

<b>SANYO</b>	No.2754	<b>2SC4401</b>
		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	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 2\text{V}, I_C = 0$			1.0	$\mu\text{A}$
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	$\text{MAG}$	$V_{CE} = 3\text{V}, I_C = 3\text{mA}, f = 0.9\text{GHz}$		11		dB
Noise Figure	$\text{NF}$	$V_{CE} = 3\text{V}, I_C = 3\text{mA}, f = 0.9\text{GHz}$		3.0	5.0	dB

See specified Test Circuit.

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

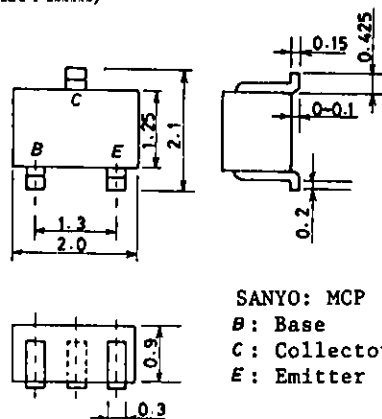
40	2	80	60	3	120	100	4	200
----	---	----	----	---	-----	-----	---	-----

(Note) Marking: OT

$h_{FE}$  rank: 2,3,4

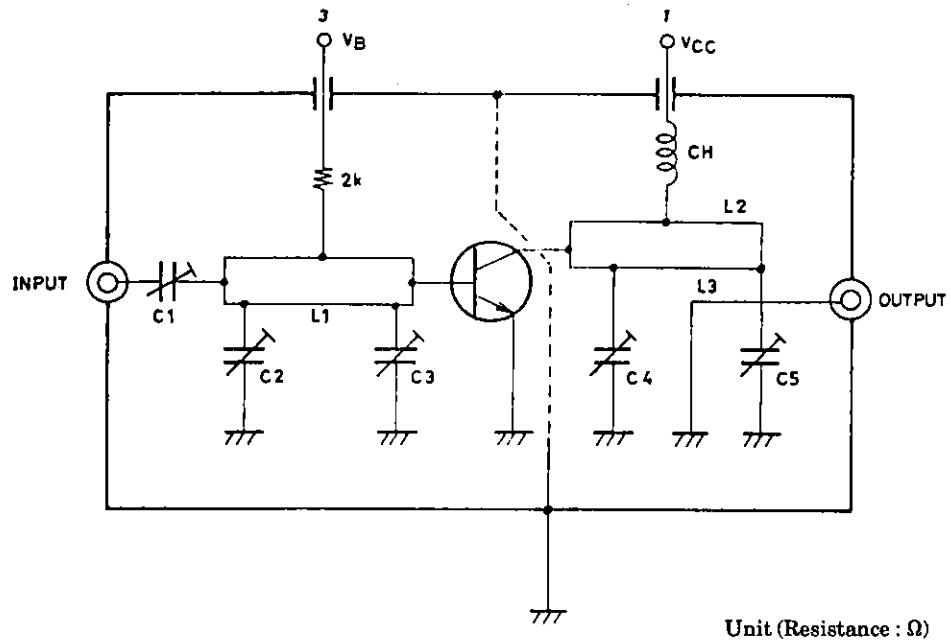
• For CP package version, use the 2SC4364.

