Ordering number:EN4496

# FP203

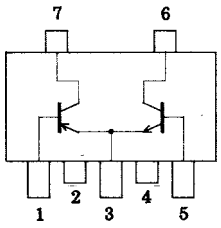
PNP/NPN Epitaxial Planar Silicon Transistors

## Push-Pull Circuits

## Features

- Composite type with 2 transistors of PNP transistor and NPN transistor,facilitating high-density mounting.
- The FP203 is formed with chips, being equivalent to the 2SB1122 and 2SD1622, placed in one package.

### Electrical Connection



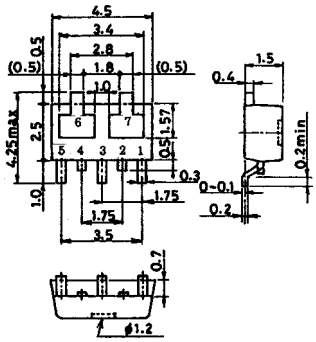

1:Base (PNP TR)
2:Collector (PNP TR)
3:Emitter Common
4:Collector (NPN TR)
5:Base (NPN TR)
6:Collector (NPN TR)
7:Collector (PNP TR)
(Top view)

## Package Dimensions

unit:mm

2097A

[FP203]




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

SANYO:PCP5
(Bottom view)

## Specifications

### Absolute Maximum Ratings at Ta = 25˚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 | $I_C$ | | (–)1 | A |
| Collector Current (Pulse) | $I_{CP}$ | | (–)2 | A |
| Base Current | $I_B$ | | (–)0.2 | A |
| Collector Dissipation | $P_C$ | Mounted on ceramic board (250mm²×0.8mm) 1unit | 0.75 | W |
| Total Dissipation | $P_T$ | Mounted on ceramic board (250mm²×0.8mm) | 1.0 | W |
| 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 | $I_{CBO}$ | $V_{CB}$=(–)50V, $I_E$=0 | | | (–)100 | nA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{EB}$=(–)4V, $I_C$=0 | | | (–)100 | nA |
| DC Current Gain | $h_{FE}$ | $V_{CE}$=(–)2V, $I_C$=(–)100mA | 140 | | 400 | |
| Gain-Bandwidth Product | $f_T$ | $V_{CE}$=(–)10V, $I_C$=(–)50mA | | 150 | | MHz |
| Output Capacitance | Cob | $V_{CB}$=(–)10V, f=1MHz | | (12) | | pF |
| | | | | 8.5 | | pF |
| C-E Saturation Voltage | $V_{CE(sat)}$ | $I_C$=(–)500mA, $I_B$=(–)50mA | | (–180) | (–400) | mV |
| | | | | 120 | 250 | mV |
| B-E Saturation Voltage | $V_{BE(sat)}$ | $I_C$=(–)500mA, $I_B$=(–)50mA | | (–)0.9 | (–)1.2 | V |
| C-B Breakdown Voltage | $V_{(BR)CBO}$ | $I_C$=(–)10μA, $I_E$=0 | (–)60 | | | V |
| C-E Breakdown Voltage | $V_{(BR)CEO}$ | $I_C$=(–)1mA, $R_{BE}$=∞ | (–)50 | | | V |
| E-B Breakdown Voltage | $V_{(BR)EBO}$ | $I_E$=(–)10μA, $I_C$=0 | (–)5 | | | V |
| Turn-ON Time | $t_{on}$ | See specified Test Circuit | | 40 | | ns |
| Storage Time | $t_{stg}$ | See specified Test Circuit | | (300)<br>350 | | ns |
| Fall Time | $t_f$ | See specified Test Circuit | | 30 | | ns |

