

Ordering number:EN4759

NPN Epitaxial Planar Silicon Transistor



2SC4855

Low-Voltage, Low-Current & High-Frequency Amplifier Applications

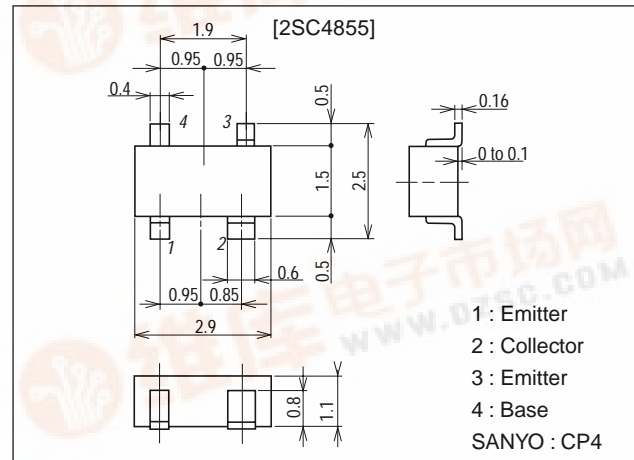
Features

- Low-voltage, low-current operation : $f_T=5\text{GHz}$ typ.
 $(V_{CE}=1\text{V}, I_C=1\text{mA}) : |S_{21e}|^2=7.5\text{dB}$ typ
 $(f=1\text{GHz}).$
 $: NF=2.6\text{dB}$ typ ($f=1\text{GHz}$).

Package Dimensions

unit:mm

2110A



Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		12	V
Collector-to-Emitter Voltage	V_{CE0}		6	V
Emitter-to-Base Voltage	V_{EB0}		1.5	V
Collector Current	I_C		15	mA
Collector Dissipation	P_C		80	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_{CB0}	$V_{CB}=5\text{V}, I_E=0$			1.0	μA
Emitter Cutoff Current	I_{EB0}	$V_{EB}=1\text{V}, I_C=0$			10	μA
DC Current Gain	h_{FE}	$V_{CE}=1\text{V}, I_C=1\text{mA}$	60*		270*	
Gain-Bandwidth Product	f_T	$V_{CE}=1\text{V}, I_C=1\text{mA}$		5		GHz
Output Capacitance	C_{ob}	$V_{CB}=1\text{V}, f=1\text{MHz}$		0.6	1.0	pF

* : The 2SC4855 is classified by 1mA h_{FE} as follows :

