

SANYO	No.2754	2SC4401
		NPN Epitaxial Planar Silicon Transistor VHF/UHF Mixer, Local Oscillator, Low-Voltage Amp Applications

Applications

- VHF/UHF MIX/OSC, low-voltage high-frequency amplifiers

Features

- Low-voltage operation : $f_T = 3.0\text{GHz}$ typ ($V_{CE} = 3\text{V}$)
: $\text{MAG} = 11\text{dB}$ typ ($V_{CE} = 3\text{V}, I_C = 3\text{mA}$)
: $\text{NF} = 3.0\text{dB}$ typ ($V_{CE} = 3\text{V}, I_C = 3\text{mA}$)
- Very small-sized package permitting 2SC4401-applied sets to be made smaller and slimmer

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}	15 V
Emitter to Base Voltage	V_{EBO}	3 V
Collector Current	I_C	30 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_{CBO}	$V_{CB} = 15\text{V}, I_E = 0$			1.0	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 2\text{V}, I_C = 0$			1.0	μA
DC Current Gain	h_{FE}	$V_{CE} = 3\text{V}, I_C = 3\text{mA}$	*40		*200	
Gain-Bandwidth Product	f_T	$V_{CE} = 3\text{V}, I_C = 3\text{mA}$		3.0		GHz
Output Capacitance	c_{ob}	$V_{CB} = 3\text{V}, f = 1\text{MHz}$		0.7	1.3	pF
Reverse Transfer Capacitance	c_{re}	$V_{CB} = 3\text{V}, f = 1\text{MHz}$		0.65		pF
Forward Transfer Gain	$ S_{21e} ^2$	$V_{CE} = 3\text{V}, I_C = 3\text{mA}, f = 0.9\text{GHz}$		7		dB
Maximum Available Power Gain	MAG	$V_{CE} = 3\text{V}, I_C = 3\text{mA}, f = 0.9\text{GHz}$		11		dB
Noise Figure	NF	$V_{CE} = 3\text{V}, I_C = 3\text{mA}, f = 0.9\text{GHz}$		3.0	5.0	dB

See specified Test Circuit.

* The 2SC4401 is classified by 3mA h_{FE} as follows:

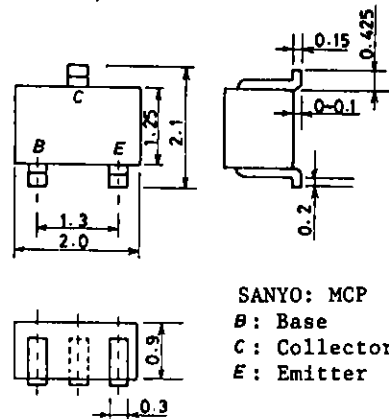
40	2	80	60	3	120	100	4	200
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(Note) Marking: OT

h_{FE} rank: 2,3,4

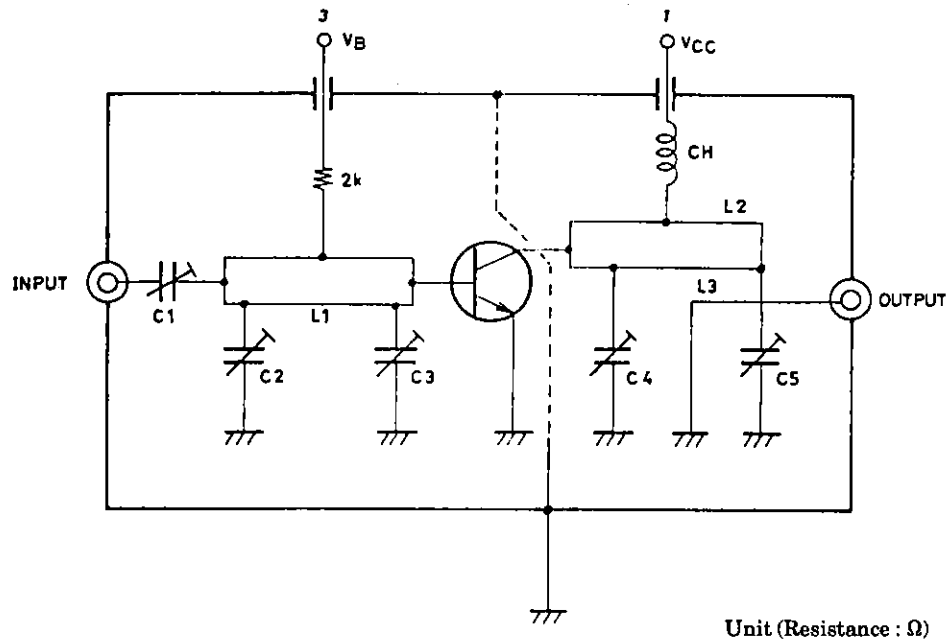
• For CP package version, use the 2SC4364.

