Ordering number: EN 2971

SANYO

No.2971

2SC4270

NPN Epitaxial Planar Silicon Transistor

UHF Converter, Local Oscillator Applications

Features

- Small noise figure : NF = 3.0dB typ (f = 0.9GHz)
- High power gain : PG = 12dB typ (f = 0.9GHz)
- High cutoff frequency : f_T = 3.0GHz typ

Absolute Maximum Ratings at Ta = 25°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	50	mA
Base Current	I_B	20	mA
Collector Dissipation	P_C	250	mW
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55 to +150	°C

Electrical Characteristics at Ta = 25°C

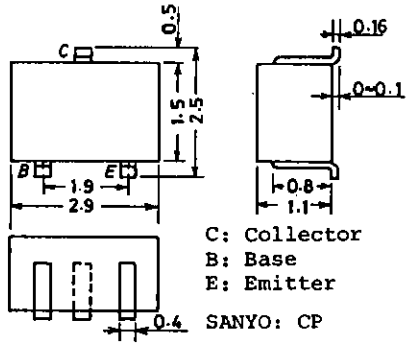
			min	typ	max	unit
Collector Cutoff Current	I_{CBO}	V_{CB} = 20V, I_E = 0			0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB} = 2V, I_C = 0			10	μA
DC Current Gain	h_{FE}	V_{CE} = 10V, I_C = 5mA	40※		200※	
Gain-Bandwidth Product	f_T	V_{CE} = 10V, I_C = 10mA	1.5	3.0		GHz
Output Capacitance	c_{ob}	V_{CB} = 10V, f = 1MHz		0.7	1.0	pF
Reverse Transfer Capacitance	c_{re}	V_{CB} = 10V, f = 1MHz		0.45		pF
Power Gain	PG	V_{CE} = 10V, I_C = 10mA, f = 0.9GHz		12		dB
Noise Figure	NF	V_{CE} = 10V, I_C = 3mA, f = 0.9GHz		3.0		dB

※ : The 2SC4270 is classified by 5mA h_{FE} as follows:

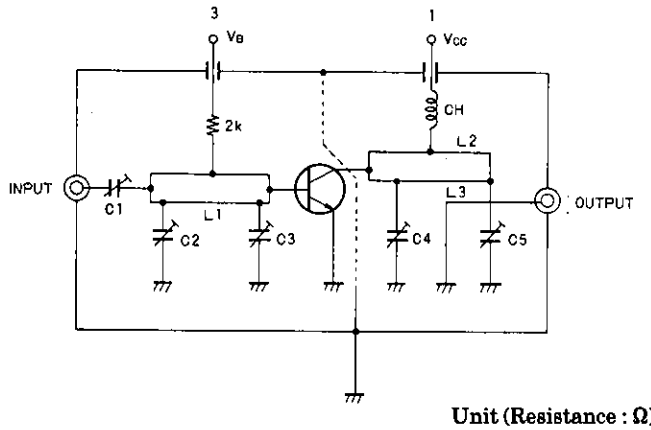
40 2 80	60 3 120	100 4 200

(Note) Marking : KT
h_{FE} rank : 2,3,4

Package Dimensions 2018A
(unit : mm)

