

Ordering number:EN5043



NPN Epitaxial Planar Silicon Transistor

**2SC4868**

**VHF to UHF Wide-Band  
Low-Noise Amplifier Applications**

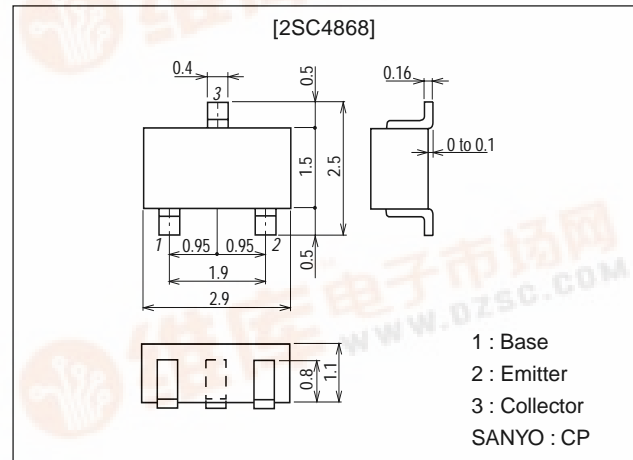
**Features**

- Low noise : NF=1.2dB typ (f=1GHz).
- High gain :  $|S_{21e}|^2=13\text{dB typ (f=1GHz)}$ .
- High cutoff frequency :  $f_T=9.0\text{GHz typ}$ .

**Package Dimensions**

unit:mm

2018B



**Specifications**

**Absolute Maximum Ratings at Ta = 25°C**

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		16	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		8	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		1.5	V
Collector Current	I <sub>C</sub>		50	mA
Collector Dissipation	P <sub>C</sub>		200	mW
Junction Temperature	T <sub>J</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

**Electrical Characteristics at Ta = 25°C**

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I <sub>CB0</sub>	V <sub>CB</sub> =10V, I <sub>E</sub> =0			1.0	µA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =1V, I <sub>C</sub> =0			10	µA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =15mA	60*		270*	
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =15mA		9.0		GHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, f=1MHz		0.6	1.1	pF
Forward Transfer Gain	S <sub>21e</sub>   <sup>2</sup>	V <sub>CE</sub> =5V, I <sub>C</sub> =15mA, f=1GHz	10	13		dB
Noise Figure	NF	V <sub>CE</sub> =5V, I <sub>C</sub> =5mA, f=1GHz		1.2	2.5	dB

\* : The 2SC4868 is classified by 15mA h<sub>FE</sub> as follows :