**Package Dimensions 2059**  
(unit: mm)



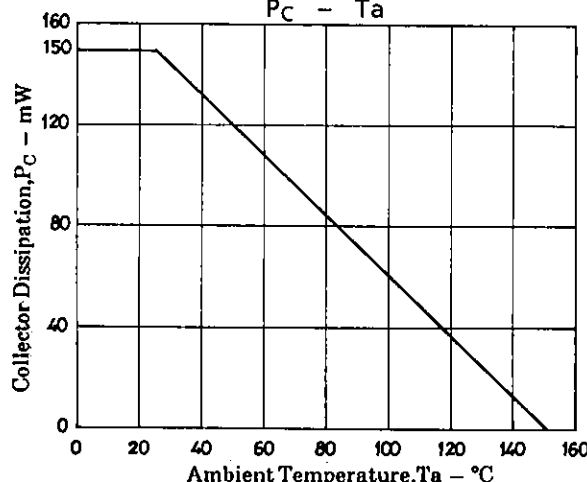
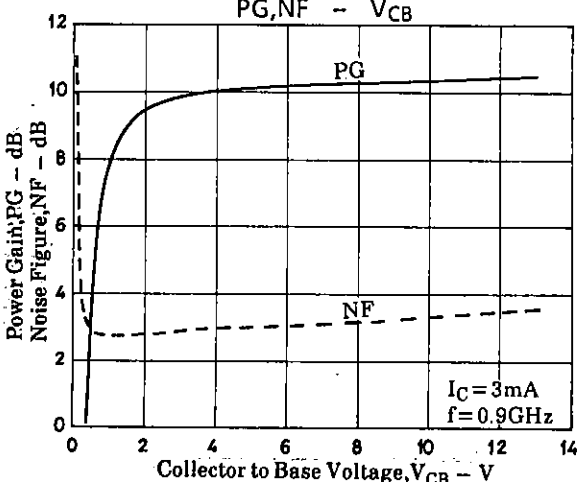
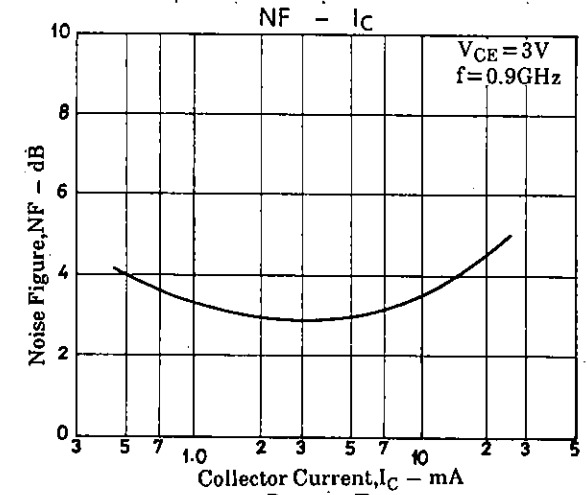
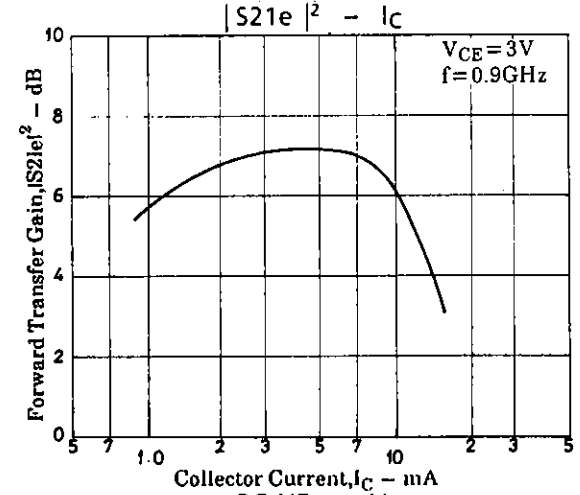
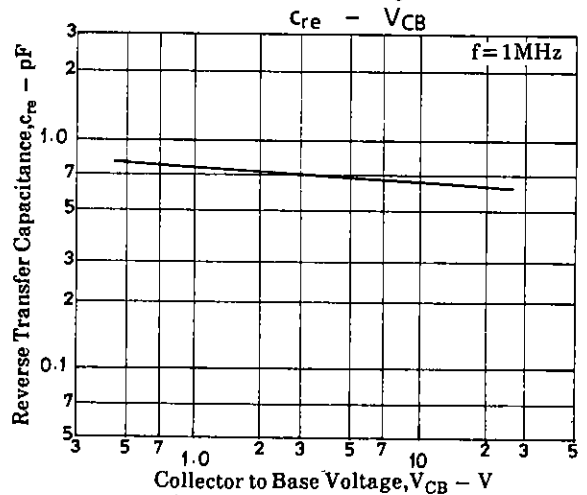
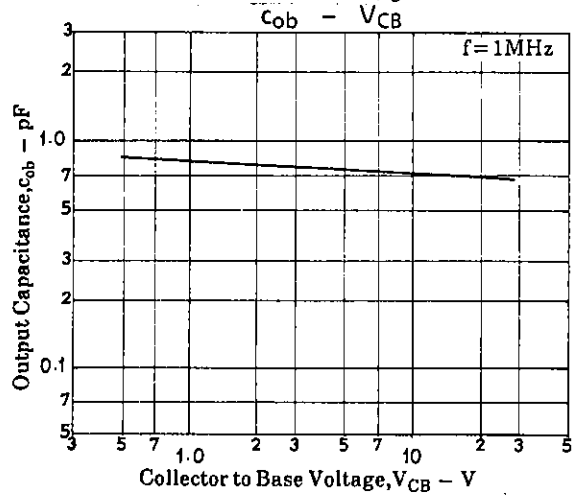
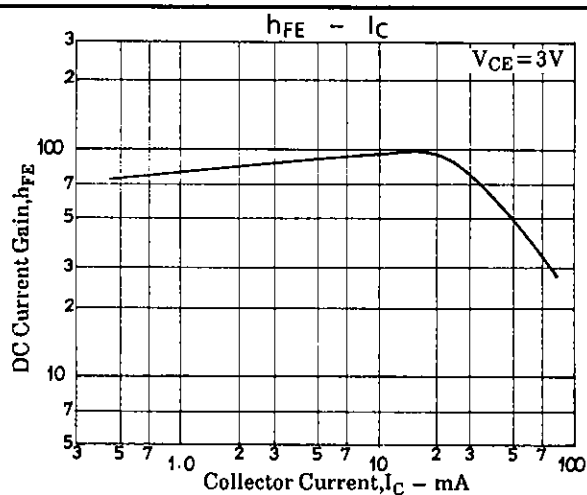
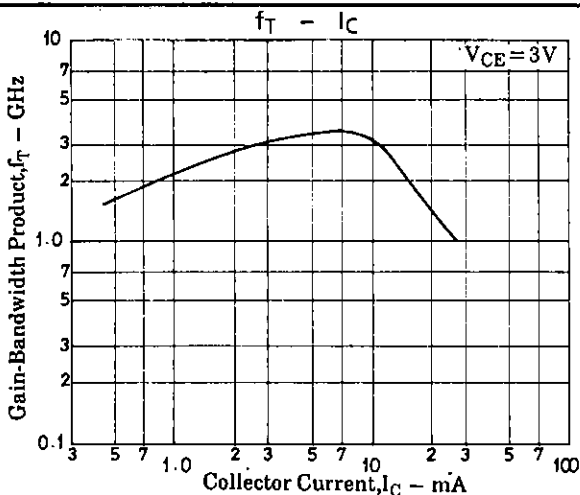
SANYO: MCP  
B: Base  
C: Collector  
E: Emitter

