

SANYO	No.1947B	2SC3774
		NPN Epitaxial Planar Silicon Transistor UHF Low-Noise Amp, Wide-Band Amp Applications

Applications

- UHF low-noise amplifiers, wide-band amplifiers

Features

- Small noise figure: NF=2.2dB typ(f=0.9GHz).
- High power gain: MAG=14dB typ(f=0.9GHz).
- High cutoff frequency: $f_T=5.0\text{GHz}$ typ.

Absolute Maximum Ratings at Ta=25°C

			unit
Collector to Base Voltage	V_{CB0}	20	V
Collector to Emitter Voltage	V_{CE0}	12	V
Emitter to Base Voltage	V_{EB0}	3	V
Collector Current	I_C	70	mA
Base Current	I_B	20	mA
Collector Dissipation	P_C	250	mW
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	-55 to +150	°C

Electrical Characteristics at Ta=25°C

			min	typ	max	unit
Collector Cutoff Current	I_{CB0}	$V_{CB}=12\text{V}, I_E=0$			1.0	μA
Emitter Cutoff Current	I_{EB0}	$V_{EB}=2\text{V}, I_C=0$			10	μA
DC Current Gain	h_{FE}	$V_{CE}=10\text{V}, I_C=20\text{mA}$	40*		200*	
Gain-Bandwidth Product	f_T	$V_{CE}=10\text{V}, I_C=20\text{mA}$		5.0		GHz
Output Capacitance	c_{ob}	$V_{CB}=10\text{V}, f=1\text{MHz}$		0.75	1.0	pF
Reverse Transfer Capacitance	c_{re}	$V_{CB}=10\text{V}, f=1\text{MHz}$		0.5		pF
Forward Transfer Gain	$ S_{21e}^2 $	$V_{CE}=10\text{V}, I_C=20\text{mA}, f=0.9\text{GHz}$	8	10		dB
Maximum Available Power Gain	MAG	$V_{CE}=10\text{V}, I_C=20\text{mA}, f=0.9\text{GHz}$		14		dB
Noise Figure	NF	$V_{CE}=10\text{V}, I_C=5\text{mA}, f=0.9\text{GHz}$	2.2	4.5		dB

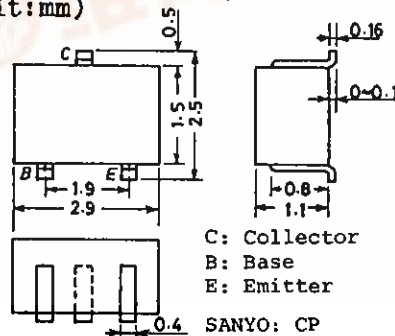
See specified Test Circuit.

*: The 2SC3774 is classified by 20mA h_{FE} as follows:

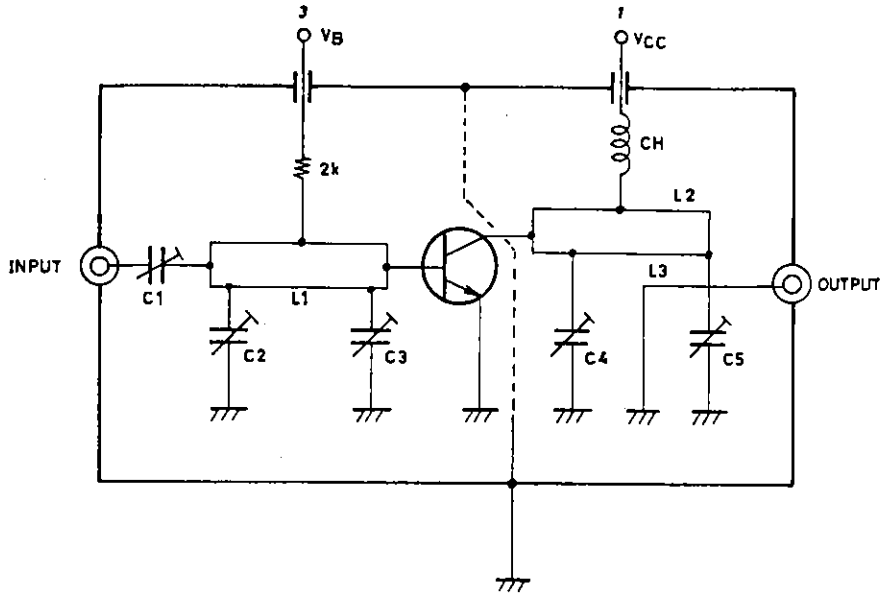
40	2	80	60	3	120	100	4	200
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(Note) Marking : NY
 h_{FE} rank : 2,3,4

