

<b>SANYO</b>	No.4582	<b>2SC4863</b>
		NPN Epitaxial Planar Silicon Transistor <b>VHF to UHF Wide-Band Low-Noise Amp</b> Applications

**Features**

- Low noise : NF = 1.1dB typ (f = 1GHz)
- High gain : | S21e |<sup>2</sup> = 11dB typ (f = 1GHz)
- High cutoff frequency : f<sub>T</sub> = 7.0GHz typ

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

			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>	2	V
Collector Current	I <sub>C</sub>	70	mA
Collector Dissipation	P <sub>C</sub>	150	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**

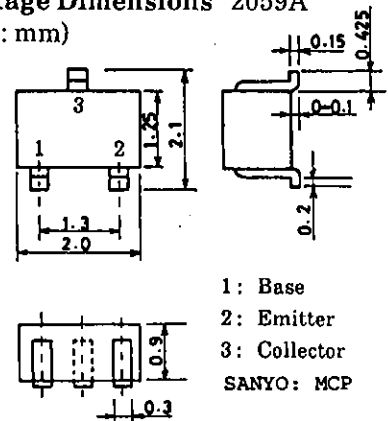
			min	typ	max	unit
Collector Cutoff Current	I <sub>CB0</sub>	V <sub>CB</sub> = 10V, I <sub>E</sub> = 0			1.0	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> = 1V, I <sub>C</sub> = 0			10	μA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> = 5V, I <sub>C</sub> = 20mA	60*		270*	
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> = 5V, I <sub>C</sub> = 20mA		7.0		GHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> = 10V, f = 1MHz		0.95	1.4	pF
Forward Transfer Gain	S21e   <sup>2</sup>	V <sub>CE</sub> = 5V, I <sub>C</sub> = 20mA, f = 1GHz	7	11		dB
Noise Figure	NF	V <sub>CE</sub> = 5V, I <sub>C</sub> = 7mA, f = 1GHz		1.1	2.0	dB

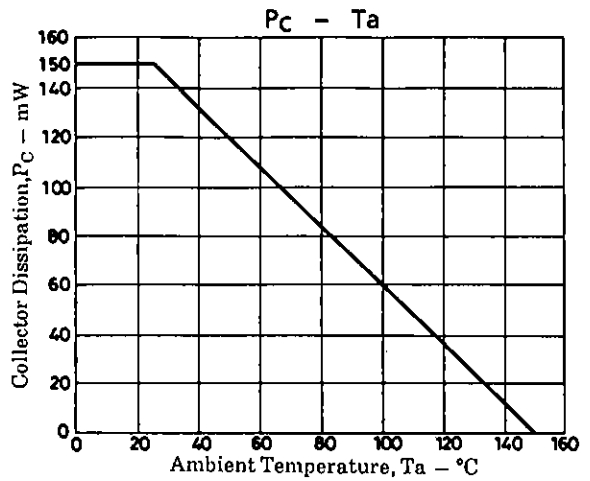
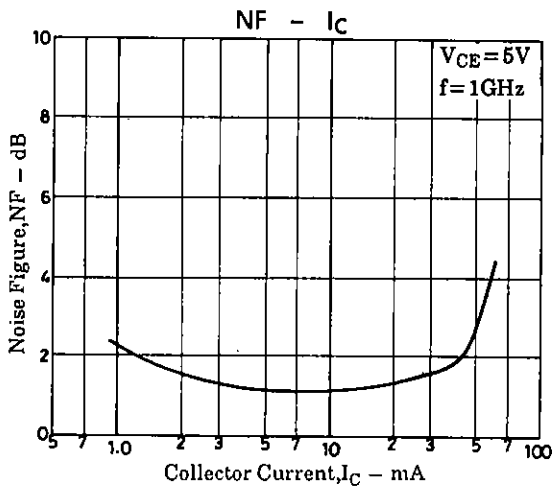
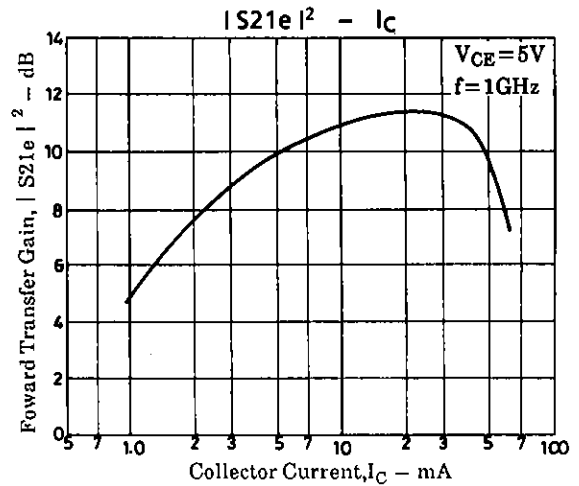
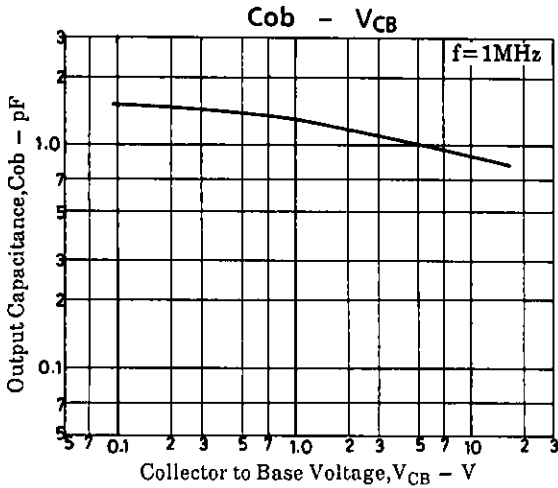
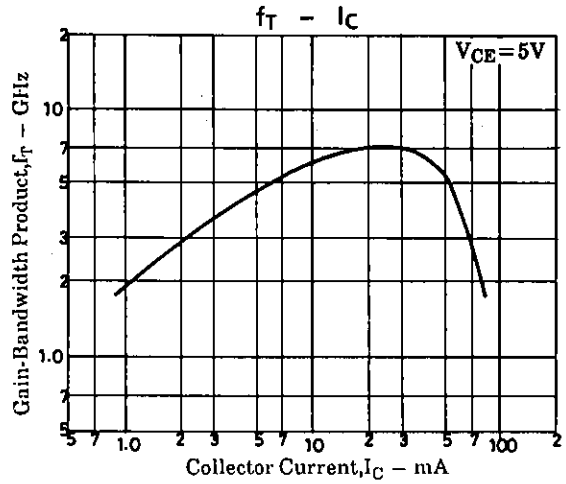
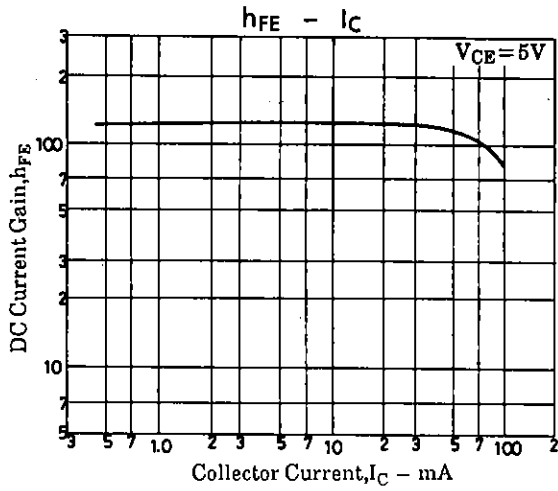
\* The 2SC4863 is classified by 20mA h<sub>FE</sub> as follows :

