Ordering number: EN 1950B

SANYO

No.1950B

2SC3777

NPN Epitaxial Planar Silicon Transistor

UHF Oscillator, Mixer, Low-Noise Amp, Wide-Band Amp Applications

Applications

- UHF frequency converters, local oscillators, low-noise amplifieres, wide-band amplifiers

Features

- Small noise figure: NF=3.0dB typ(f=0.9GHz).
- High power gain: MAG=12dB typ(f=0.9GHz).
- High cutoff frequency: f_T=3.5GHz typ.

Absolute Maximum Ratings at Ta=25°C

			unit
Collector to Base Voltage	V_{CBO}	25	V
Collector to Emitter Voltage	V_{CEO}	16	V
Emitter to Base Voltage	V_{EBO}	3	V
Collector Current	I_C	50	mA
Base Current	I_B	20	mA
Collector Dissipation	P_C	400	mW
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55 to +150	°C

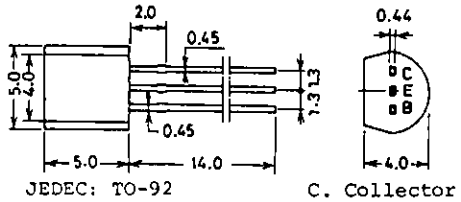
Electrical Characteristics at Ta=25°C

			min	typ	max	unit
Collector Cutoff Current	I_{CBO}	V_{CB}=16V,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	1.8	3.5		GHz
Output Capacitance	c_{ob}	V_{CB}=10V,f=1MHz		0.7	1.0	pF
Reverse Transfer Capacitance	c_{re}	V_{CB}=10V,f=1MHz		0.45		pF
Forward Transfer Gain	$\|S21e\|^2$	V_{CE}=10V,I_C=10mA,f=0.9GHz	7.5	9		dB
Maximum Available Power Gain	MAG	V_{CE}=10V,I_C=10mA,f=0.9GHz		12		dB
Noise Figure	NF	V_{CE}=10V,I_C=3mA,f=0.9GHz, See specified Test Circuit.		3.0	5.0	dB

*: The 2SC3777 is classified by 5mA h_{FE} as follows:

40 C 80	60 D 120	100 E 200

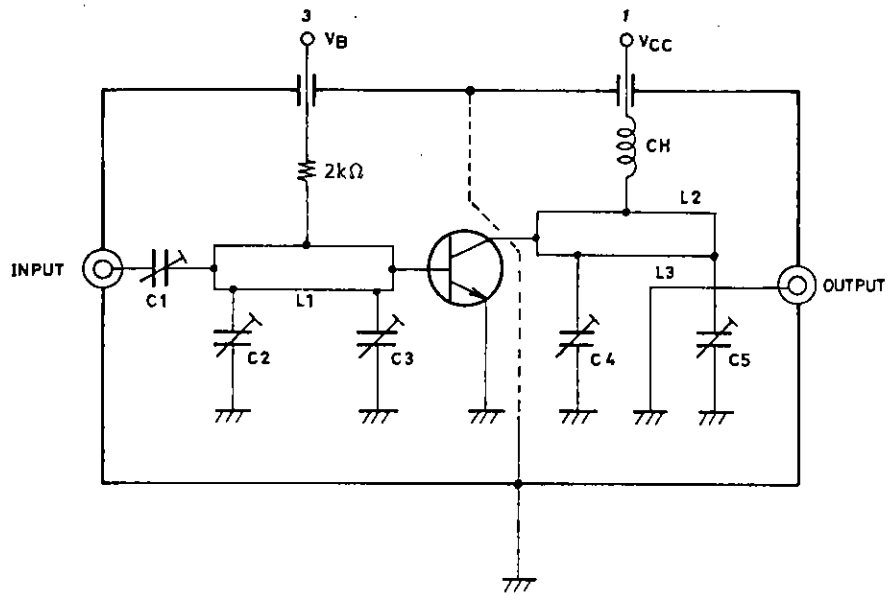
Package Dimensions 2004A
(unit: mm)



