Ordering number:EN3007

NPN Epitaxial Planar Silicon Transistor

2SC4365

VHF, UHF/MIX. OSC. Low-Voltage High-Frequency Amplifier Applications

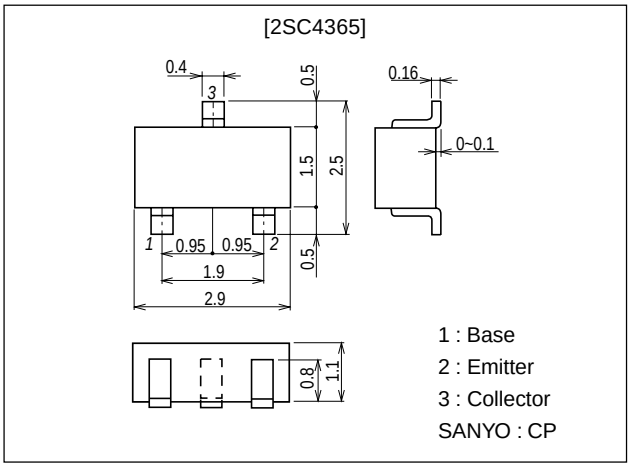
Features

· Low-voltage operation
: f_T=3.0GHz typ (V_{CE}=3V)
: MAG=12dB typ (V_{CE}=3V, I_C=10mA)
: NF=1.5dB typ (V_{CE}=3V, I_C=5mA)

Package Dimensions

unit:mm

2018B



Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	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
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}=15V, I_E=0			1.0	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=1V, I_C=0			1.0	μA
DC Current Gain	h_{FE}	V_{CE}=3V, I_C=10mA	40*		200*	
Gain-Bandwidth Product	f_T	V_{CE}=3V, I_C=10mA		3.0		GHz
Output Capacitance	C_{ob}	V_{CB}=3V, f=1MHz		0.9	1.5	pF
Reverse Transfer Capacitance	C_{re}	V_{CB}=3V, f=1MHz		0.85		pF

* : The 2SC4365 is classified by 10mA h_{FE} as follows :

40	2	80	60	3	120	100	4	200

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

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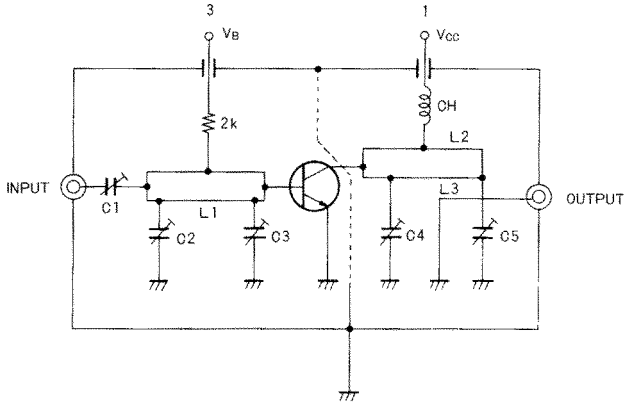
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

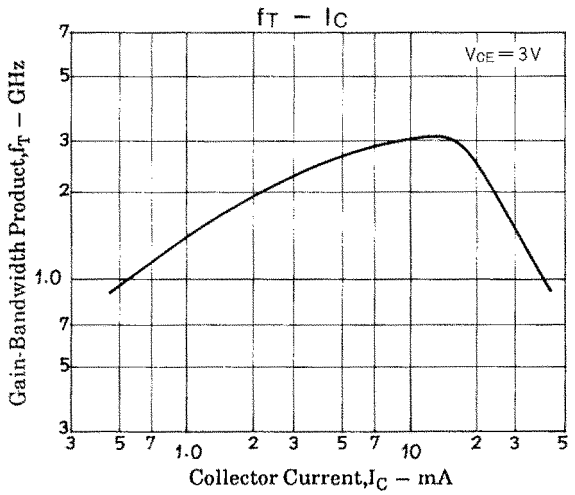
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Gain	$\|S21e\|^2$	V_{CE}=3V, I_C=10mA, f=0.9GHz		7		dB
Maximum Available Power Gain	MAG	V_{CE}=3V, I_C=10mA, f=0.9GHz		12		dB
Noise Figure	NF	V_{CE}=3V, I_C=5mA, f=0.9GHz		1.5	3.0	dB