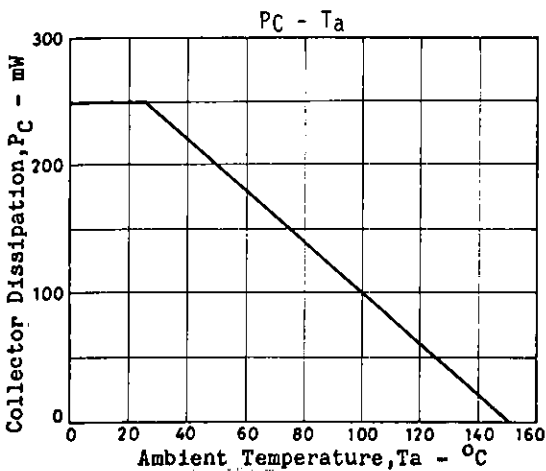
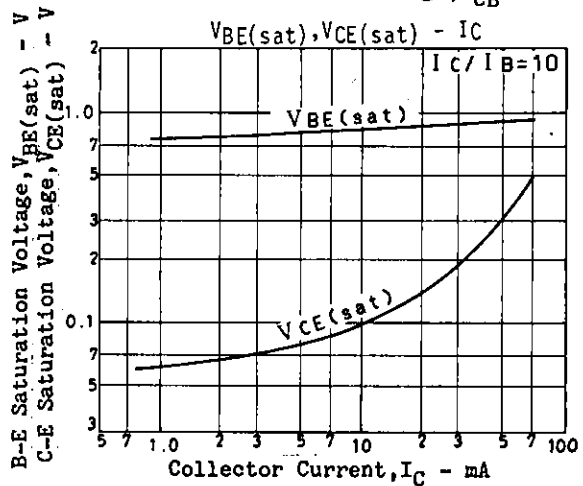
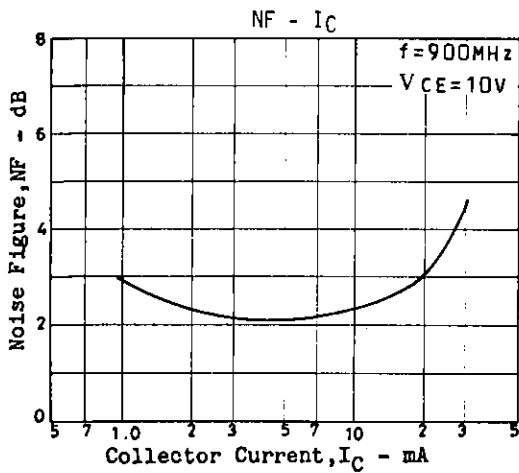
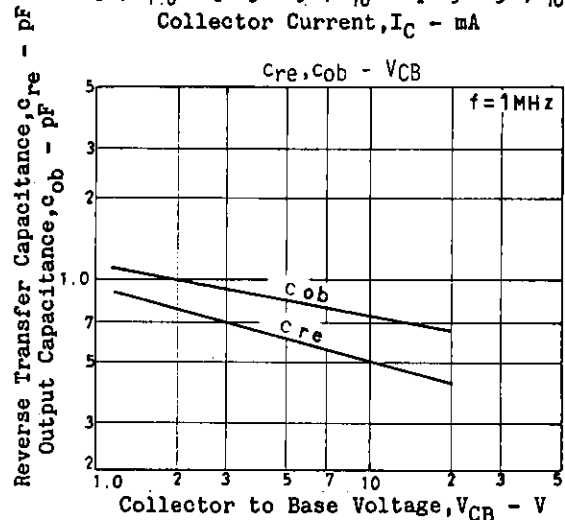