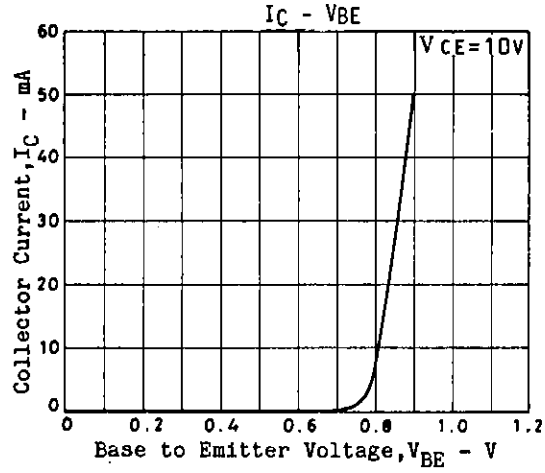
JEDEC: TO-92
EIAJ : SC-43
SANYO: NP

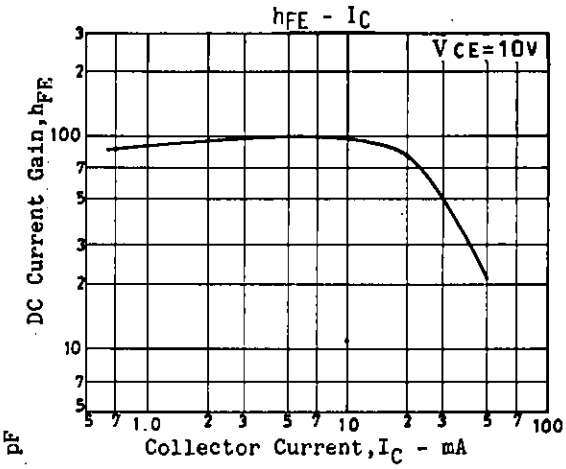
C. Collector
E. Emitter
B. Base

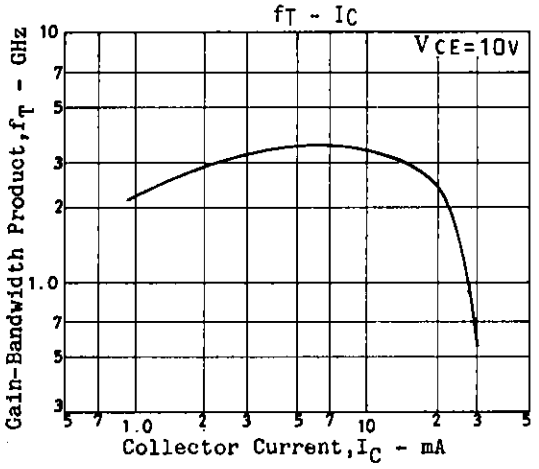
NF Test Circuit

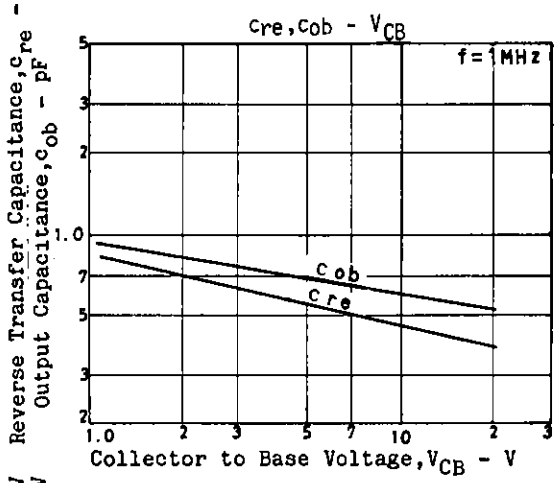


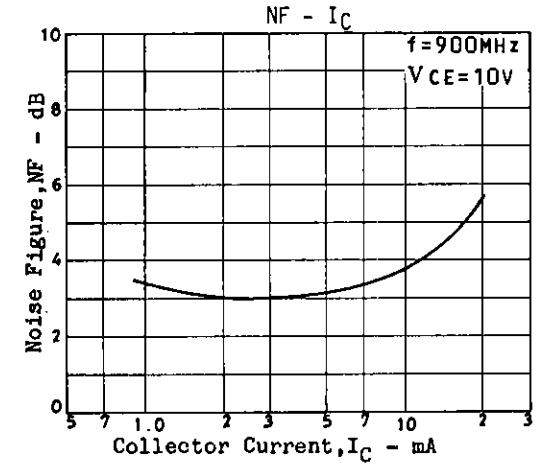
	900MHz
C1	~5pF
C2	~10pF
C3	~10pF
C4	~10pF
C5	~10pF
L1	W≒1.5mm, l≒25mm strip line
L2	W≒4mm, l≒25mm strip line
L3	0.5φ, l≒40mm
CH	2t+bead core

