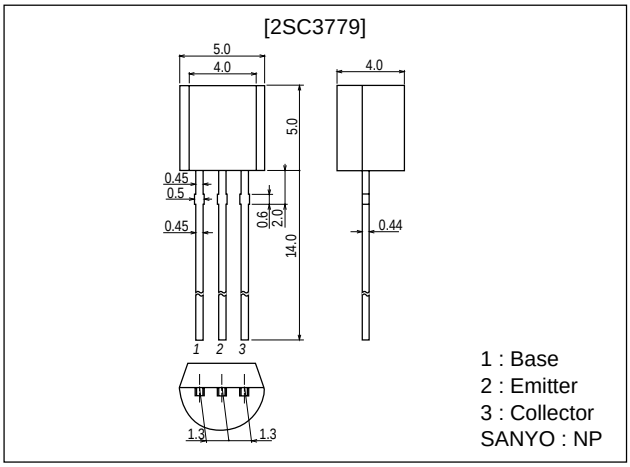
Features

· Small noise figure : NF=1.5dB typ (f=0.9GHz).
· High power gain : MAG=14dB typ (f=0.9GHz).
· High cutoff frequency : f_T=5GHz typ.

Package Dimensions

unit:mm

2004B



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		40	mA
Collector Dissipation	P_C		600	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}=12V, I_E=0			1.0	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=2V, I_C=0			10	μA
DC Current Gain	h_{FE}	V_{CE}=10V, I_C=20mA	40*		200*	
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=20mA		5.0		GHz
Output Capacitance	C_{ob}	V_{CB}=10V, f=1MHz		1.0		pF
Reverse Transfer Capacitance	C_{re}	V_{CB}=10V, f=1MHz		0.7		pF

* : The 2SC3779 is classified by 20mA h_{FE} as follows :

Continued on next page.

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

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

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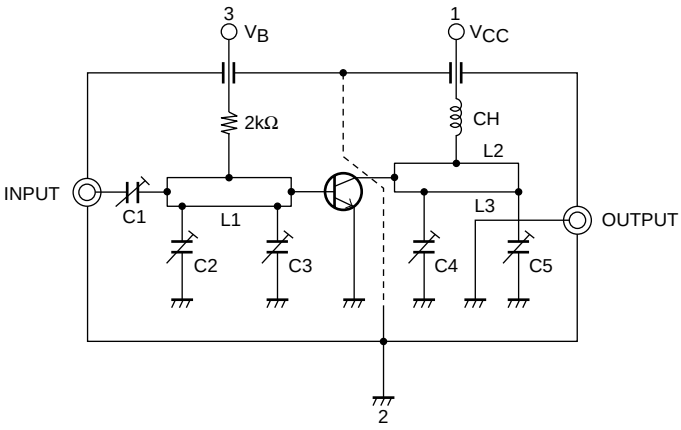
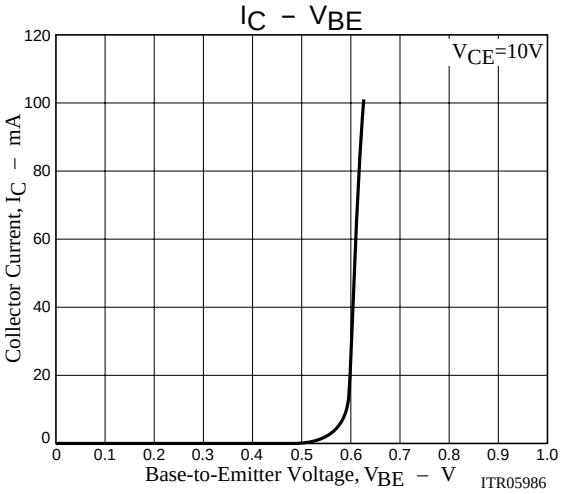
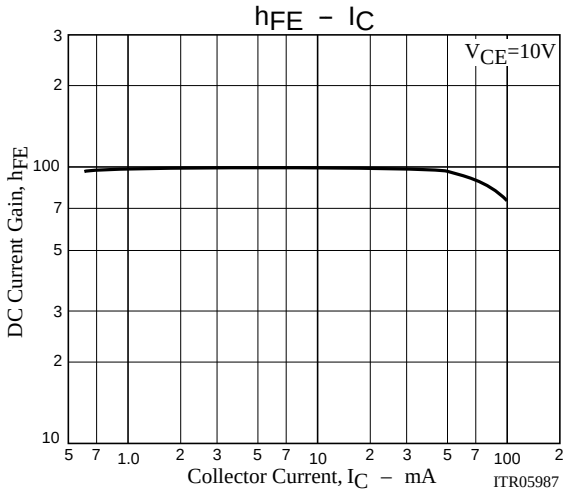
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Gain	$\|S21e\|^2$	V_{CE}=10V, I_C=20mA, f=0.9GHz	8.5	10		dB
Maximum Available Power Gain	MAG	V_{CE}=10V, I_C=20mA, f=0.9GHz		14		dB
Noise Figure	NF	V_{CE}=10V, I_C=5mA, f=0.9GHz, See specified Test Circuit.		1.5	3.0	dB

