Ordering number:EN1944B

NPN Epitaxial Planar Silicon Transistor

2SC3771

UHF, VHF Oscillator Mixer, HF Amplifier Applications

Applications

· UHF/VHF frequency converters, local oscillators, HF amplifiers.

Features

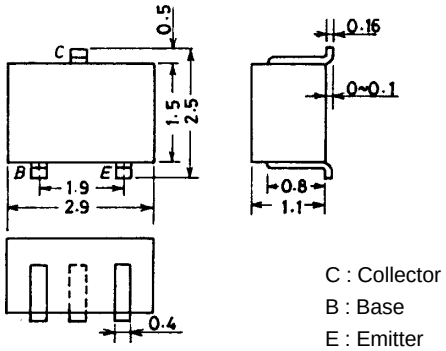
· High power gain : PG=10dB typ (f=0.9GHz).
PG=16dB typ (f=0.4GHz).
· Small noise figure : NF=3.5dB typ (f=0.9GHz).
· High cutoff frequency : f_T=2.2GHz typ.

Package Dimensions

unit:mm

2018A

[2SC3771]



C : Collector
B : Base
E : Emitter
SANYO : CP

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		30	V
Collector-to-Emitter Voltage	V_{CEO}		20	V
Emitter-to-Base Voltage	V_{EBO}		3	V
Collector Current	I_C		30	mA
Base Current	I_B		10	mA
Collector Dissipation	P_C		250	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}=20V, 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=5mA	40*		200*	
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=5mA	1.4	2.2		GHz
Output Capacitance	C_{ob}	V_{CB}=10V, f=1MHz		0.7	1.1	pF
Reverse Transfer Capacitance	C_{re}	V_{CB}=10V, f=1MHz		0.5		pF

* : The 2SC3771 is classified by 5mA h_{FE} as follows :

40	2	80	60	3	120	100	4	200

(Note) Marking : KY
h_{FE} rank : 2, 3, 4

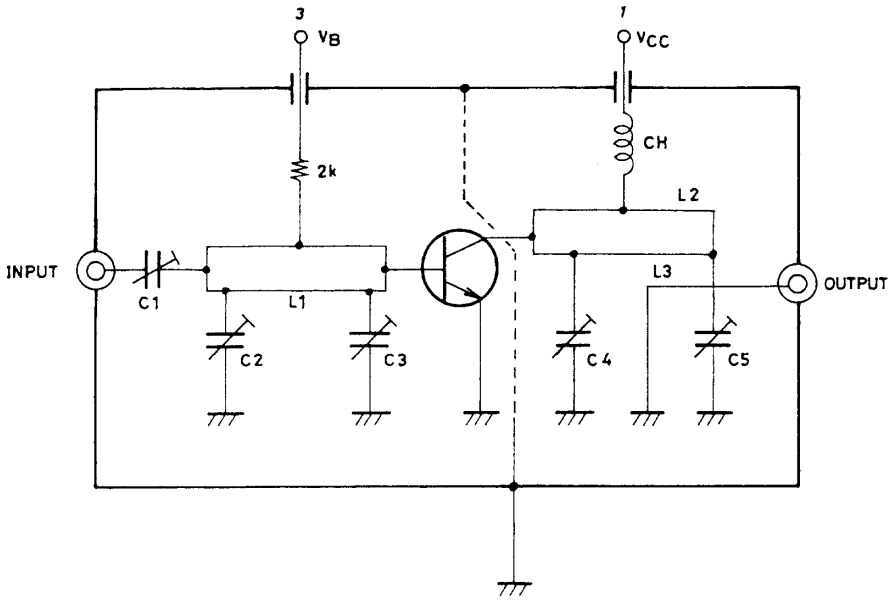
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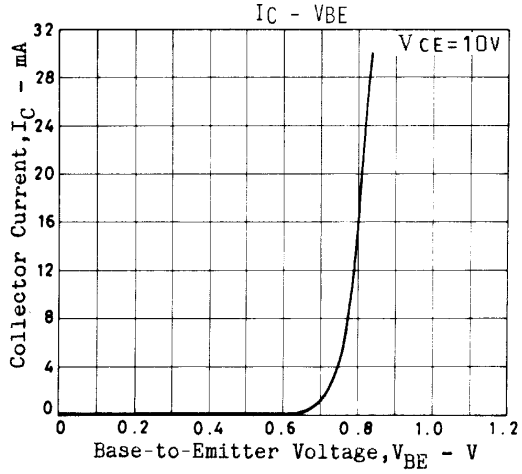
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Power Gain	PG	V_{CE}=10V, I_C=10mA, f=0.4GHz		16		dB
		V_{CE}=10V, I_C=10mA, f=0.9GHz		10		dB
Noise Figure	NF	V_{CE}=10V, I_C=3mA, f=0.9GHz, See specified Test Circuit.		3.5		dB

