Ordering number:EN5432

FC156

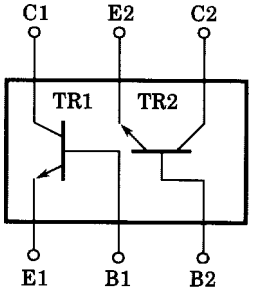
NPN Epitaxial Planar Silicon Composite Transistor

High-Frequency Low-Noise Amp, Differential Amp Applications

Features

- Composite type with 2 transistors contained in the CP package currently in use, improving the mounting efficiency greatly.
- The FC156 is formed with two chips, being equivalent to the 2SC5226, placed in one package.
- Excellent in thermal equilibrium and in inter-chip characteristics matching.

Electrical Connection

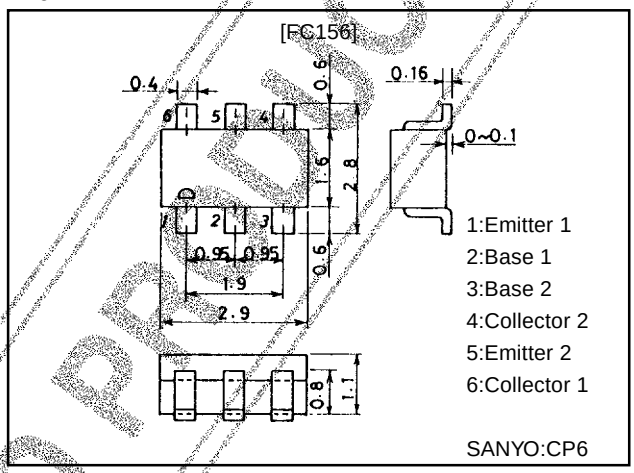


1:Emitter 1
2:Base 1
3:Base 2
4:Collector 2
5:Emitter 2
6:Collector 1

Package Dimensions

unit:mm

2104A



1:Emitter 1
2:Base 1
3:Base 2
4:Collector 2
5:Emitter 2
6:Collector 1

SANYO:CP6

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		20	V
Collector-to-Emitter Voltage	V_{CEO}		10	V
Emitter-to-Base Voltage	V_{EBO}		2	V
Collector Current	I_C		70	mA
Collector Dissipation	P_C	1 unit	200	mW
Total Dissipation	P_T		300	mW
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		–55 to +150	°C

Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditons	Ratings			Unit
			min	typ	max	
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_{FE}	V_{CE}=5V, I_C=20mA	90		200	
DC Current Gain Ratio	h_{FE}(small/large)	V_{CE}=5V, I_C=20mA	0.7	0.95		
Base-to-Emitter Voltage Difference	V_{BE}(large-small)	V_{CE}=5V, I_C=20mA		1.0		mV
Gain-Bandwidth Product	f_T	V_{CE}=5V, I_C=20mA	5	7		GHz
Output Capacitance	Cob	V_{CB}=10V, f=1MHz		0.75	1.2	pF
Reverse Transfer Capacitance	Cre	V_{CB}=10V, f=1MHz		0.5		pF
Forward Transfer Gain	$\|S21e\|^2$	V_{CE}=5V, I_C=20mA, f=1GHz	9	12		dB
	$\|S21e\|^2$	V_{CE}=2V, I_C=3mA, f=1GHz		8		dB
Noise Figure	NF	V_{CE}=5V, I_C=7mA, f=1GHz		1.0	1.8	dB

Note:The specifications shown above are for each individual transistor.