60 3 120	90 4 180	135 5 270
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Marking : FN  
h<sub>FE</sub> rank : 3,4,5

**Package Dimensions 2059A**  
(unit : mm)

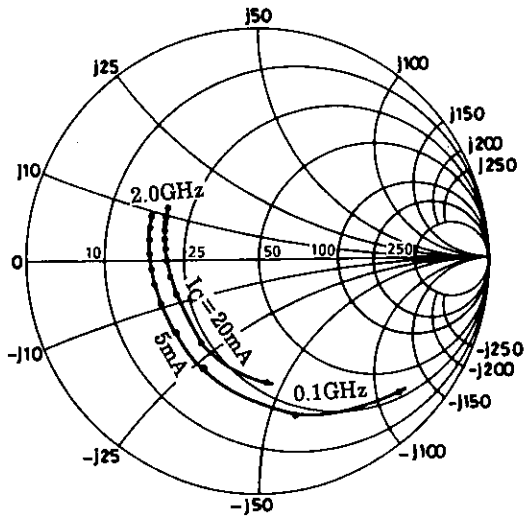




S Parameter

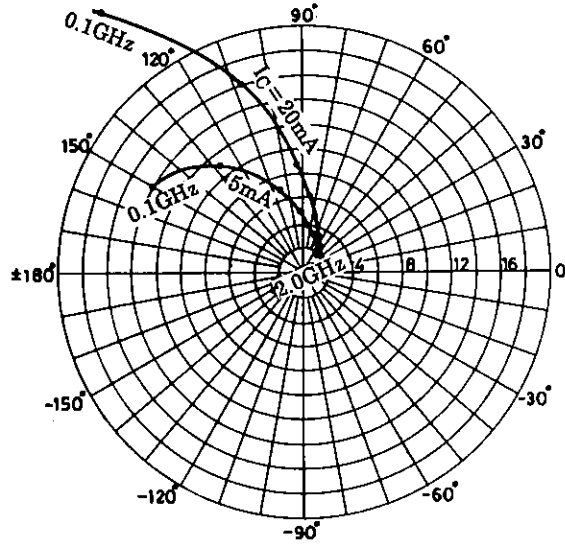
S11e:  $V_{CE}=5V$

$f=100MHz, 200\sim 2000MHz$  (200MHz step)