Marking:203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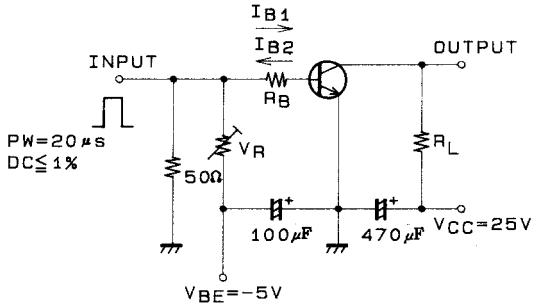
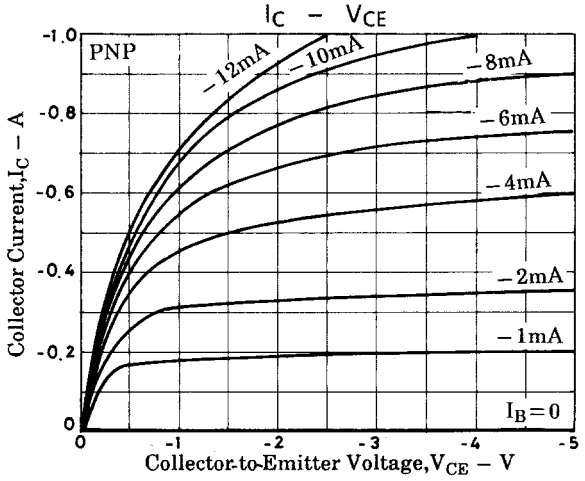
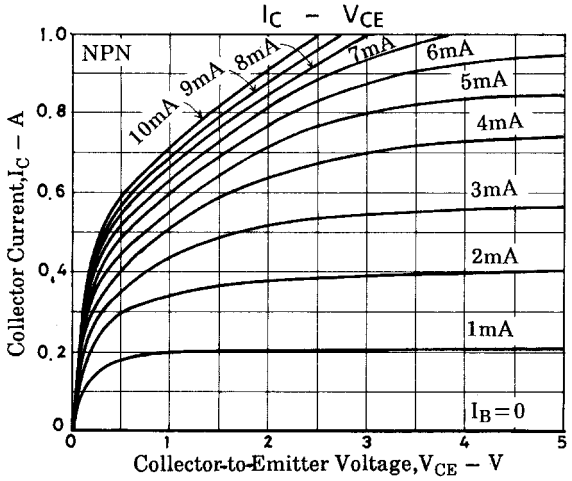
## Switching Time Test Circuit

