Ordering number:EN2969A

NPN Epitaxial Planar Silicon Transistor

2SC4269

VHF Converter, Local Oscillator Applications

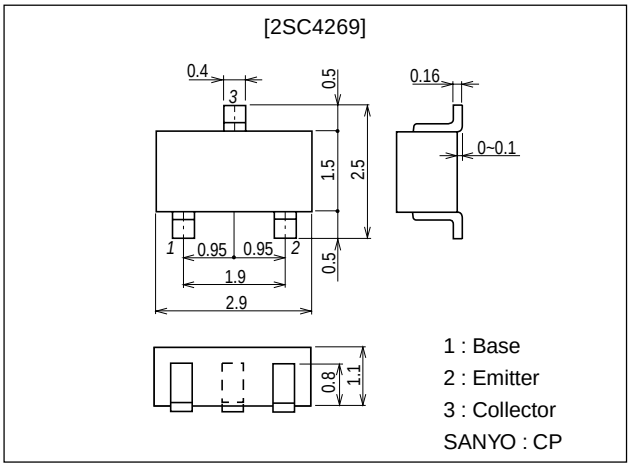
Features

- High power gain : PG=15dB typ (f=0.4GHz)
- High cutoff frequency : f_T=1.2GHz typ

Package Dimensions

unit:mm

2018B



Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	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
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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
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			1	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	0.6	1.2		GHz
Output Capacitance	C_{ob}	V_{CB}=10V, f=1MHz		0.75	1.1	pF
Reverse Transfer Capacitance	C_{re}	V_{CB}=10V, f=1MHz		0.5		pF
Power Gain	PG	V_{CE}=10V, I_C=10mA, f=0.4GHz		15		dB
Noise Figure	NF	V_{CE}=10V, I_C=3mA, f=0.4GHz		2.0		dB

* : The 2SC4269 is classified by 5mA h_{FE} as follows :

40	2	80	60	3	120	100	4	200

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

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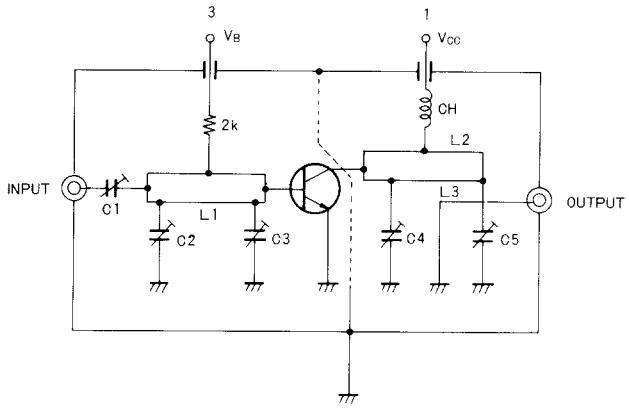
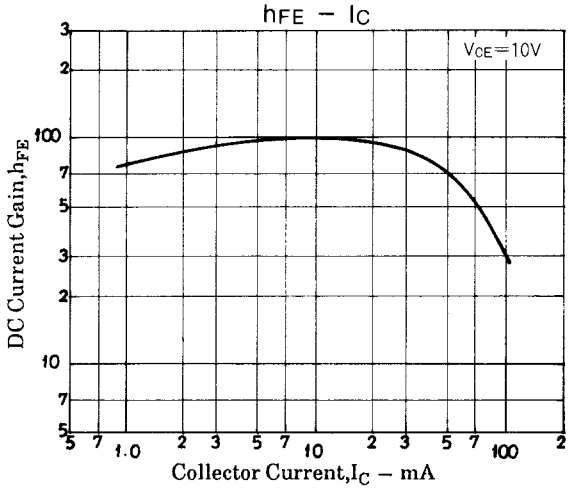
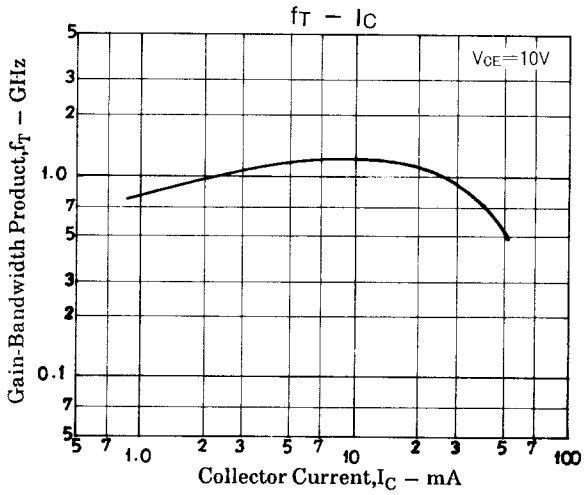
PG, NF Test Circuit

