

<b>SANYO</b>	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  $T_a=25^\circ\text{C}$**

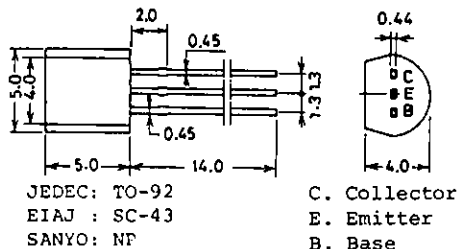
		min	typ	max	unit
Collector Cutoff Current	$I_{CBO}$ $V_{CB}=16\text{V}, I_E=0$			1.0	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$ $V_{EB}=2\text{V}, I_C=0$			10	$\mu\text{A}$
DC Current Gain	$h_{FE}$ $V_{CE}=10\text{V}, I_C=5\text{mA}$	40*		200*	
Gain-Bandwidth Product	$f_T$ $V_{CE}=10\text{V}, I_C=5\text{mA}$	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:

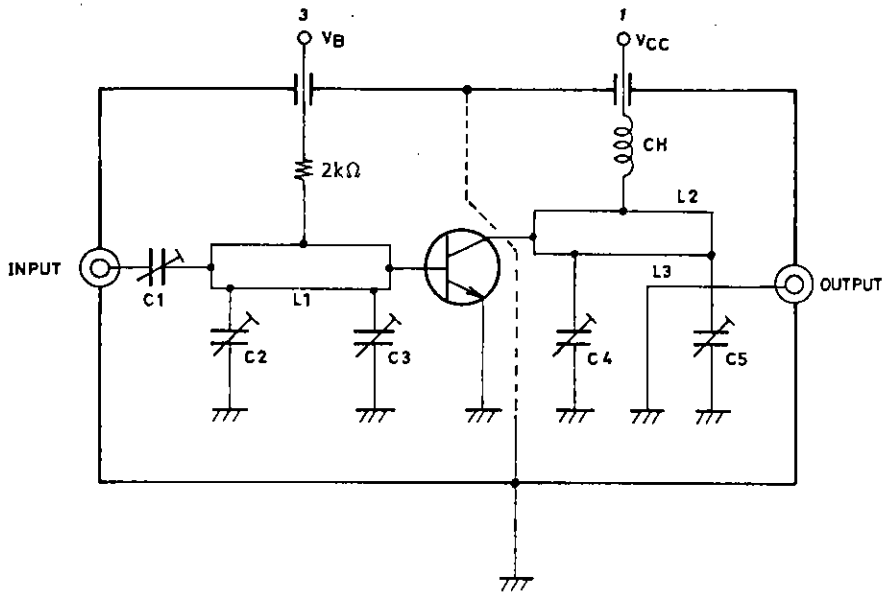
40	C	80	60	D	120	100	E	200
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**Package Dimensions 2004A**  
(unit: mm)

