

**2SC5375**

VHF to UHF Band OSC, High-Frequency Amplifiers Applications

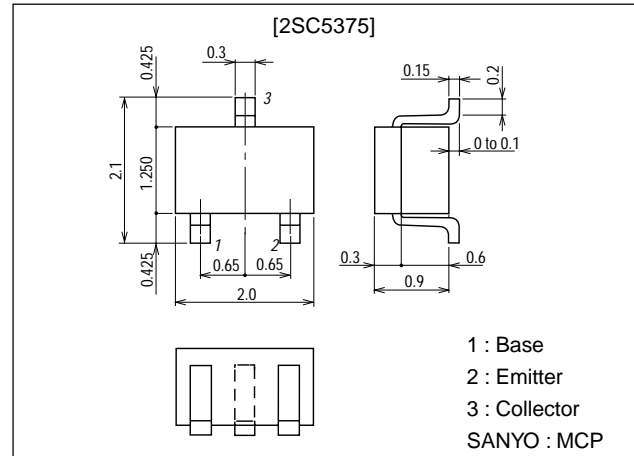
Features

- High gain : $|S_{21e}|^2=10\text{dB typ (f=1GHz)}$.
- High cutoff frequency : $f_T=5.2\text{GHz typ}$.

Package Dimensions

unit:mm

2059B



Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		20	V
Collector-to-Emitter Voltage	V_{CE0}		10	V
Emitter-to-Base Voltage	V_{EBO}		2	V
Collector Current	I_C		100	mA
Collector Dissipation	P_C		150	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}	$V_{CB}=10\text{V}, I_E=0$			1.0	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=1\text{V}, I_C=0$			10	μA
DC Current Gain	h_{FE1}	$V_{CE}=3\text{V}, I_C=7\text{mA}$	110		180	
	h_{FE2}	$V_{CE}=3\text{V}, I_C=30\text{mA}$	100			
Gain-Bandwidth Product	f_T	$V_{CE}=3\text{V}, I_C=7\text{mA}$	3	5.2		GHz
Output Capacitance	C_{ob}	$V_{CB}=3\text{V}, f=1\text{MHz}$		1.0	1.5	pF
Reverse Transfer Capacitance	C_{re}	$V_{CB}=3\text{V}, f=1\text{MHz}$		0.7		pF
Forward Transfer Gain	$ S_{21e} ^2$	$V_{CE}=3\text{V}, I_C=7\text{mA}, f=1\text{GHz}$	8	10		dB
Noise Figure	NF	$V_{CE}=3\text{V}, I_C=7\text{mA}, f=1\text{GHz}$		1.4	2.5	dB

