

SANYO	No.2759A	2SC4406
		NPN Epitaxial Planar Silicon Transistor VHF Frequency Mixer, Local Oscillator Applications

Applications

- VHF mixers, frequency converters, local oscillators

Features

- High cutoff frequency : $f_T = 1.2\text{GHz typ}$
- High power gain : $PG = 15\text{dB typ (} f = 0.4\text{GHz)}$
- Good dependence of f_T on current
- Very small-sized package permitting 2SC4406-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}	30	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	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 2\text{V}, I_C = 0$			1	μA
DC Current Gain	h_{FE}	$V_{CE} = 10\text{V}, I_C = 5\text{mA}$	≈ 40		≈ 200	
Gain-Bandwidth Product	f_T	$V_{CE} = 10\text{V}, I_C = 10\text{mA}$	0.6	1.2		GHz
Output Capacitance	c_{ob}	$V_{CB} = 10\text{V}, f = 1\text{MHz}$		0.75	1.1	pF
Reverse Transfer Capacitance	c_{re}	$V_{CB} = 10\text{V}, f = 1\text{MHz}$		0.5		pF
Power Gain	PG	$V_{CE} = 10\text{V}, I_C = 10\text{mA}, f = 0.4\text{GHz}$		15		dB
Noise Figure	NF	$V_{CE} = 10\text{V}, I_C = 3\text{mA}, f = 0.4\text{GHz}$		2.0		dB

See specified Test Circuit.

※ The 2SC4406 is classified by 5mA h_{FE} as follows:

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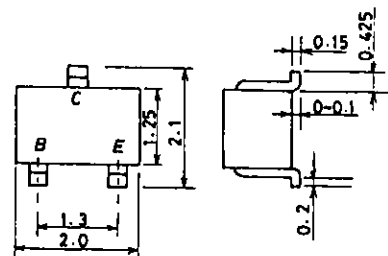
(Note) Marking : JT

h_{FE} rank : 2,3,4

● For CP package version, use the 2SC4269.

Package Dimensions 2059

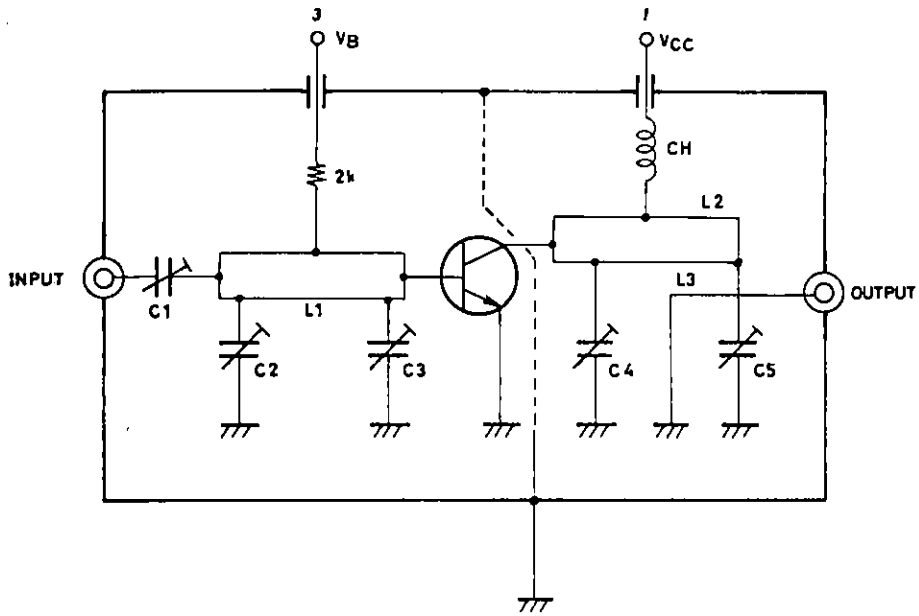
(unit : mm)