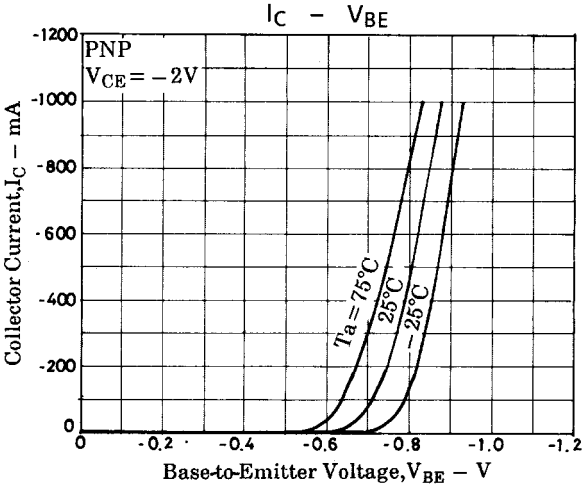


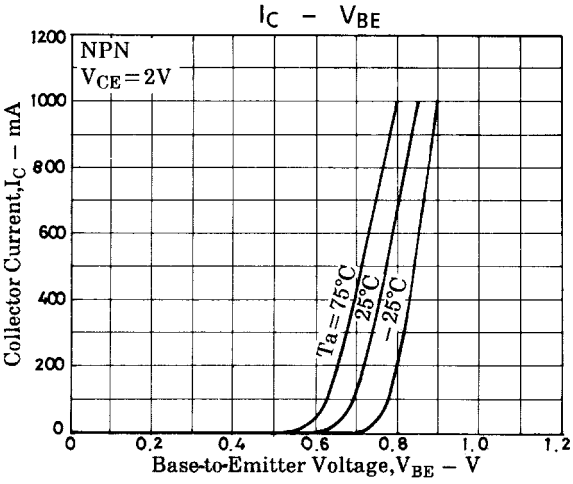

$10I_{B1}=-10I_{B2}=I_C=500mA$

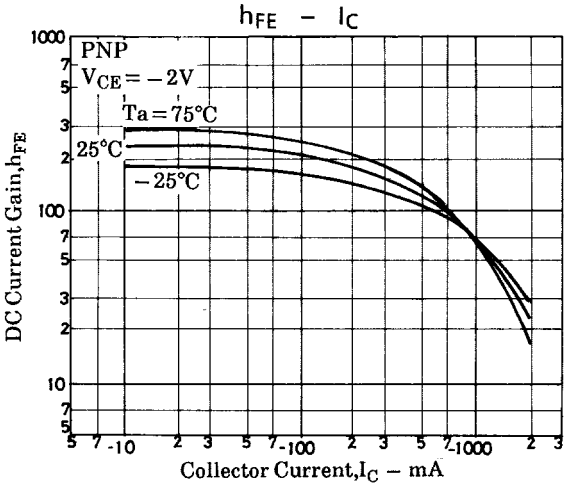
**For PNP, the polarity is reversed.**

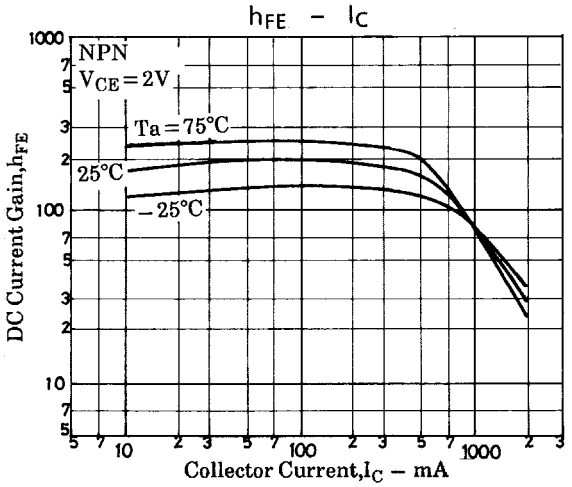


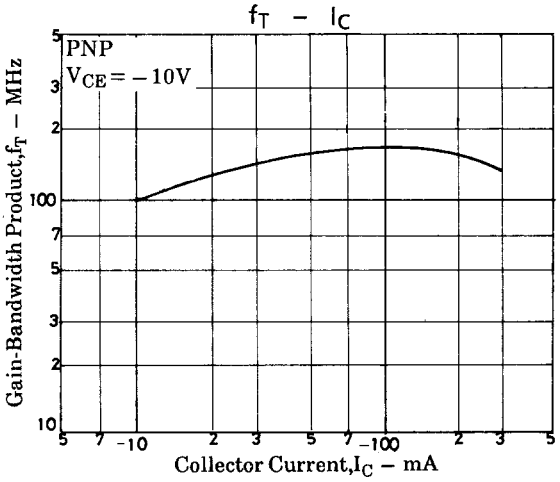



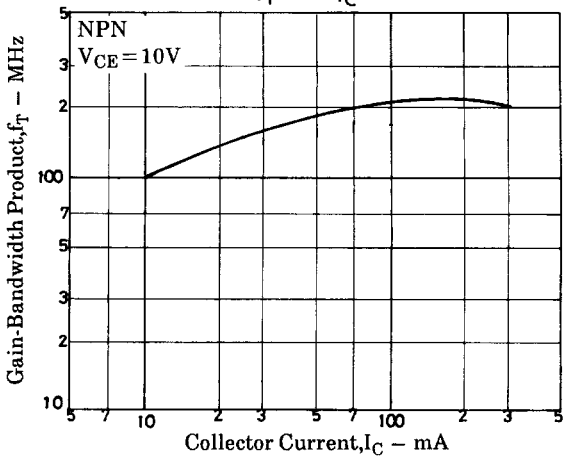



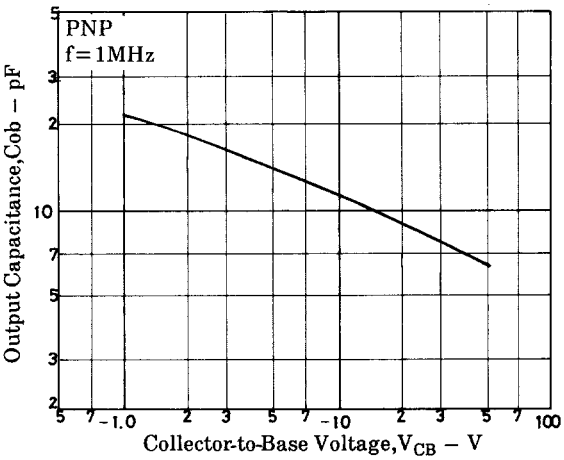
