

<b>SANYO</b>	No.2760	2SC4407
		NPN Epitaxial Planar Silicon Transistor VHF/UHF Mixer, Local Oscillator Applications

**Applications**

- VHF/UHF mixers, frequency converters, local oscillators

**Features**

- High cutoff frequency :  $f_T = 3.0\text{GHz typ}$
- High power gain :  $PG = 12\text{dB typ (}f = 0.9\text{GHz)}$
- Small noise figure :  $NF = 3.0\text{dB typ (}f = 0.9\text{GHz)}$
- Very small-sized package permitting 2SC4407-applied sets to be made smaller and slimmer

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

		unit
Collector to Base Voltage	$V_{CB0}$	25 V
Collector to Emitter Voltage	$V_{CEO}$	15 V
Emitter to Base Voltage	$V_{EBO}$	3 V
Collector Current	$I_C$	50 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	$I_{CBO}$	$V_{CB} = 15\text{V}, I_E = 0$			0.1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 2\text{V}, I_C = 0$			10	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE} = 10\text{V}, I_C = 5\text{mA}$	*40		*200	
Gain-Bandwidth Product	$f_T$	$V_{CE} = 10\text{V}, I_C = 10\text{mA}$	1.5	3.0		GHz
Output Capacitance	$c_{ob}$	$V_{CB} = 10\text{V}, f = 1\text{MHz}$		0.7	1.0	pF
Reverse Transfer Capacitance	$c_{re}$	$V_{CB} = 10\text{V}, f = 1\text{MHz}$		0.45		pF
Power Gain	PG	$V_{CE} = 10\text{V}, I_C = 10\text{mA}, f = 0.9\text{GHz}$		12		dB
Noise Figure	NF	$V_{CE} = 10\text{V}, I_C = 3\text{mA}, f = 0.9\text{GHz}$		3.0		dB

See specified Test Circuit.

\* The 2SC4407 is classified by 5mA  $h_{FE}$  as follows:

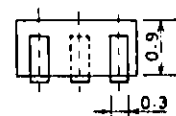
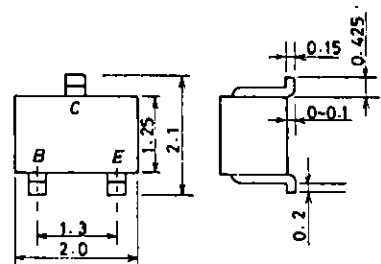
40 2 80	60 3 120	100 4 200
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(Note) Marking : KT

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

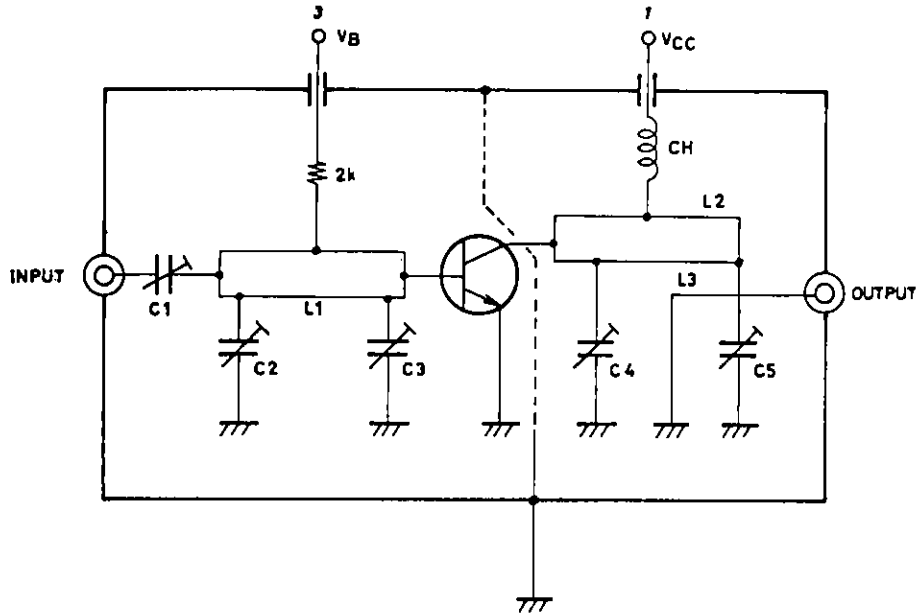
• For CP package version, use the 2SC4270.

