



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 amplifiers, wide-band amplifiers

Features

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

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

			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	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics at $T_a=25^\circ\text{C}$

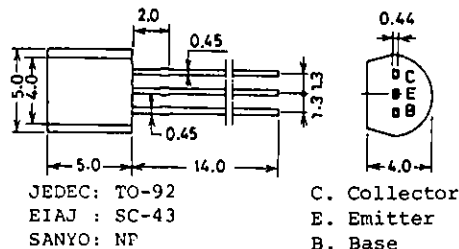
		min	typ	max	unit
Collector Cutoff Current	I_{CBO} $V_{CB}=16\text{V}, I_E=0$			1.0	μA
Emitter Cutoff Current	I_{EBO} $V_{EB}=2\text{V}, I_C=0$			10	μA
DC Current Gain	h_{FE} $V_{CE}=10\text{V}, I_C=5\text{mA}$	40*		200*	
Gain-Bandwidth Product	f_T $V_{CE}=10\text{V}, I_C=5\text{mA}$	1.8	3.5		GHz
Output Capacitance	c_{ob} $V_{CB}=10\text{V}, f=1\text{MHz}$		0.7	1.0	pF
Reverse Transfer Capacitance	c_{re} $V_{CB}=10\text{V}, f=1\text{MHz}$		0.45		pF
Forward Transfer Gain	$ S_{21e} $ $V_{CE}=10\text{V}, I_C=10\text{mA}, f=0.9\text{GHz}$	7.5	9		dB
Maximum Available Power Gain	MAG $V_{CE}=10\text{V}, I_C=10\text{mA}, f=0.9\text{GHz}$		12		dB
Noise Figure	NF $V_{CE}=10\text{V}, I_C=3\text{mA}, f=0.9\text{GHz}$	3.0	5.0		dB

See specified Test Circuit.

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

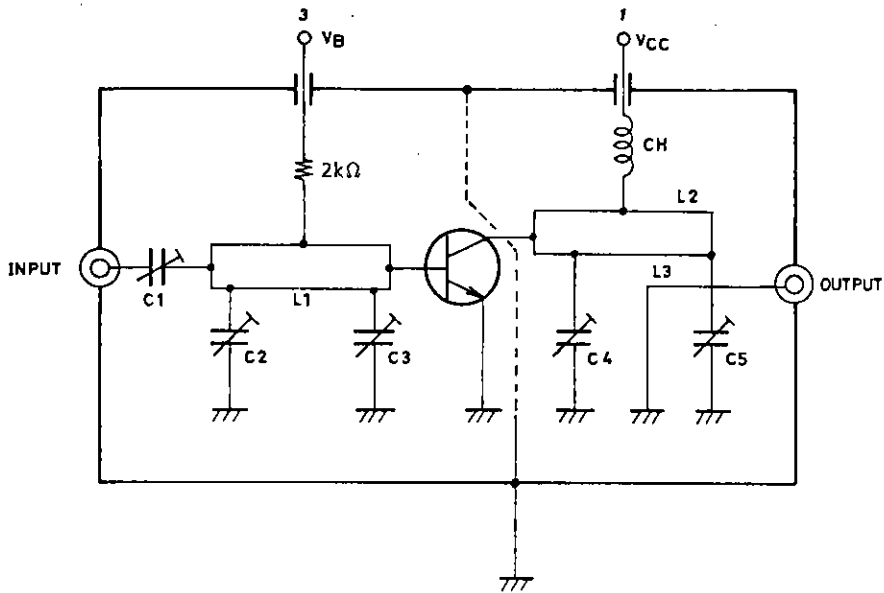
40	C	80	60	D	120	100	E	200
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Package Dimensions 2004A
(unit: mm)

