Ordering number:EN4494

FP205

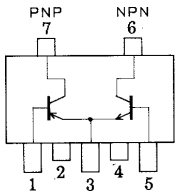
PNP/NPN Epitaxial Planar Silicon Transistors

Push-Pull Circuit Applications

Features

- Composite type with a PNP transistor and an NPN transistor in one package, facilitating high-density mounting.
- The FP205 is composed of 2 chips, one being equivalent to the 2SA1416 and the other 2SC3646, which are placed in one package.

Electrical Connection



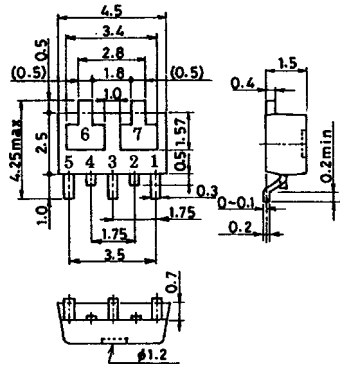
1:Base
2:Collector
3:Emitter Common
4:Collector
5:Base
6:Collector
7:Collector
(Top view)

Package Dimensions

unit:mm

2097A

[FP205]



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

SANYO:PCP5
(Bottom view)

Specifications

Absolute Maximum Ratings at Ta = 25˚C

( ) : PNP

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)120	V
Collector-to-Emitter Voltage	V_{CEO}		(–)100	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	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	0.8	W
Total Power Dissipation	P_T	Mounted on ceramic board (250mm²×0.8mm)	1.1	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

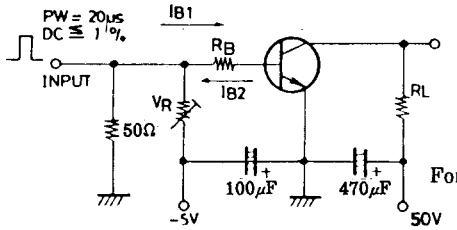
Electrical Characteristics at Ta=25˚C

Parameter	Symbol	Conditons	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)100V, 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=(–)100mA	140		400	
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)100mA		120		MHz
Output Capacitance	Cob	V_{CB}=(–)10V, f=1MHz		(13)		pF
				8.5		pF
C-E Saturation Voltage	$V_{CE(sat)}$	I_C=(–)400mA, I_B=(–)40mA		(–0.2)	(–0.6)	V
				0.1	0.4	V
B-E Saturation Voltage	$V_{BE(sat)}$	I_C=(–)400mA, I_B=(–)40mA		(–)0.85	(–)1.2	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)120			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)100			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=0	(–)6			V
Turn-ON Time	t_{on}	See specified Test Circuit		(80)80		ns
Storage Time	t_{stg}	See specified Test Circuit		(700) 850		ns
Fall Time	t_f	See specified Test Circuit		(40)50		ns

Marking:205

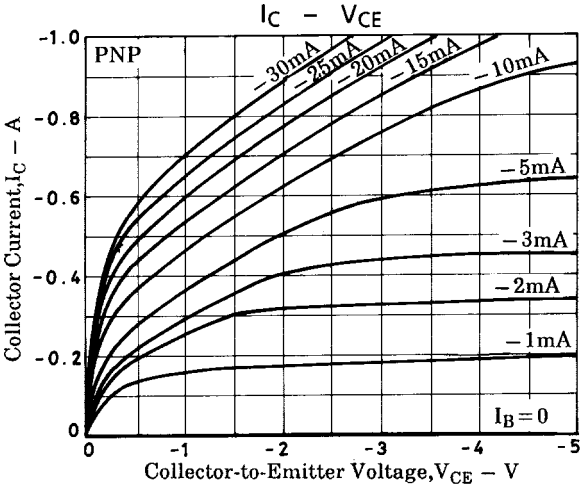
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

