

Ordering number:EN3008

NPN Epitaxial Planar Silicon Transistor



2SC4364

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

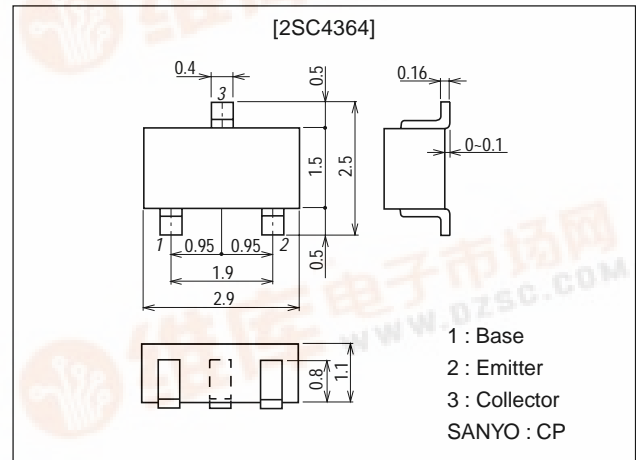
Features

- Low-voltage operation
 - : $f_T=3.0\text{GHz}$ typ ($V_{CE}=3\text{V}$)
 - : $MAG=11\text{dB}$ typ ($V_{CE}=3\text{V}$, $I_C=3\text{mA}$)
 - : $NF=3.0\text{dB}$ typ ($V_{CE}=3\text{V}$, $I_C=3\text{mA}$)

Package Dimensions

unit:mm

2018B



Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

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		30	mA
Collector Dissipation	P_C		250	mW
Junction Temperature	T_j		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=15\text{V}$, $I_E=0$			1.0	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=2\text{V}$, $I_C=0$			1.0	μA
DC Current Gain	h_{FE}	$V_{CE}=3\text{V}$, $I_C=3\text{mA}$	40*		200*	
Gain-Bandwidth Product	f_T	$V_{CE}=3\text{V}$, $I_C=3\text{mA}$		3.0		GHz
Output Capacitance	C_{ob}	$V_{CB}=3\text{V}$, $f=1\text{MHz}$		0.75	1.3	pF
Reverse Transfer Capacitance	C_{re}	$V_{CB}=3\text{V}$, $f=1\text{MHz}$		0.7		pF

* : The 2SC4364 is classified by 3mA h_{FE} as follows :