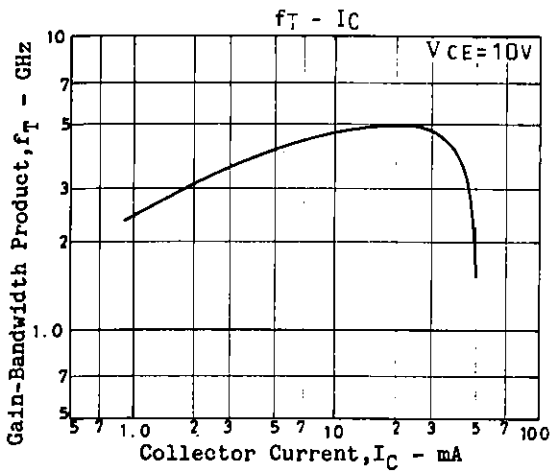
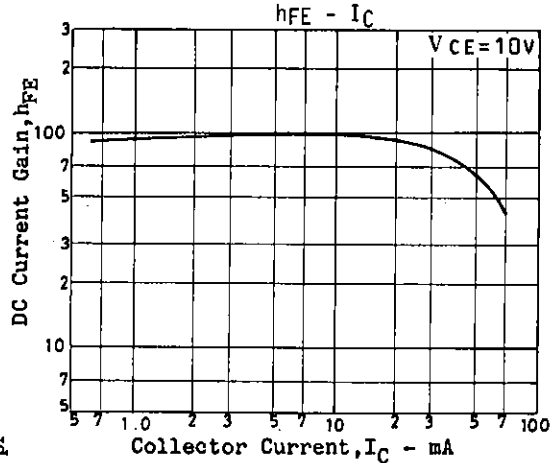
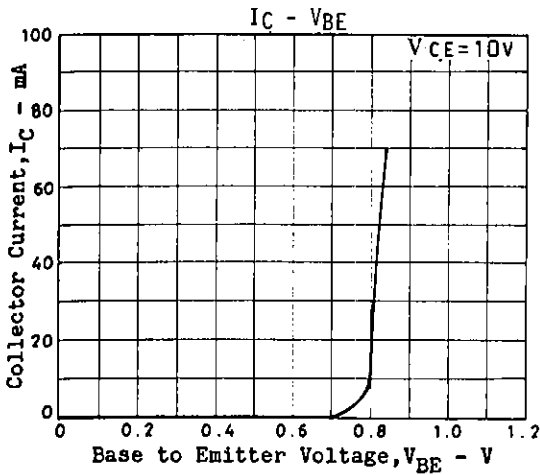
Package Dimensions 2018A
 (unit:mm)



