

SANYO**FC152**

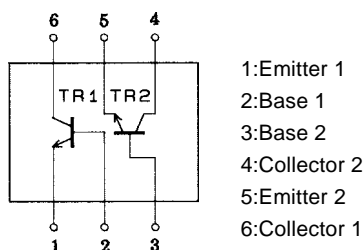
PNP Epitaxial Planar Silicon Composite Transistor

High-Frequency Amp, Differential Amp

Applications

Features

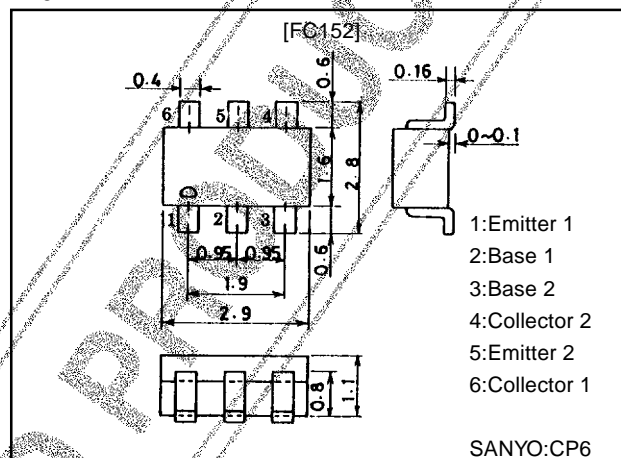
- Composite type with 2 transistors contained in the CP package currently in use, improving the mounting efficiency greatly.
- The FC152 is formed with two chips, being equivalent to the 2SC4270, placed in one package.
- Excellent in thermal equilibrium, pair capability and especially suited for differential amp.



Package Dimensions

unit:mm

2104A



Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		25	V
Collector-to-Emitter Voltage	V_{CE0}		15	V
Emitter-to-Base Voltage	V_{EB0}		3	V
Collector Current	I_C		50	mA
Collector Dissipation	P_C	1 unit	200	mW
Total Dissipation	P_T		300	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}	$V_{CB}=20\text{V}, I_E=0$			0.1	μA
Emitter Cutoff Current	I_{EB0}	$V_{EB}=2\text{V}, I_C=0$			10	μA
DC Current Gain	h_{FE}	$V_{CE}=10\text{V}, I_C=5\text{mA}$	60		200	
DC Current Gain Ratio	$h_{FE}(\text{small/large})$	$V_{CE}=10\text{V}, I_C=5\text{mA}$	0.7	0.95		
B-E Voltage Difference	$V_{BE}(\text{large-small})$	$V_{CE}=10\text{V}, I_C=0$		3.0	10	mV
Gain-Bandwidth Product	f_T	$V_{CE}=10\text{V}, I_C=10\text{mA}$	1.5	3.0		GHz
Output Capacitance	C_{ob}	$V_{CB}=10\text{V}, f=1\text{MHz}$		0.7	1.0	pF
Power Gain	P_G	$V_{CE}=10\text{V}, I_C=10\text{mA}, f=0.9\text{GHz}$		12		dB
Noise Figure	NF	$V_{CE}=10\text{V}, I_C=3\text{mA}, f=0.9\text{GHz}$		3.0		dB

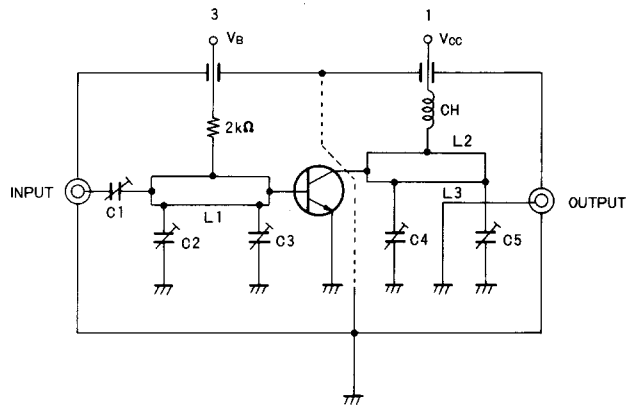
Note: The specifications shown above are for each individual transistor. However, the specifications of $h_{FE}(\text{small/large})$ and $V_{BE}(\text{large-small})$ are for pair capability