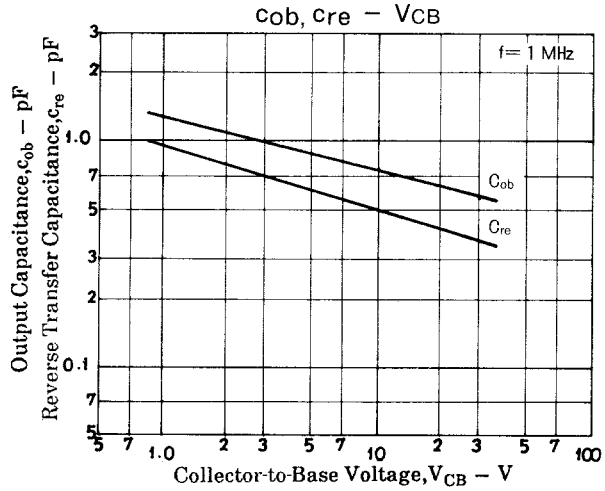


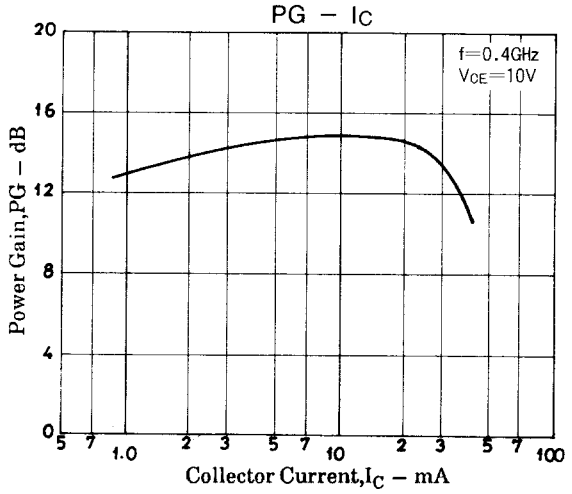
	f=400MHz
C1	~20pF
C2	~10pF
C3	~10pF
C4	~20pF
C5	~30pF
L1	2ϕ, l=40mm 2/3t
L2	2ϕ, l=40mm 2/3t
L3	1ϕ, l=40mm 1/2t

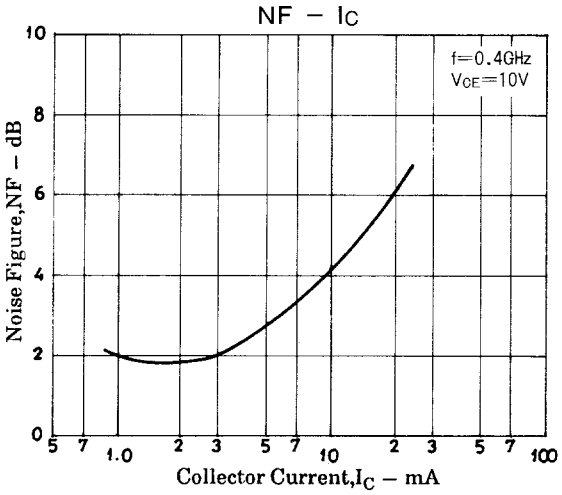
Unit (resistance : Ω)

