

SANYO	No.2758	2SC4405
		NPN Epitaxial Planar Silicon Transistor UHF, Low-Noise, Wide-Band Amplifier Applications

Applications

- UHF, low-noise amplifiers, wide-band amplifiers

Features

- High cutoff frequency : $f_T = 5.0\text{GHz typ}$
- High power gain : $\text{MAG} = 14\text{dB typ}$ ($f = 0.9\text{GHz}$)
- Small noise figure : $\text{NF} = 1.5\text{dB typ}$ ($f = 0.9\text{GHz}$)
- Very small-sized package permitting 2SC4405-applied sets to be made smaller and slimmer

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
Collector Dissipation	P_C	150	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	1.5	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		dB

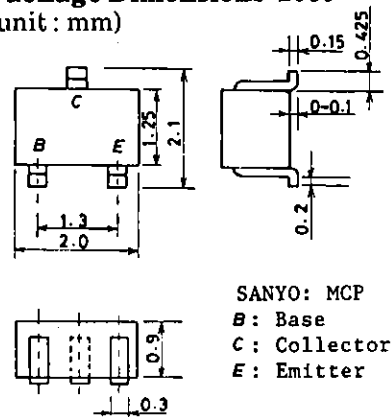
See specified Test Circuit.

* The 2SC4405 is classified by 20mA h_{FE} as follows:

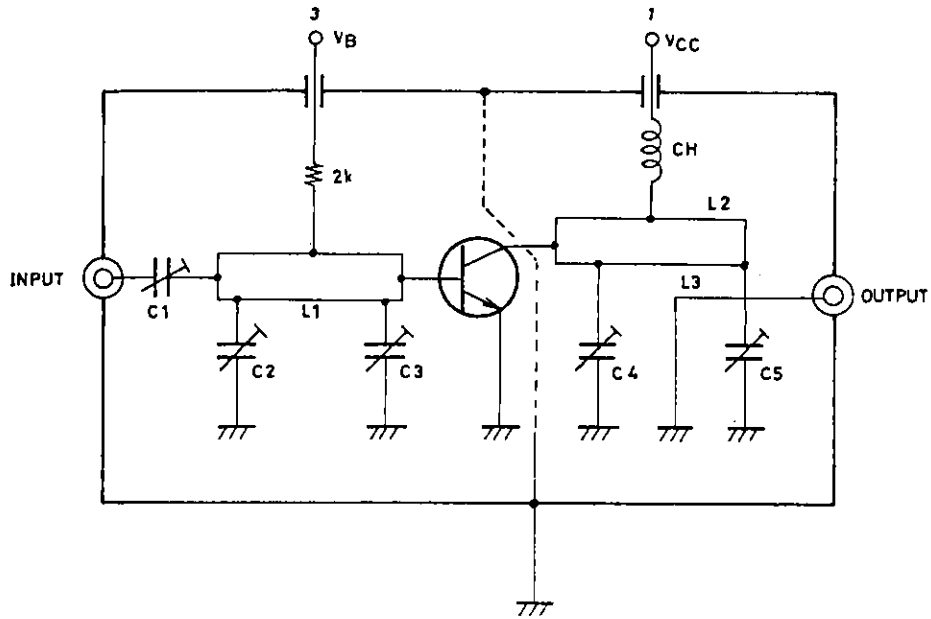
40	2	80	60	3	120	100	4	200
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- (Note) Marking: OY
 h_{FE} rank: 2,3,4
 • For CP package version, use the 2SC3775.

Package Dimensions 2059
(unit: mm)