Marking:156

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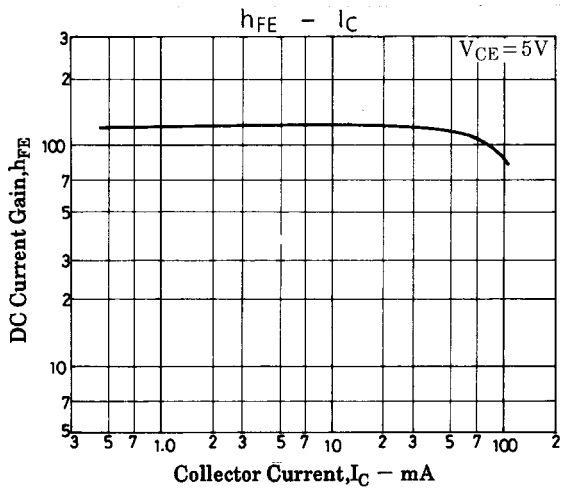
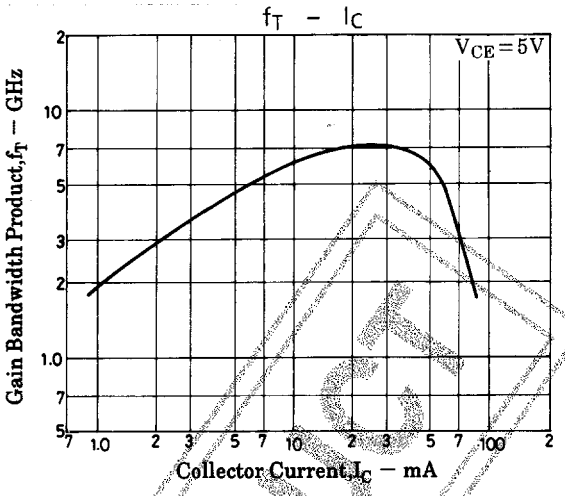
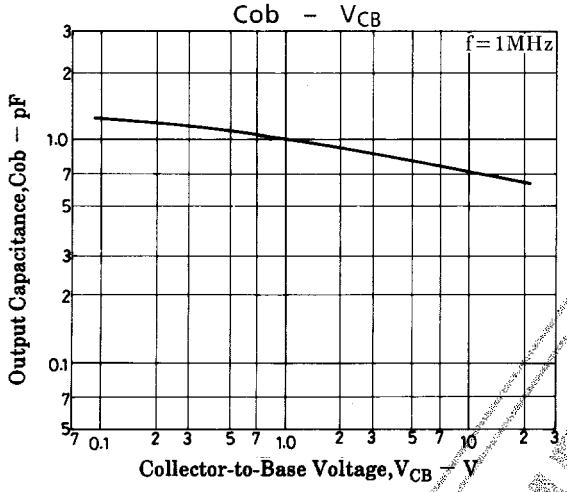
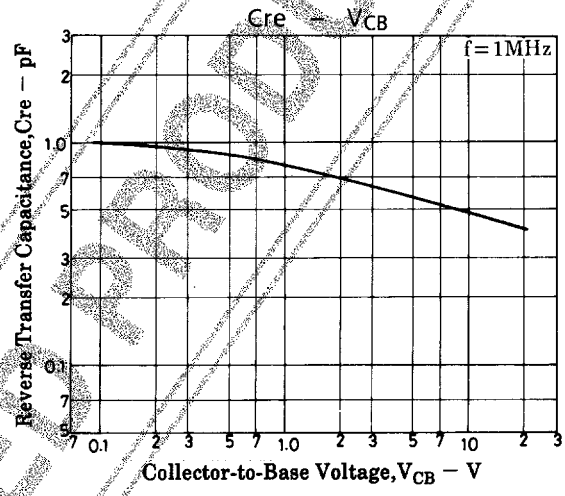
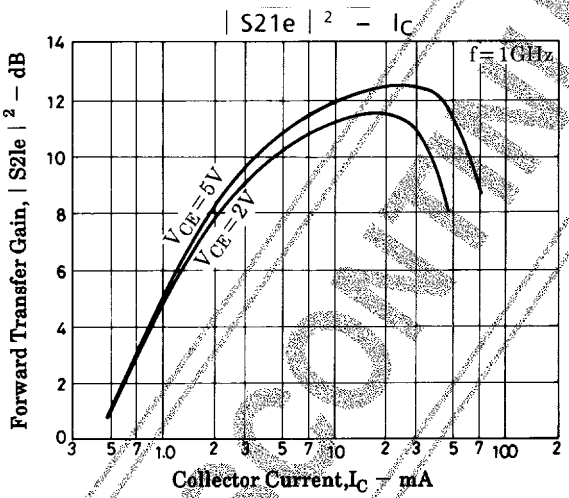
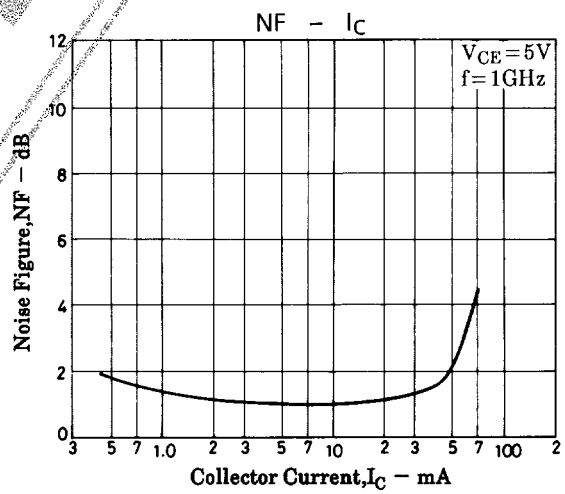