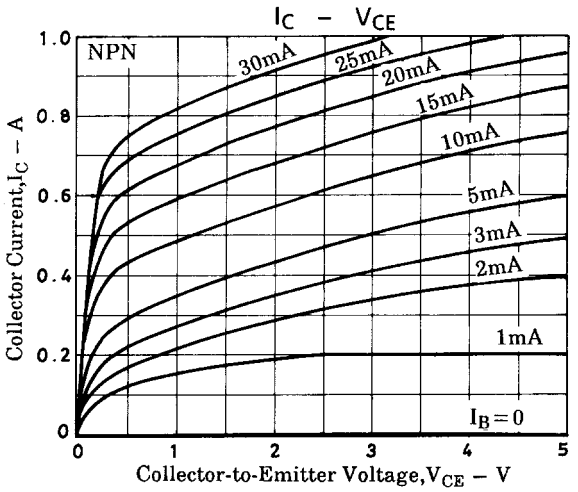
Switching Time Test Circuit

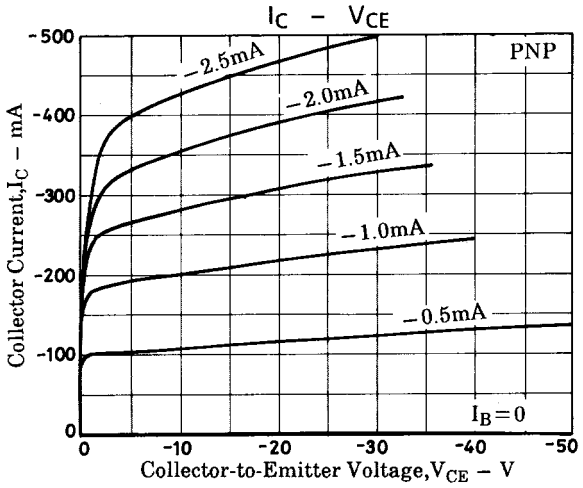


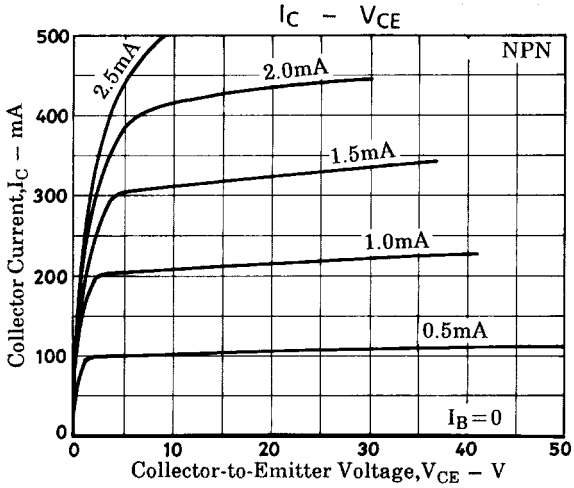
For PNP, the polarity is reversed.