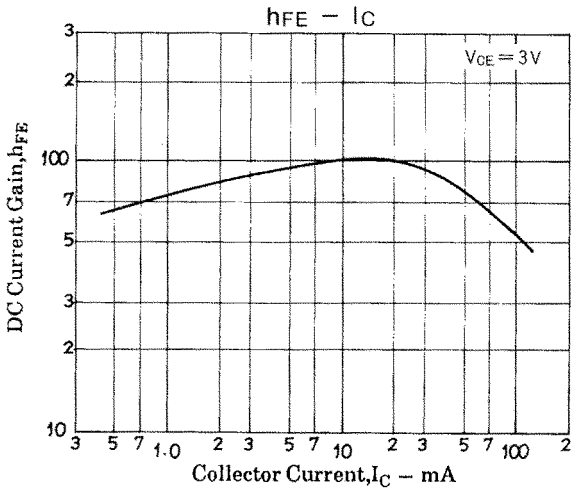
NF Test Circuit

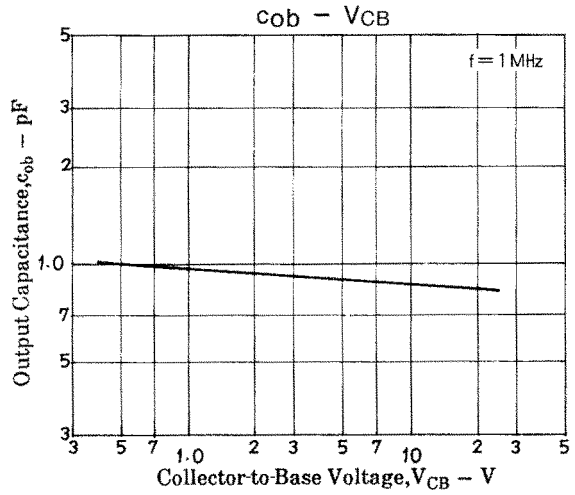


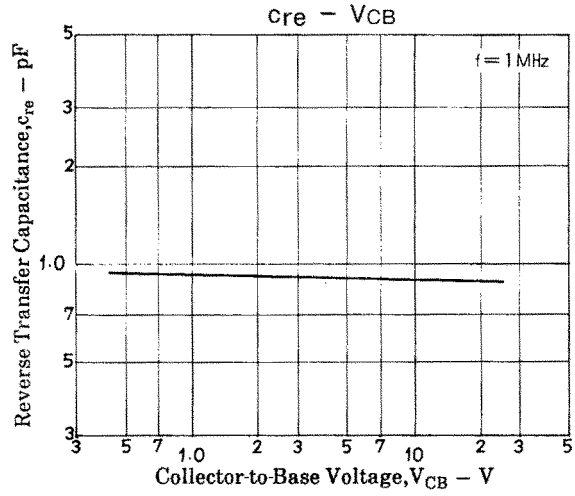
Unit (resistance : Ω)

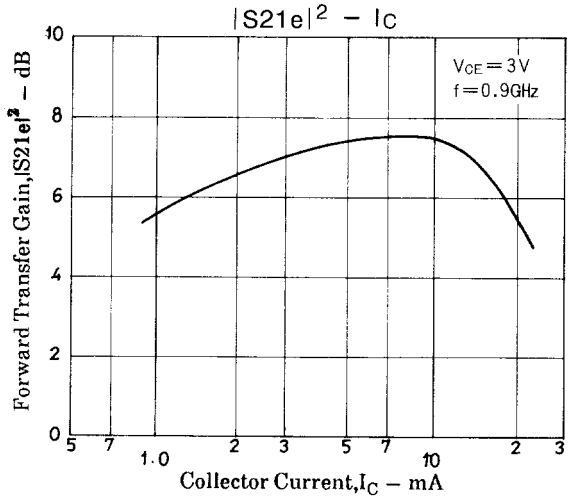
	900MHz
C1	~5pF
C2	~10pF
C3	~10pF
C4	~10pF
C5	~10pF
L1	W ≈ 1.5mm, l ≈ 25mm Strip line
L2	W ≈ 4mm, l ≈ 25mm Strip line
L3	0.5ϕ, l ≈ 40mm
CH	2t+bead core