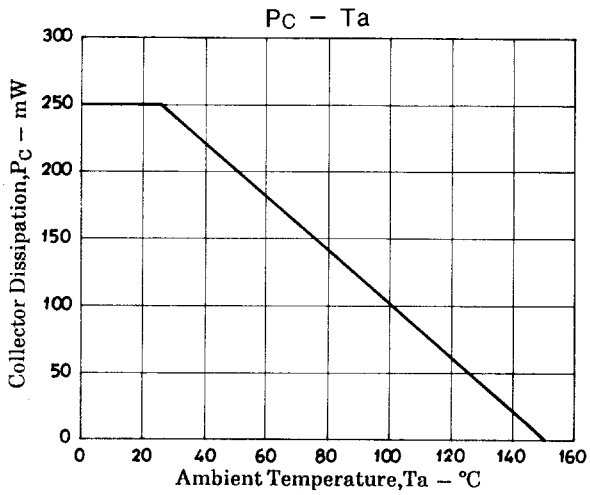






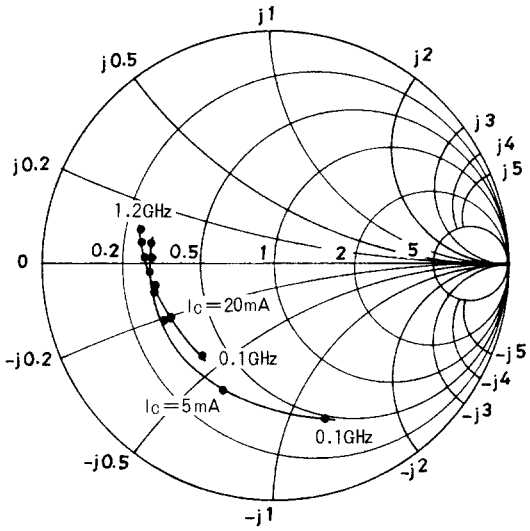




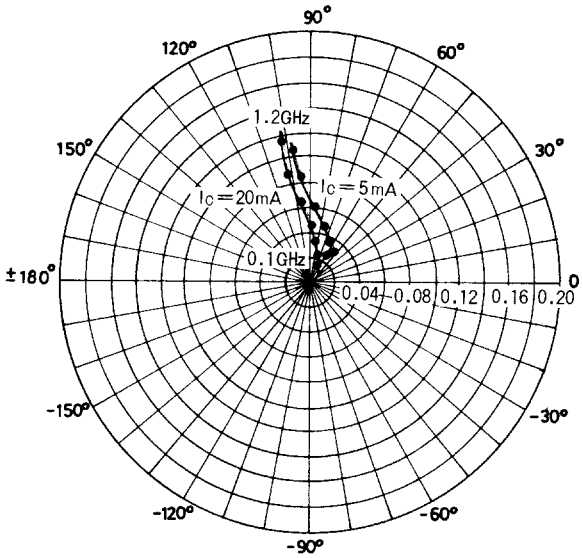


S parameter

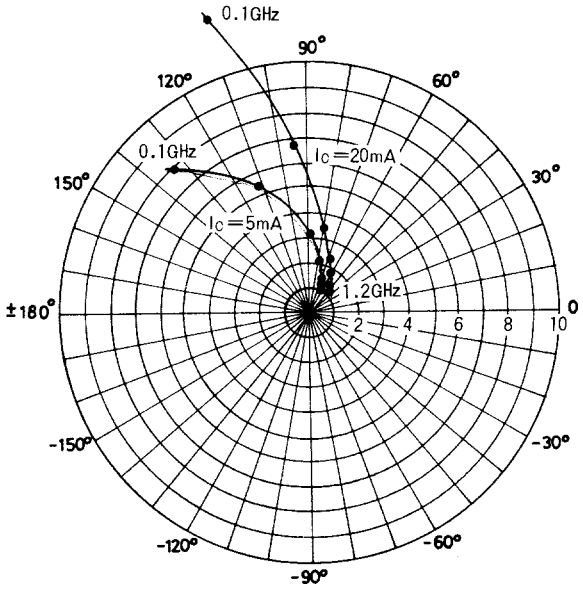
S11e : VCE= 10V
f=100MHz, 200 to 1200MHz (200MHz step)



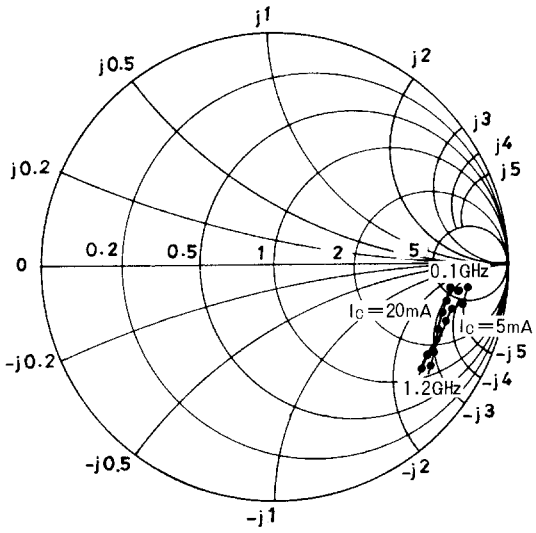
S12e : VCE= 10V
f=100MHz, 200 to 1200MHz (200MHz step)



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



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



S parameter (Common emitter)

V_{CE}=10V, I_C=5mA, 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	0.703	–69.5	7.836	133.2	0.022	56.2	0.873	–10.4
200	0.529	–111.8	5.462	111.6	0.029	49.5	0.809	–12.1
400	0.543	–152.3	3.089	89.2	0.036	59.4	0.771	–15.2
600	0.538	–166.4	2.123	78.2	0.046	74.4	0.767	–19.6
800	0.541	–175.3	1.626	69.3	0.061	86.1	0.766	–25.0
1000	0.550	177.0	1.332	63.2	0.082	93.7	0.768	–29.7
1200	0.561	171.4	1.144	57.1	0.107	96.9	0.773	–35.4

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	0.521	–127.8	12.130	109.6	0.014	56.2	0.783	–9.5
200	0.517	–153.4	6.656	94.7	0.020	64.9	0.753	–9.2
400	0.532	–169.8	3.328	79.1	0.032	77.9	0.745	–12.4
600	0.544	–177.2	2.236	69.2	0.047	86.8	0.751	–17.4
800	0.565	176.9	1.655	60.5	0.065	94.8	0.761	–23.1
1000	0.583	172.2	1.334	54.4	0.087	99.7	0.769	–28.1
1200	0.597	167.0	1.129	48.4	0.114	101.2	0.776	–34.0