Marking : NA

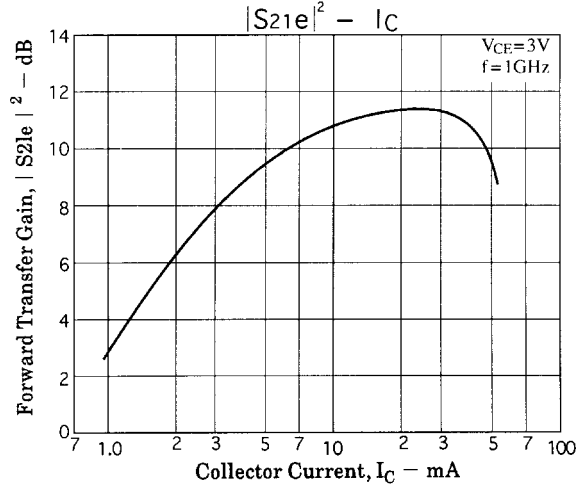
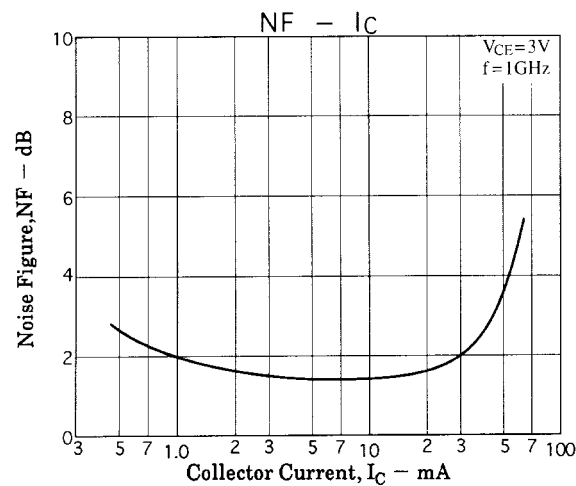
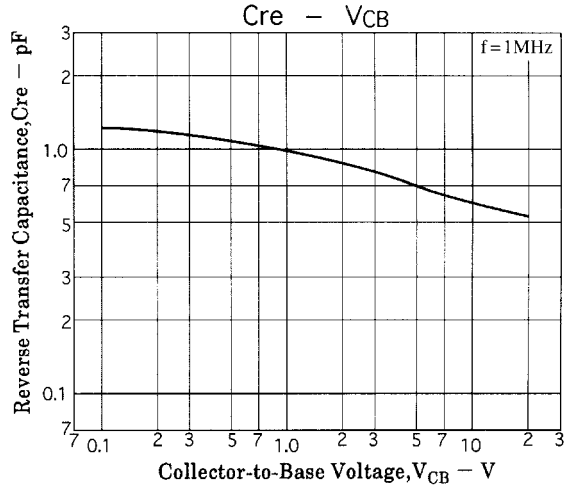
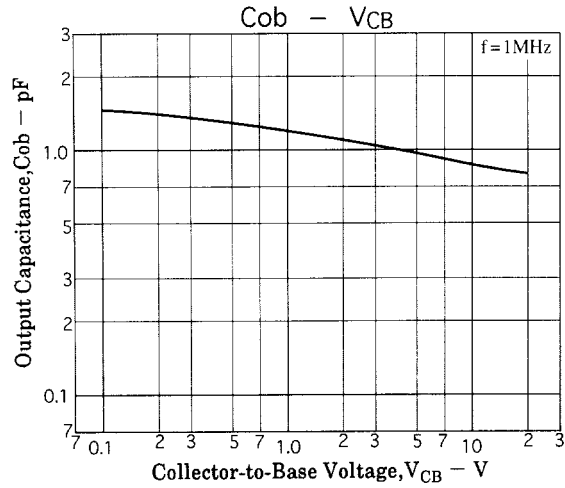
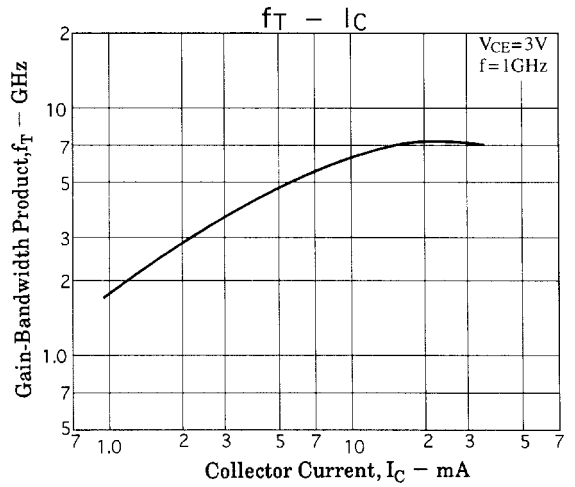
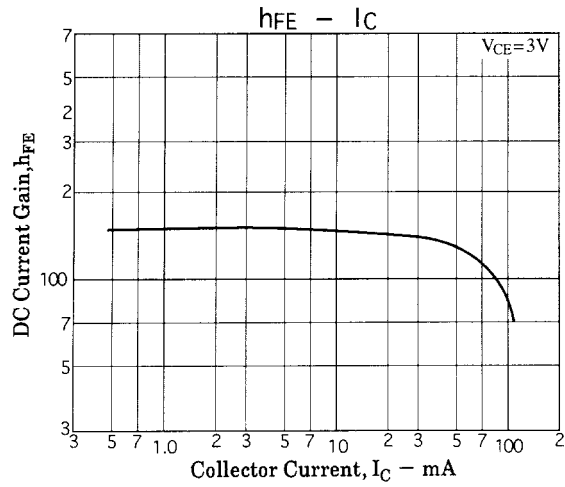
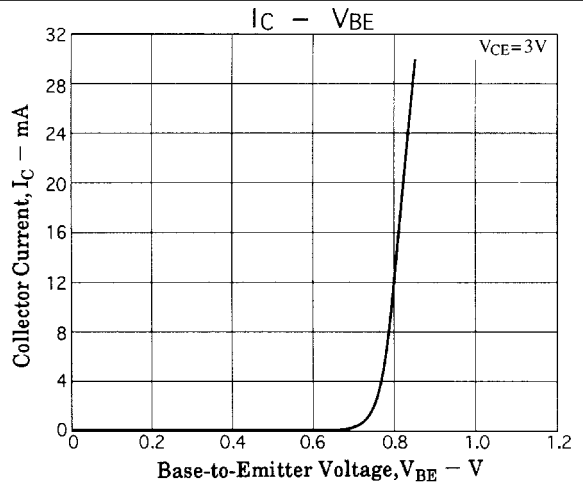
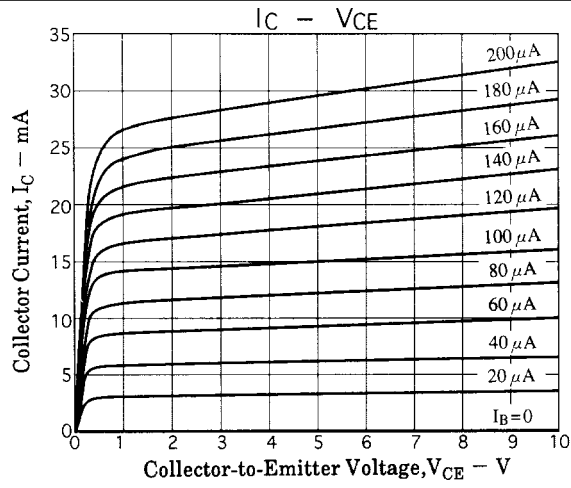
- Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious 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.

