

SANYO

No.5432

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, each being equivalent to the 2SC5226, placed in one package.
- Excellent in thermal equilibrium and in inter-chip characteristic matching.

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	70	mA
Collector Dissipation	P _C	200	mW
Total Dissipation	P _T	300	mW
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-55 to +150	°C

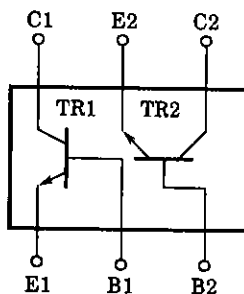
Electrical Characteristics at Ta = 25°C

			min	typ	max	unit
Collector Cutoff Current	I _{CB0}	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	C _{ob}	V _{CB} = 10V, f = 1MHz		0.75	1.2	pF
Reverse Transfer Capacitance	C _{re}	V _{CB} = 10V, f = 1MHz		0.5		pF
Forward Transfer Gain	S _{21e} ² (1)	V _{CE} = 5V, I _C = 20mA, f = 1GHz	9	12		dB
	S _{21e} ² (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.

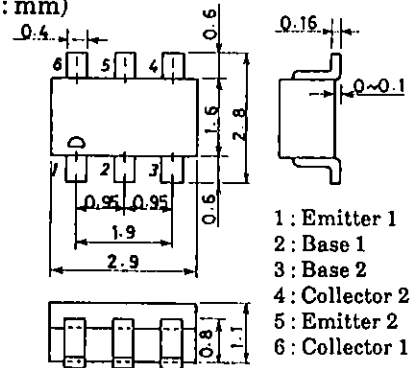
Marking : 156

Electrical Connection



Package Dimensions 2104A

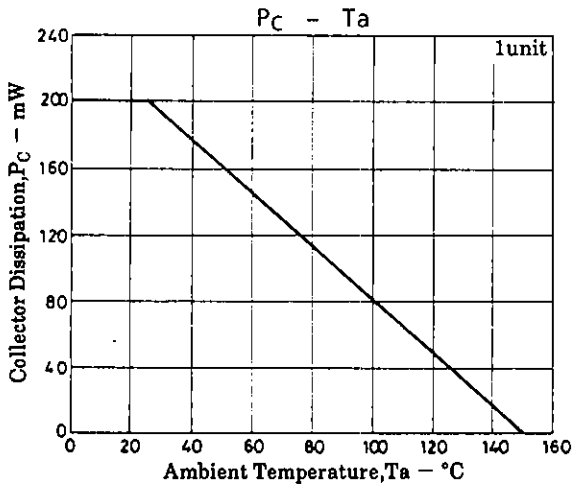