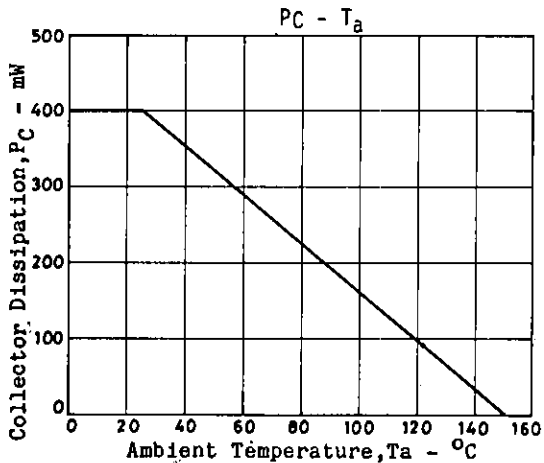
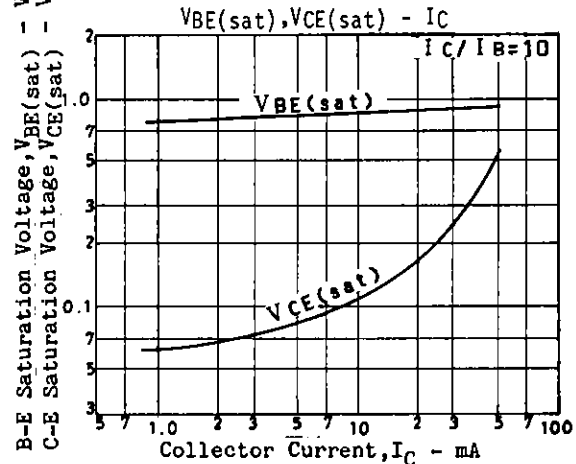
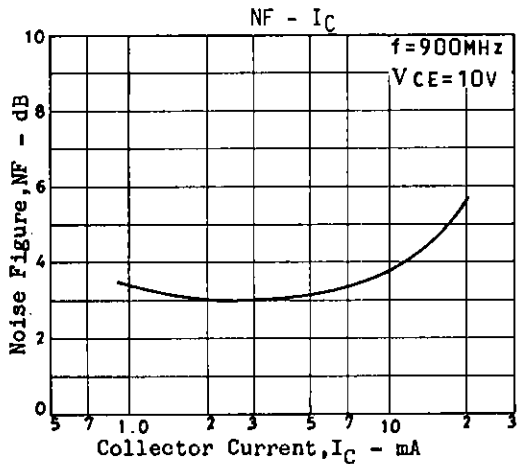
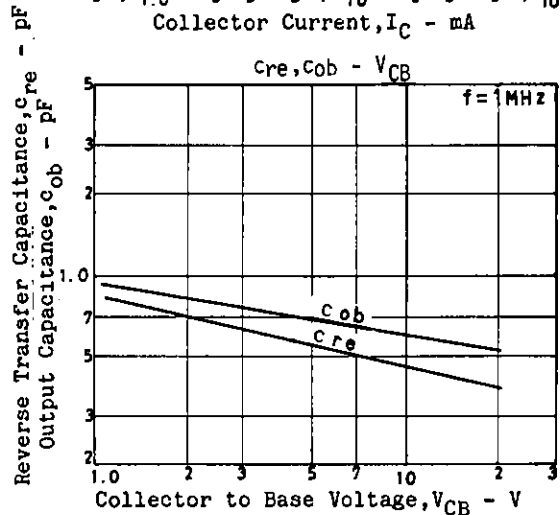
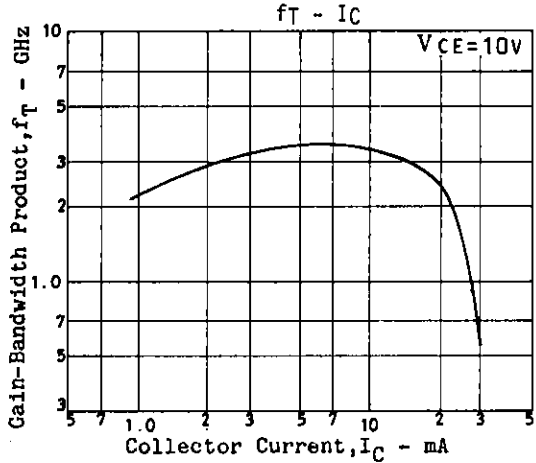
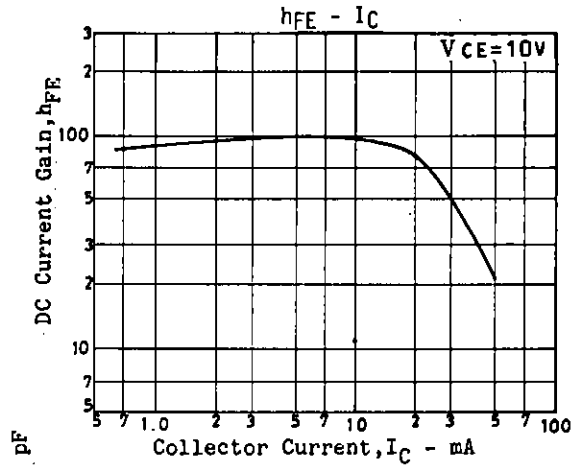
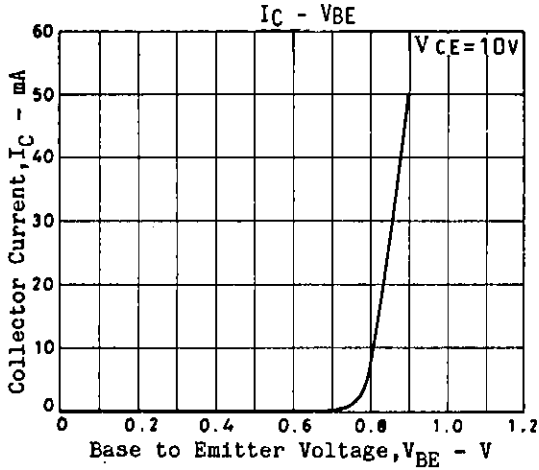