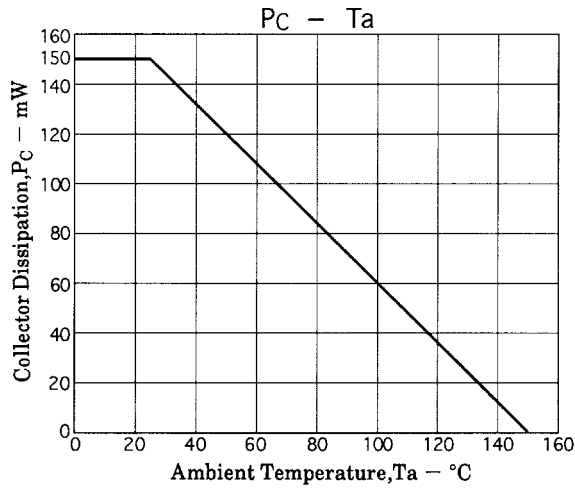
SANYO Electric Co., Ltd. Semiconductor Business Headquarters

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

21599TH (KT)/N2996TS (KOTO) TA-0824 No.5541-1/5

2SC5375

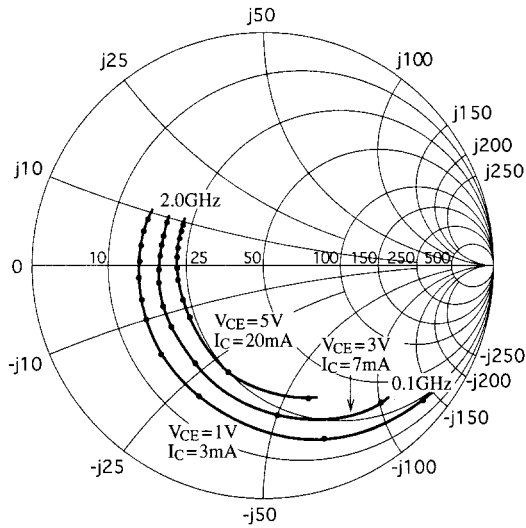




S Parameters

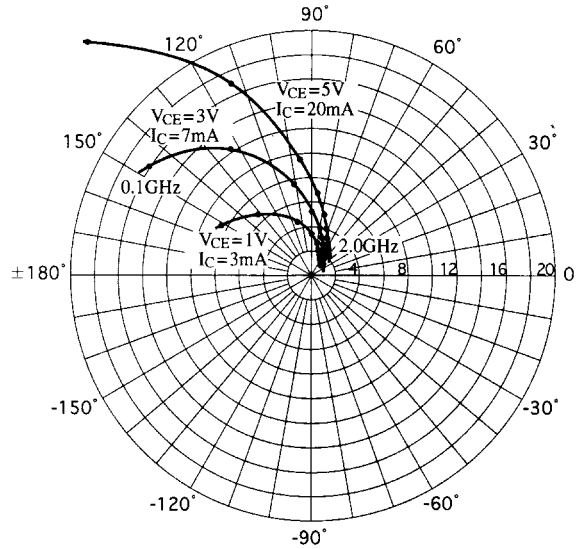
S11e

$f = 100\text{MHz}, 200 \text{ to } 2000\text{MHz (200MHz step)}$



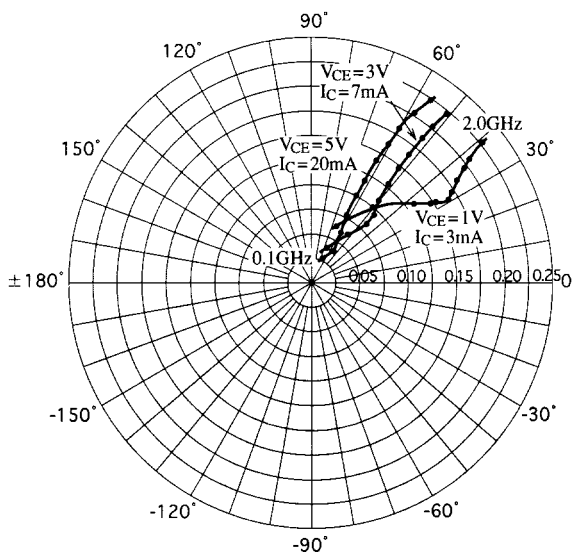
S21e

$f = 100\text{MHz}, 200 \text{ to } 2000\text{MHz (200MHz step)}$



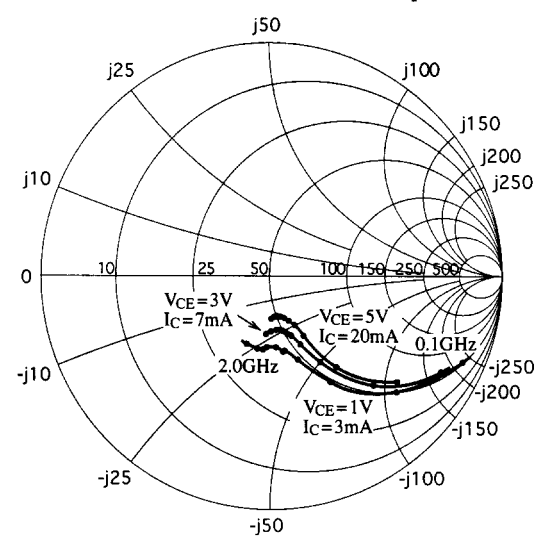
S12e

$f = 100\text{MHz}, 200 \text{ to } 2000\text{MHz (200MHz step)}$



S22e

$f = 100\text{MHz}, 200 \text{ to } 2000\text{MHz (200MHz step)}$



2SC5375

S parameters (Common emitter)

$V_{CE}=1V, I_C=3mA, Z_O=50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.875	-40.1	8.529	152.1	0.062	67.4	0.905	-24.3
200	0.782	-70.7	6.673	131.8	0.101	51.6	0.745	-42.0
400	0.621	-115.9	4.733	104.7	0.135	37.2	0.524	-59.1
600	0.576	-138.2	3.353	90.2	0.143	33.3	0.387	-71.5
800	0.547	-155.7	2.686	79.1	0.151	33.0	0.329	-79.4
1000	0.542	-165.4	2.165	70.4	0.165	31.2	0.330	-80.5
1200	0.534	-174.7	1.873	62.4	0.173	33.0	0.310	-86.0
1400	0.529	178.3	1.638	55.7	0.184	35.1	0.295	-91.9
1600	0.529	170.8	1.480	49.7	0.194	35.6	0.308	-95.7
1800	0.533	165.4	1.321	43.4	0.208	36.8	0.312	-101.6
2000	0.532	159.3	1.215	38.3	0.227	38.6	0.304	-109.1