## NF Test Circuit

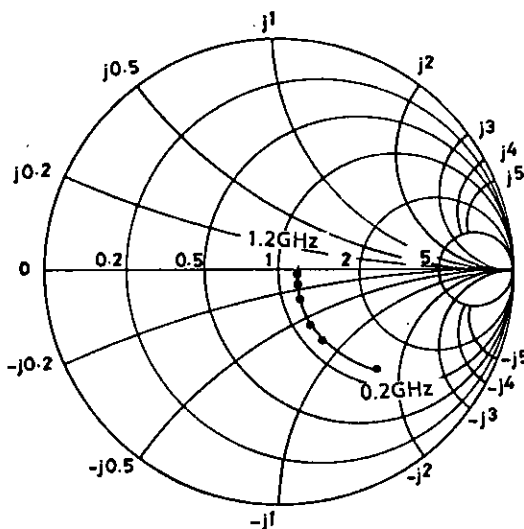


	900MHz
C1	$\sim 5 \text{ pF}$
C2	$\sim 10 \text{ pF}$
C3	$\sim 10 \text{ pF}$
C4	$\sim 10 \text{ pF}$
C5	$\sim 10 \text{ pF}$
L1	$W \div 1.5 \text{ mm}, l \div 2.5 \text{ mm}$ strip line
L2	$W \div 4 \text{ mm}, l \div 2.5 \text{ mm}$ strip line
L3	$0.5 \phi, l \div 40 \text{ mm}$
CH	$2t + \text{bead core}$

