

SANYO**FP202**

PNP/NPN Epitaxial Planar Silicon Transistor

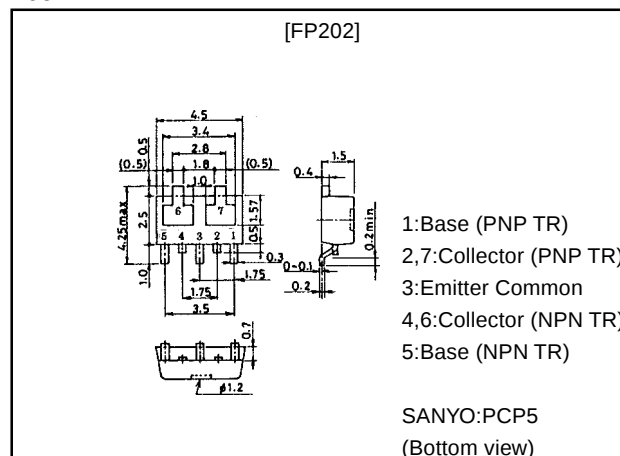
Push-Pull Circuit Applications**Features**

- Composite type with 2 transistors (PNP and NPN) contained in one package facilitating high-density mounting.
- The FP202 is formed with a chip being equivalent to the 2SA1338 and a chip being equivalent to the 2SC3392, placed in one package.

Package Dimensions

unit:mm

2097A

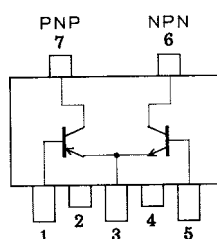
**Specifications****Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$**

() : PNP

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(-)-60	V
Collector-to-Emitter Voltage	V_{CEO}		(-)-50	V
Emitter-to-Base Voltage	V_{EBO}		(-)-5	V
Collector Current	I_C		(-)-500	mA
Collector Current (Pulse)	I_{CP}		(-)-800	mA
Base Current	I_B		(-)-0.1	A
Collector Dissipation	P_C	Mounted on ceramic board (250mm $\times$ 0.8mm) 1unit	0.75	W
Total Dissipation	P_T	Mounted on ceramic board (250mm $\times$ 0.8mm)	1.0	W
Junction Temperature	T_J		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

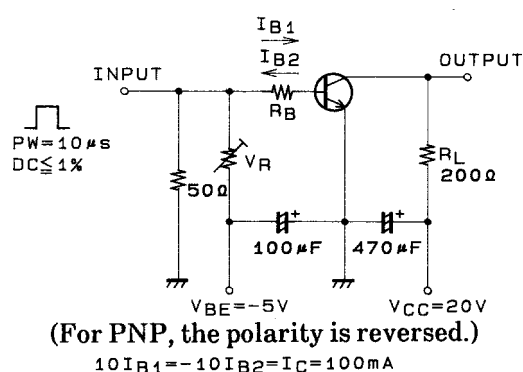
Marking:202

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Electrical Connection

- 1:Base (PNP TR)
2,7:Collector (PNP TR)
3:Emitter Common
4,7:Collector (NPN TR)
5:Base (NPN TR)

(Top view)