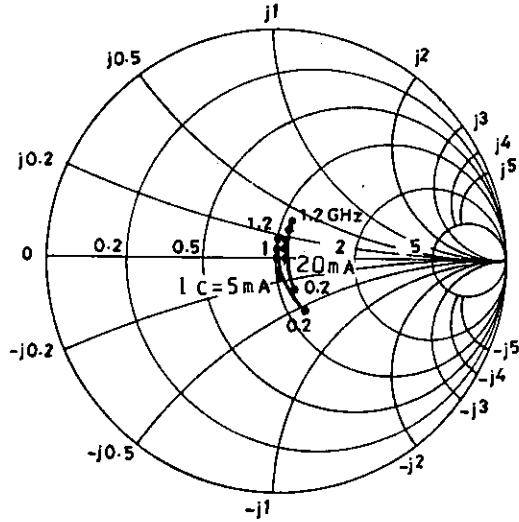
NF Test Circuit

Unit (Resistance : Ω)

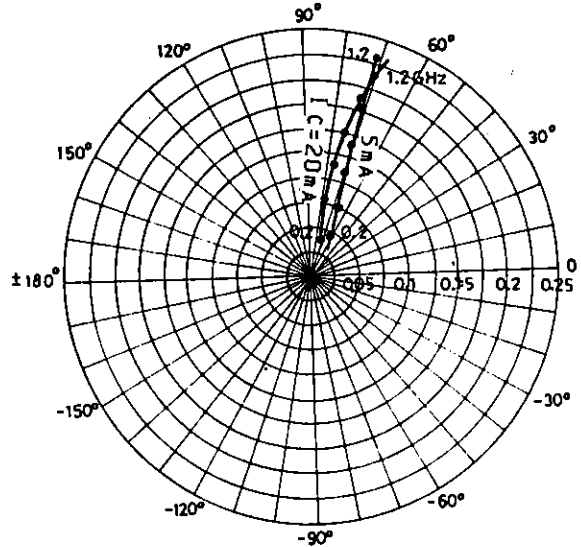
900MHz	
C1	~5 pF
C2	~10 pF
C3	~10 pF
C4	~10 pF
C5	~10 pF
L1	$W \doteq 1.5\text{mm}$, $l \doteq 25\text{mm}$ strip line
L2	$W \doteq 4\text{mm}$, $l \doteq 25\text{mm}$ strip line
L3	0.5ϕ , $l \doteq 40\text{mm}$
CH	2t+bead core



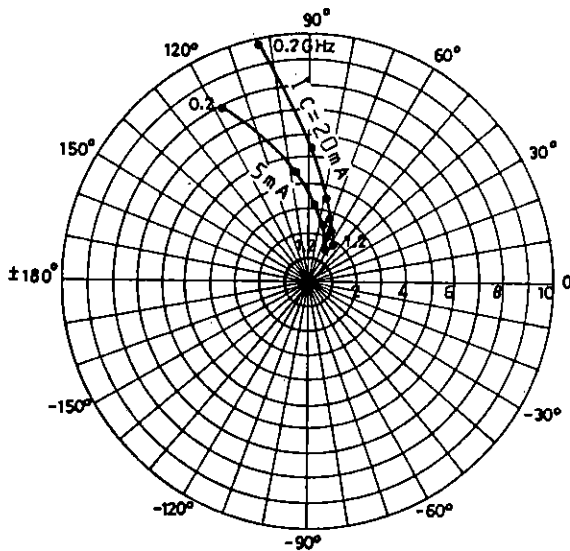
S11e : VCE=10V
f=200MHz step



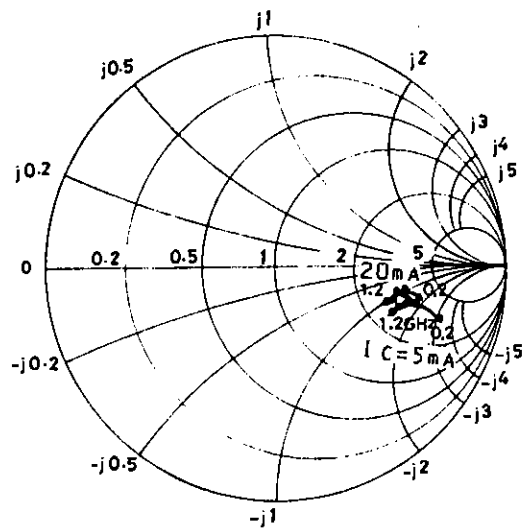
S12e : VCE=10V
f=200MHz step



S21e : VCE=10V
f=200MHz step



S22e : VCE=10V
f=200MHz step



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