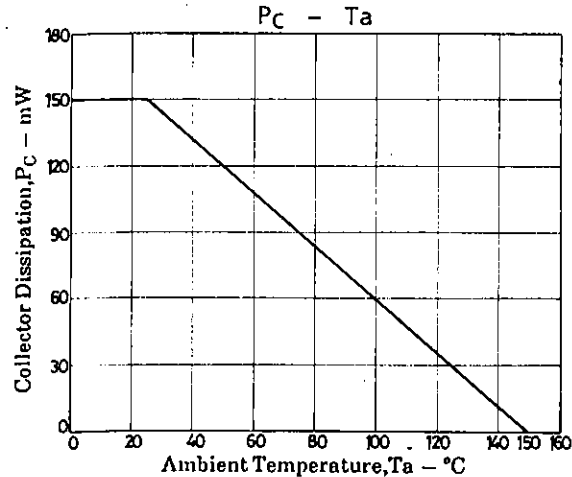
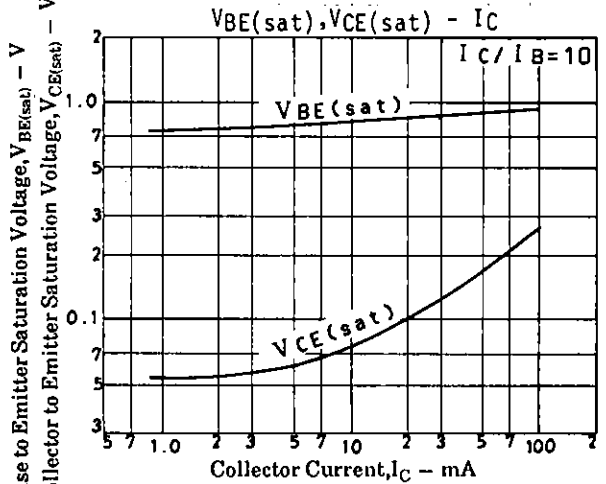
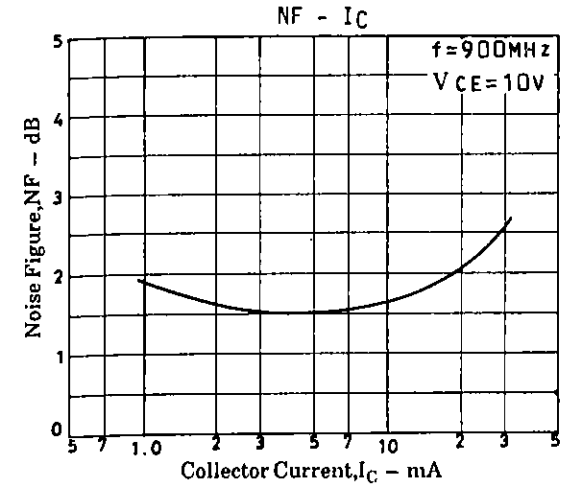
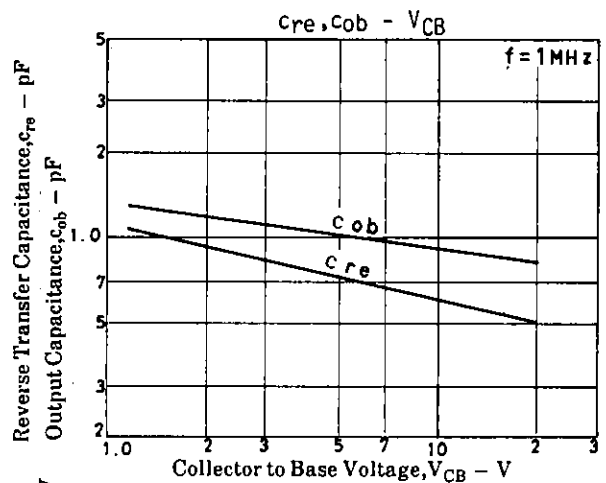
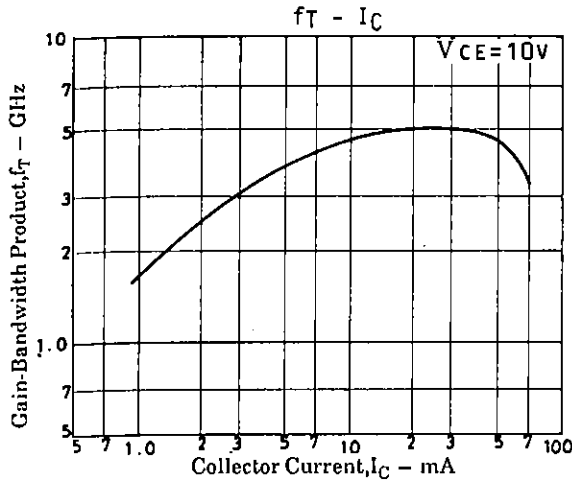
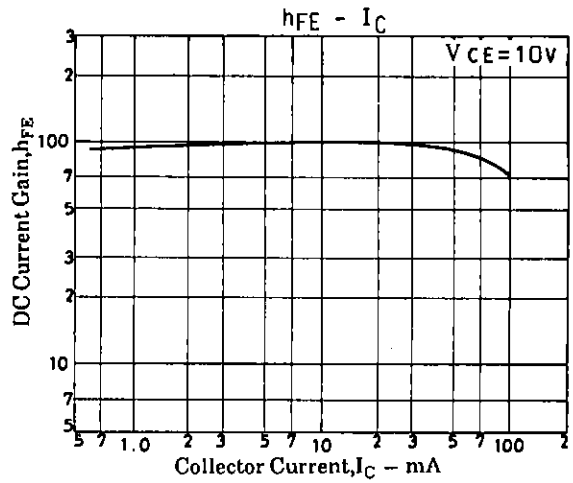
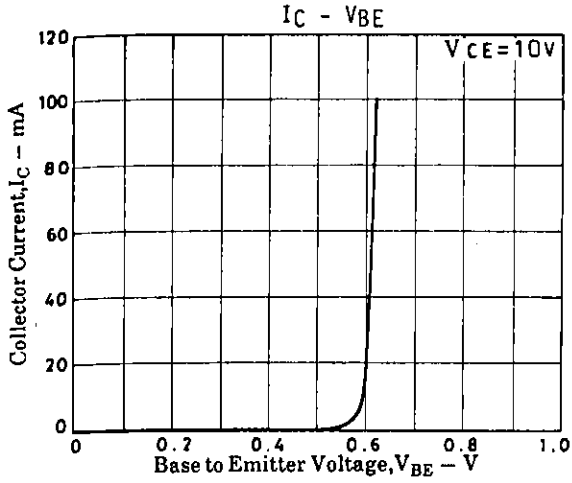