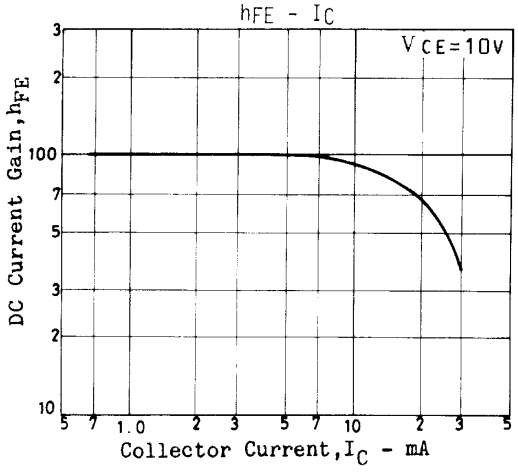
PG, NF Test Circuit

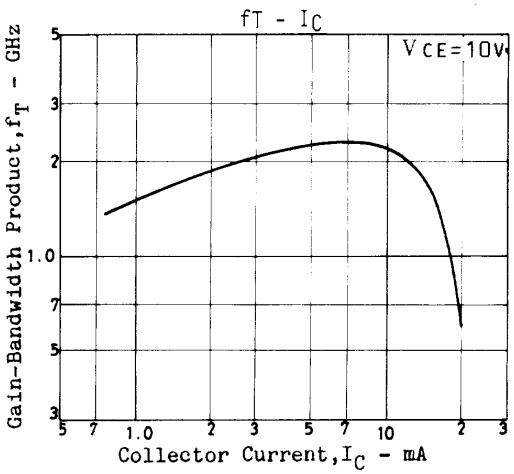


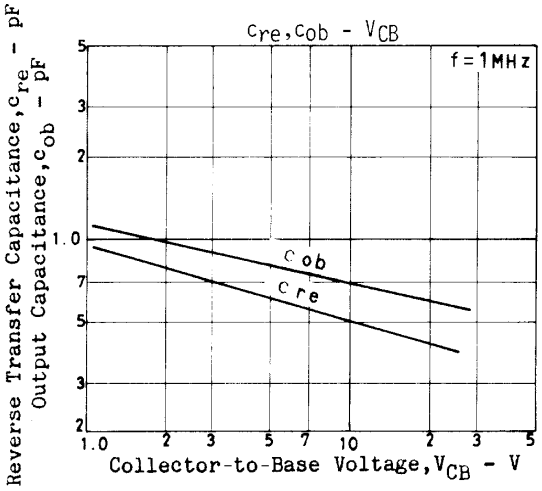
Unit (resistance : Ω)

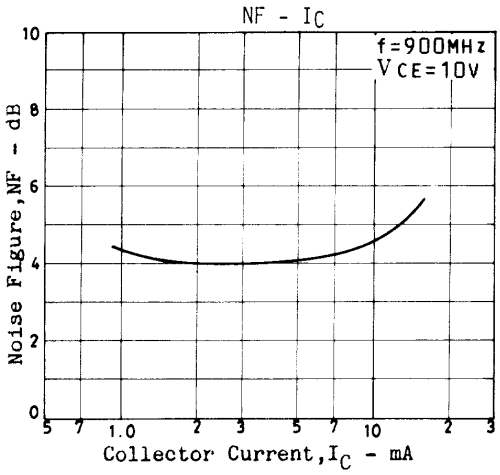
	900MHz
C1	~5pF
C2	~10pF
C3	~10pF
C4	~10pF
C5	~10pF
L1	W ≈ 1.5mm, l ≈ 25mm Strip line
L2	W ≈ 4mm, l ≈ 25mm Strip line
L3	0.5ϕ, l ≈ 40mm
CH	2t+bead core