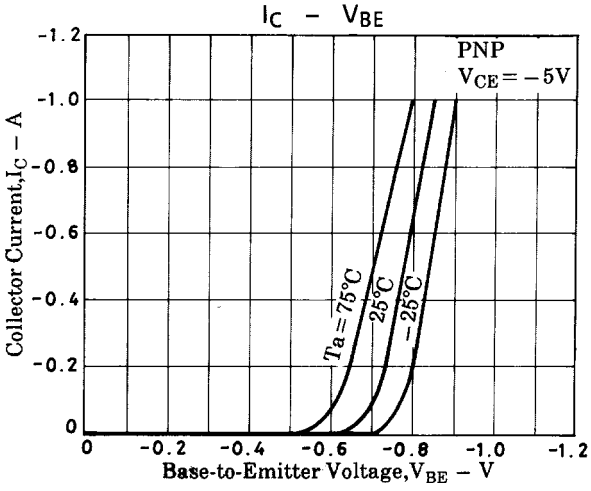
$10I_{B1} = -10I_{B2} = I_C = 400mA$

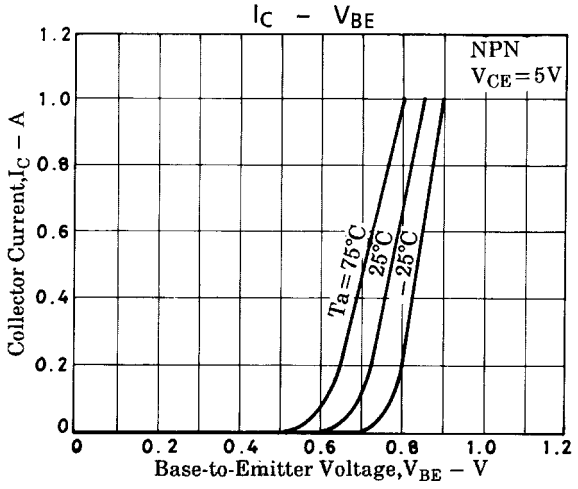


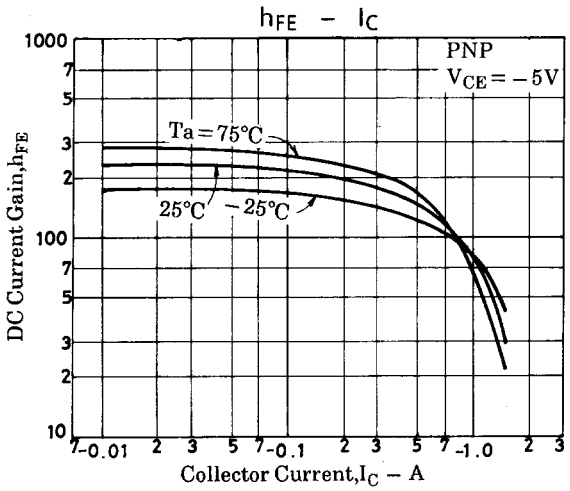


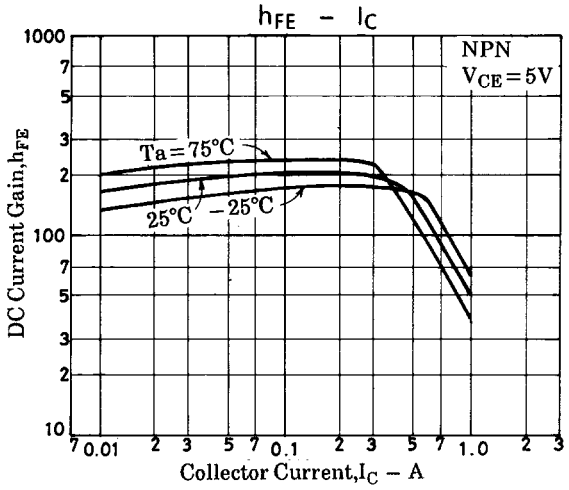


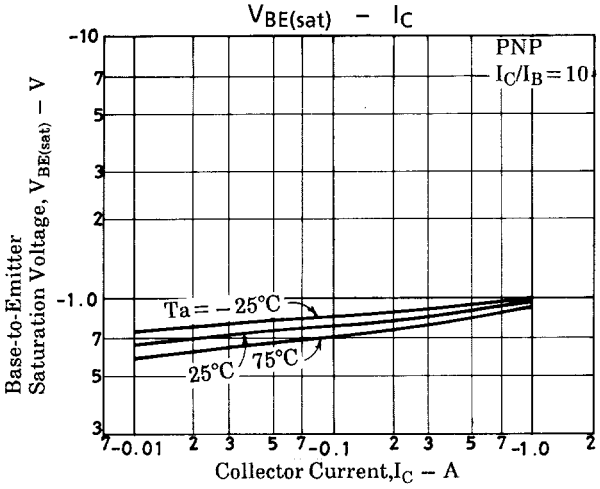


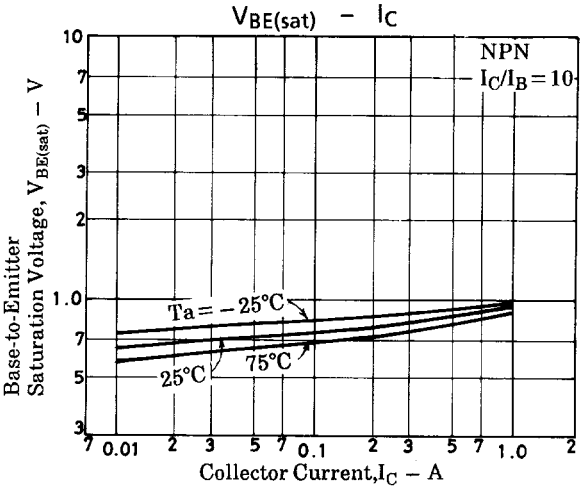