NF Test Circuit

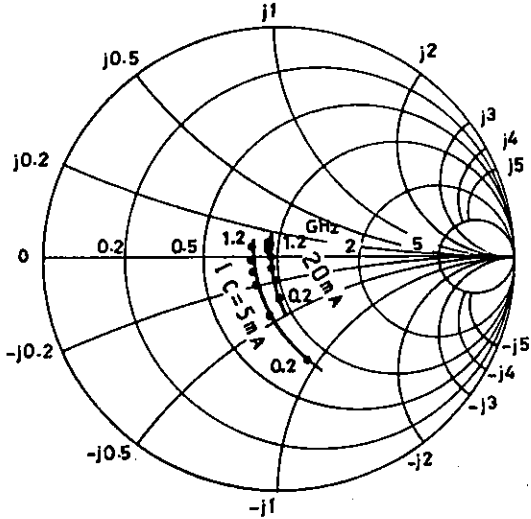


Unit (Resistance : Ω)

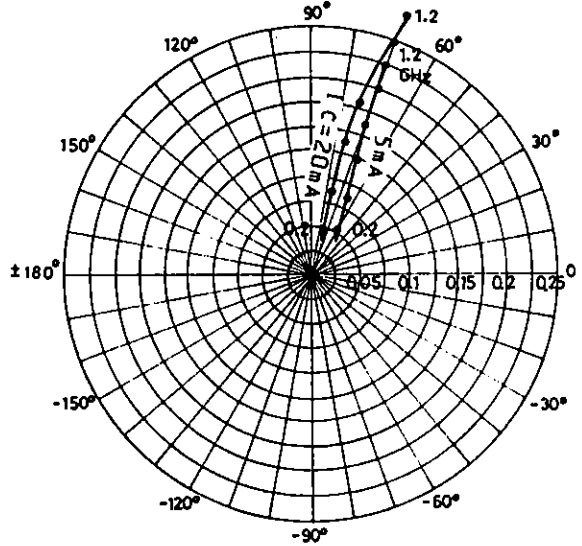
900MHz	
C1	~5 pF
C2	~10 pF
C3	~10 pF
C4	~10 pF
C5	~10 pF
L1	W ≐ 1.5 mm, l ≐ 25 mm strip line
L2	W ≐ 4 mm, l ≐ 25 mm strip line
L3	0.5 φ, l ≐ 40 mm
CH	2t + bead core



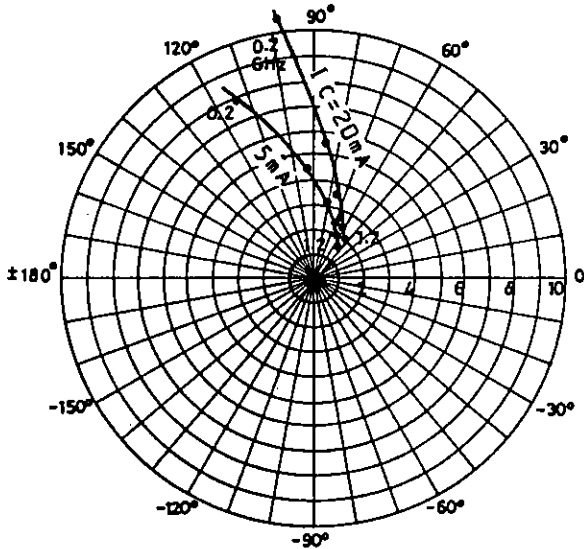
S11e : VCE=10V
f=200MHz step



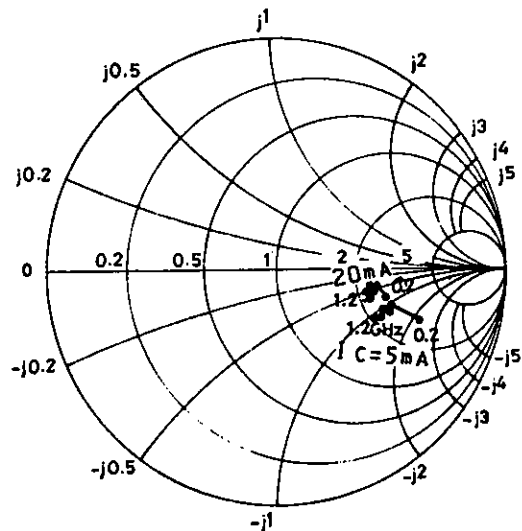
S12e : VCE=10V
f=200MHz step



S21e : VCE=10V
f=200MHz step



S22e : VCE=10V
f=200MHz step



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