

SANYO	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_{CE0}	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	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 2\text{V}, I_C = 0$			10	μA
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:

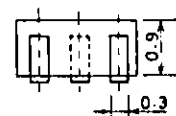
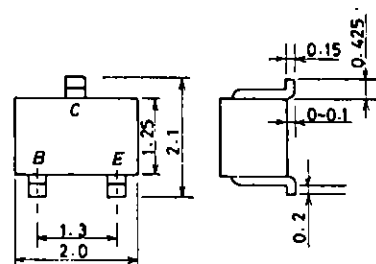
40	2	80	60	3	120	100	4	200
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(Note) Marking : KT

h_{FE} rank : 2,3,4

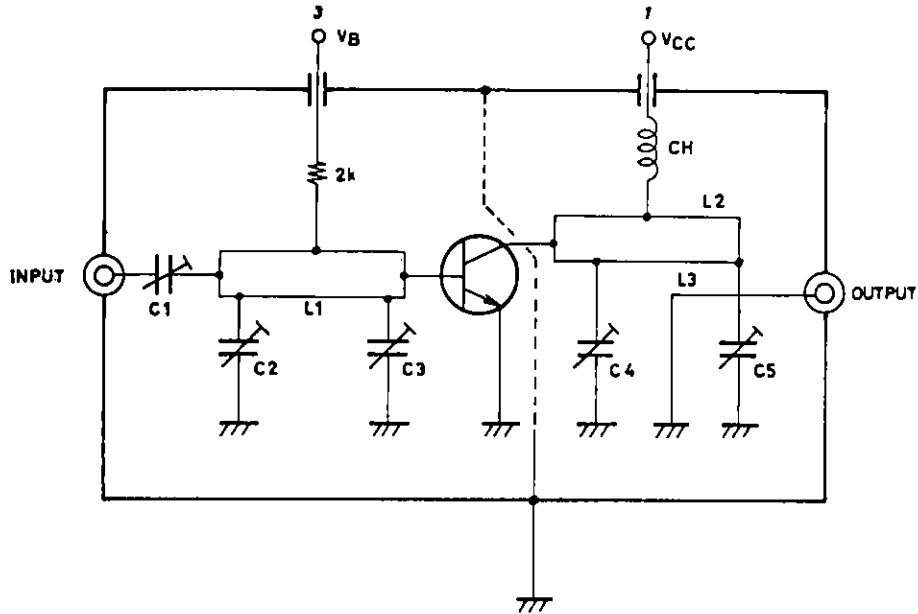
• For CP package version, use the 2SC4270.

Package Dimensions 2059
(unit : mm)

