

<b>SANYO</b>	No.5541A	<b>2SC5375</b>
		NPN Epitaxial Planar Silicon Transistor <b>VHF to UHF Band OSC, High-Frequency Amp Applications</b>

**Features**

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

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

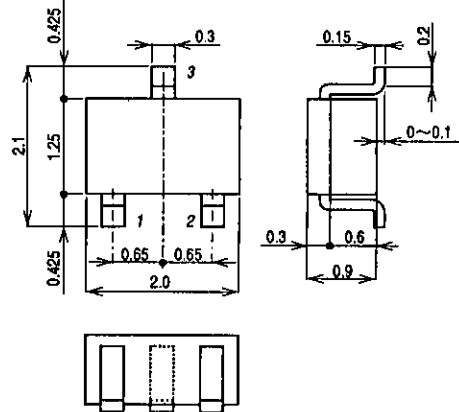
			unit
Collector-to-Base Voltage	$V_{CB0}$	20	V
Collector-to-Emitter Voltage	$V_{CEO}$	10	V
Emitter-to-Base Voltage	$V_{EBO}$	2	V
Collector Current	$I_C$	100	mA
Collector Dissipation	$P_C$	150	mW
Junction Temperature	$T_j$	150	°C
Storage Temperature	$T_{stg}$	-55 to +150	°C