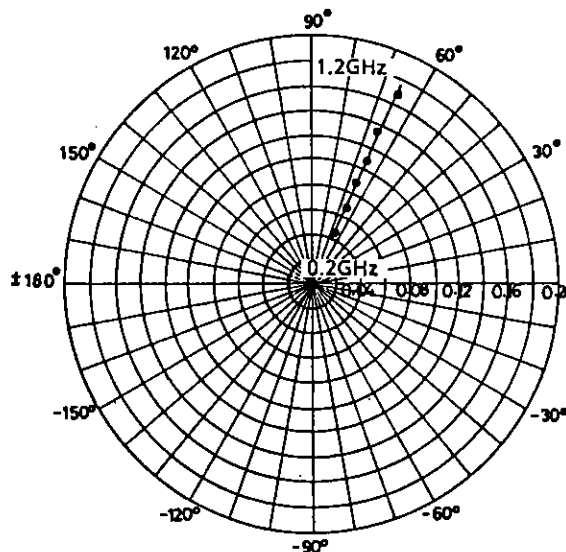
2SC4401



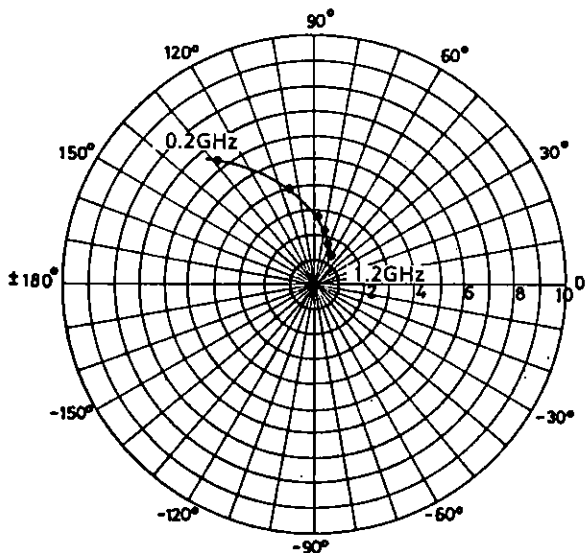
S11e:  $V_{CE} = 3V$   
 $I_C = 3mA$   
 $f = 0.2GHz$  step



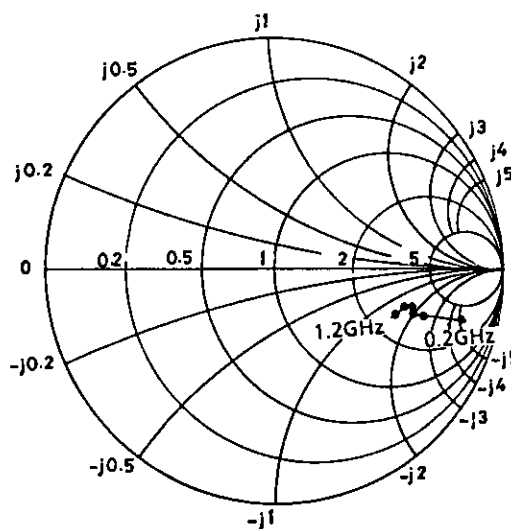
S12e:  $V_{CE} = 3V$   
 $I_C = 3mA$   
 $f = 0.2GHz$  step



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



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



■ No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.

■ Anyone purchasing any products described or contained herein for an above-mentioned use shall:

- ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use;
- ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.

■ Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.