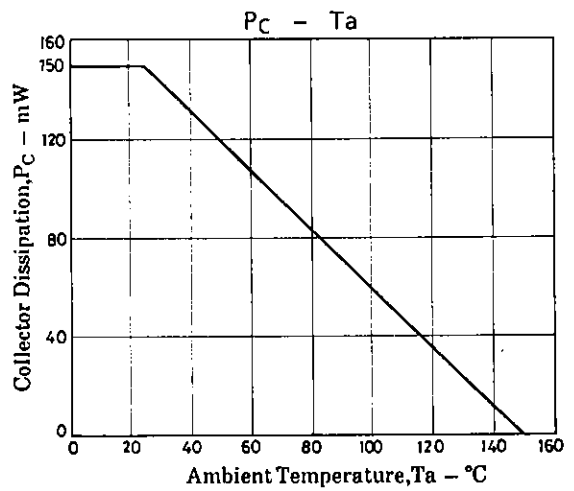
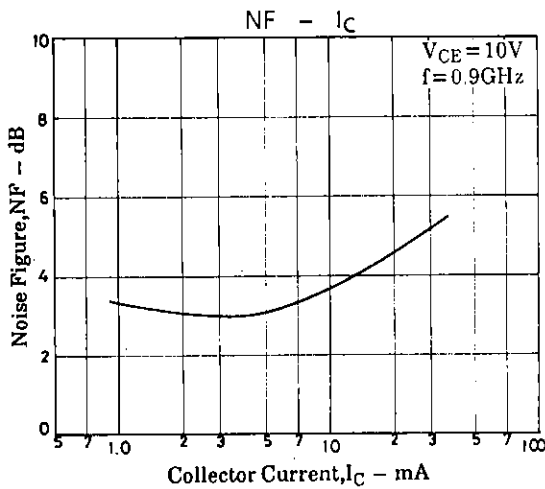
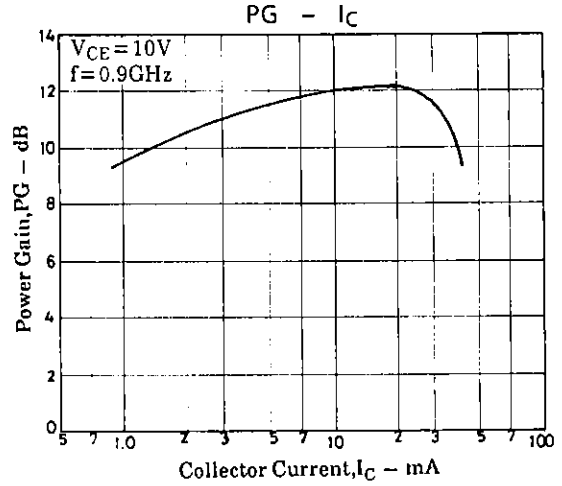
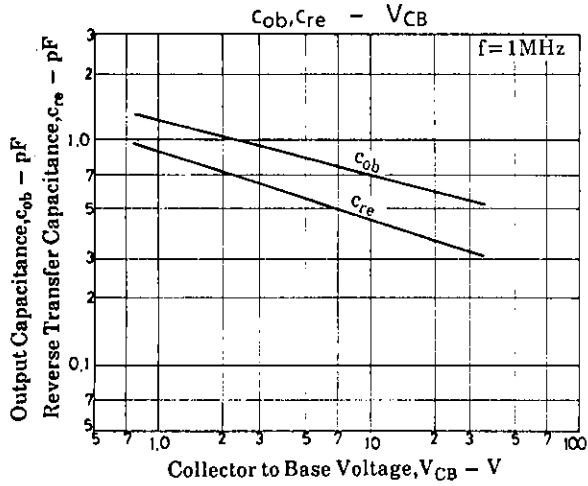
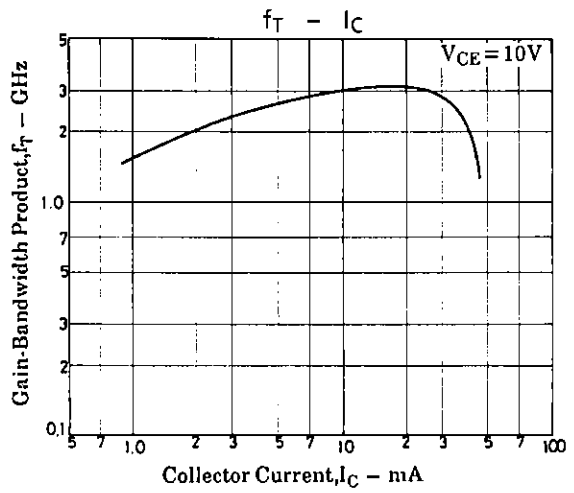
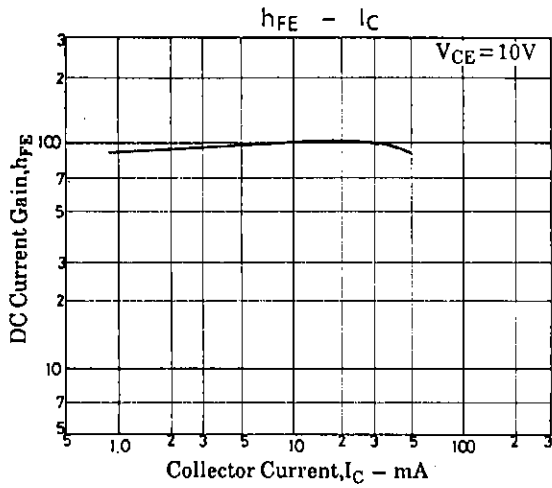