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

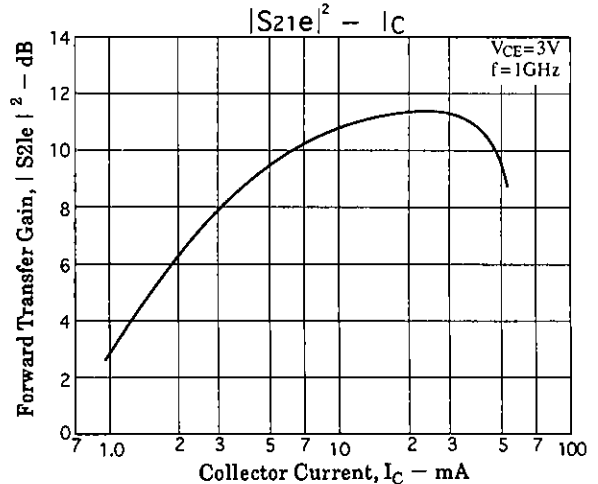
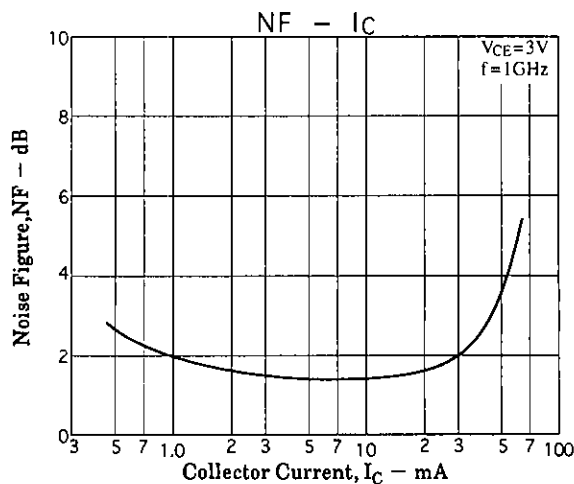
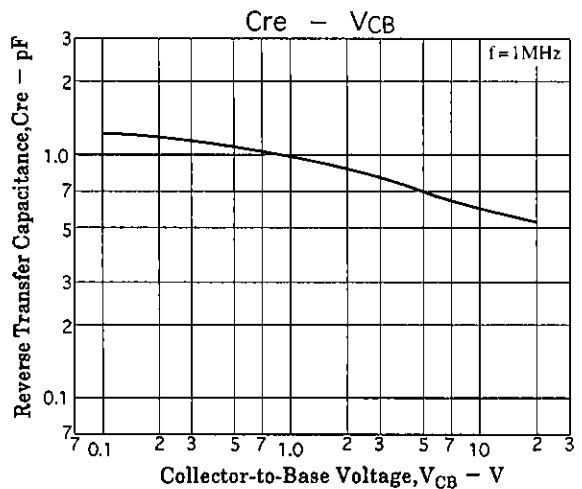
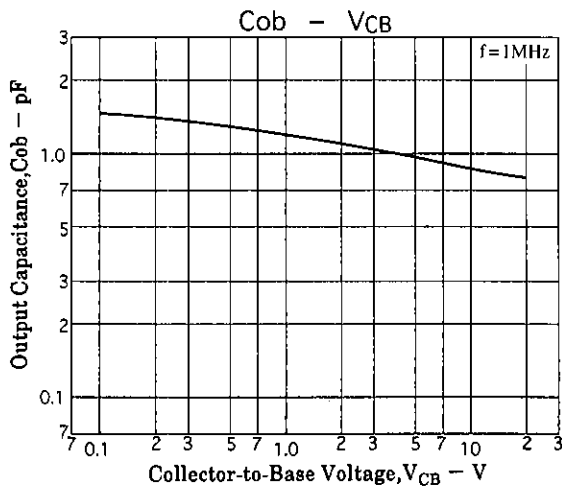
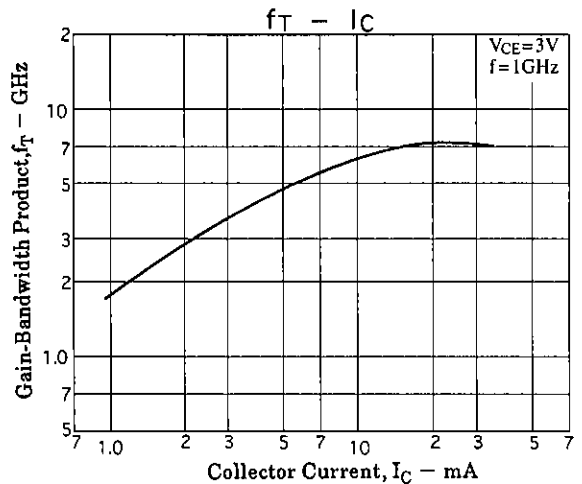
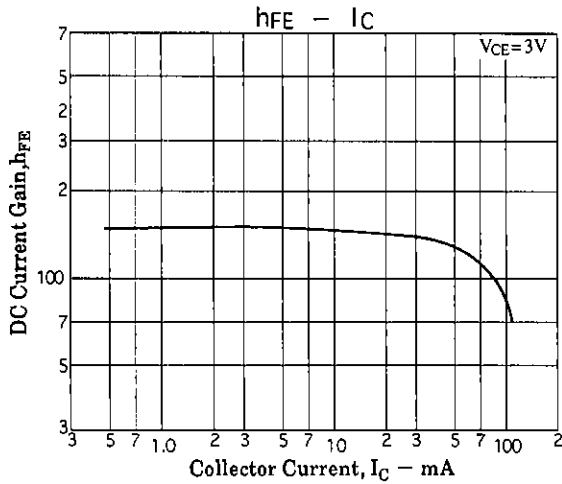
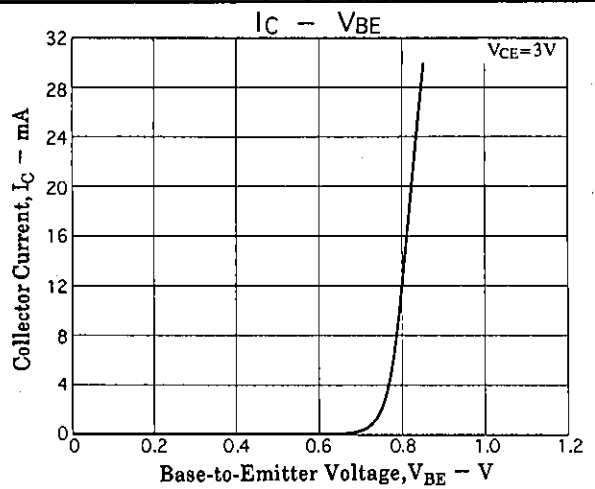
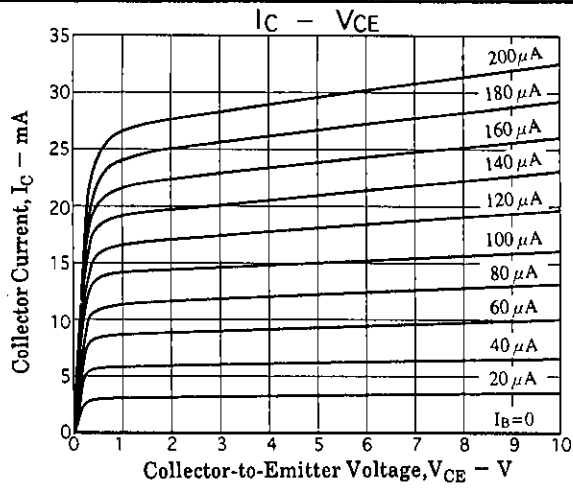
			min	typ	max	unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 10V, I_E = 0$			1.0	μA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 1V, I_C = 0$			10	μA
DC Current Gain	$h_{FE1}$	$V_{CE} = 3V, I_C = 7mA$	110		180	
	$h_{FE2}$	$V_{CE} = 3V, I_C = 30mA$	100			
Gain-Bandwidth Product	$f_T$	$V_{CE} = 3V, I_C = 7mA$	3	5.2		GHz
Output Capacitance	$C_{ob}$	$V_{CB} = 3V, f = 1MHz$		1.0	1.5	pF
Reverse Transfer Capacitance	$C_{re}$	$V_{CB} = 3V, f = 1MHz$		0.7		pF
Forward Transfer Gain	$ S_{21e} ^2$	$V_{CE} = 3V, I_C = 7mA, f = 1GHz$	8	10		dB
Noise Figure	NF	$V_{CE} = 3V, I_C = 7mA, f = 1GHz$		1.4	2.5	dB