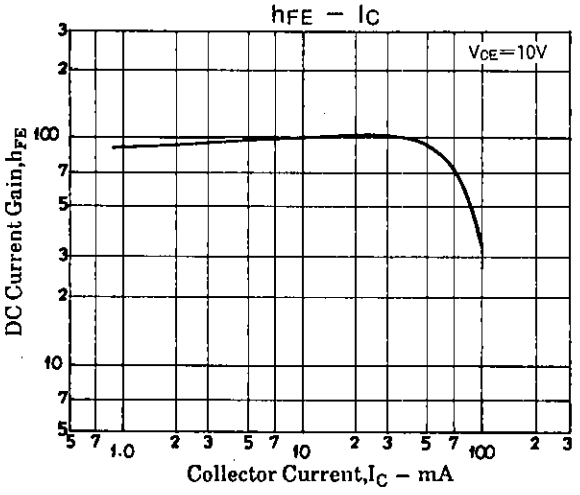


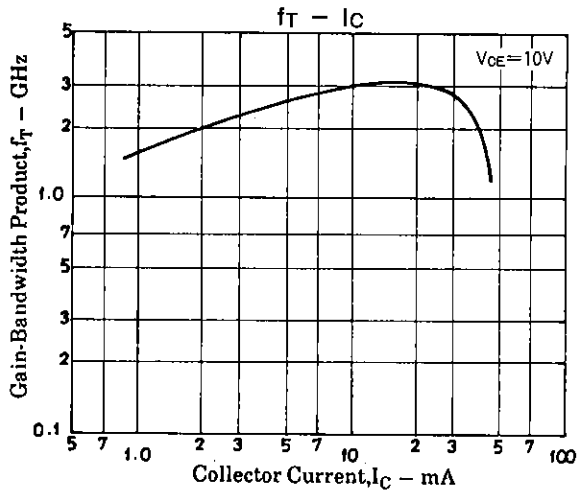
PG, NF Test Circuit

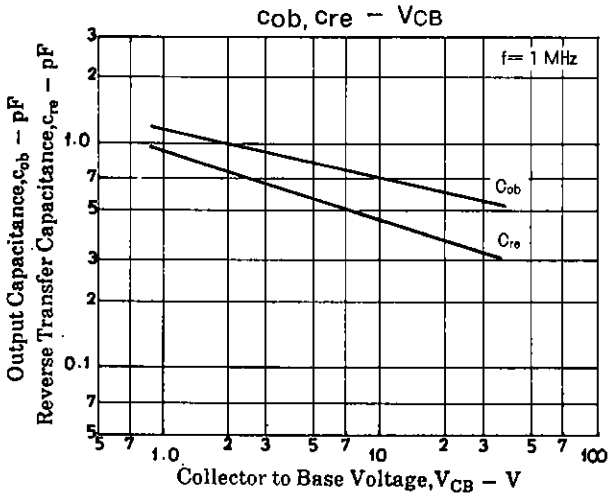


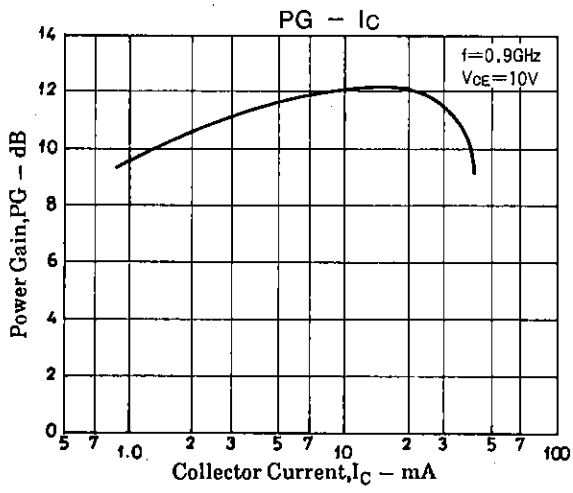
	900MHz	
C1	~5pF	
C2	~10pF	
C3	~10pF	
C4	~10pF	
C5	~10pF	
L1	W≒1.5mm, 1≒25mm	strip line
L2	W≒4mm, 1≒25mm	strip line
L3	0.5ø, 1≒40mm	
CH	2t+bead core	

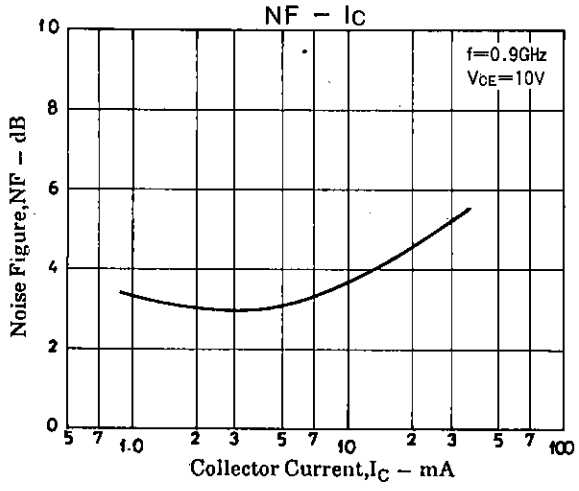
Unit (Resistance : Ω)