60	3	120	90	4	180	135	5	270
----	---	-----	----	---	-----	-----	---	-----

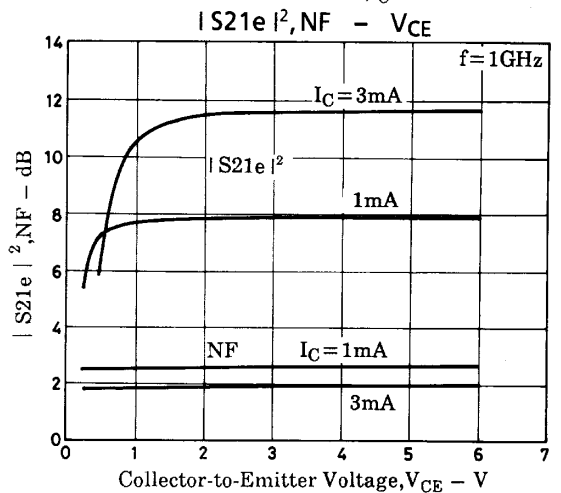
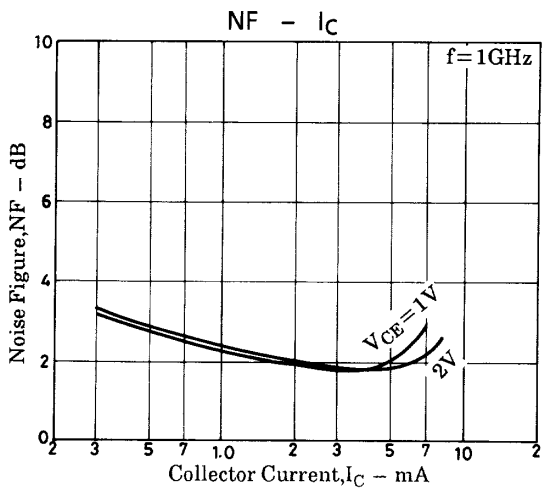
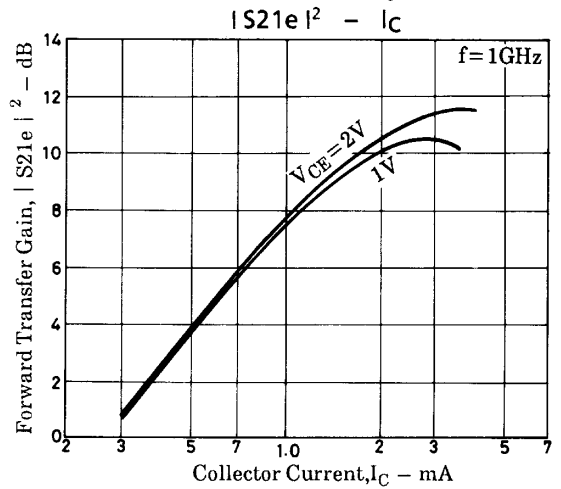
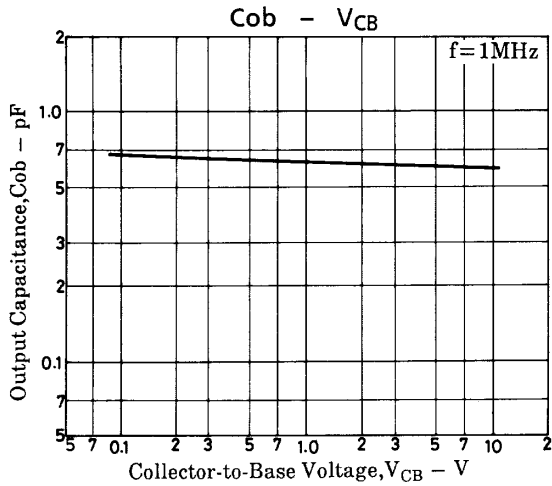
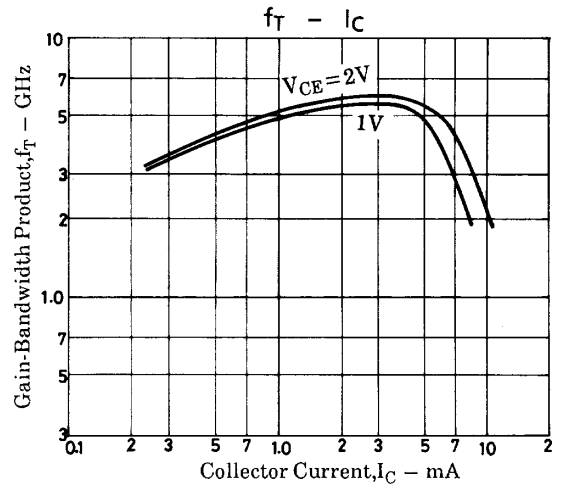
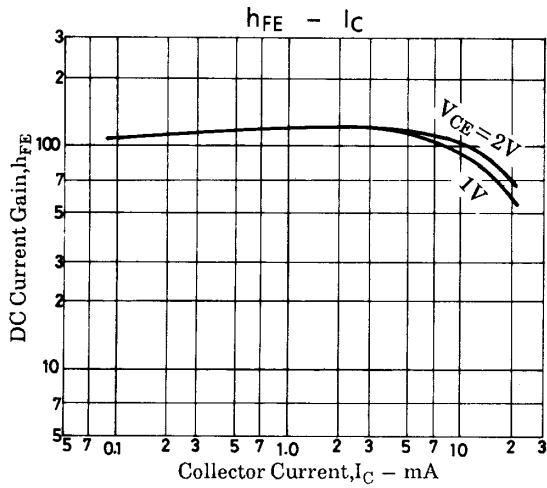
Marking : CN