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

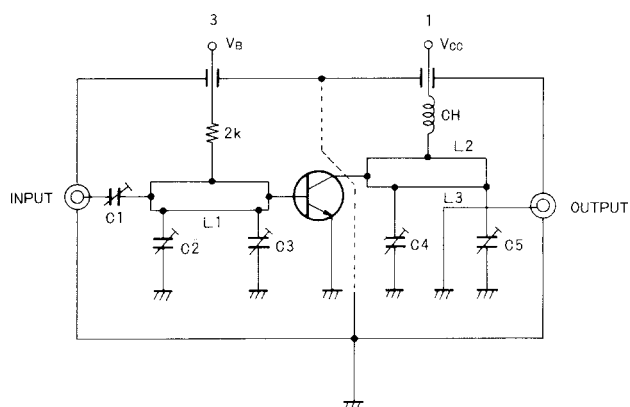
h_{FE} rank : 2, 3, 4

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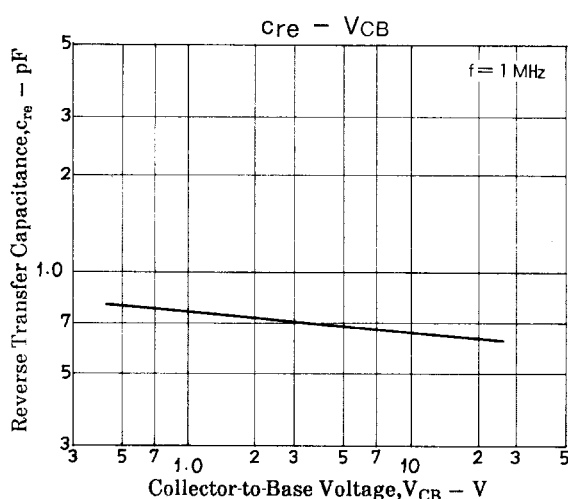
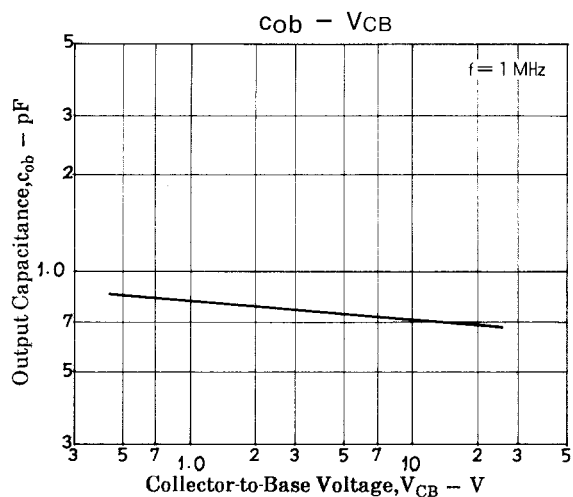
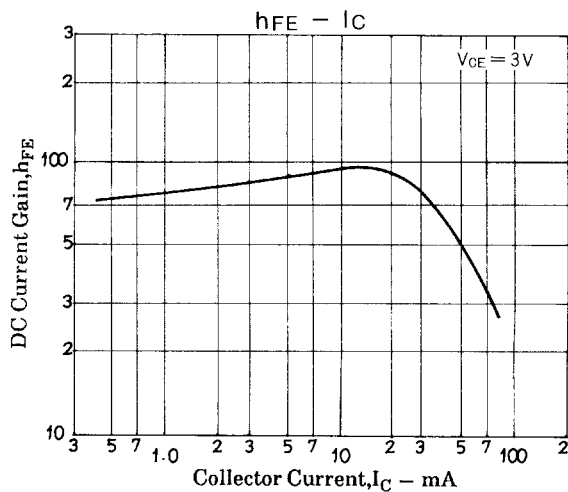
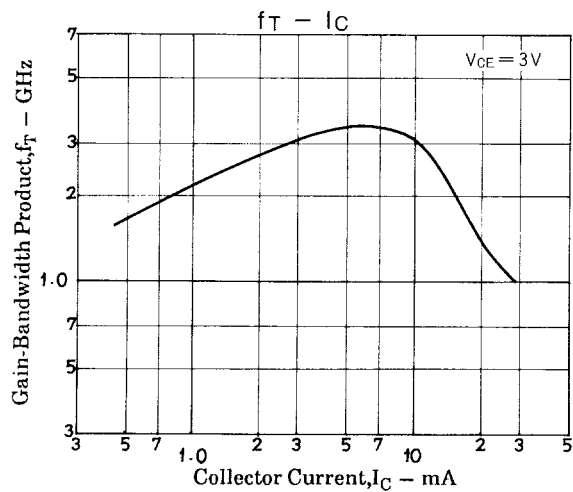
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Gain	$ S_{21e} ^2$	$V_{CE}=3V, I_C=3mA, f=0.9GHz$		7		dB
Maximum Available Power Gain	MAG	$V_{CE}=3V, I_C=3mA, f=0.9GHz$		11		dB
Noise Figure	NF	$V_{CE}=3V, I_C=3mA, f=0.9GHz$		3.0	5.0	dB