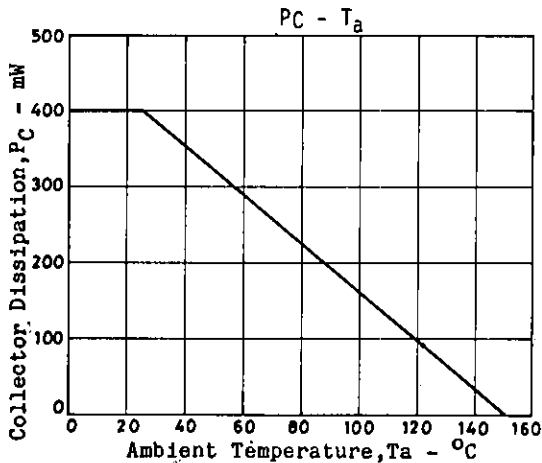
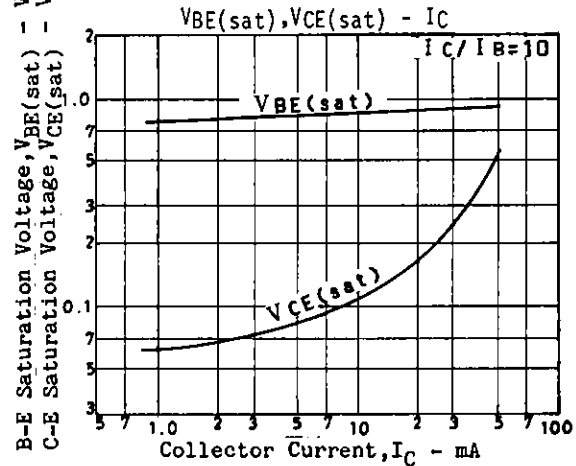
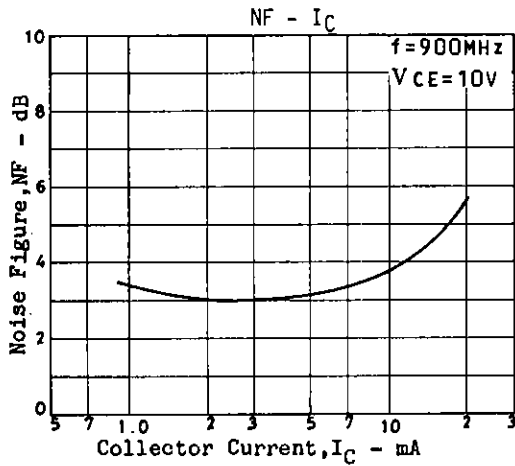
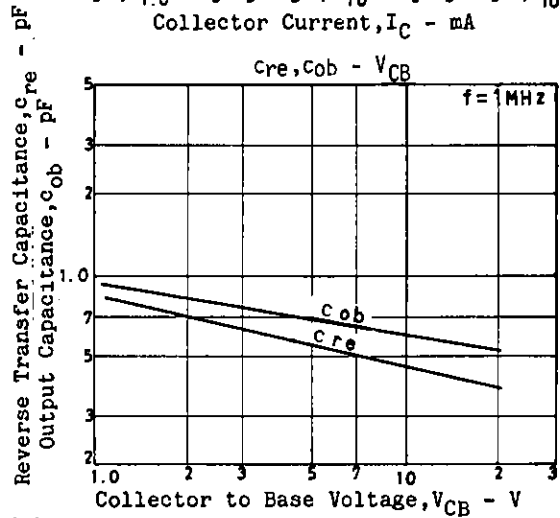
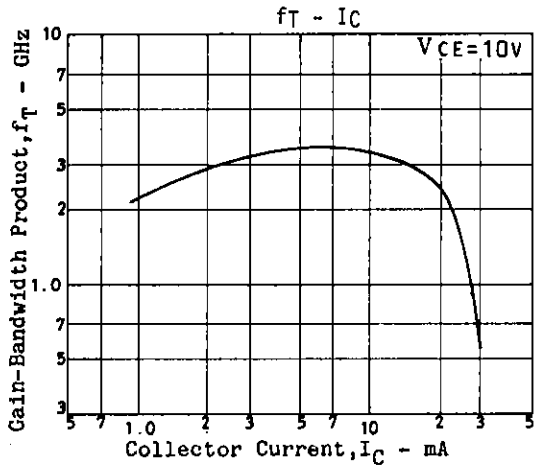
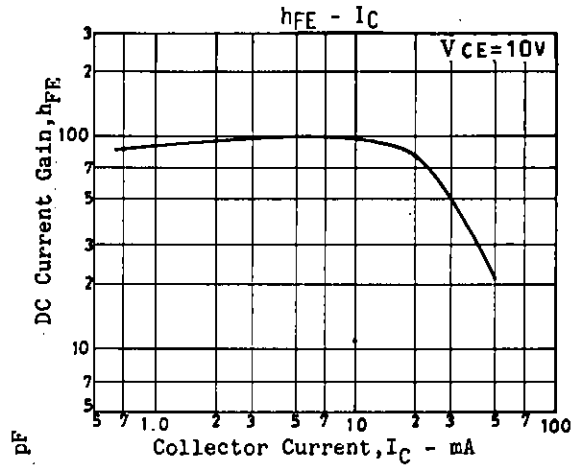
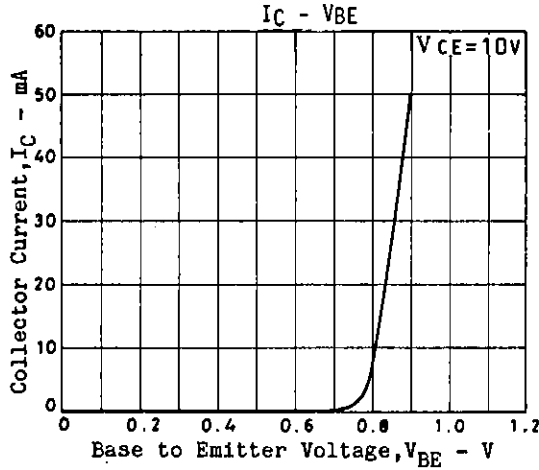