SANYO: MCP
 B: Base
 C: Collector
 E: Emitter

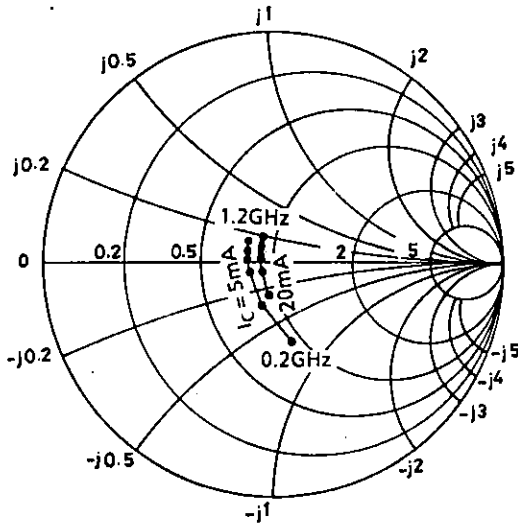
PG,NF Test Circuit



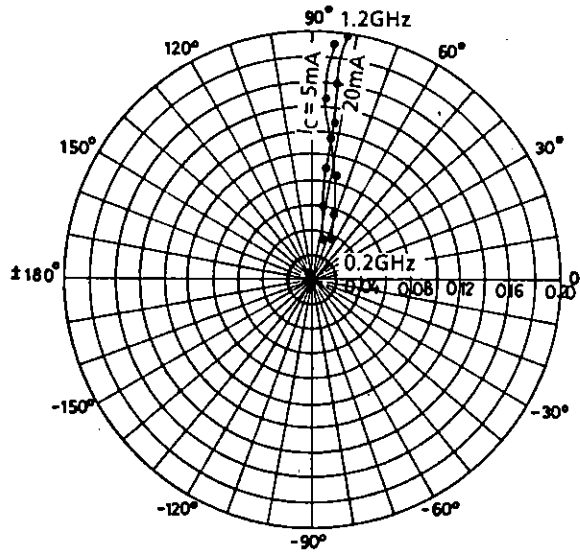
900MHz	
C1	$\sim 5 \text{ pF}$
C2	$\sim 10 \text{ pF}$
C3	$\sim 10 \text{ pF}$
C4	$\sim 10 \text{ pF}$
C5	$\sim 10 \text{ pF}$
L1	$W \doteq 1.5 \text{ mm}$, $l \doteq 25 \text{ mm}$ strip line
L2	$W \doteq 4 \text{ mm}$, $l \doteq 25 \text{ mm}$ strip line
L3	0.5ϕ , $l \doteq 40 \text{ mm}$
CH	$2t +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



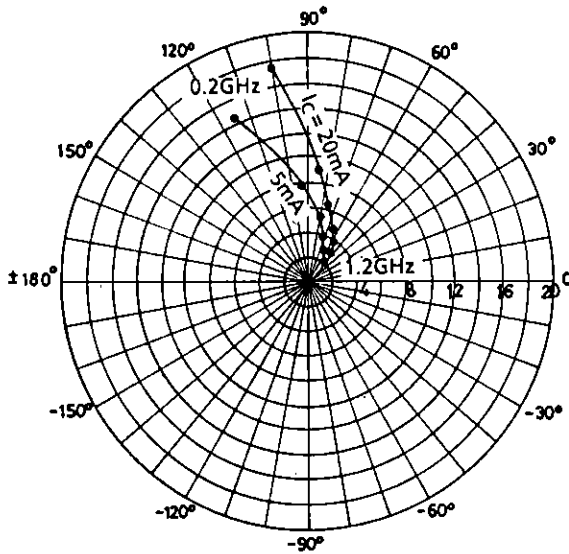
S11e: $V_{CE} = 10V$
 $f = 200MHz$ step



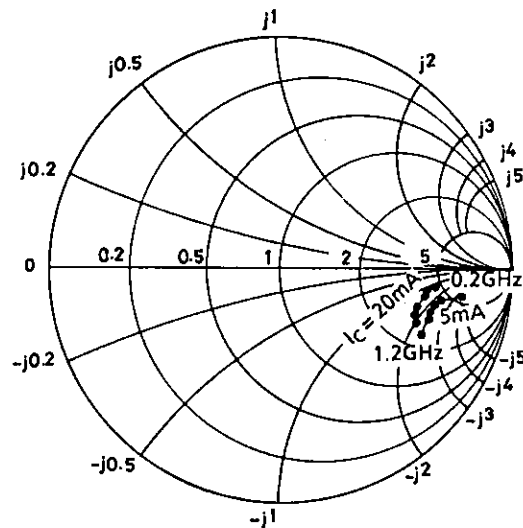
S12e: $V_{CE} = 10V$
 $f = 200MHz$ step



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



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



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