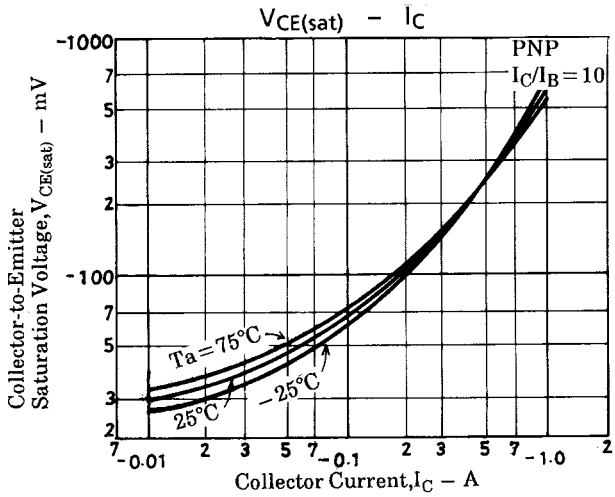


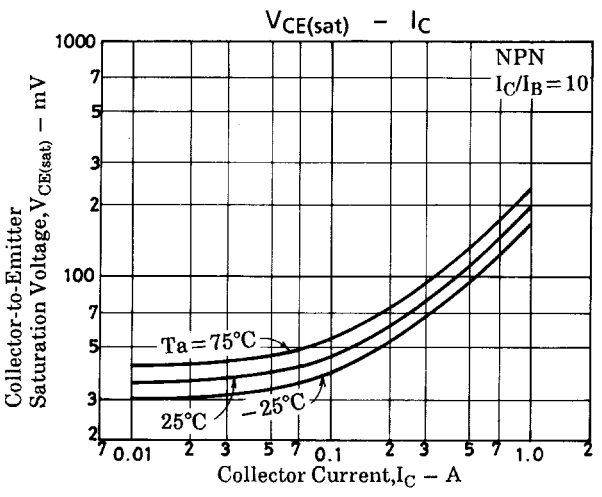

hFE – IC
PNP
VCE = –5V
Ta = 75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A

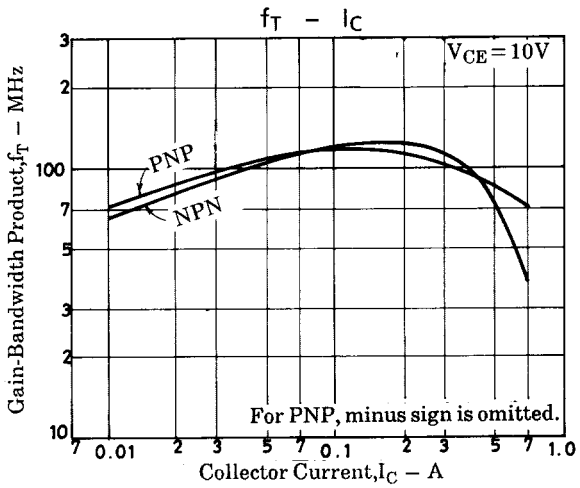

hFE – IC
NPN
VCE = 5V
Ta = 75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A