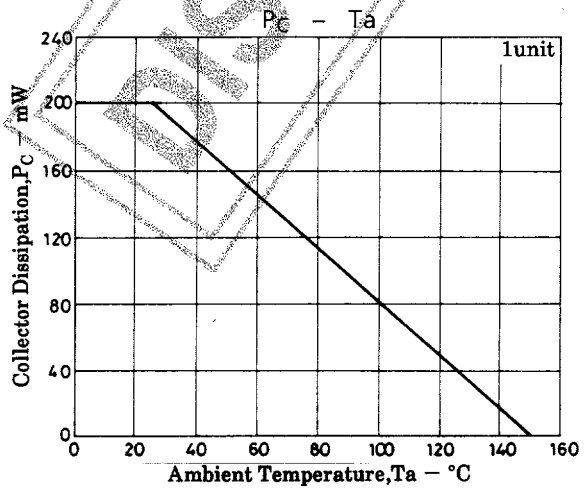








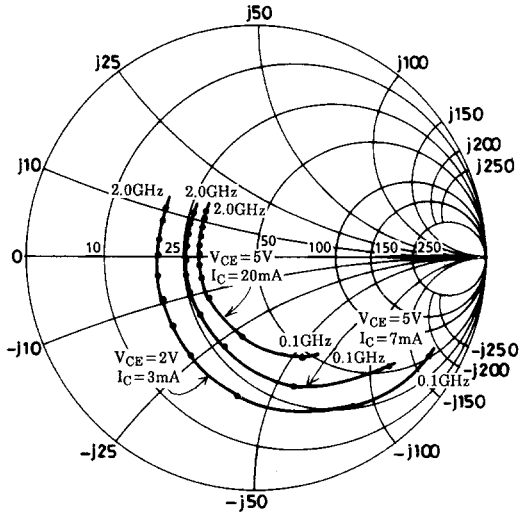




S Parameters

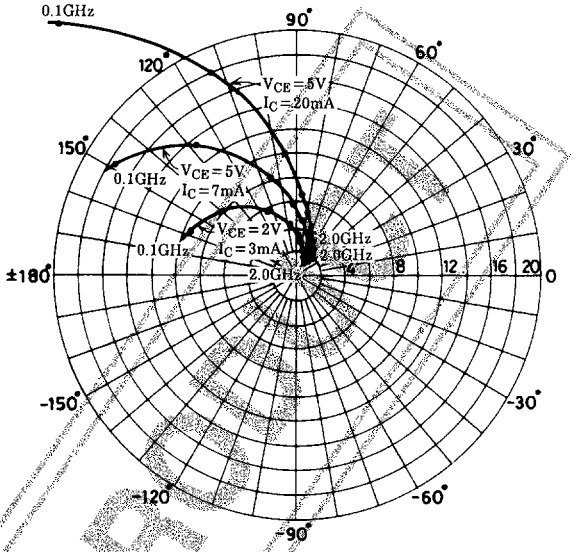
S11e

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



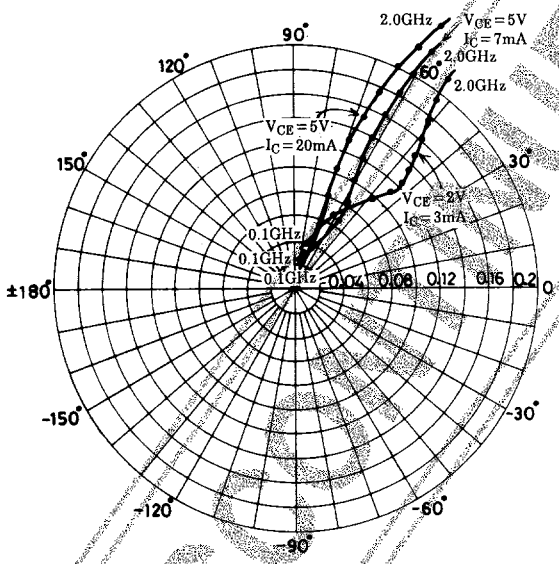
S21e

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



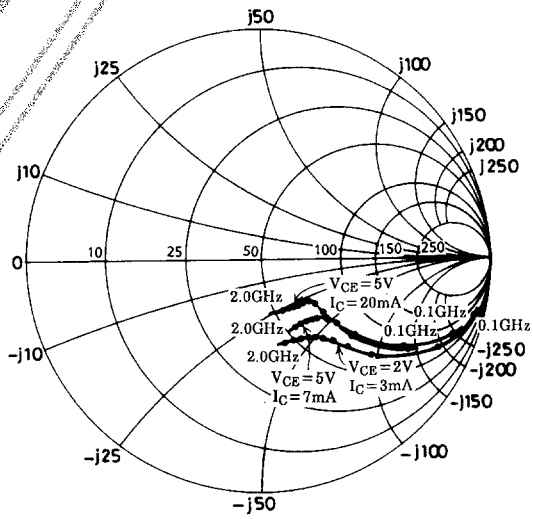
S12e

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



S22e

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



S Parameters (Common emitter)

$V_{CE}=5V$, $I_C=7mA$, $Z_O=50\Omega$

Freq (MHz)	$\|S_{11}\|$	$\angle S_{11}$	$\|S_{21}\|$	$\angle S_{21}$	$\|S_{12}\|$	$\angle S_{12}$	$\|S_{22}\|$	$\angle S_{22}$
100	0.722	−41.6	17.352	148.7	0.029	70.9	0.883	−21.3
200	0.587	−73.2	13.419	127.6	0.046	60.8	0.710	−33.1
400	0.426	−113.0	8.371	105.1	0.067	56.9	0.507	−40.7
600	0.369	−136.6	5.914	92.7	0.084	58.4	0.423	−42.5
800	0.344	−152.9	4.593	83.9	0.102	60.3	0.382	−43.9
1000	0.334	−165.7	3.750	76.7	0.121	61.5	0.360	−46.3
1200	0.326	−177.9	3.178	70.3	0.141	62.0	0.350	−49.1
1400	0.324	172.3	2.784	64.9	0.162	61.8	0.341	−52.2
1600	0.328	163.4	2.476	59.5	0.183	61.2	0.334	−56.4
1800	0.335	154.5	2.246	54.6	0.204	60.5	0.328	−60.8
2000	0.346	147.5	3.073	50.0	0.226	59.6	0.328	−65.4

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

Freq (MHz)	$\|S_{11}\|$	$\angle S_{11}$	$\|S_{21}\|$	$\angle S_{21}$	$\|S_{12}\|$	$\angle S_{12}$	$\|S_{22}\|$	$\angle S_{22}$