NF Test Circuit

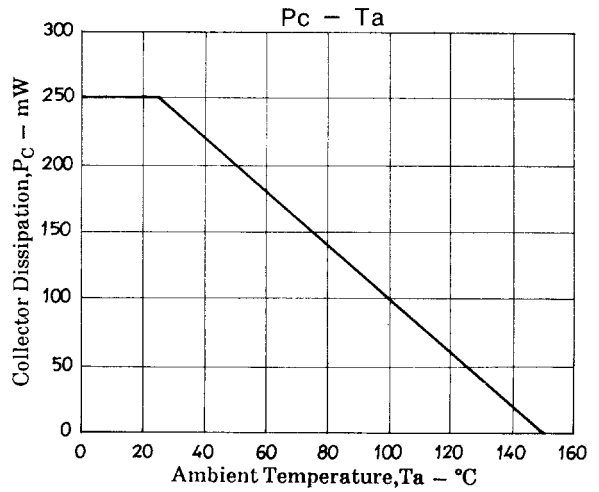
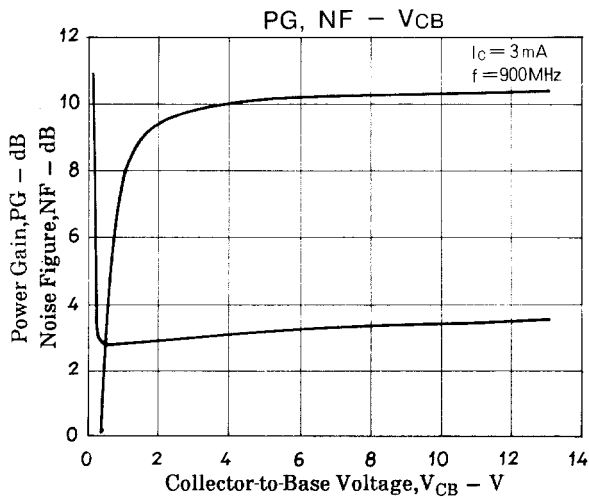
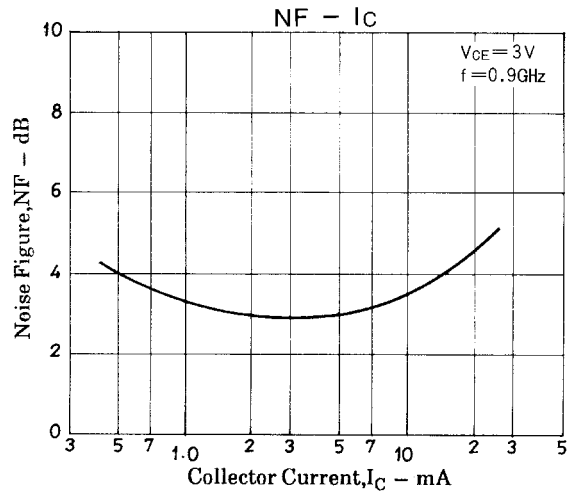
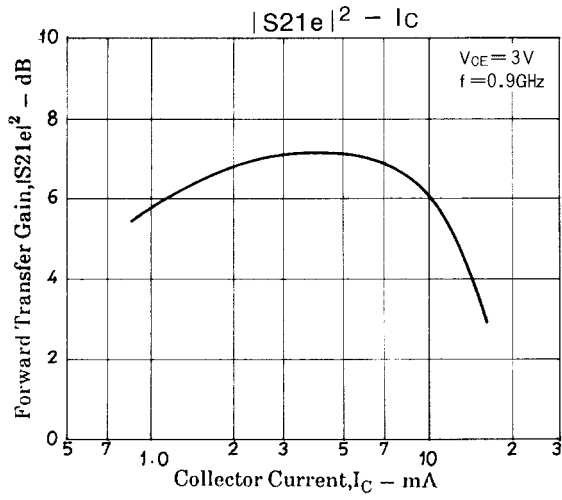


	900MHz
C1	~5pF
C2	~10pF
C3	~10pF
C4	~10pF
C5	~10pF
L1	$W \approx 1.5mm, l \approx 25mm$ Strip line
L2	$W \approx 4mm, l \approx 25mm$ Strip line
L3	$0.5\phi, l \approx 40mm$
CH	2t+bead core

Unit (resistance : Ω)

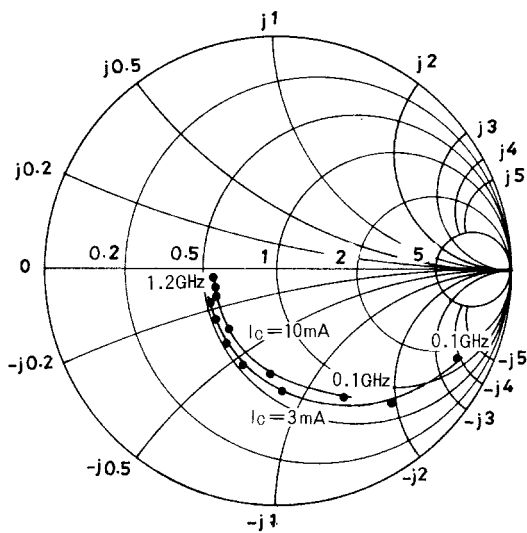


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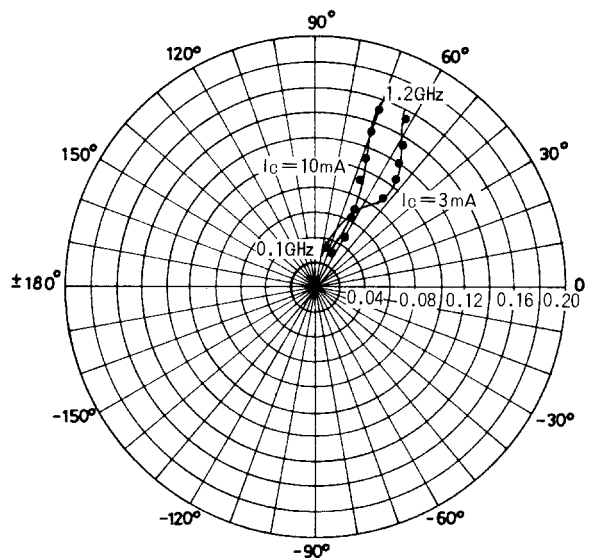