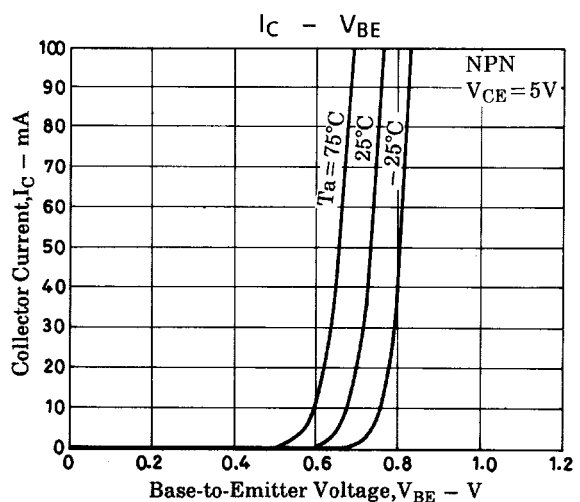
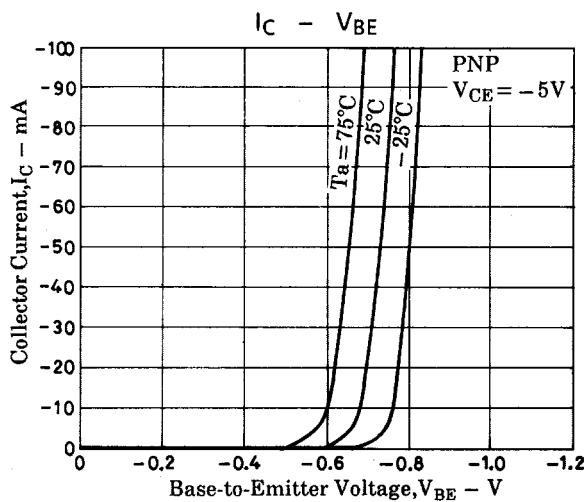
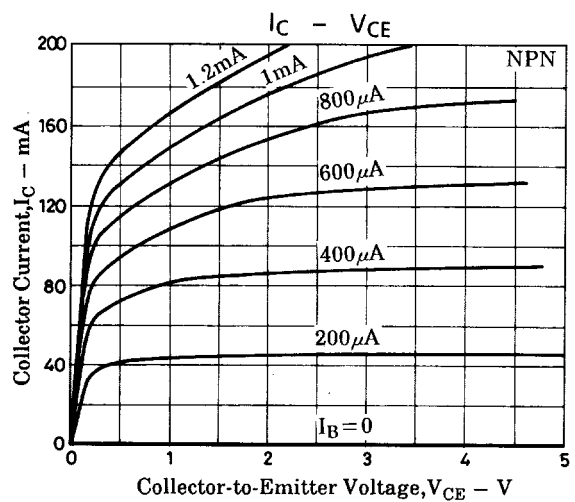
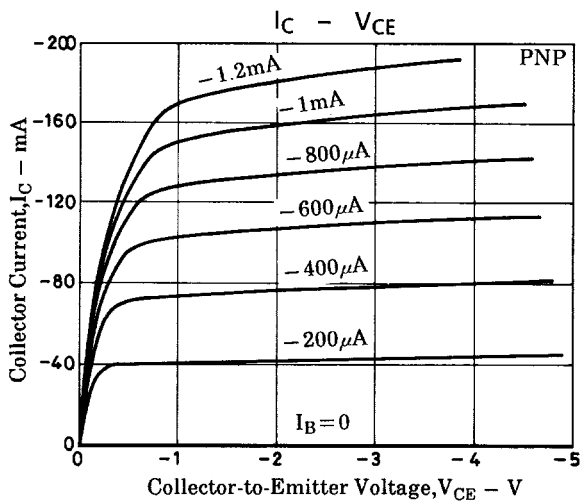
Switching Time Test Circuit**SANYO Electric Co.,Ltd. Semiconductor Business Headquarters**