100	0.477	−66.8	28.090	133.6	0.022	67.7	0.726	−32.7
200	0.358	−104.1	17.995	112.9	0.035	65.3	0.506	−41.6
400	0.288	−142.2	9.903	95.9	0.057	68.3	0.350	−42.4
600	0.273	−159.8	6.777	86.7	0.081	69.9	0.299	−41.8
800	0.270	−171.7	5.181	79.9	0.104	70.2	0.278	−43.2
1000	0.271	178.7	4.209	73.9	0.129	69.1	0.269	−45.9
1200	0.273	169.4	3.554	68.5	0.153	67.9	0.264	−49.6
1400	0.275	161.1	3.085	63.6	0.177	66.2	0.258	−53.3
1600	0.284	153.4	2.749	59.1	0.202	64.3	0.253	−58.3
1800	0.294	145.6	2.479	54.6	0.224	62.5	0.249	−63.4
2000	0.302	140.8	2.295	50.6	0.248	60.4	0.248	−68.7

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

Freq (MHz)	$\|S_{11}\|$	$\angle S_{11}$	$\|S_{21}\|$	$\angle S_{21}$	$\|S_{12}\|$	$\angle S_{12}$	$\|S_{22}\|$	$\angle S_{22}$
100	0.858	−30.5	9.283	157.3	0.039	73.6	0.944	−15.6
200	0.769	−57.4	8.036	138.7	0.068	61.4	0.834	−27.5
400	0.607	−97.1	5.756	113.9	0.099	48.4	0.641	−40.5
600	0.528	−123.2	4.302	98.1	0.114	44.4	0.525	−46.5
800	0.486	−141.6	3.414	87.0	0.125	43.9	0.465	−50.2
1000	0.460	−156.4	2.834	78.0	0.137	45.4	0.429	−53.7
1200	0.453	−169.4	2.429	70.3	0.149	47.5	0.408	−57.3
1400	0.440	179.8	2.143	63.6	0.163	49.2	0.395	−60.9
1600	0.441	170.1	1.919	57.4	0.179	50.8	0.385	−65.4
1800	0.447	160.4	1.739	51.7	0.196	52.3	0.381	−70.1
2000	0.454	152.5	1.621	46.4	0.215	53.3	0.379	−75.2

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