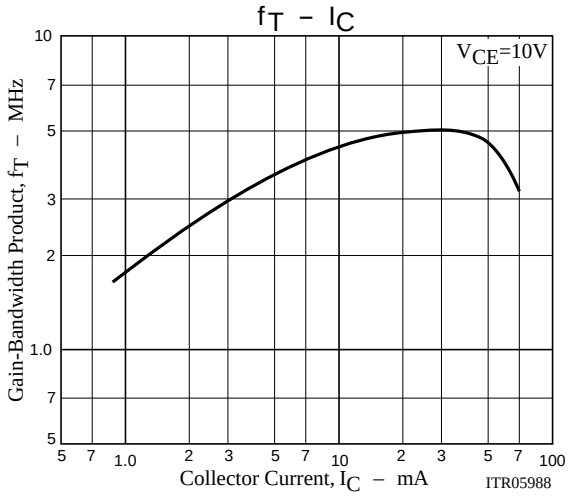
NF Test Circuit

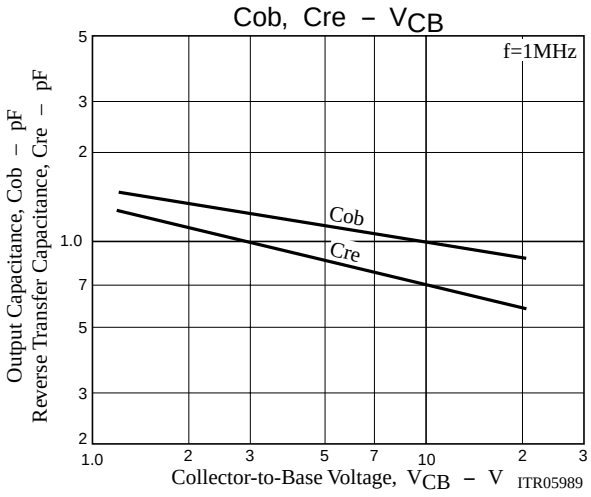


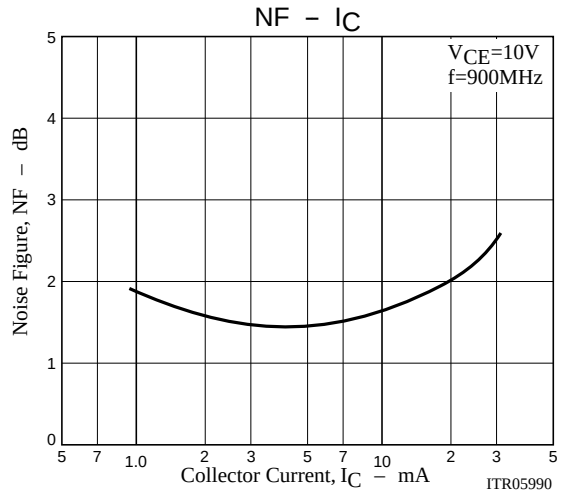
	900MHz
C1	~5pF
C2	~10pF
C3	~10pF
C4	~10pF
C5	~10pF
L1	W ≈ 1.5mm, l ≈ 25mm Strip line
L2	W ≈ 4mm, l ≈ 25mm Strip line
L3	0.5ϕ, l ≈ 40mm
CH	2t+bead core