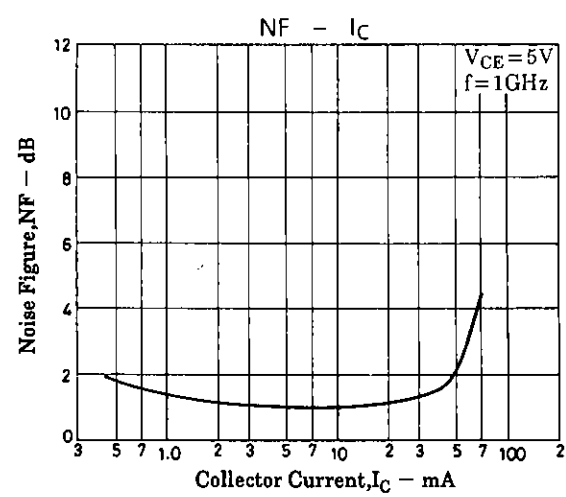
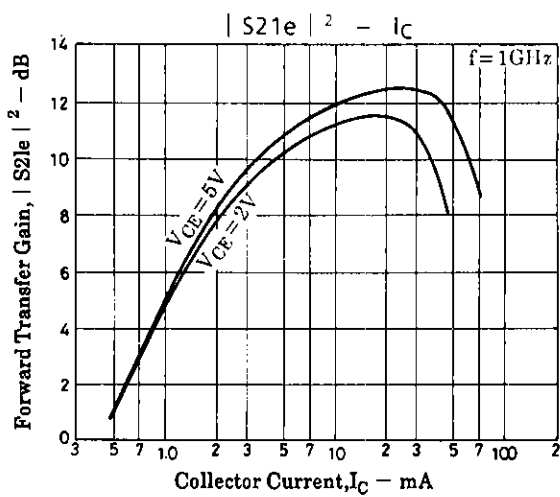
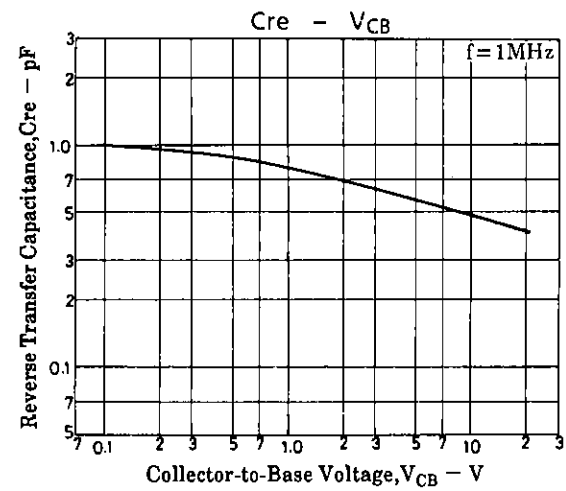
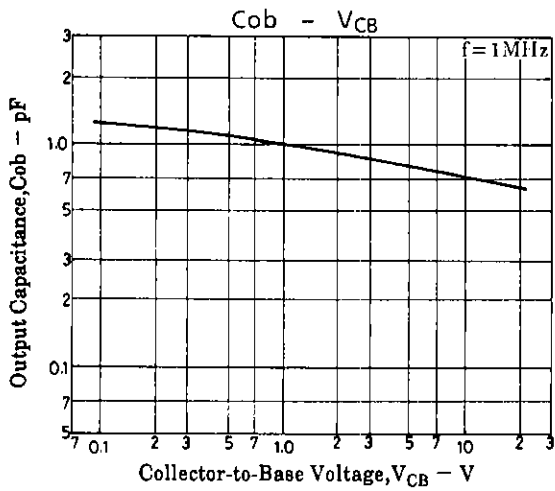
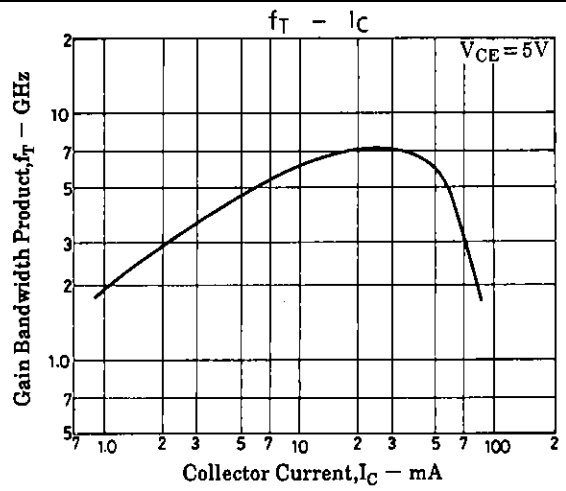
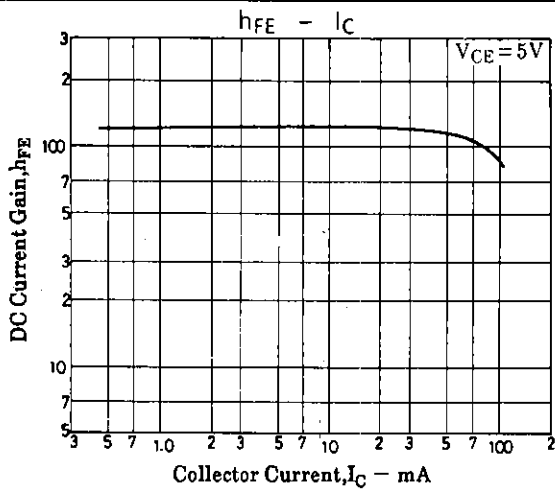
(unit : mm)



- 1: Emitter 1
 - 2: Base 1
 - 3: Base 2
 - 4: Collector 2
 - 5: Emitter 2
 - 6: Collector 1
- SANYO : CP6

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FC156

S Parameters (Common emitter)

$V_{CE} = 5V, I_C = 7mA, Z_0 = 50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.722	-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

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

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.477	-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

$V_{CE} = 2V, I_C = 3mA, Z_0 = 50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.858	-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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