Marking:152

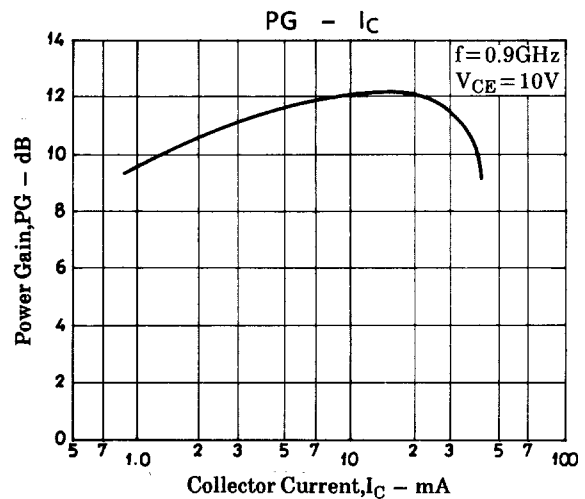
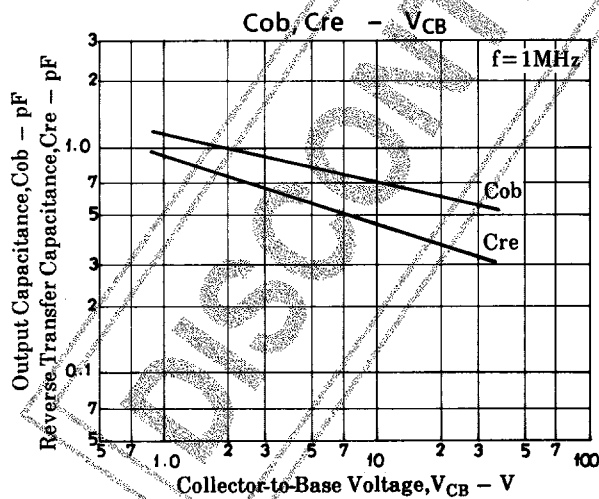
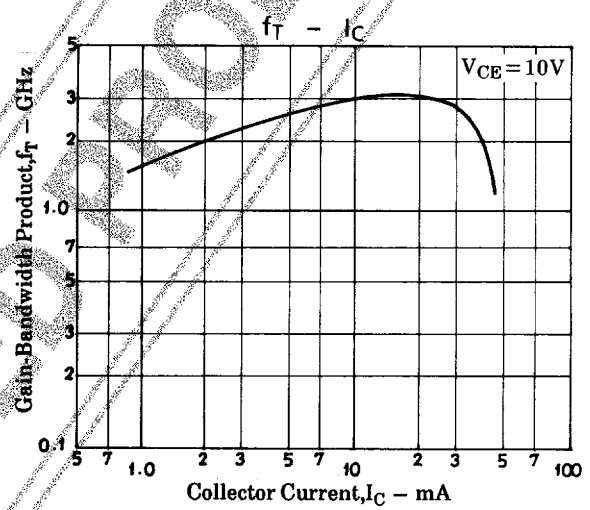
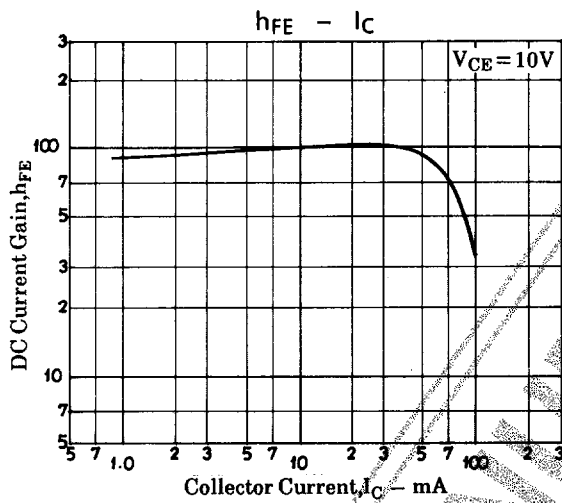
SANYO Electric Co., Ltd. Semiconductor Business Headquarters