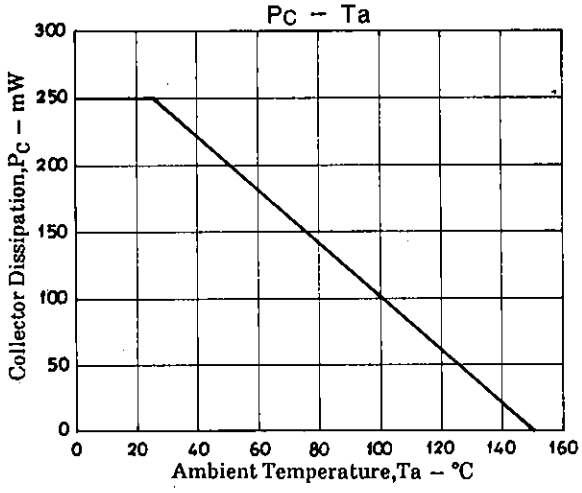






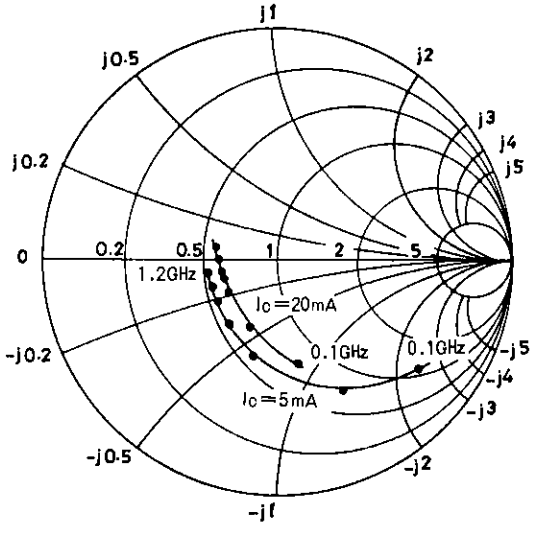




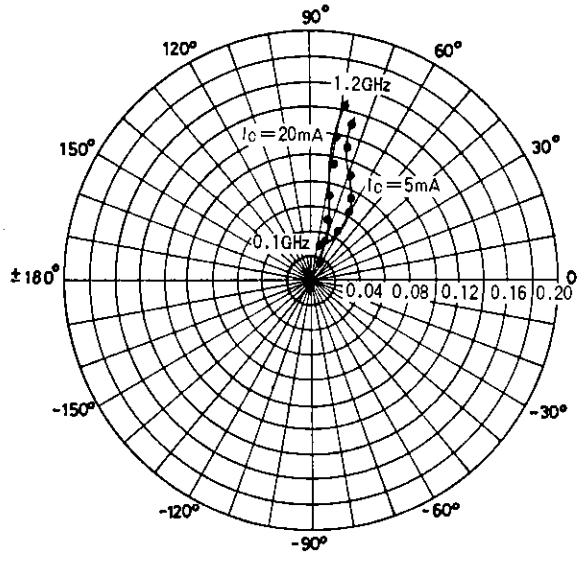


S parameter

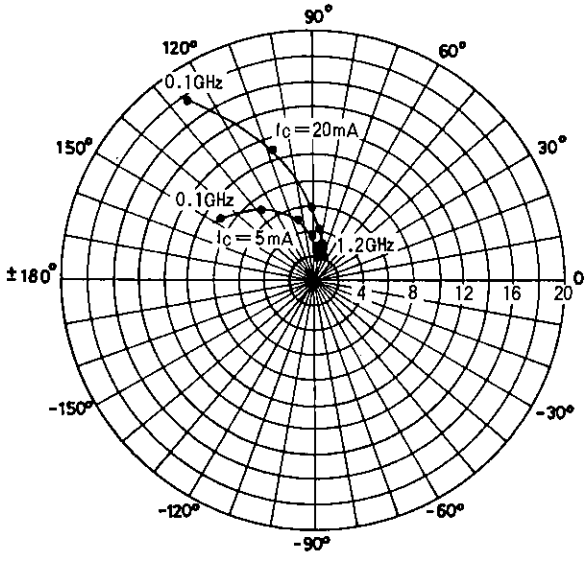
S11e : VCE=10V
f=100MHz, 200~1200MHz(200MHz step)



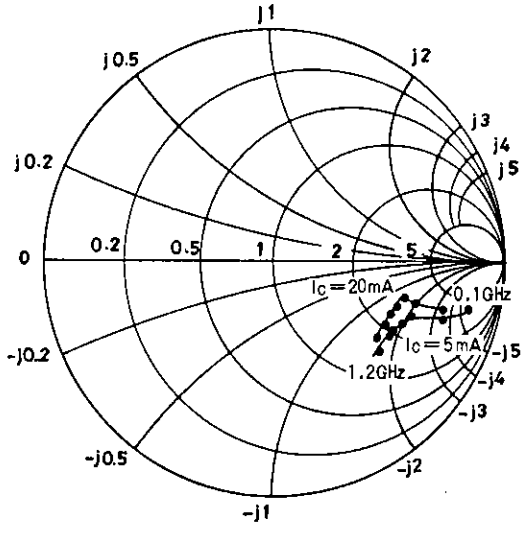
S12e : VCE=10V
f=100MHz, 200~1200MHz(200MHz step)



S21e : VCE=10V
f=100MHz, 200~1200MHz(200MHz step)



S22e : VCE=10V
f=100MHz, 200~1200MHz(200MHz step)



S parameter (Common emitter)

V_{CE}=10V, I_C= 5 mA, Z_O=50Ω

Freq (MHz)	$\|S_{11}\|$	$\angle S_{11}$	$\|S_{21}\|$	$\angle S_{21}$	$\|S_{12}\|$	$\angle S_{12}$	$\|S_{22}\|$	$\angle S_{22}$
100	0.771	−35.1	8.763	147.2	0.027	69.3	0.890	−14.2
200	0.613	−64.7	7.004	127.6	0.043	59.8	0.780	−19.7
400	0.429	−110.7	4.882	103.1	0.061	58.1	0.660	−22.8