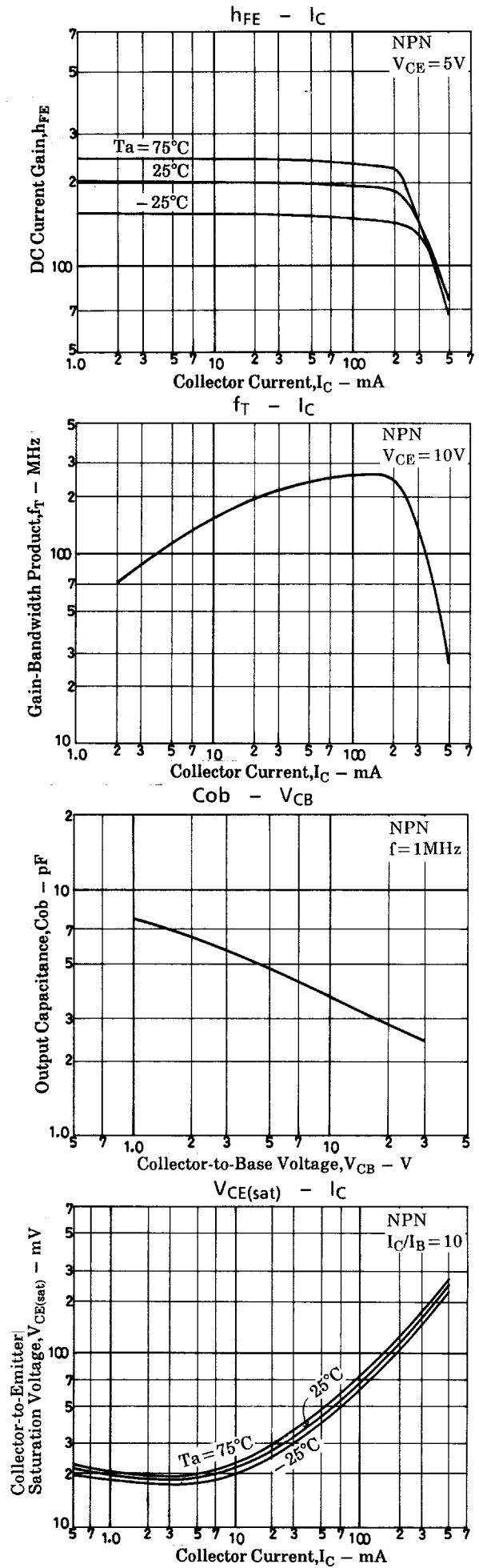
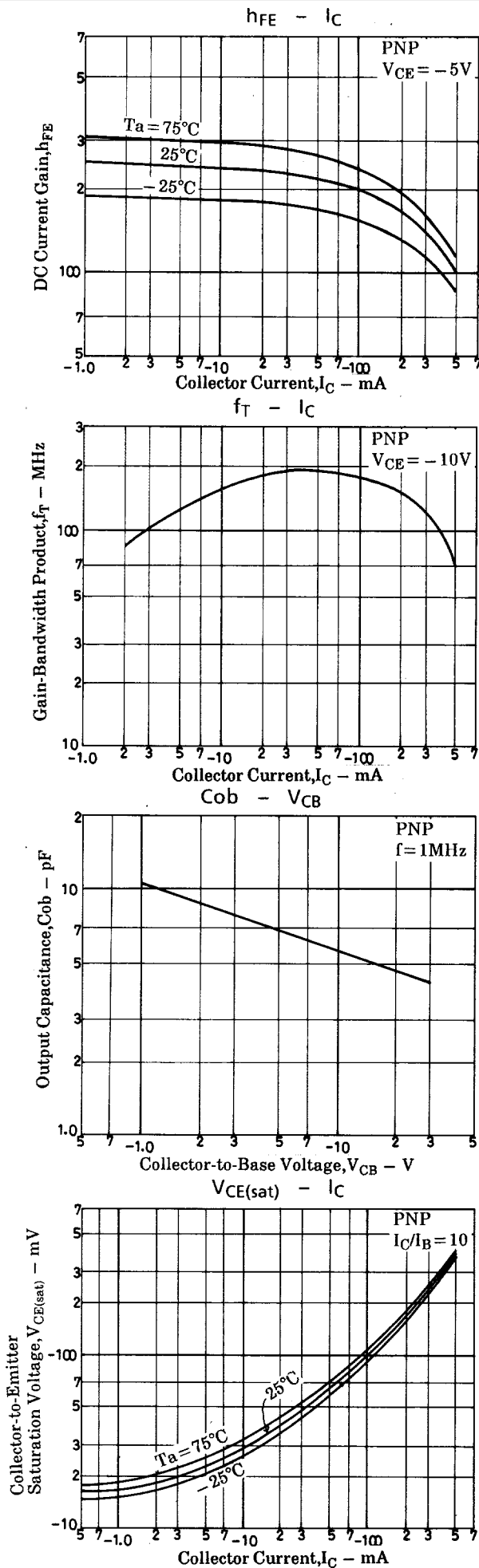
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