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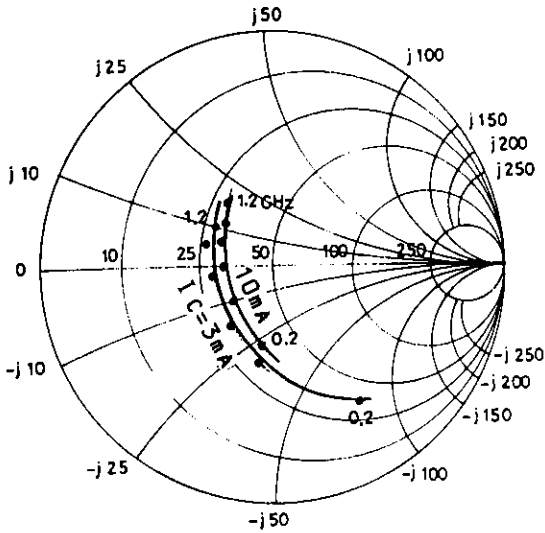
NF Test Circuit



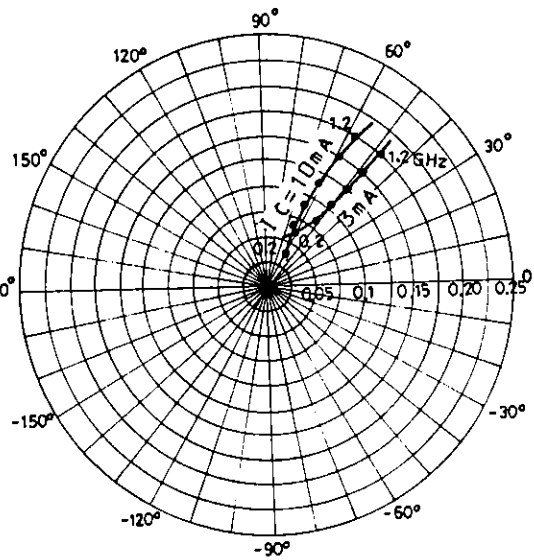
900MHz	
C1	~5 pF
C2	~10 pF
C3	~10 pF
C4	~10 pF
C5	~10 pF
L1	W ≐ 1.5mm, l ≐ 25mm strip line
L2	W ≐ 4mm, l ≐ 25mm strip line
L3	0.5 φ, l ≐ 40mm
CH	2t+bead core



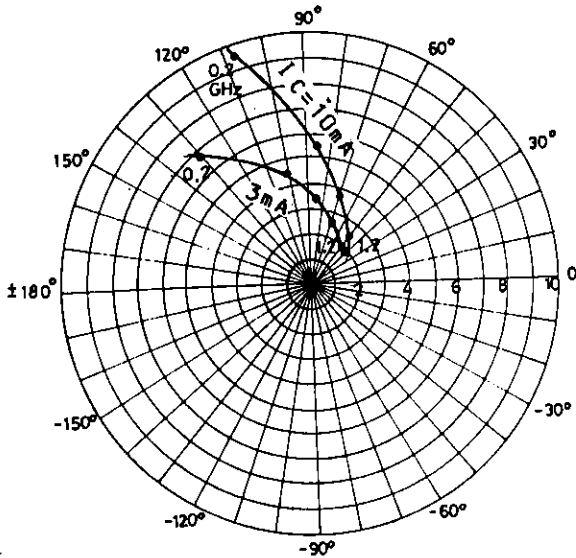
S11e : V_{CE}=10V
f=200MHz step



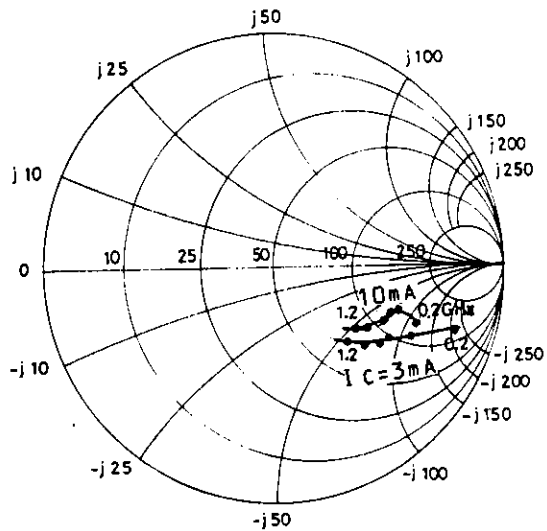
S12e : V_{CE}=10V
f=200MHz step



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



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



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