Package Dimensions 2059
(unit: mm)



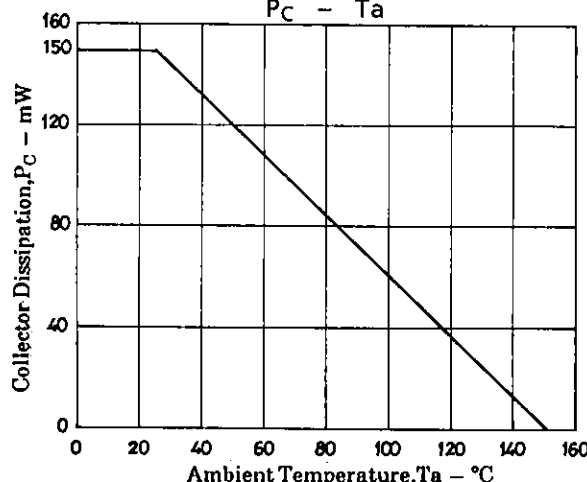
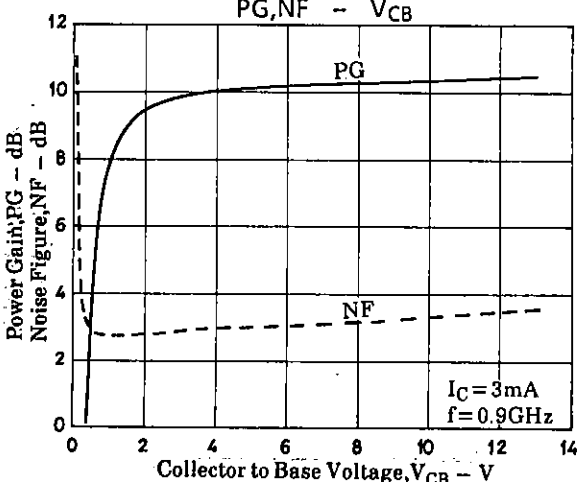
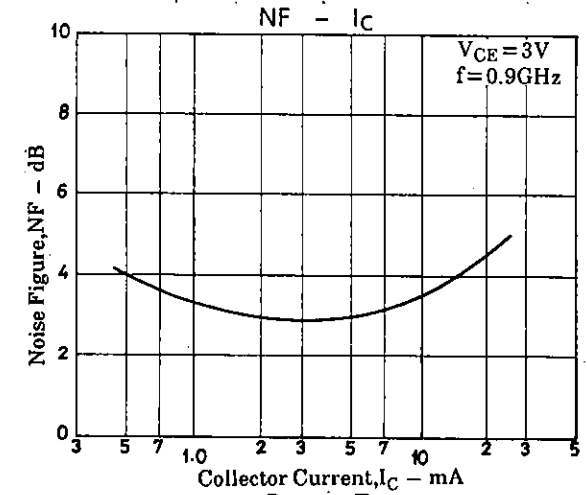
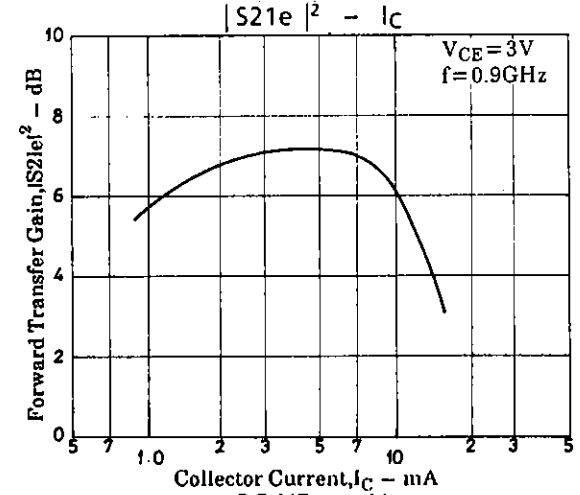