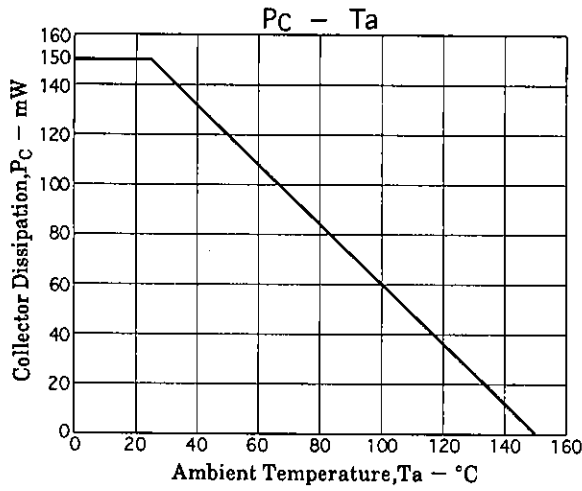
Marking : NA

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



1 : Base  
2 : Emitter  
3 : Collector  
SANYO : MCP

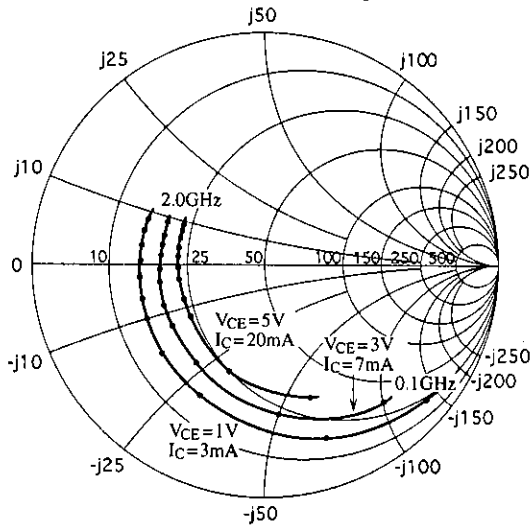




**S Parameters**

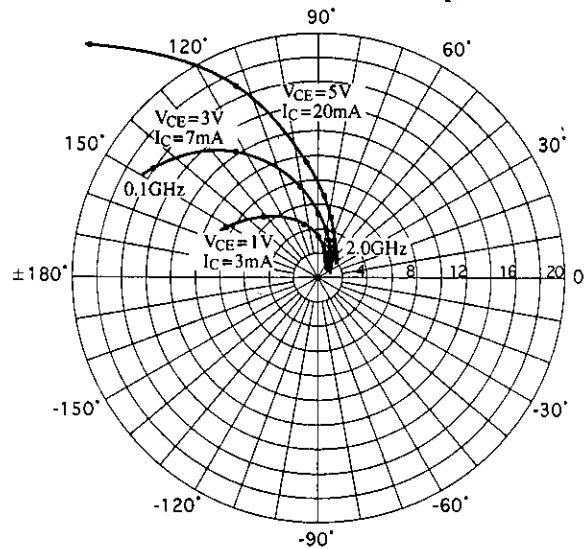
**S11e**

f = 100MHz, 200 to 2000MHz (200MHz step)



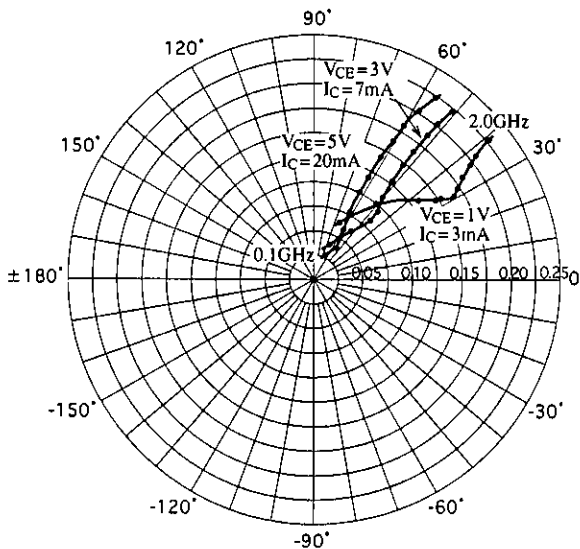
**S21e**

f = 100MHz, 200 to 2000MHz (200MHz step)



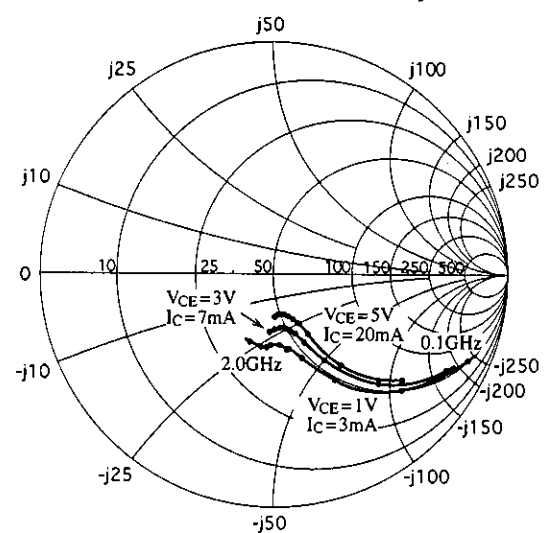
**S12e**

f = 100MHz, 200 to 2000MHz (200MHz step)



**S22e**

f = 100MHz, 200 to 2000MHz (200MHz step)



**S Parameters (Common emitter)** $V_{CE} = 1V, I_C = 3mA, Z_0 = 50\Omega$ 

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.875	-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

 $V_{CE} = 3V, I_C = 7mA, Z_0 = 50\Omega$ 

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.777	-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

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

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.595	-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

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