**SANYO Electric Co., Ltd. Semiconductor Business Headquarters**  
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

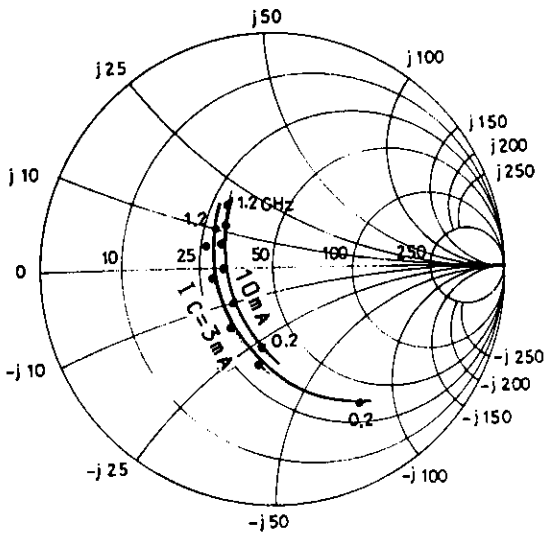
## NF Test Circuit



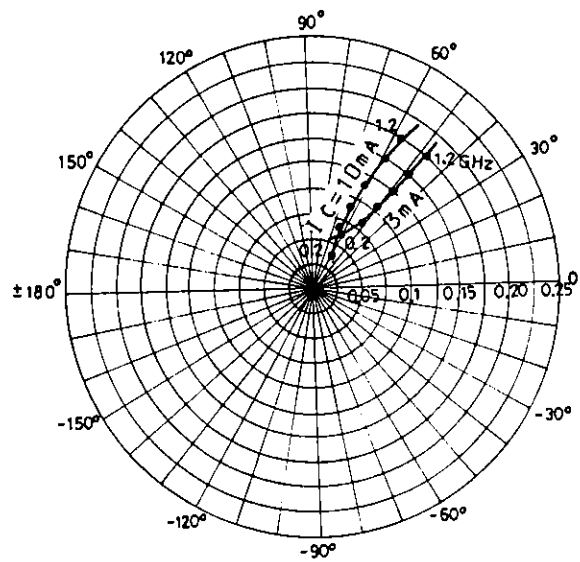
900MHz	
C 1	~5 pF
C 2	~10 pF
C 3	~10 pF
C 4	~10 pF
C 5	~10 pF
L 1	W ≐ 1.5mm, l ≐ 25mm strip line
L 2	W ≐ 4mm, l ≐ 25mm strip line
L 3	0.5 φ, l ≐ 40mm
CH	2t+bead core



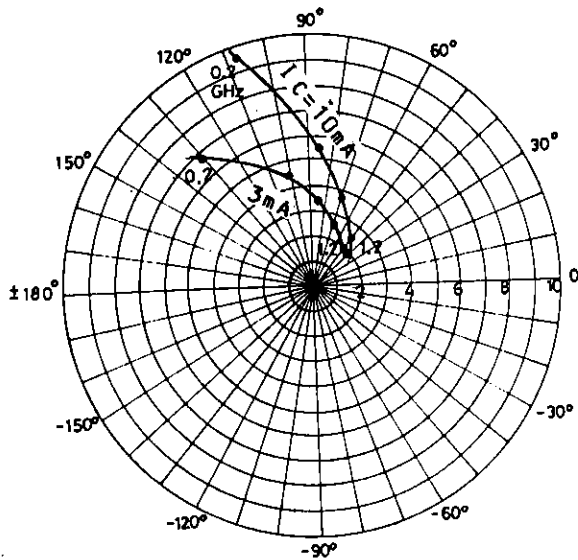
S11e :  $V_{CE}=10V$   
 $f=200MHz$  step



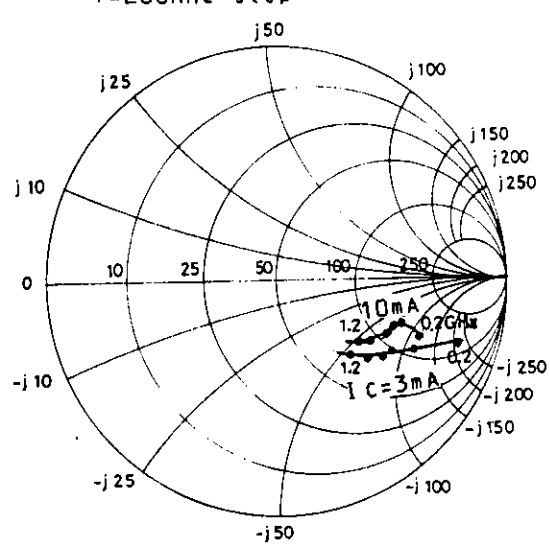
S12e :  $V_{CE}=10V$   
 $f=200MHz$  step



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



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



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