h_{FE} rank : 3, 4, 5

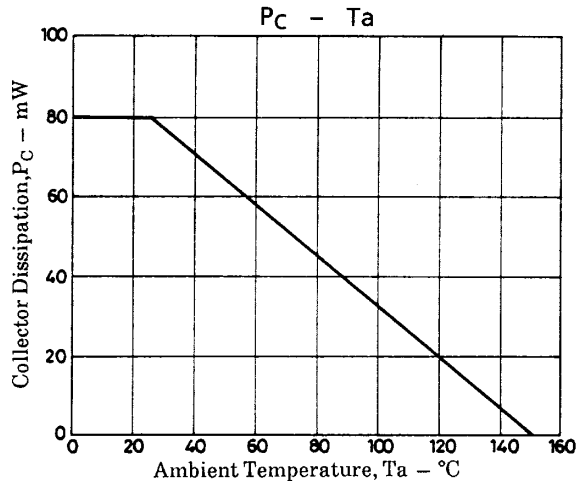
- Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein in such applications.
- SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

2SC4855

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Gain	$ S_{21e} ^2$ 1	$V_{CE}=1V, I_C=1mA, f=1GHz$	5	7.5		dB
	$ S_{21e} ^2$ 2	$V_{CE}=2V, I_C=3mA, f=1GHz$		11.5		dB
Noise Figure	NF1	$V_{CE}=1V, I_C=1mA, f=1GHz$		2.6	4.5	dB
	NF2	$V_{CE}=2V, I_C=3mA, f=1GHz$		1.9		dB