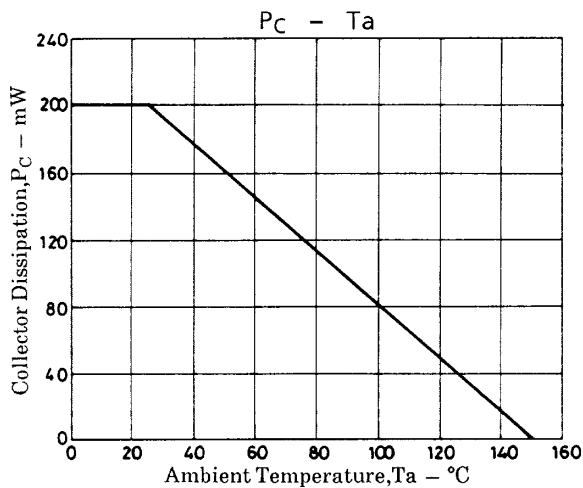
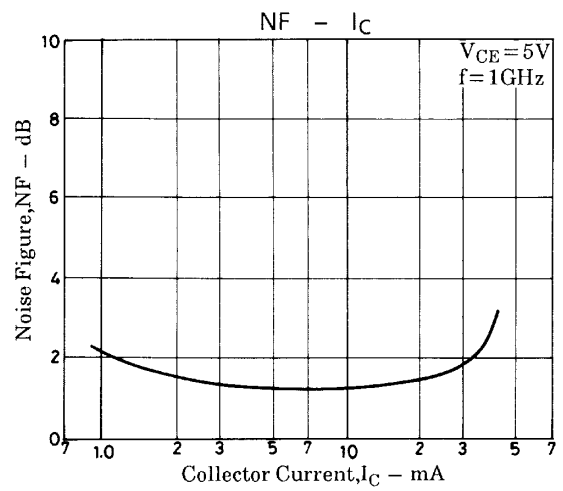
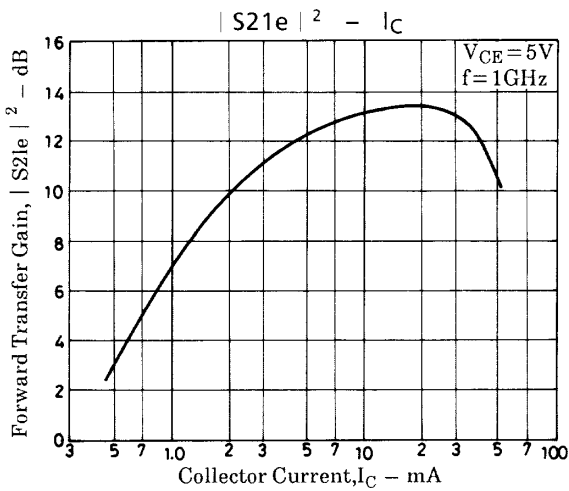
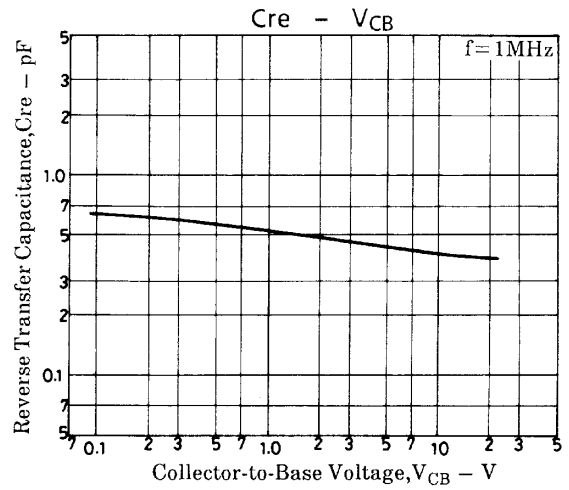
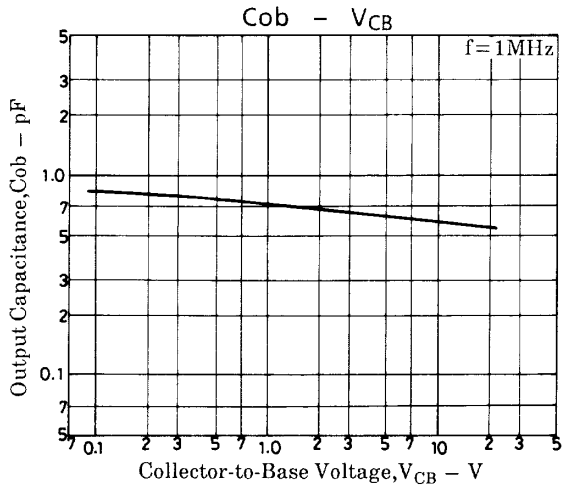