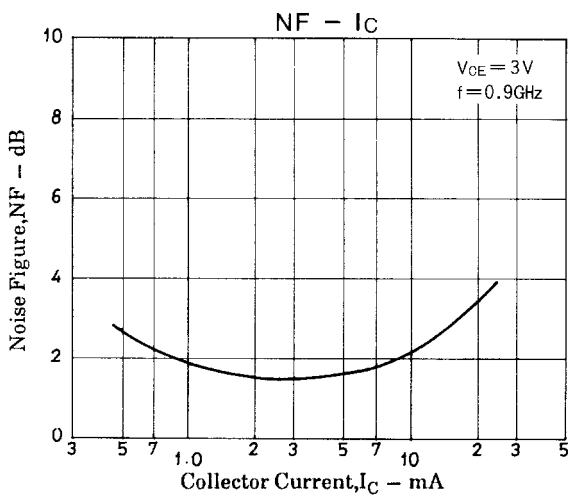


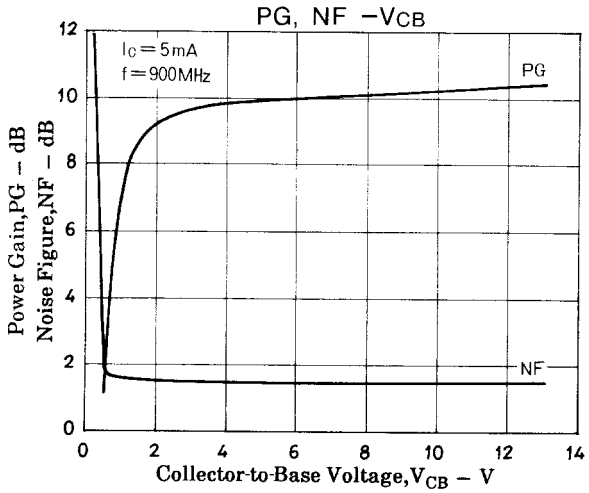


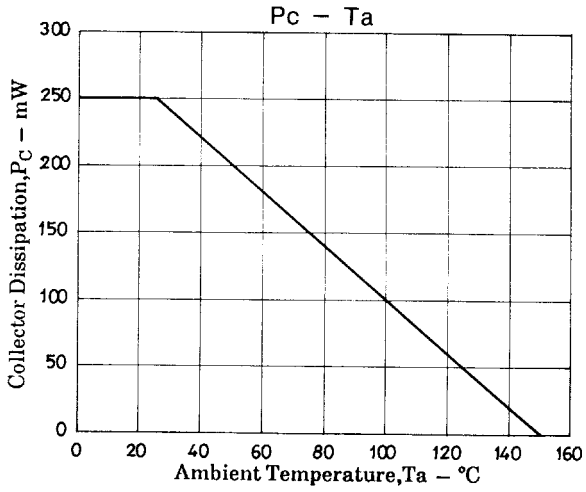






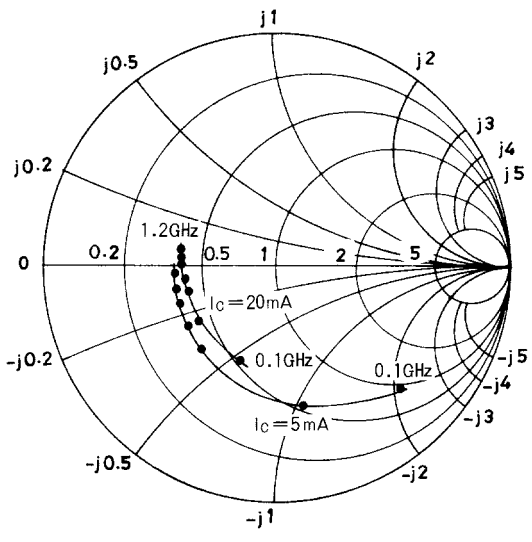




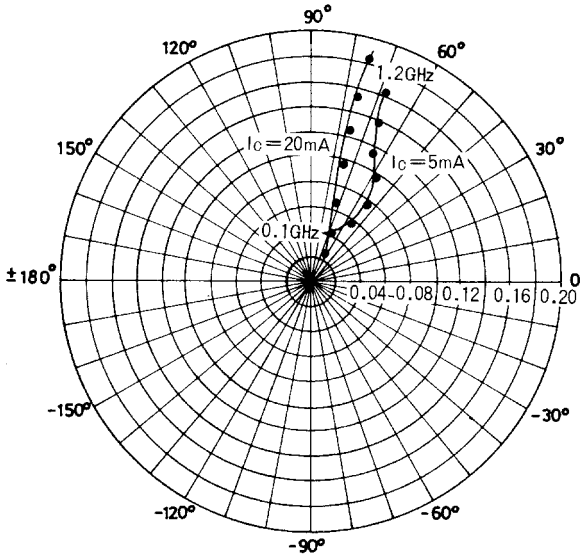


S parameter

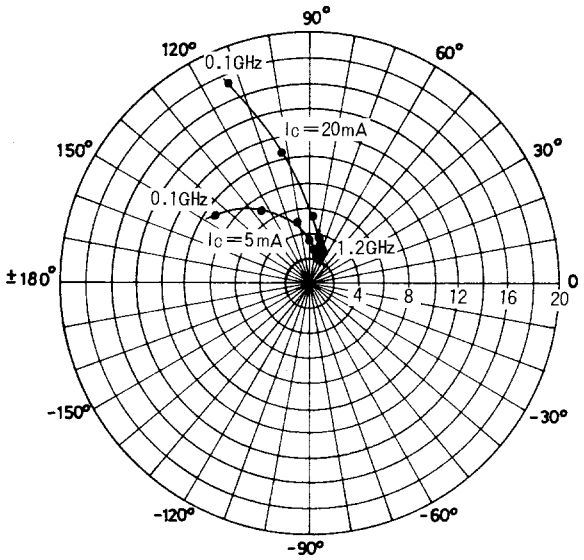
S11e : VCE = 3 V
f = 100MHz, 200 to 1200MHz (200MHz step)



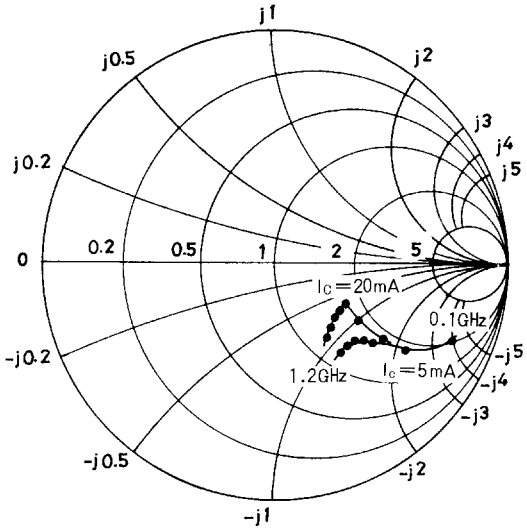
S12e : VCE = 3 V
f = 100MHz, 200 to 1200MHz (200MHz step)



S21e : V_{CE}= 3 V
f=100MHz, 200 to 1200MHz(200MHz step)



S22e : V_{CE}= 3 V
f=100MHz, 200 to 1200MHz(200MHz step)



S parameter (Common emitter)

V_{CE}=3V, I_C=5mA, Z_O=50Ω

Freq (MHz)	| S_{11} |	∠ S_{11}	| S_{21} |	∠ S_{21}	| S_{12} |	∠ S_{12}	| S_{22} |	∠ S_{22}
100	0.738	–45.7	9.352	143.7	0.040	65.0	0.827	–22.5
200	0.606	–80.3	7.183	123.9	0.059	54.4	0.664	–31.3