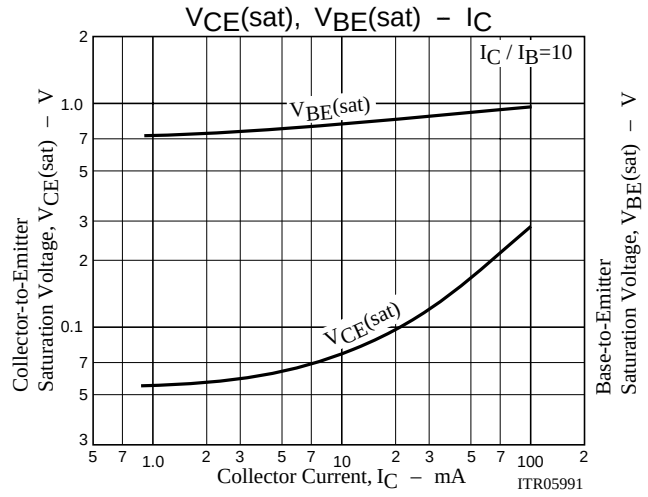


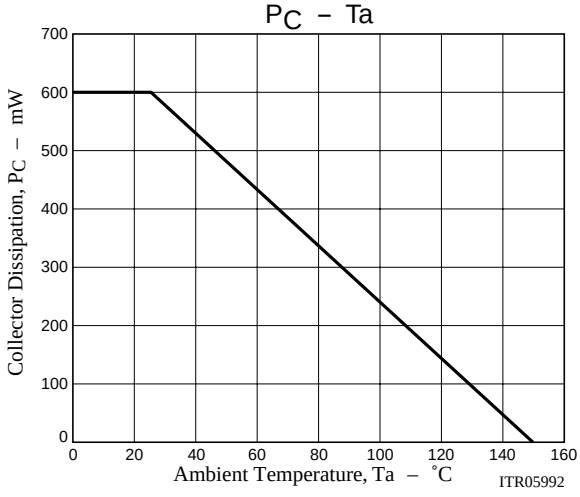



fT – IC
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA
ITR05988


Cob, Cre – VCB
f=1MHz
Cob
Cre
Output Capacitance, Cob – pF
Reverse Transfer Capacitance, Cre – pF
Collector-to-Base Voltage, VCB – V
ITR05989

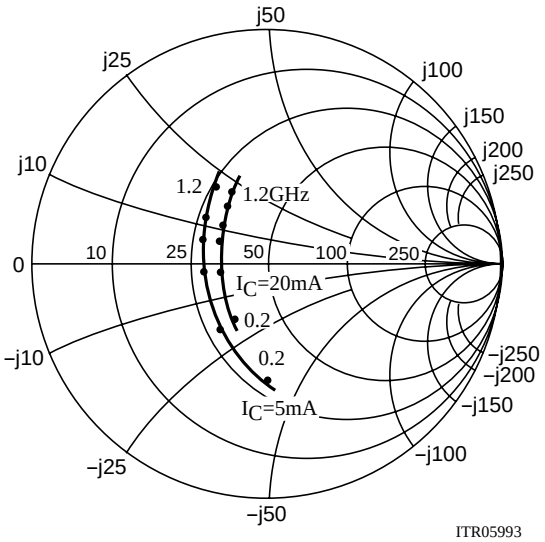

NF – IC
VCE=10V
f=900MHz
Noise Figure, NF – dB
Collector Current, IC – mA
ITR05990


