

	No.1948B	2SC3775 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: $NF=1.5\text{dB typ}(f=0.9\text{GHz})$.
- High power gain: $MAG=14\text{dB typ}(f=0.9\text{GHz})$.
- High cutoff frequency: $f_T=5.0\text{GHz typ}$.

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

			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	100	mA
Base Current	I_B	30	mA
Collector Dissipation	P_C	250	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_{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}	$V_{CB}=10\text{V}, f=1\text{MHz}$		0.9		pF
Reverse Transfer Capacitance	c_{re}	$V_{CB}=10\text{V}, f=1\text{MHz}$		0.6		pF
Forward Transfer Gain	$ S_{21e} ^2$	$V_{CE}=10\text{V}, I_C=20\text{mA}, f=0.9\text{GHz}$	8.5	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	$V_{CE}=10\text{V}, I_C=5\text{mA}, f=0.9\text{GHz}$	1.5	3.0		dB

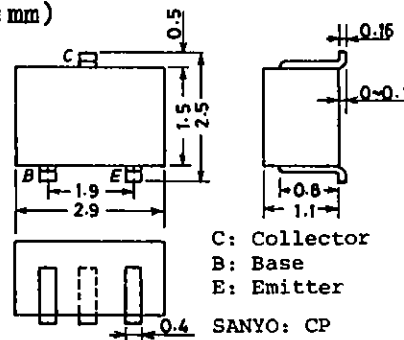
See specified Test Circuit.

*: The 2SC3775 is classified by 20mA h_{FE} as follows:

40	2	80	60	3	120	100	4	200
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(Note) Marking :0Y
 h_{FE} rank :2,3,4

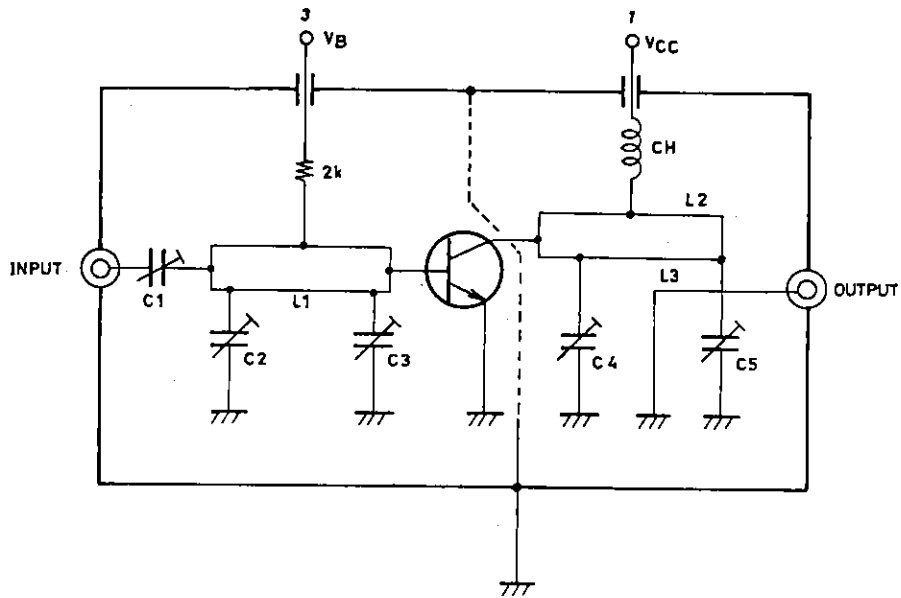
Package Dimensions 2018A (unit:mm)