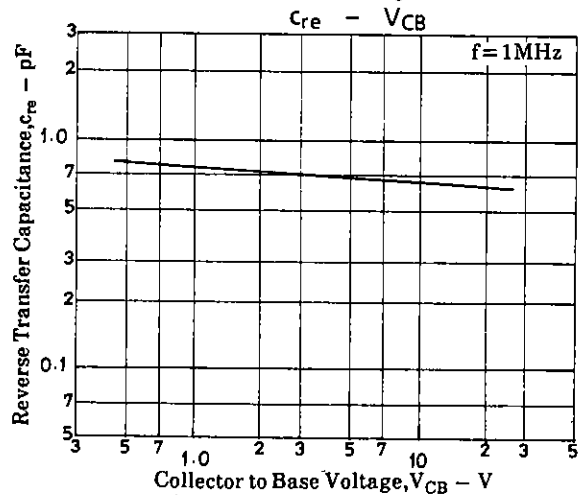
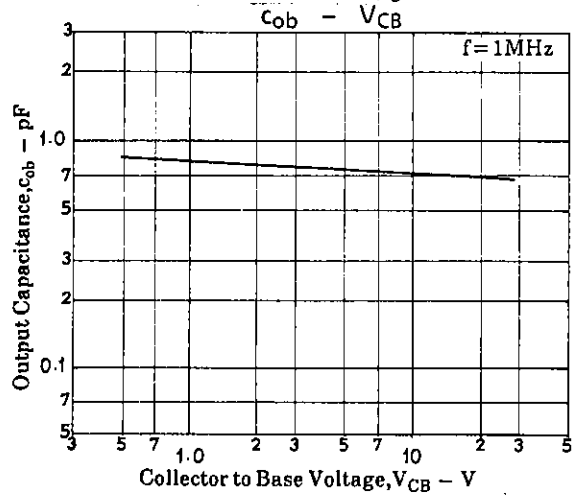
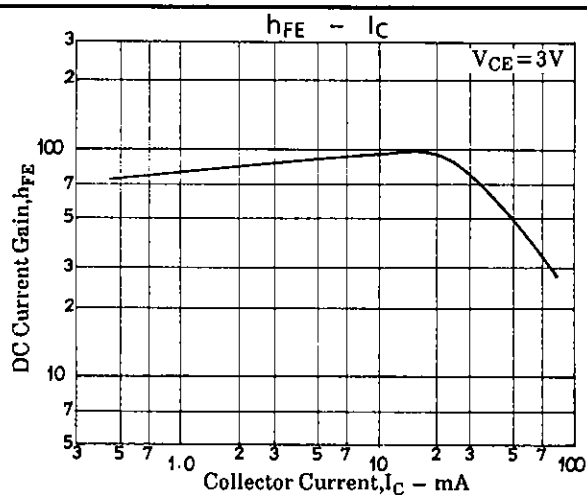
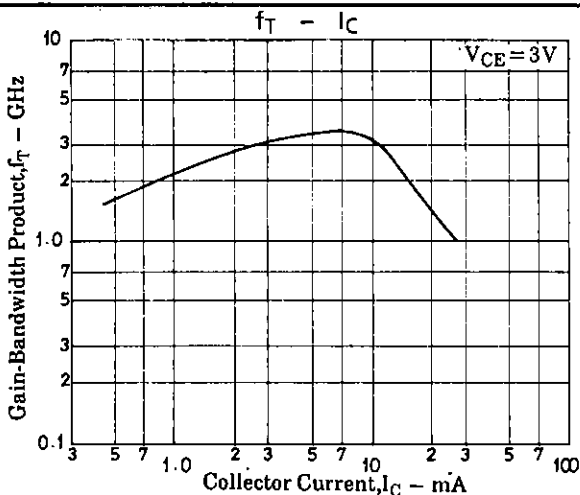
SANYO: MCP
B: Base
C: Collector
E: Emitter