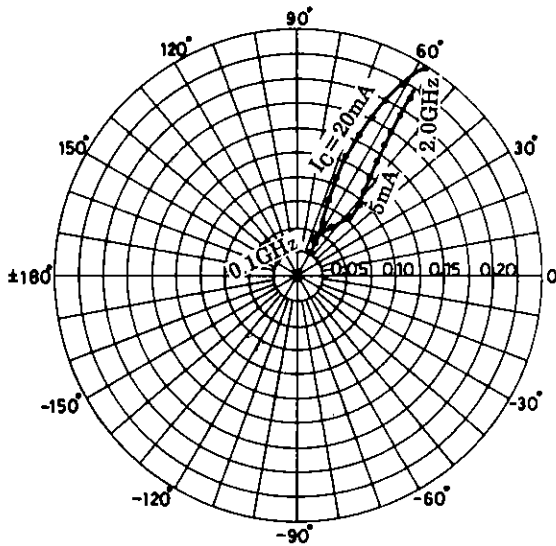
S21e:  $V_{CE}=5V$

$f=100MHz, 200\sim 2000MHz$  (200MHz step)



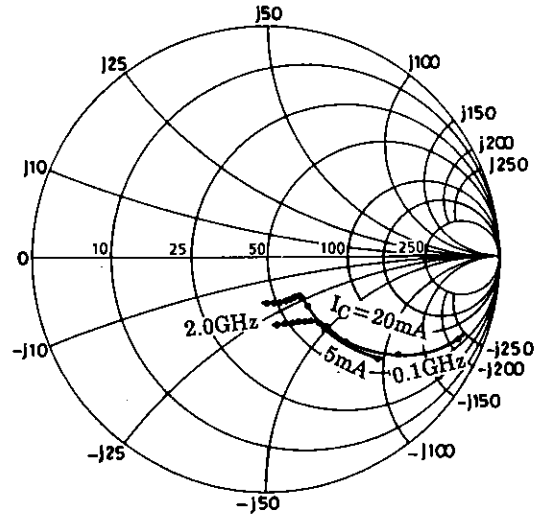
S12e:  $V_{CE}=5V$

$f=100MHz, 200\sim 2000MHz$  (200MHz step)



S22e:  $V_{CE}=5V$

$f=100MHz, 200\sim 2000MHz$  (200MHz step)



## S Parameter (Common emitter)

 $V_{CE}=5V, I_C=5mA, Z_0=50\Omega$ 

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.810	-43.8	13.998	149.9	0.039	66.6	0.877	-23.4
200	0.669	-77.9	10.882	128.5	0.060	53.7	0.687	-37.0
400	0.521	-118.3	6.872	106.2	0.081	47.6	0.488	-46.9
600	0.478	-140.5	4.929	93.4	0.095	48.3	0.397	-50.5
800	0.470	-156.3	3.857	84.2	0.109	51.1	0.355	-52.7
1000	0.470	-168.2	3.194	75.7	0.125	53.0	0.331	-56.3
1200	0.473	-177.3	2.712	68.9	0.141	54.7	0.317	-59.9
1400	0.479	174.7	2.378	62.3	0.159	55.7	0.306	-65.3
1600	0.480	169.0	2.122	56.7	0.175	56.8	0.302	-69.9
1800	0.486	164.6	1.918	51.9	0.194	57.1	0.296	-76.0
2000	0.500	158.3	1.773	46.7	0.214	57.3	0.294	-82.0

 $V_{CE}=5V, I_C=20mA, Z_0=50\Omega$ 

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.519	-87.6	26.951	127.9	0.026	59.9	0.629	-42.6
200	0.433	-126.9	16.215	108.5	0.038	58.2	0.395	-51.2
400	0.397	-158.1	8.736	93.4	0.059	64.2	0.264	-50.4
600	0.394	-169.7	5.958	85.0	0.082	66.9	0.228	-50.2
800	0.404	-178.8	4.568	78.1	0.106	68.0	0.217	-51.7
1000	0.412	173.9	3.713	71.9	0.131	67.3	0.211	-56.8
1200	0.422	168.6	3.151	66.4	0.156	65.9	0.207	-61.9
1400	0.430	163.3	2.764	60.6	0.179	64.3	0.203	-69.1
1600	0.435	160.0	2.437	56.2	0.200	62.8	0.201	-75.3
1800	0.442	157.3	2.202	51.9	0.222	60.9	0.199	-83.5
2000	0.460	151.9	2.025	47.3	0.245	59.4	0.199	-90.7

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