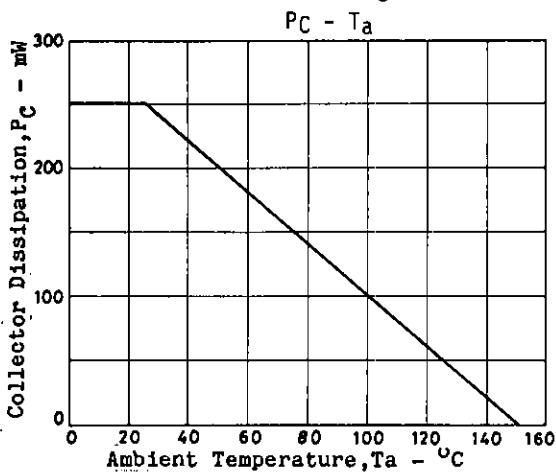
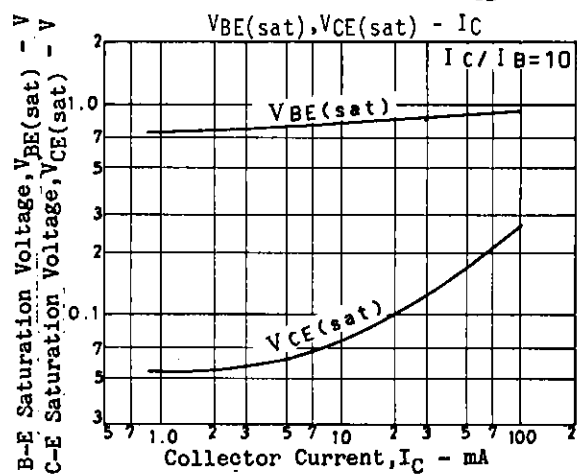
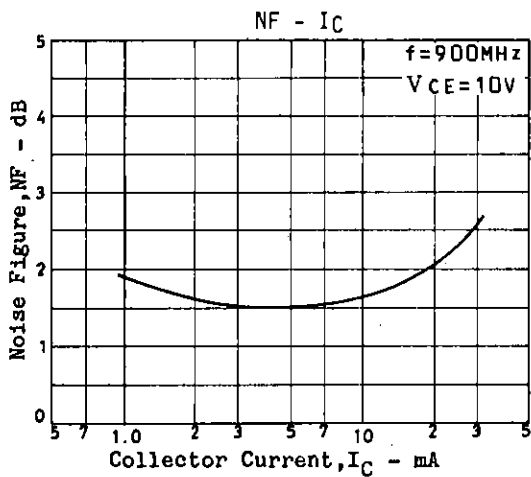
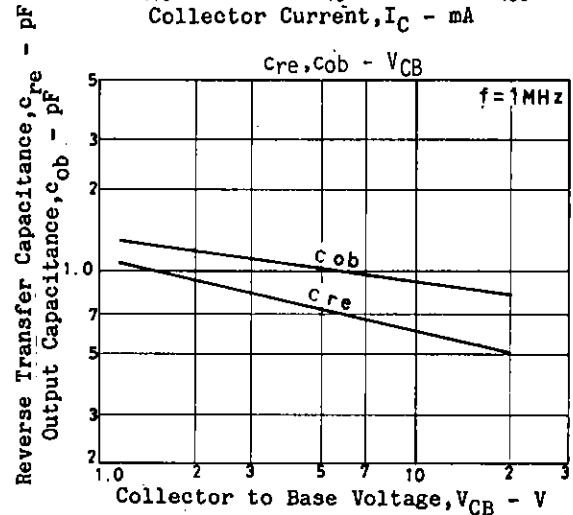
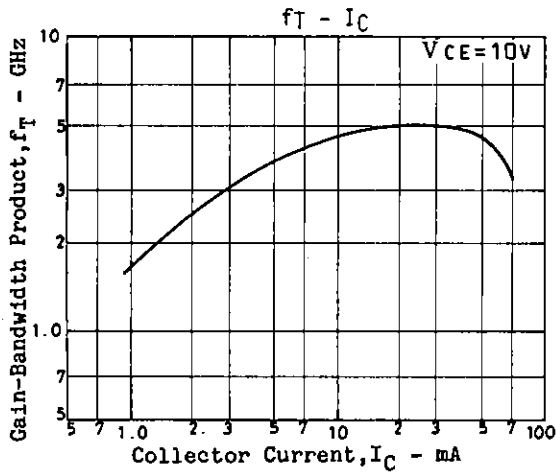
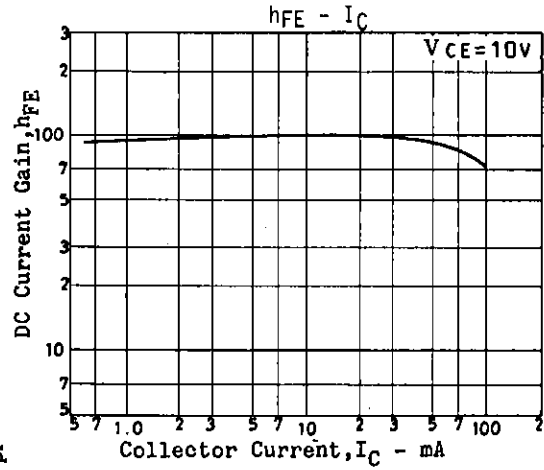
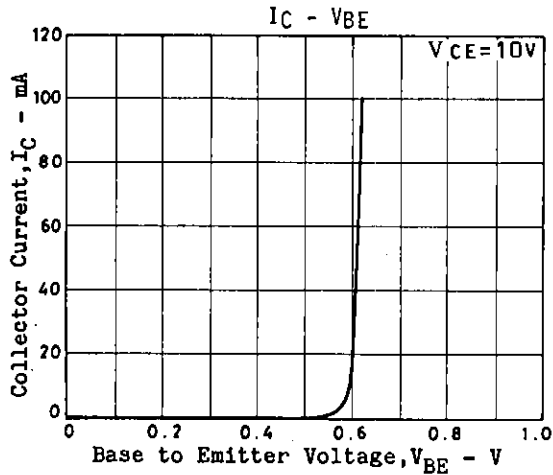
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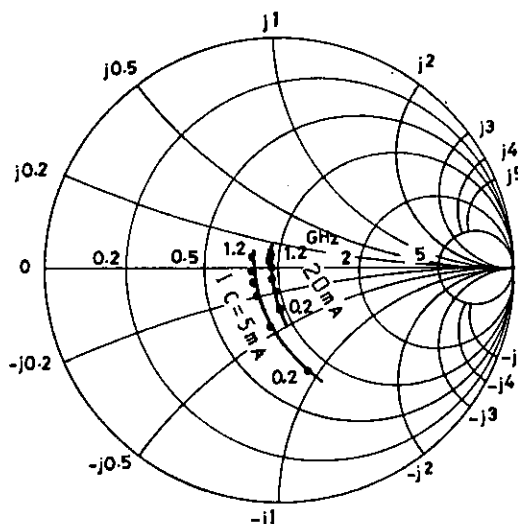
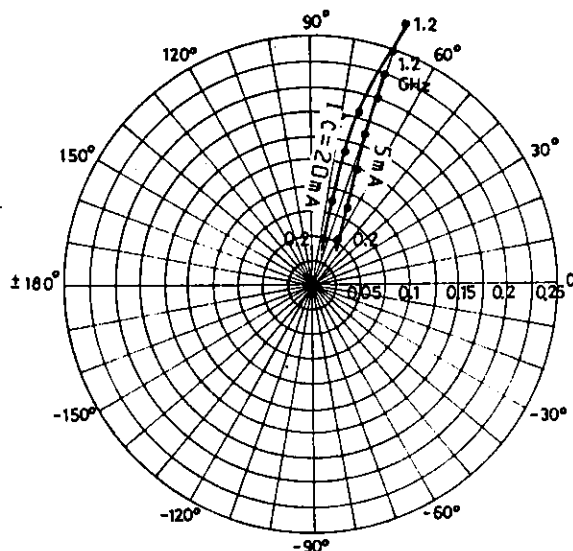