NF Test Circuit

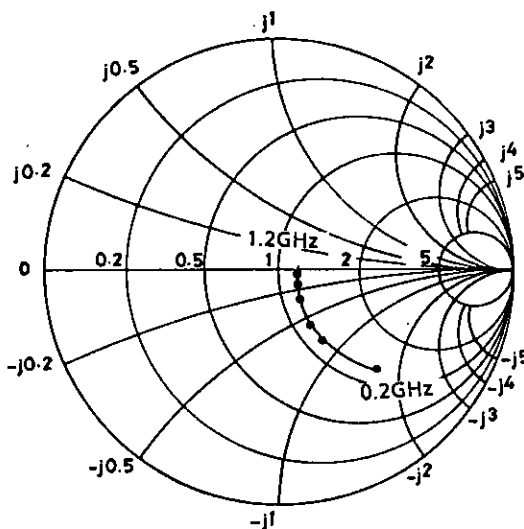


900MHz	
C1	$\sim 5 \text{ pF}$
C2	$\sim 10 \text{ pF}$
C3	$\sim 10 \text{ pF}$
C4	$\sim 10 \text{ pF}$
C5	$\sim 10 \text{ pF}$
L1	$W \div 1.5 \text{ mm}, l \div 25 \text{ mm}$ strip line
L2	$W \div 4 \text{ mm}, l \div 25 \text{ mm}$ strip line
L3	$0.5 \phi, l \div 40 \text{ mm}$
CH	$2t + \text{bead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

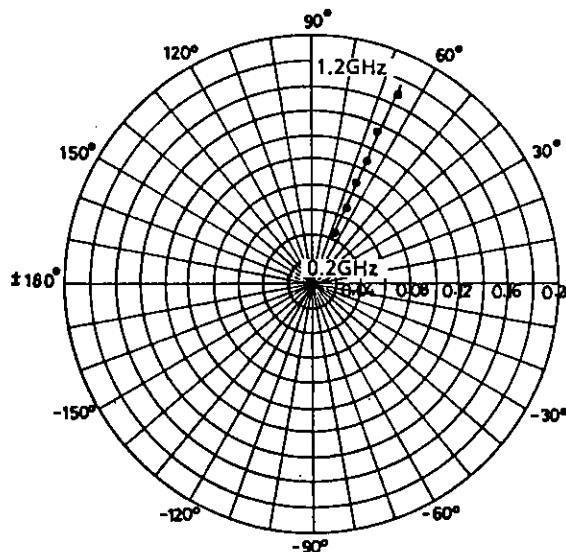
2SC4401



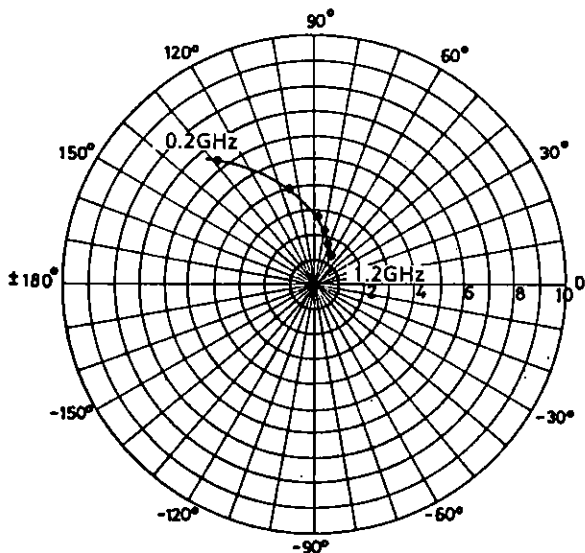
S11e: $V_{CE} = 3V$
 $I_C = 3mA$
 $f = 0.2GHz$ step



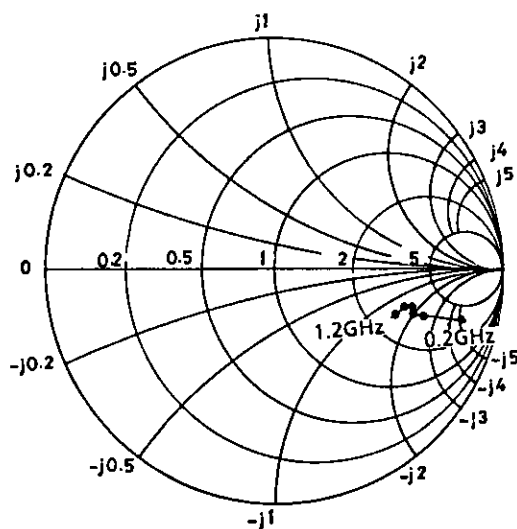
S12e: $V_{CE} = 3V$
 $I_C = 3mA$
 $f = 0.2GHz$ step



S21e: $V_{CE} = 3V$
 $I_C = 3mA$
 $f = 0.2GHz$ step



S22e: $V_{CE} = 3V$
 $I_C = 3mA$
 $f = 0.2GHz$ step



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