S parameter

S11e : $V_{CE} = 3V$
 $f = 100MHz, 200 \text{ to } 1200MHz (200MHz \text{ step})$



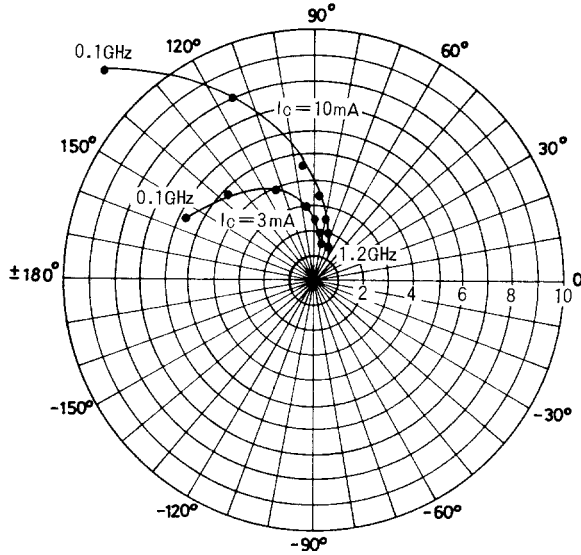
S12e : $V_{CE} = 3V$
 $f = 100MHz, 200 \text{ to } 1200MHz (200MHz \text{ step})$



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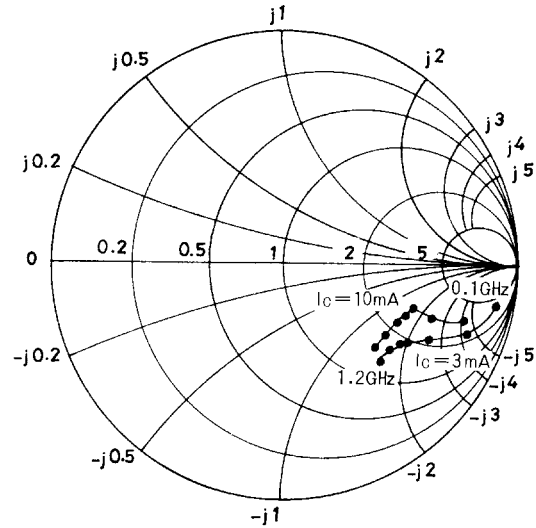
S21e : $V_{CE} = 3V$

$f = 100\text{MHz}$, 200 to 1200MHz (200MHz step)



S22e : $V_{CE} = 10V$

$f = 100\text{MHz}$, 200 to 1200MHz (200MHz step)



S parameter (Common emitter)

$V_{CE} = 3V$, $I_C = 3mA$, $Z_0 = 50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.874	-25.4	5.638	154.7	0.036	73.4	0.931	-12.4
200	0.758	-46.8	4.895	137.3	0.061	62.3	0.842	-19.9
400	0.555	-85.9	3.925	112.5	0.088	53.7	0.696	-26.7
600	0.437	-110.1	3.004	97.1	0.105	53.2	0.631	-30.3
800	0.377	-127.8	2.387	86.7	0.119	56.2	0.596	-32.9
900	0.361	-135.3	2.201	82.7	0.128	57.3	0.594	-34.4
1000	0.353	-141.9	2.014	79.1	0.135	56.5	0.586	-36.1
1200	0.340	-151.4	1.763	72.7	0.153	60.6	0.581	-40.1

$V_{CE} = 3V$, $I_C = 10mA$, $Z_0 = 50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.632	-59.2	11.508	135.2	0.031	63.9	0.811	-18.4
200	0.467	-92.6	7.923	115.1	0.045	58.7	0.677	-21.8
400	0.352	-129.6	4.570	95.5	0.067	61.8	0.584	-22.7
600	0.317	-147.2	3.190	85.3	0.089	65.4	0.561	-25.8
800	0.307	-157.8	2.432	78.1	0.109	68.6	0.548	-29.2
900	0.308	-162.6	2.217	75.1	0.122	69.1	0.551	-31.2
1000	0.314	-166.9	2.023	72.2	0.133	70.1	0.547	-33.3
1200	0.318	-172.2	1.756	67.0	0.156	70.1	0.549	-38.1

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