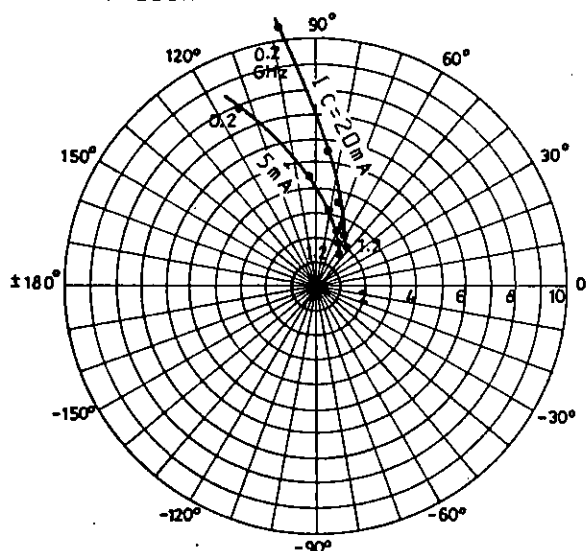
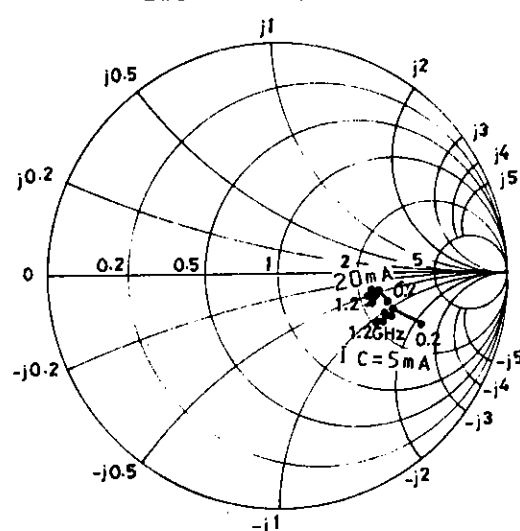
5318MO/5137KI/0185KI, TS No. 1948-1/4

NF Test Circuit

Unit (Resistance : Ω)

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



S11e : $V_{CE}=10V$ $f=200\text{MHz}$ stepS12e : $V_{CE}=10V$ $f=200\text{MHz}$ stepS21e : $V_{CE}=10V$ $f=200\text{MHz}$ stepS22e : $V_{CE}=10V$ $f=200\text{MHz}$ step

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