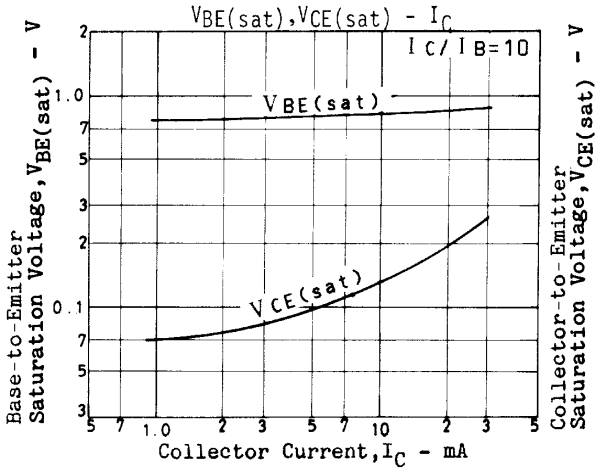


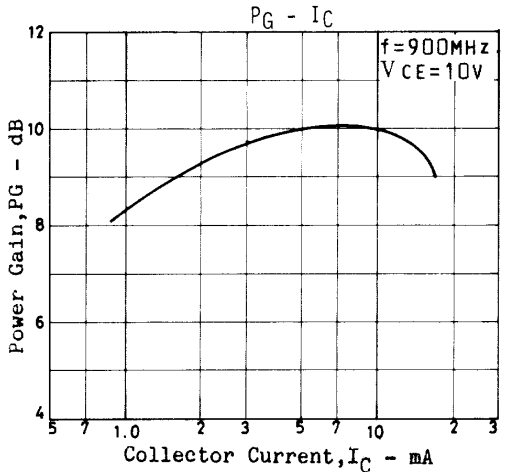


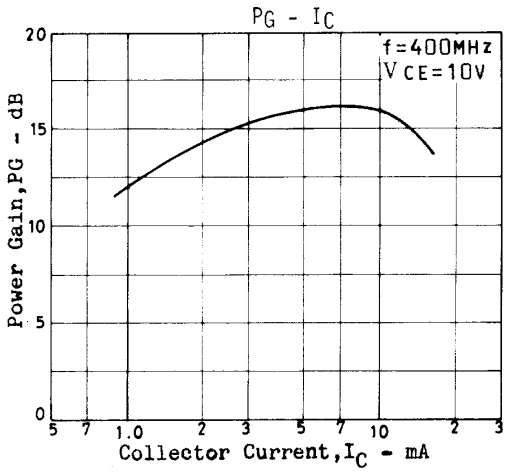

fT - IC
VCE=10V
Gain-Bandwidth Product,fT - GHz
Collector Current,IC - mA

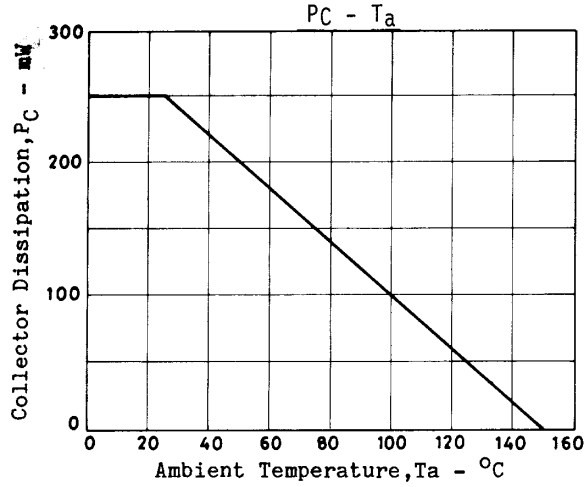

Cre,Cob - VCB
f=1MHz
Reverse Transfer Capacitance,Cre - pF
Output Capacitance,Cob - pF
Cob
Cre
Collector-to-Base Voltage,VCB - V