$f_T$ – $I_C$



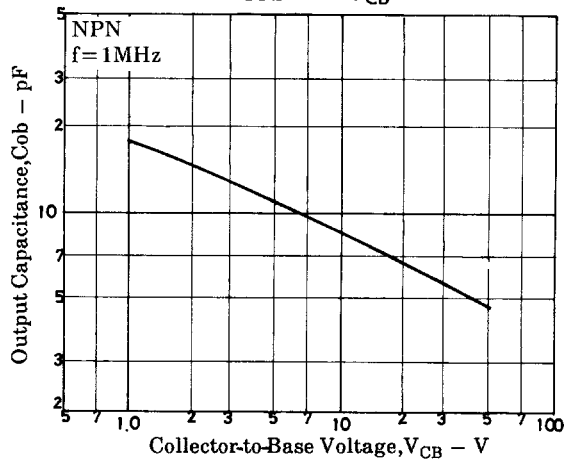

$f_T$ – $I_C$



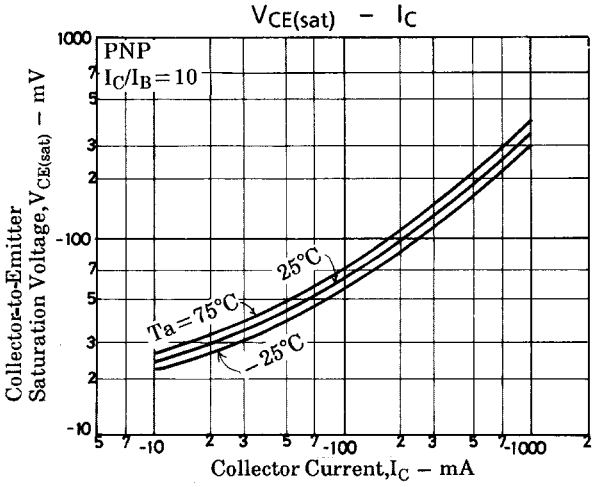

Cob – $V_{CB}$



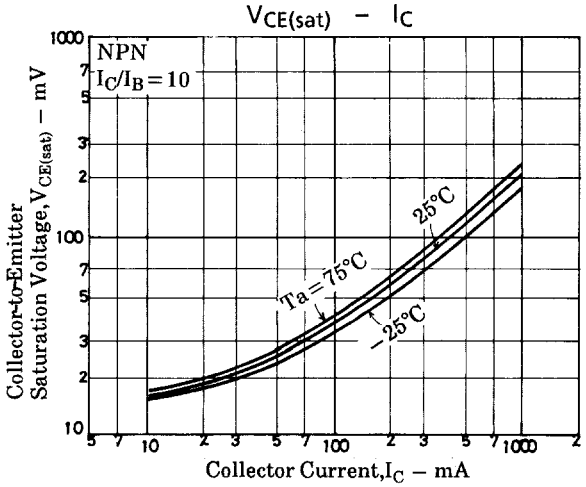

Cob – $V_{CB}$



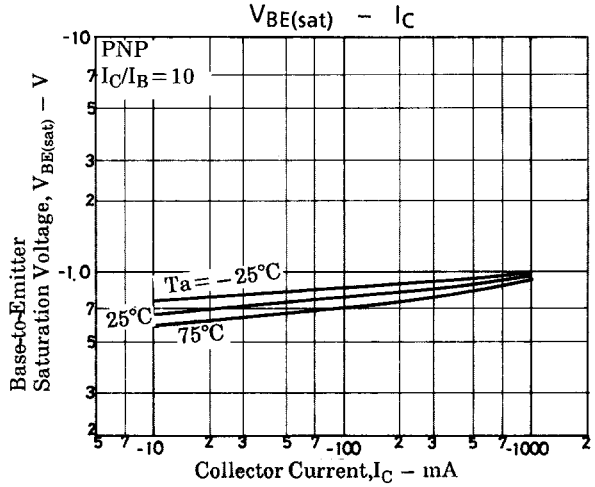

$V_{CE(sat)}$ – $I_C$




$V_{CE(sat)}$ – $I_C$




$V_{BE(sat)}$ – $I_C$




$V_{BE(sat)}$ – $I_C$