400	0.485	–129.6	4.814	99.4	0.079	53.5	0.506	–35.3
600	0.449	–149.5	3.426	87.4	0.097	58.1	0.463	–38.1
800	0.437	–161.2	2.626	78.8	0.115	63.5	0.444	–41.4
900	0.437	–165.9	2.392	75.6	0.127	65.2	0.446	–43.3
1000	0.444	–170.2	2.180	72.3	0.138	67.3	0.444	–45.4
1200	0.448	–175.7	1.891	66.8	0.163	69.0	0.451	–50.4

V_{CE}=3V, I_C=20mA, Z_O=50Ω

Freq (MHz)	| S_{11} |	∠ S_{11}	| S_{21} |	∠ S_{21}	| S_{12} |	∠ S_{12}	| S_{22} |	∠ S_{22}
100	0.446	–112.7	17.471	118.5	0.026	61.5	0.581	–32.6
200	0.421	–143.4	10.341	102.4	0.040	65.0	0.437	–32.2
400	0.414	–164.8	5.545	88.2	0.067	71.7	0.370	–30.5
600	0.412	–173.5	3.742	79.9	0.096	74.1	0.361	–34.4
800	0.412	–178.4	2.822	73.4	0.123	75.8	0.359	–39.1
900	0.418	179.1	2.566	70.9	0.139	75.6	0.365	–41.5
1000	0.428	176.8	2.326	68.1	0.153	76.0	0.366	–44.2
1200	0.435	174.0	2.013	63.2	0.182	74.9	0.398	–50.2