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

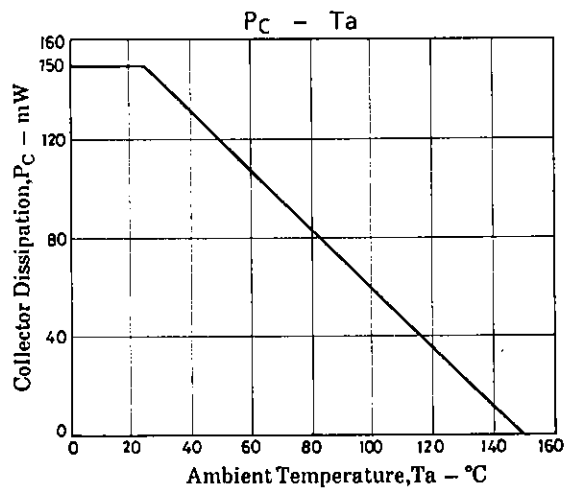
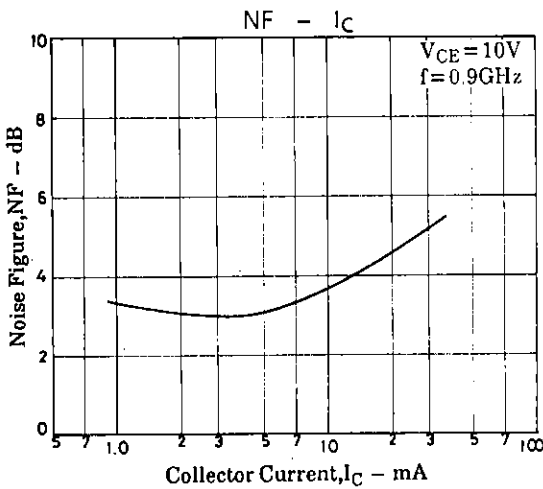
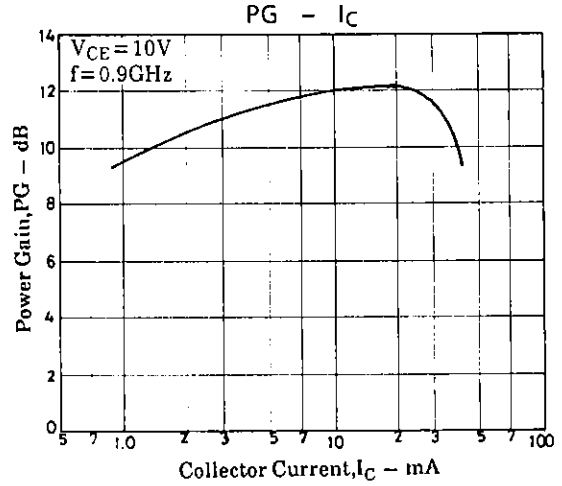
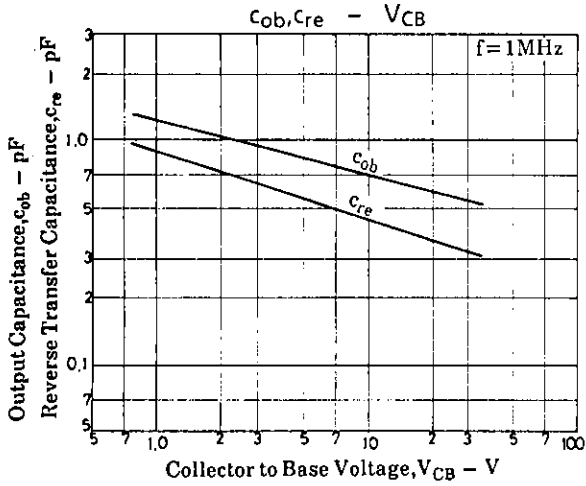
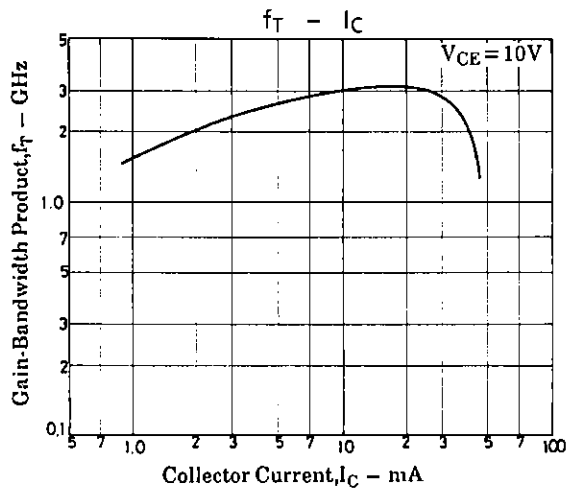
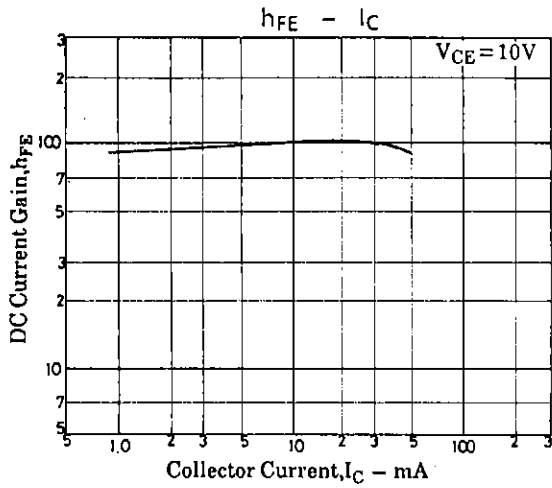