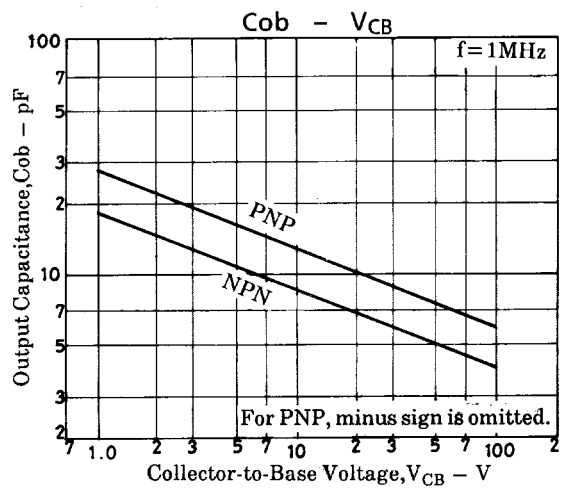

VBE(sat) – IC
PNP
IC/IB = 10
Ta = –25°C
25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A


VBE(sat) – IC
NPN
IC/IB = 10
Ta = –25°C
25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A

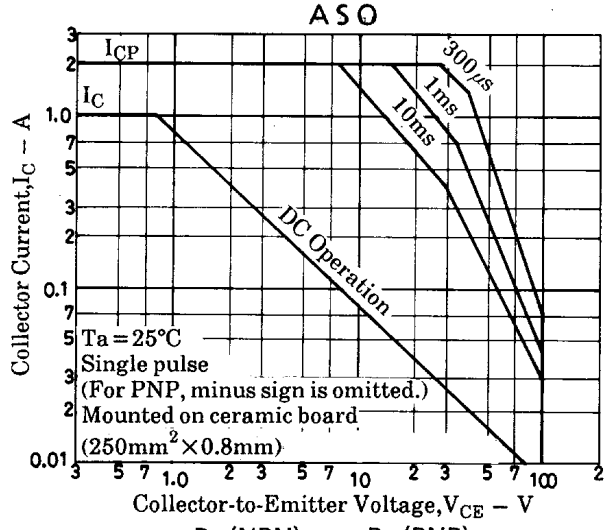

VCE(sat) – IC
PNP
IC/IB = 10
Ta = 75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A


VCE(sat) – IC
NPN
IC/IB = 10
Ta = 75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A

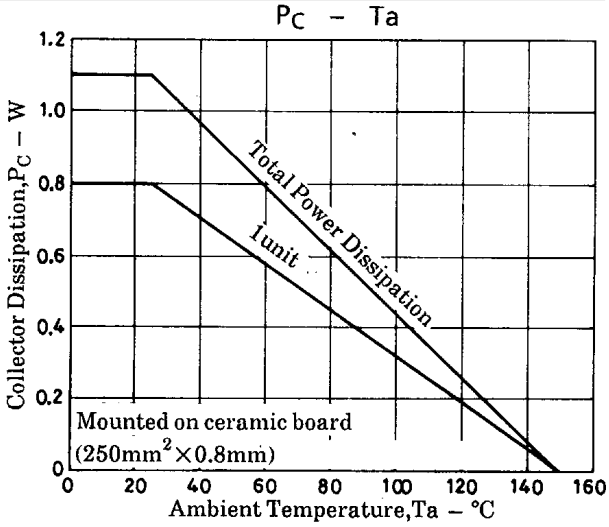

fT – IC
VCE = 10V
PNP
NPN
For PNP, minus sign is omitted.
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A


Cob – VCB
f = 1MHz
PNP
NPN
For PNP, minus sign is omitted.
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V

ASO



PC – Ta



PC(NPN) – PC(PNP)