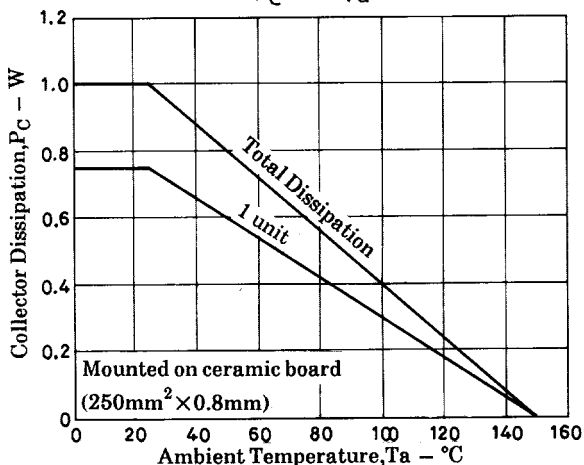
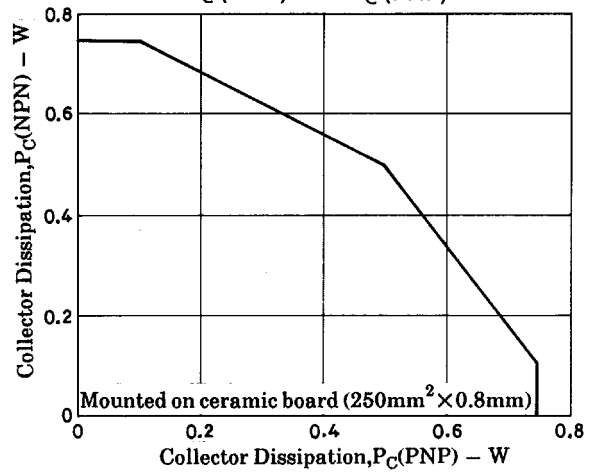
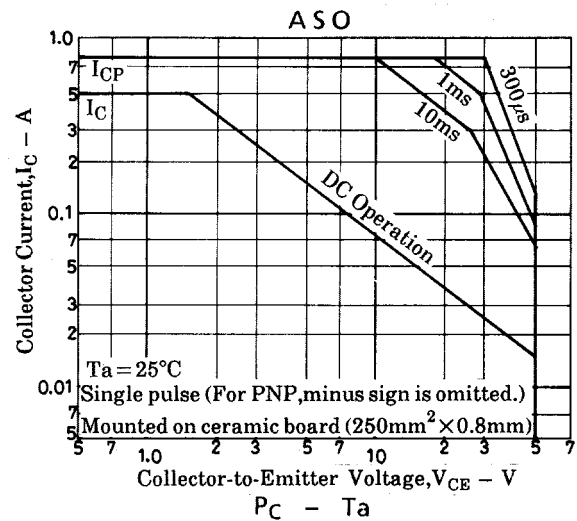
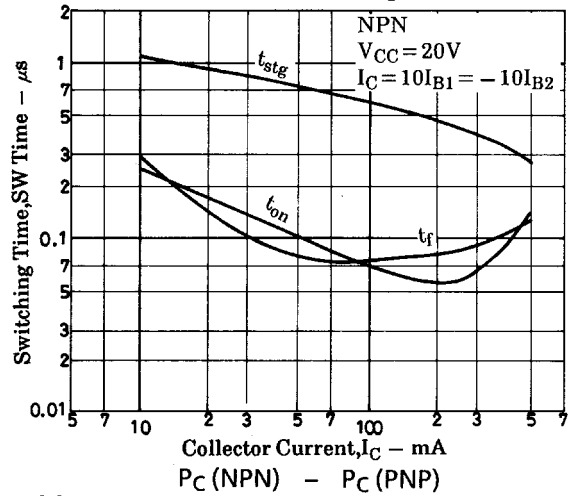
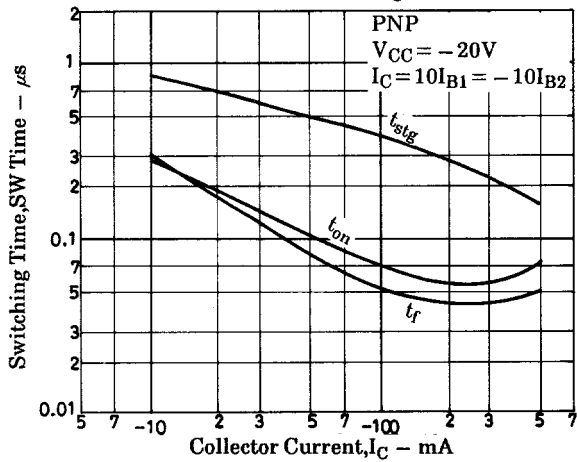
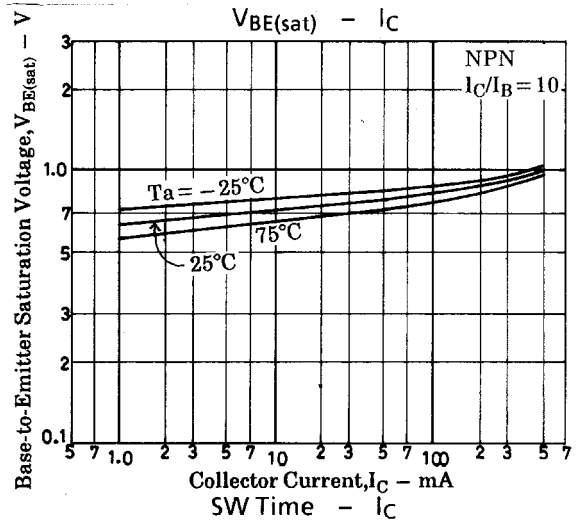
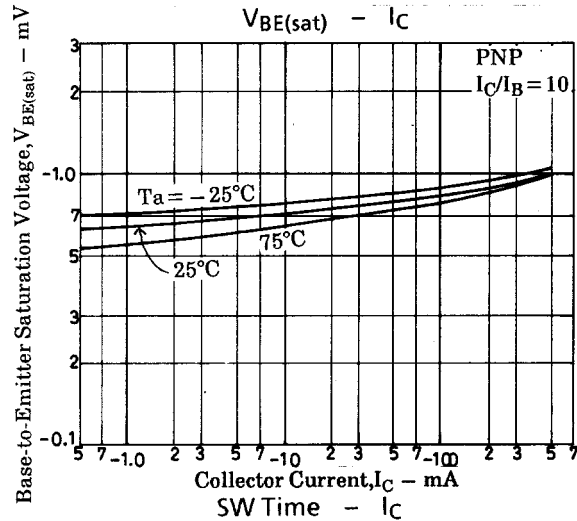
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Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=(-)40V, I_E=0$			(-)100	nA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4V, I_C=0$			(-)100	nA
DC Current Gain	h_{FE}	$V_{CE}=(-)5V, I_C=(-)10mA$	140		400	
Gain-Bandwidth Product	f_T	$V_{CE}=(-)10V, I_C=(-)50mA$		(200)		MHz
				250		MHz
Output Capacitance	C_{ob}	$V_{CB}=(-)10V, f=1MHz$		(5.6)		pF
				3.7		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)100mA, I_B=(-)10mA$		(-100)	(-300)	mV
				70	200	mV
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)100mA, I_B=(-)10mA$		(-)0.8	(-)1.2	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-)60			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)100\mu A, R_{BE}=\infty$	(-)50			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-)5			V
Turn-ON Time	t_{on}	See specified Test Circuit		(70)		ns
		See specified Test Circuit		70		ns
Storage Time	t_{stg}	See specified Test Circuit		(400)		ns
		See specified Test Circuit		600		ns
Fall Time	t_f	See specified Test Circuit		(50)		ns
		See specified Test Circuit		70		ns







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