SANYO: MCP  
 B: Base  
 C: Collector  
 E: Emitter

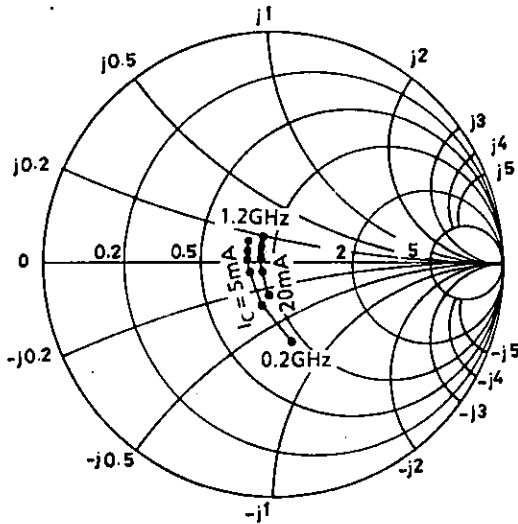
## PG,NF Test Circuit

Unit (Resistance :  $\Omega$ )

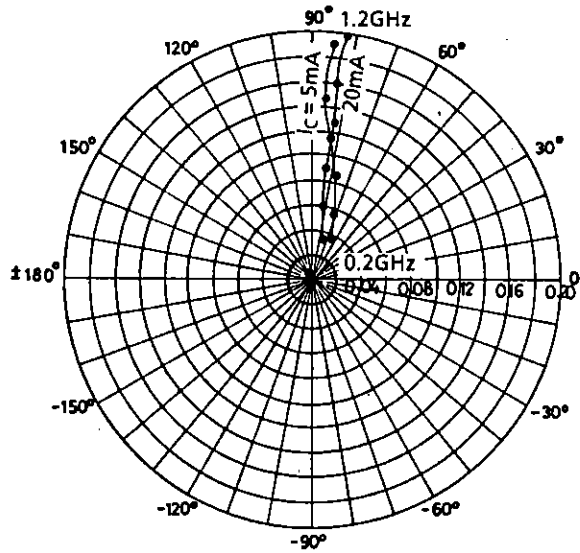
900MHz	
C 1	$\sim 5 \text{ pF}$
C 2	$\sim 10 \text{ pF}$
C 3	$\sim 10 \text{ pF}$
C 4	$\sim 10 \text{ pF}$
C 5	$\sim 10 \text{ pF}$
L 1	$W \doteq 1.5 \text{ mm}$ , $l \doteq 25 \text{ mm}$ strip line
L 2	$W \doteq 4 \text{ mm}$ , $l \doteq 25 \text{ mm}$ strip line
L 3	$0.5 \phi$ , $l \doteq 40 \text{ mm}$
CH	$2t + \text{bead core}$



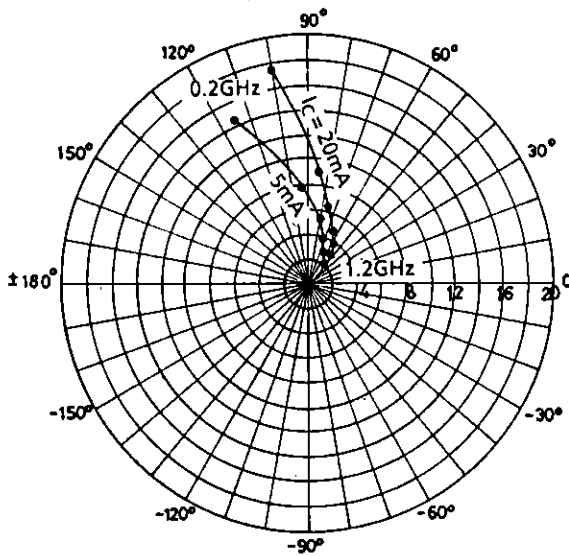
S11e:  $V_{CE} = 10V$   
 $f = 200MHz$  step



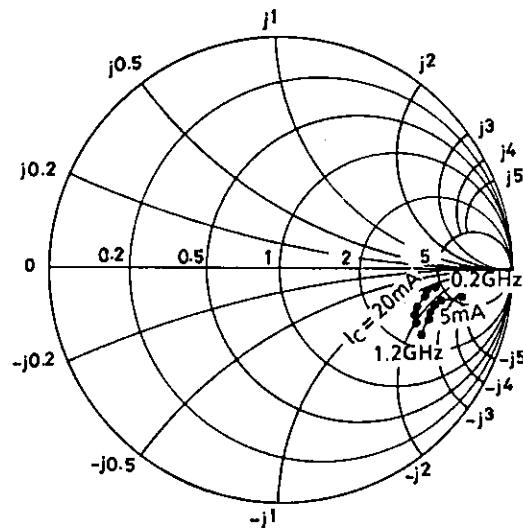
S12e:  $V_{CE} = 10V$   
 $f = 200MHz$  step



S21e:  $V_{CE} = 10V$   
 $f = 200MHz$  step



S22e:  $V_{CE} = 10V$   
 $f = 200MHz$  step



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