SANYO: MCP

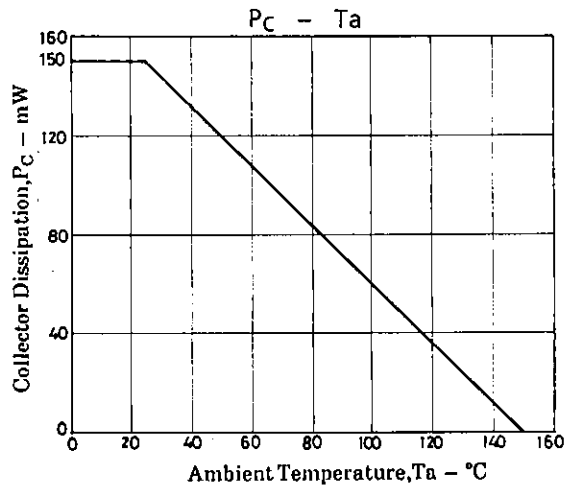
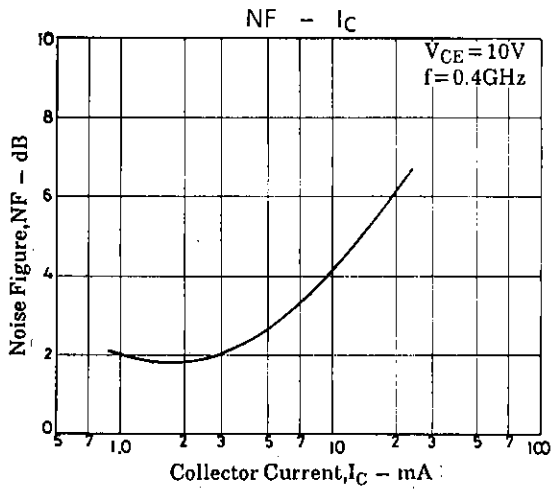
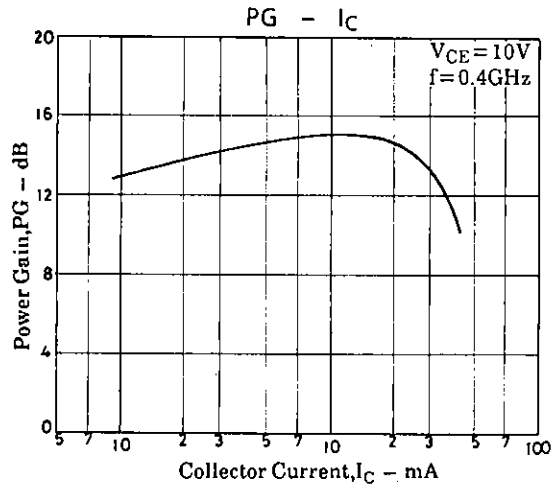
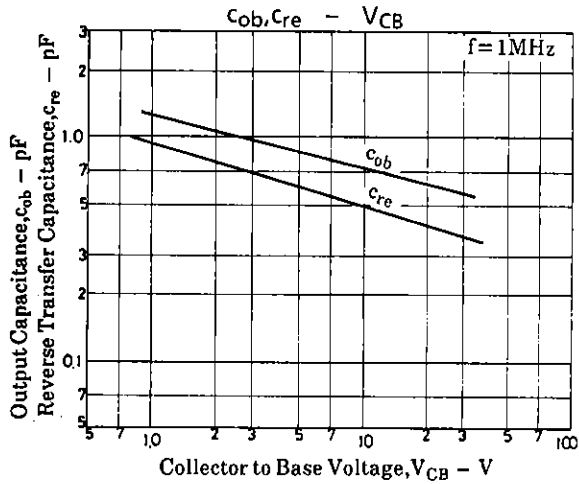
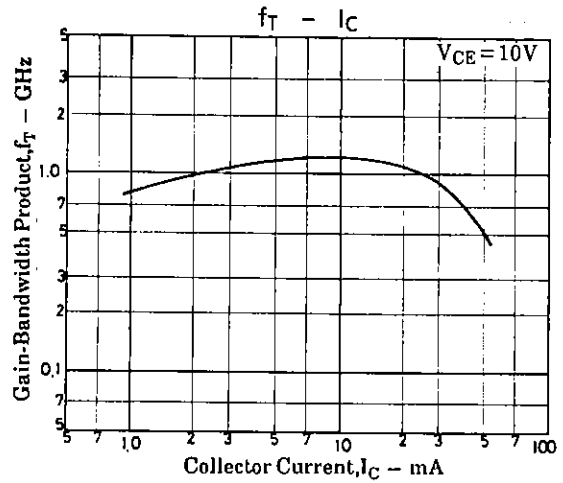
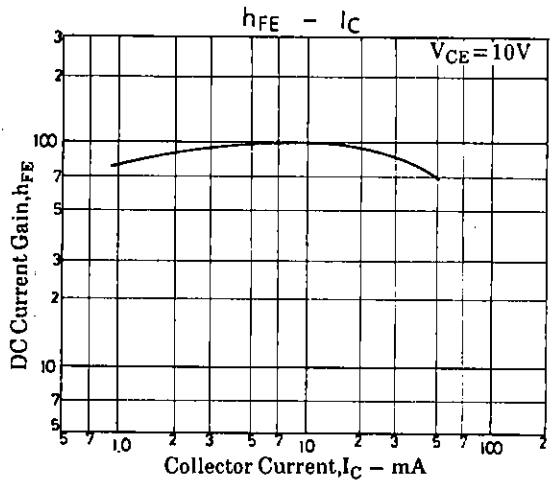
B : Base
C : Collector
E : Emitter