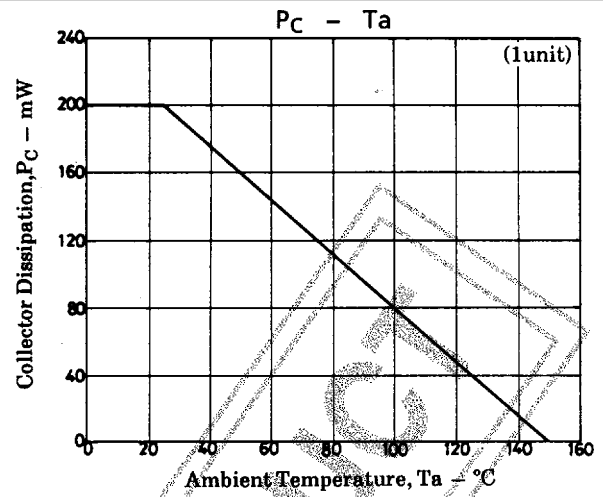
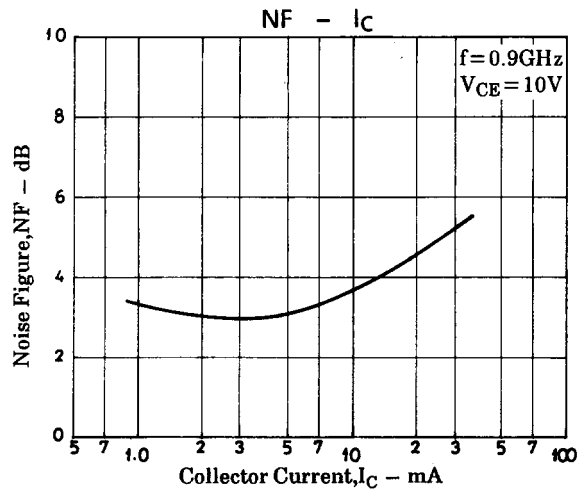
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

PG, NF Test Circuit



	900MHz
C1	~5pF
C2	~10pF
C3	~10pF
C4	~10pF
C5	~10pF
L1	W=1.5mm, l=25mm strip line
L2	W=4mm, l=25mm strip line
L3	0.5φ, l=40mm
CH	2t + bead core

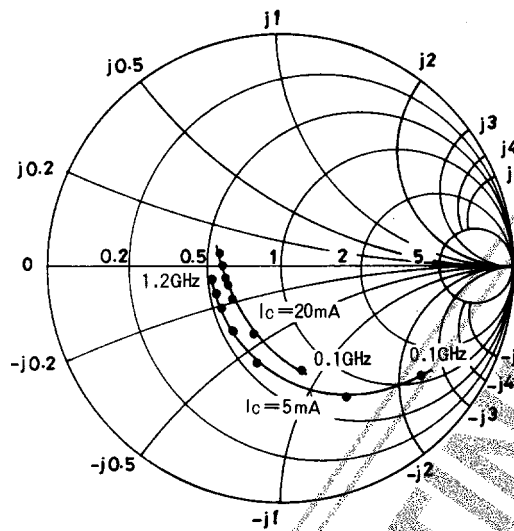




S Parameter

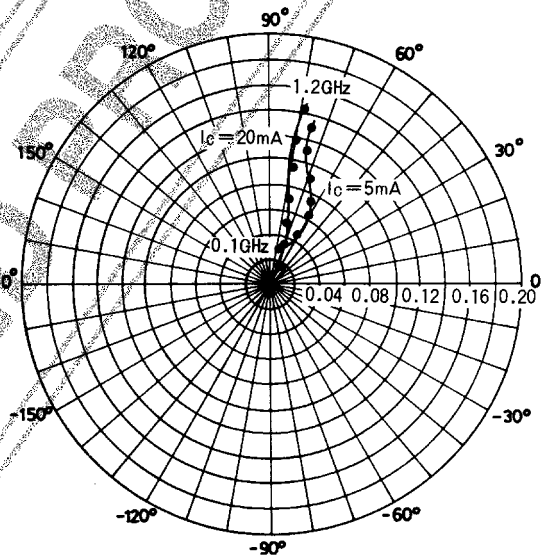
S11e: $V_{CE} = 10\text{V}$

$f = 100\text{MHz}$, 200 to 1200MHz (200MHz step)