VCE(sat), VBE(sat) – IC
IC / IB=10
VBE(sat)
VCE(sat)
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – mA
ITR05991


PC – Ta
Collector Dissipation, PC – mW
Ambient Temperature, Ta – °C
ITR05992

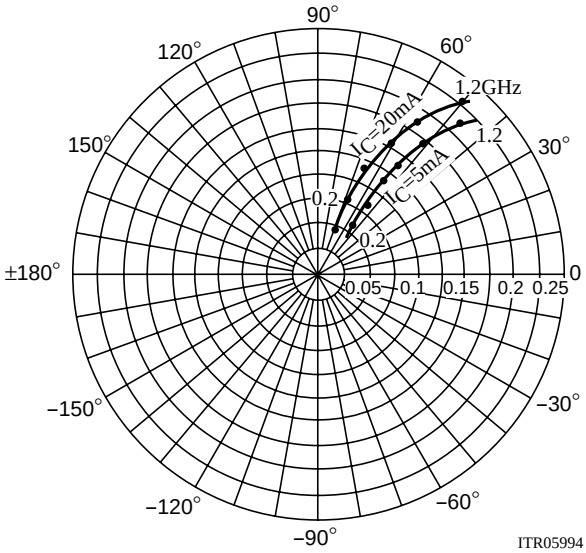
S parameter

S11e : V_{CE}=10V
f=200MHz step



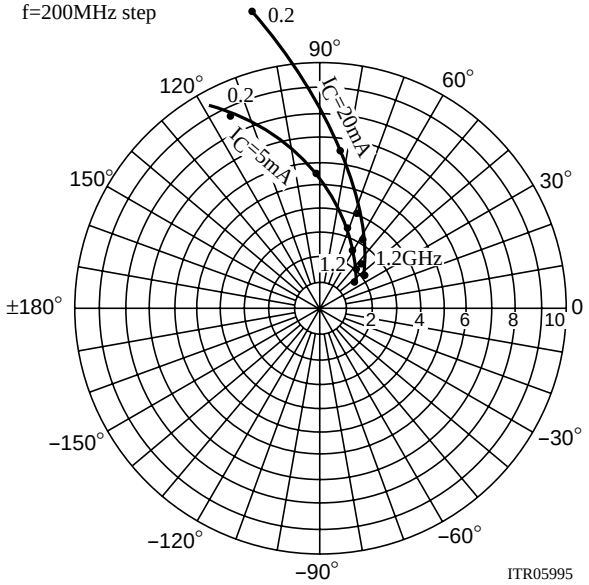
ITR05993

S12e : V_{CE}=10V
f=200MHz step



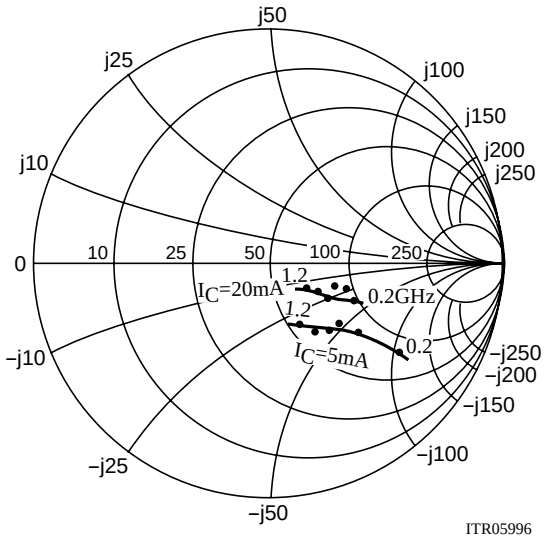
ITR05994

S21e : V_{CE}=10V
f=200MHz step



ITR05995

S22e : V_{CE}=10V
f=200MHz step



ITR05996