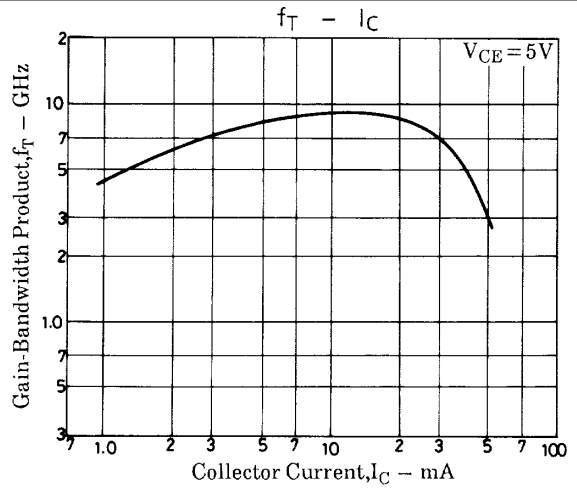
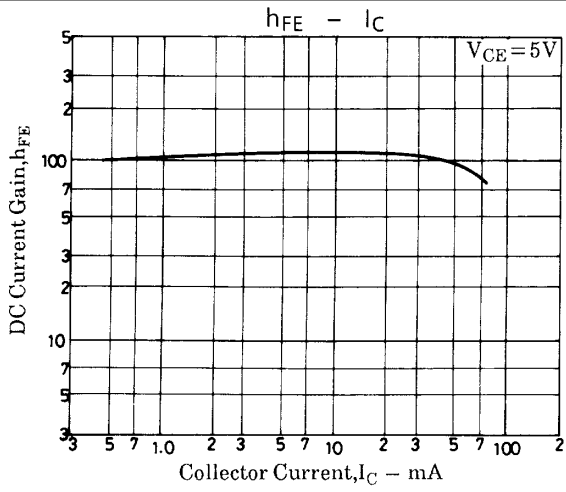
60	3	120	90	4	180	135	5	270
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Marking : GN