$V_{CE}=3V, I_C=7mA, Z_O=50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.777	-48.9	16.116	146.5	0.040	65.9	0.852	-29.0
200	0.643	-84.8	12.223	124.2	0.061	52.9	0.646	-46.3
400	0.505	-126.1	7.484	101.5	0.083	46.6	0.428	-58.8
600	0.473	-146.2	5.198	89.7	0.096	48.3	0.317	-65.6
800	0.454	-160.6	3.984	80.7	0.112	49.9	0.273	-70.2
1000	0.446	-170.4	3.275	73.6	0.129	51.4	0.248	-74.1
1200	0.449	-177.6	2.738	66.9	0.147	52.0	0.239	-76.3
1400	0.445	175.5	2.391	61.2	0.165	52.4	0.229	-79.6
1600	0.443	168.9	2.135	55.9	0.184	52.4	0.225	-84.6
1800	0.439	164.1	1.944	50.5	0.203	51.5	0.227	-90.0
2000	0.443	157.7	1.760	45.7	0.222	50.4	0.240	-93.0

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

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.595	-70.3	26.610	134.3	0.028	62.1	0.724	-39.3
200	0.480	-107.7	17.090	113.5	0.041	56.3	0.482	-54.3
400	0.406	-143.8	9.432	95.7	0.060	58.8	0.296	-61.9
600	0.393	-160.3	6.459	86.2	0.079	61.8	0.227	-64.4
800	0.388	-171.0	4.909	79.0	0.100	62.8	0.200	-67.5
1000	0.387	-178.6	3.989	73.3	0.121	62.8	0.188	-70.3
1200	0.390	175.1	3.356	67.3	0.142	62.0	0.182	-72.4
1400	0.385	169.8	2.918	62.1	0.163	61.0	0.176	-75.0
1600	0.386	163.9	2.588	57.7	0.184	59.9	0.173	-80.1
1800	0.388	159.8	2.322	52.8	0.205	57.9	0.177	-85.8
2000	0.394	154.7	2.117	48.5	0.226	56.0	0.185	-89.4

- 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 February, 1999. Specifications and information herein are subject to change without notice.