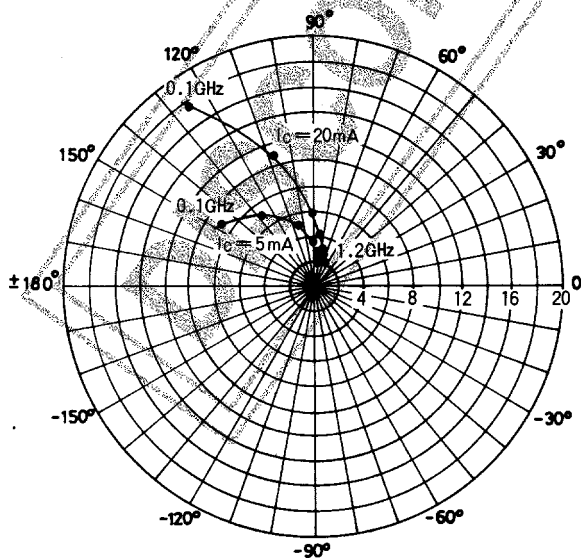
S12e, $V_{CE} = 10\text{V}$

$f = 100\text{MHz}$, 200 to 1200MHz (200MHz step)



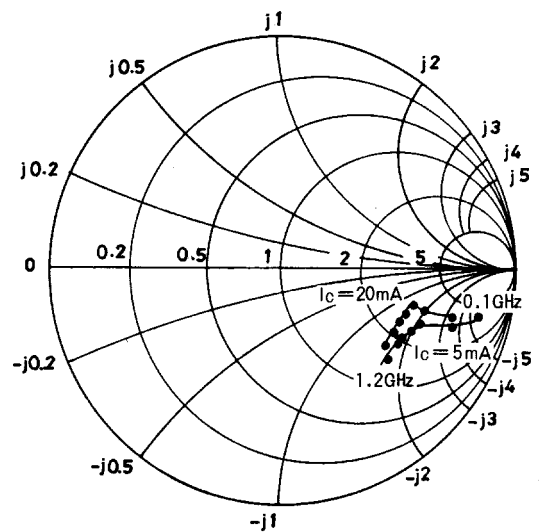
S21e: $V_{CE} = 10\text{V}$

$f = 100\text{MHz}$, 200 to 1200MHz (200MHz step)



S22e: $V_{CE} = 10\text{V}$

$f = 100\text{MHz}$, 200 to 1200MHz (200MHz step)



S Parameter (Common-emitter) $V_{CE} = 10V, I_C = 5mA, Z_0 = 50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.771	-35.1	8.763	147.2	0.027	69.3	0.890	-14.2
200	0.613	-64.7	7.004	127.6	0.043	59.8	0.780	-19.7
400	0.429	-110.7	4.882	103.1	0.061	58.1	0.660	-22.8
600	0.361	-133.5	3.471	90.5	0.075	63.1	0.625	-25.1
800	0.355	-148.4	2.693	81.6	0.091	68.1	0.612	-28.6
900	0.331	-153.7	2.450	78.9	0.100	70.5	0.609	-29.9
1000	0.328	-158.9	2.236	75.5	0.110	72.5	0.607	-31.6
1200	0.326	-167.9	1.932	69.9	0.130	74.7	0.608	-35.7

 $V_{CE} = 10V, I_C = 20mA, Z_0 = 50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.447	-78.1	17.728	125.0	0.020	66.0	0.752	-18.5
200	0.338	-113.2	10.936	107.5	0.031	66.5	0.639	-18.5
400	0.290	-146.6	5.773	91.4	0.052	72.1	0.580	-18.5
600	0.281	-159.3	3.956	83.0	0.074	75.7	0.571	-21.1
800	0.285	-168.8	2.982	76.2	0.095	77.6	0.566	-25.2
900	0.289	-171.3	2.703	74.0	0.106	78.6	0.563	-26.7
1000	0.291	-174.4	2.454	71.3	0.118	79.4	0.565	-28.6
1200	0.297	-178.1	2.116	66.5	0.140	79.0	0.569	-33.1

■ No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.

■ Anyone purchasing any products described or contained herein for an above-mentioned use shall:

- ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use;
- ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.

■ 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 May, 1998. Specifications and information herein are subject to change without notice.