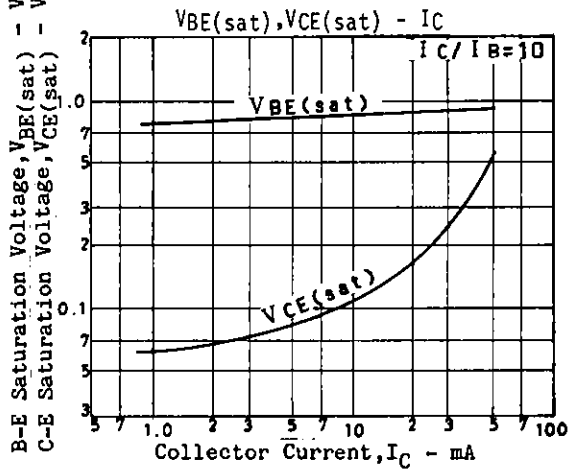

IC - VBE
VCE=10V
Collector Current, IC - mA
Base to Emitter Voltage, VBE - V

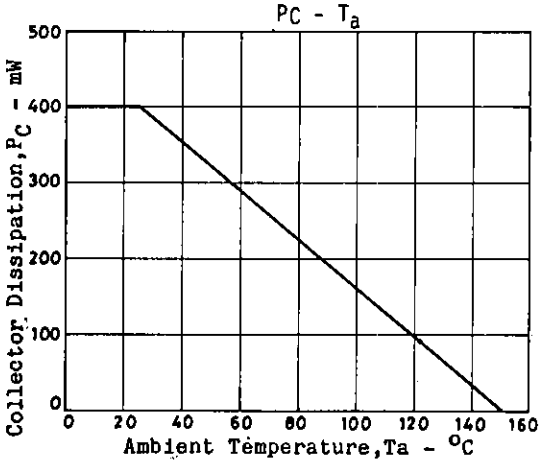

hFE - IC
VCE=10V
DC Current Gain, hFE
Collector Current, IC - mA


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

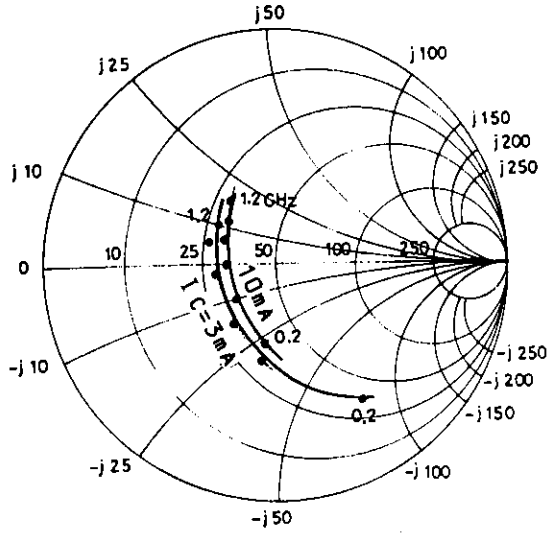

Cre, Cob - VCB
f=1MHz
Reverse Transfer Capacitance, Cre - pF
Output Capacitance, Cob - pF
Cob
Cre
Collector to Base Voltage, VCB - V


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

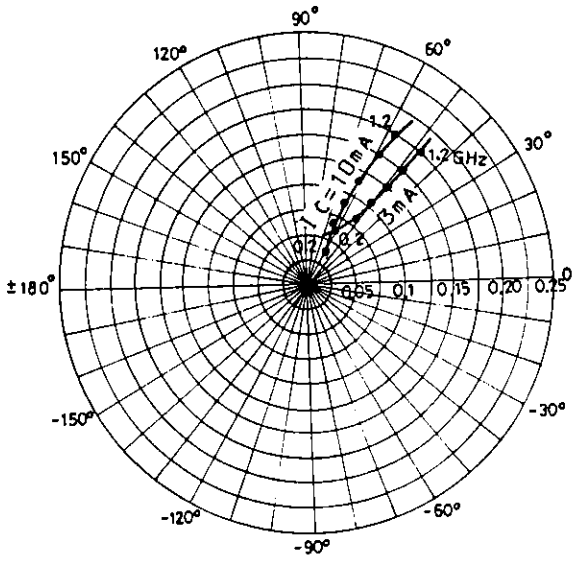

VBE(sat), VCE(sat) - IC
IC/IB=10
B-E Saturation Voltage, VBE(sat) - V
C-E Saturation Voltage, VCE(sat) - V
VBE(sat)
VCE(sat)
Collector Current, IC - mA


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

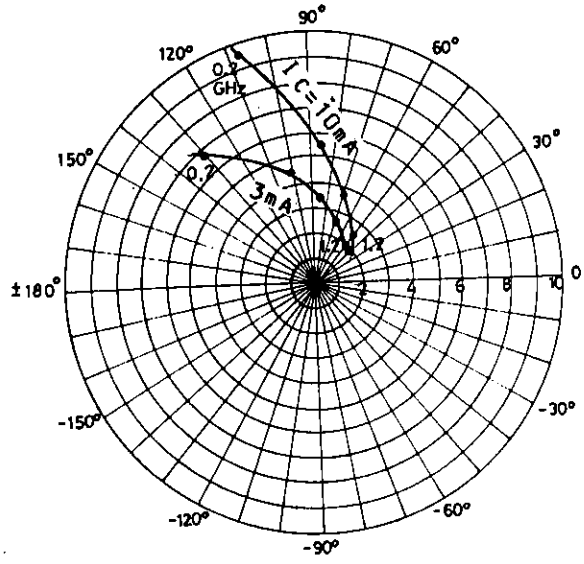
S11e : VCE=10V
f=200MHz step



S12e : VCE=10V
f=200MHz step



S21e : VCE=10V
f=200MHz step



S22e : VCE=10V
f=200MHz step