h<sub>FE</sub> rank : 3, 4, 5

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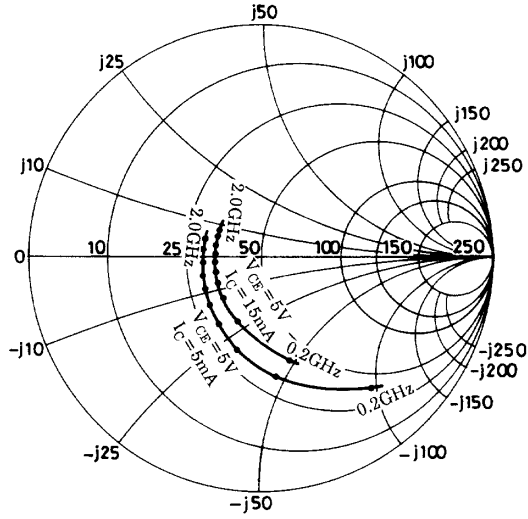
## 2SC4868



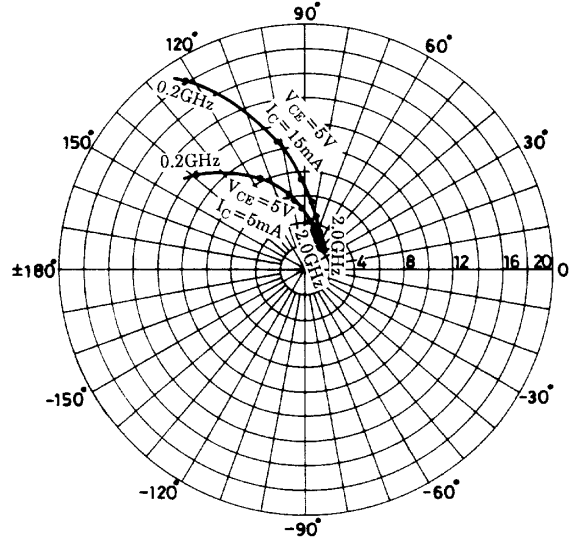
# 2SC4868

## S parameter

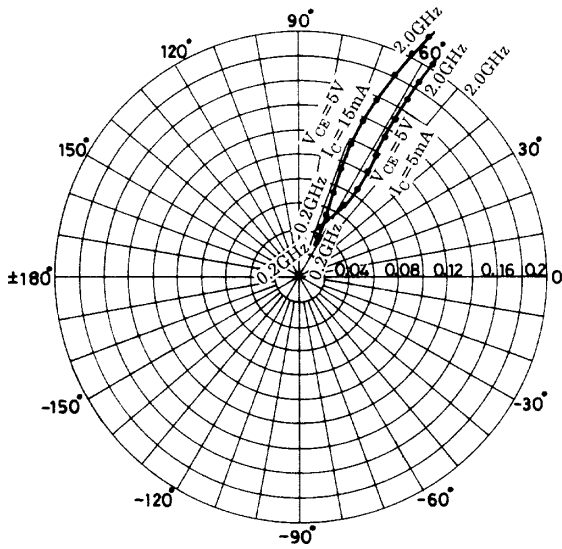
f = 200 to 2000MHz (200MHz step)



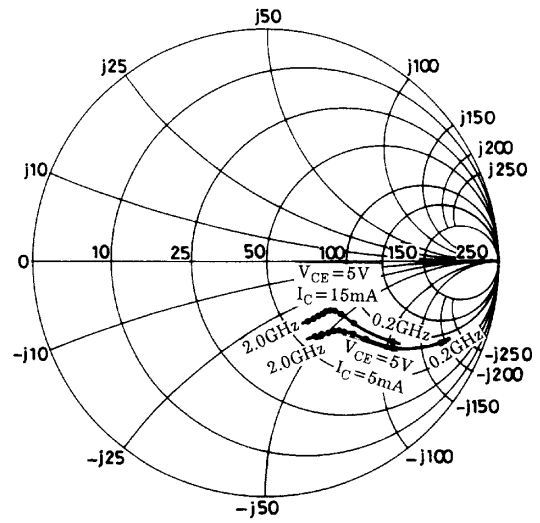
f = 200 to 2000MHz (200MHz step)



f = 200 to 2000MHz (200MHz step)



f = 200 to 2000MHz (200MHz step)



## 2SC4868

### S parameter (Common emitter)

$V_{CE}=5V, I_C=5mA, Z_O=50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
200	0.726	-49.0	11.900	139.5	0.045	66.5	0.832	-25.0
400	0.522	-81.9	8.438	115.9	0.070	58.2	0.648	-35.5
600	0.411	-104.5	6.284	101.5	0.086	56.5	0.538	-39.5
800	0.342	-122.0	4.977	91.5	0.102	57.1	0.473	-41.7
1000	0.304	-136.2	4.094	83.7	0.118	57.8	0.448	-44.0
1200	0.278	-150.8	3.498	76.8	0.134	58.8	0.427	-46.0
1400	0.263	-162.9	3.057	70.7	0.151	58.9	0.413	-48.4
1600	0.254	-174.7	2.732	65.3	0.170	58.8	0.400	-51.7
1800	0.252	172.2	2.473	60.2	0.187	58.5	0.391	-55.0
2000	0.253	162.6	2.289	55.4	0.206	58.1	0.387	-58.5

$V_{CE}=5V, I_C=15mA, Z_O=50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
200	0.454	-74.7	18.146	122.0	0.035	65.4	0.635	-33.9
400	0.295	-110.8	10.672	101.9	0.055	66.1	0.459	-37.3
600	0.243	-132.5	7.405	91.5	0.075	67.8	0.391	-37.1
800	0.219	-149.0	5.706	84.0	0.095	68.5	0.363	-38.0
1000	0.205	-161.4	4.636	78.0	0.117	68.4	0.347	-39.9
1200	0.200	-174.2	3.913	72.4	0.138	67.6	0.340	-42.4
1400	0.200	175.6	3.407	67.7	0.159	66.3	0.334	-45.3
1600	0.202	165.1	3.032	62.9	0.181	64.8	0.327	-49.3
1800	0.209	154.6	2.734	58.5	0.202	63.4	0.322	-53.1
2000	0.215	146.0	2.517	54.3	0.223	61.6	0.319	-57.3

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