PG,NF Test Circuit

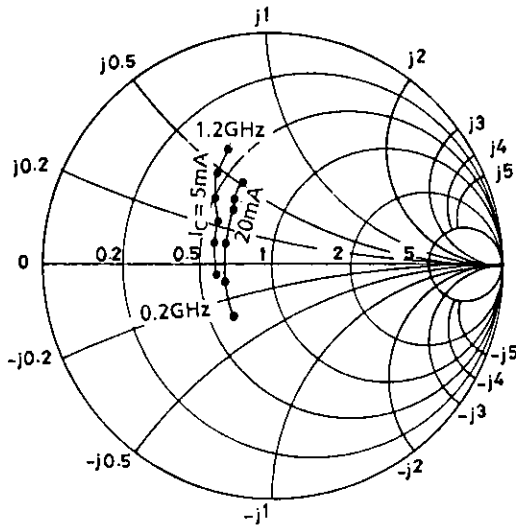


Unit (Resistance : Ω)

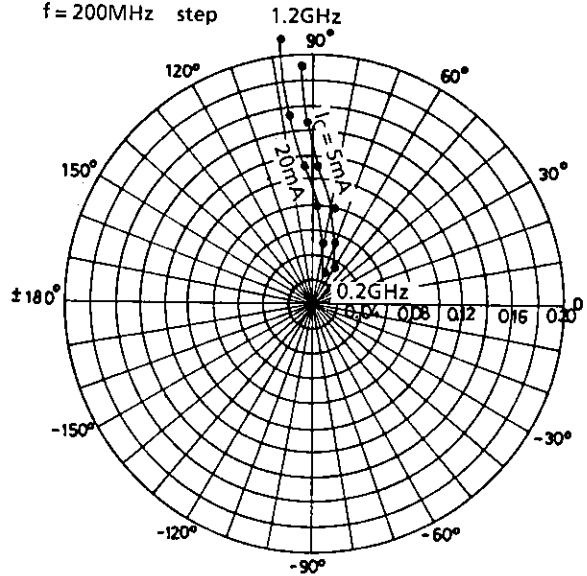
	$f = 400\text{MHz}$
C1	$\sim 20\text{pF}$
C2	$\sim 10\text{pF}$
C3	$\sim 10\text{pF}$
C4	$\sim 20\text{pF}$
C5	$\sim 30\text{pF}$
L1	$2\phi, l = 40\text{mm } 2/3t$
L2	$2\phi, l = 40\text{mm } 2/3t$
L3	$1\phi, l = 40\text{mm } 1/2t$



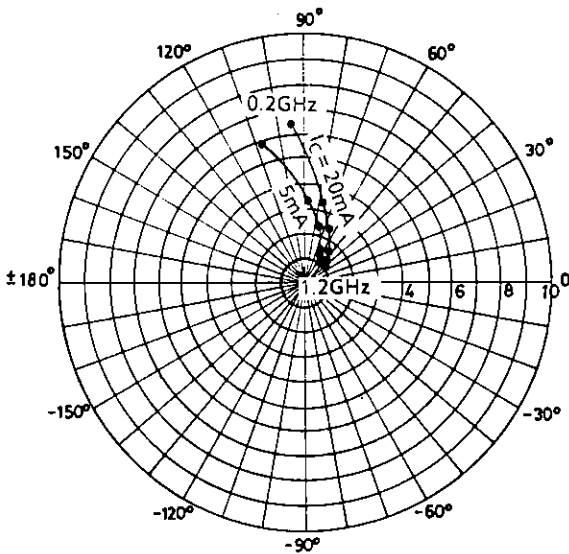
S11e: $V_{CE} = 10V$
 $f = 200MHz$ step



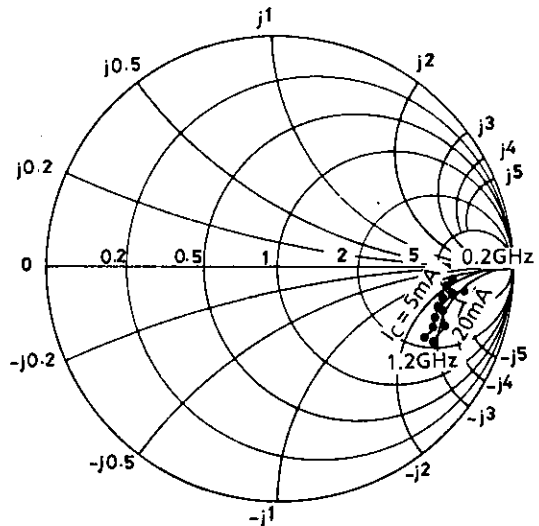
S12e: $V_{CE} = 10V$
 $f = 200MHz$ step



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



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



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