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

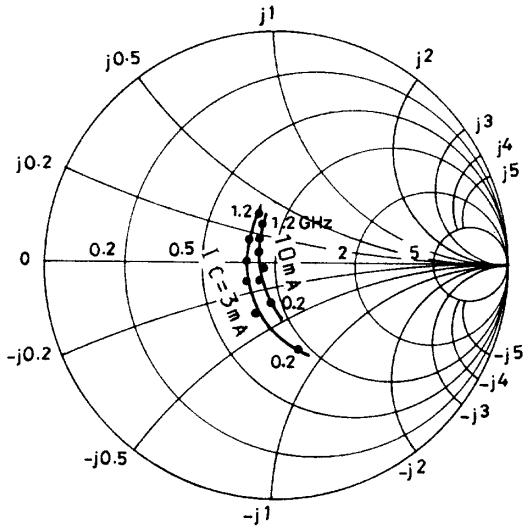

VBE(sat),VCE(sat) - IC
IC/IB=10
VBE(sat)
VCE(sat)
Base-to-Emitter Saturation Voltage,VBE(sat) - V
Collector-to-Emitter Saturation Voltage,VCE(sat) - V
Collector Current,IC - mA


PG - IC
f=900MHz
VCE=10V
Power Gain,PG - dB
Collector Current,IC - mA

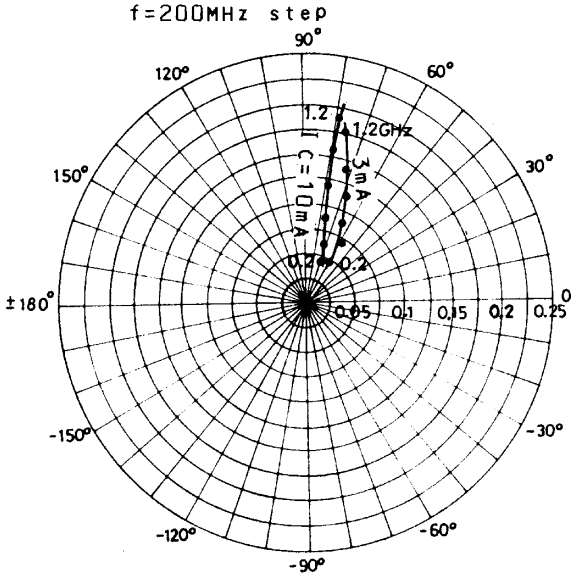

PG - IC
f=400MHz
VCE=10V
Power Gain,PG - dB
Collector Current,IC - mA


PC - Ta
Collector Dissipation,PC - mW
Ambient Temperature,Ta - °C

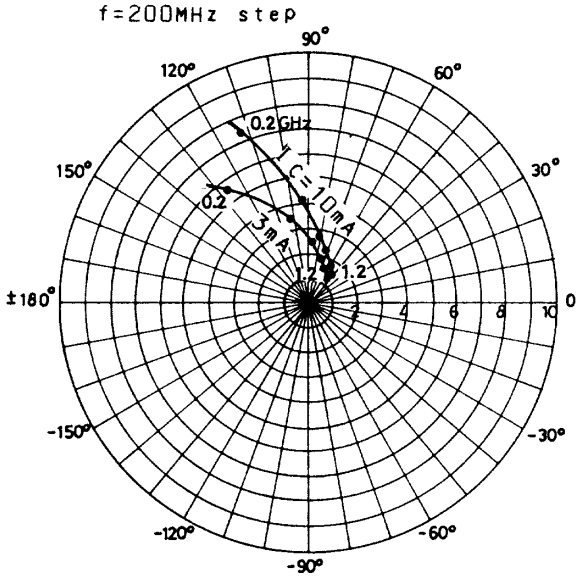
S11e : VCE=10V
f=200MHz step



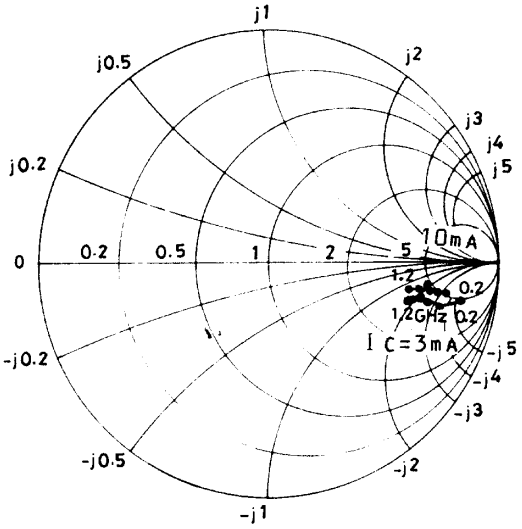
S12e : VCE=10V
f=200MHz step



S21e : VCE=10V
f=200MHz step



S22e : VCE=10V
f=200MHz step



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