600	0.361	−133.5	3.471	90.5	0.075	63.1	0.625	−25.1
800	0.355	−148.4	2.693	81.6	0.091	68.1	0.612	−28.6
900	0.331	−153.7	2.450	78.9	0.100	70.5	0.609	−29.9
1000	0.328	−158.9	2.236	75.5	0.110	72.5	0.607	−31.6
1200	0.326	−167.9	1.932	69.9	0.130	74.7	0.608	−35.7

V_{CE}=10V, I_C=20mA, Z_O=50Ω

Freq (MHz)	$\|S_{11}\|$	$\angle S_{11}$	$\|S_{21}\|$	$\angle S_{21}$	$\|S_{12}\|$	$\angle S_{12}$	$\|S_{22}\|$	$\angle S_{22}$
100	0.447	−78.1	17.728	125.0	0.020	66.0	0.752	−18.5
200	0.338	−113.2	10.936	107.5	0.031	66.5	0.639	−18.5
400	0.290	−146.6	5.773	91.4	0.052	72.1	0.580	−18.5
600	0.281	−159.3	3.956	83.0	0.074	75.7	0.571	−21.1
800	0.285	−168.8	2.982	76.2	0.095	77.6	0.566	−25.2
900	0.289	−171.3	2.703	74.0	0.106	78.6	0.563	−26.7
1000	0.291	−174.4	2.454	71.3	0.118	79.4	0.565	−28.6
1200	0.297	178.1	2.116	66.5	0.140	79.0	0.569	−33.1