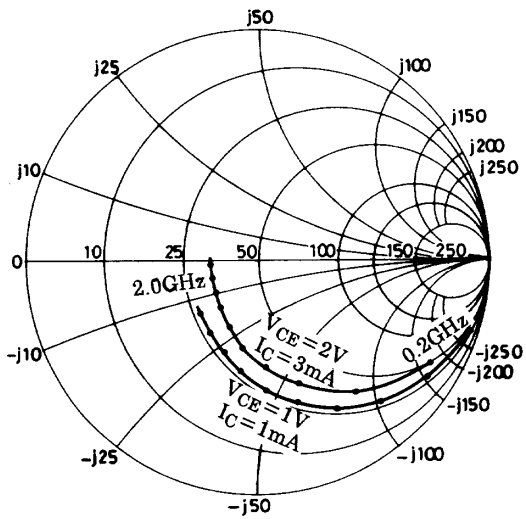


2SC4855

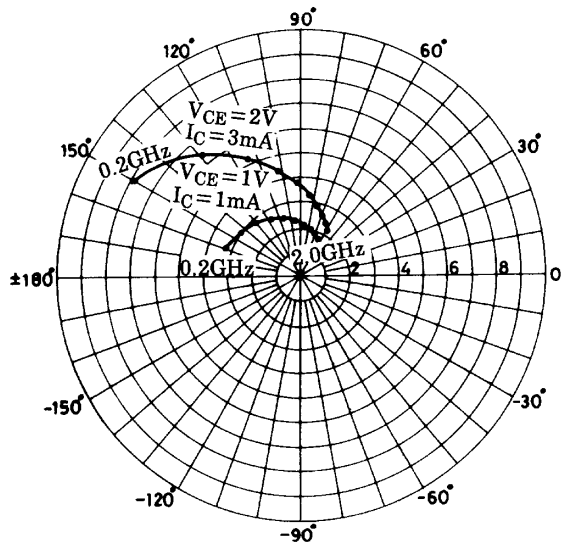


S parameter

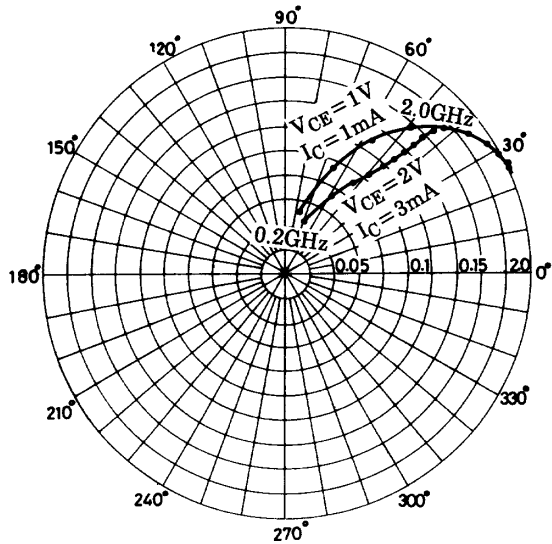
S_{11e}
f = 200 to 2000 MHz (200 MHz step)



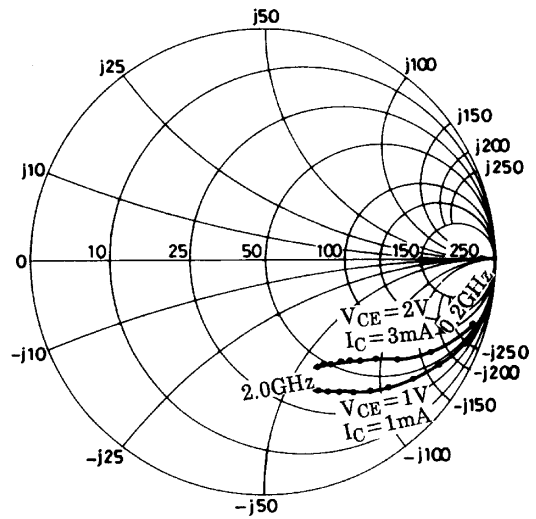
S_{21e}
f = 200 to 2000 MHz (200 MHz step)



S_{12e}
f = 200 to 2000 MHz (200 MHz step)



S_{22e}
f = 200 to 2000 MHz (200 MHz step)



2SC4855

S parameter (Common emitter)

$V_{CE}=1V, I_C=1mA, Z_O=50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
200	0.944	-18.0	3.276	159.9	0.050	76.8	0.981	-12.0
400	0.869	-34.2	3.037	143.8	0.093	65.5	0.928	-22.2
600	0.786	-48.9	2.778	130.2	0.128	56.5	0.865	-31.1
800	0.706	-62.0	2.550	117.6	0.155	48.8	0.808	-38.6
1000	0.619	-75.4	2.379	106.1	0.173	42.3	0.753	-45.7
1200	0.547	-87.4	2.165	95.7	0.186	36.9	0.712	-51.2
1400	0.473	-100.1	2.022	85.9	0.194	32.4	0.675	-56.1
1600	0.417	-111.7	1.840	77.4	0.198	28.9	0.639	-60.4
1800	0.371	-125.2	1.745	69.9	0.202	26.4	0.614	-64.1
2000	0.343	-139.3	1.639	62.2	0.201	25.2	0.595	-67.6

$V_{CE}=2V, I_C=3mA, Z_O=50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
200	0.844	-30.5	7.785	149.6	0.043	71.0	0.933	-17.4
400	0.688	-53.7	6.308	129.2	0.072	59.3	0.808	-28.8
600	0.545	-72.1	5.182	113.8	0.091	52.6	0.705	-36.3
800	0.451	-86.7	4.315	102.3	0.104	49.2	0.632	-41.6
1000	0.374	-102.0	3.713	95.2	0.117	47.0	0.590	-46.0
1200	0.308	-115.4	3.225	83.5	0.127	45.9	0.564	-49.5
1400	0.260	-130.6	2.823	75.5	0.137	45.0	0.541	-53.1
1600	0.230	-145.2	2.515	68.8	0.146	44.5	0.525	-56.8
1800	0.215	-160.5	2.296	63.0	0.155	44.2	0.510	-60.3
2000	0.213	-177.0	2.143	56.9	0.166	43.8	0.506	-63.4

- Specifications of any and all SANYO products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- SANYO Electric Co., Ltd. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all SANYO products (including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of SANYO Electric Co., Ltd.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the SANYO product that you intend to use.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of January, 1999. Specifications and information herein are subject to change without notice.