Ordering number:EN4656

FP105

TR:PNP Epitaxial Planar Silicon Transistor
SBD:Schottky Barrier Diode

DC-DC Converter Applications

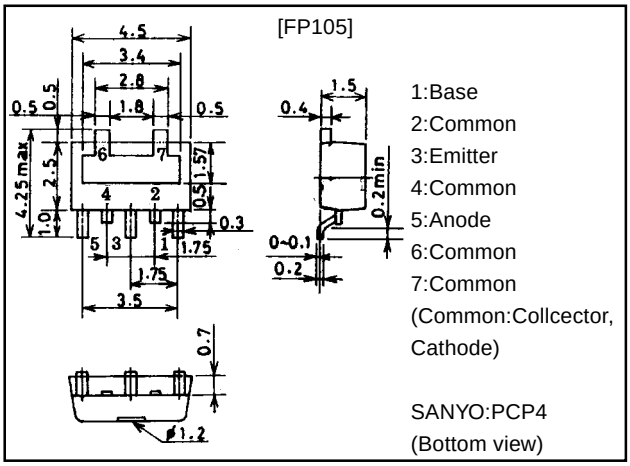
Features

- Composite type with a PNP transistor and a Shottky barrier diode contained in one package, facilitating high-density mounting.
- The FP105 is formed with 2 chips, one being equivalent to the 2SB1123 and the other the SB05-05CP, placed in one package.

Package Dimensions

unit:mm

2088A



Specifications

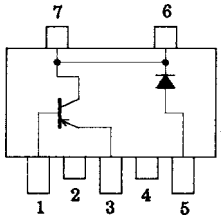
Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
[TR]				
Collector-to-Base Voltage	V_{CBO}		–60	V
Collector-to-Emitter Voltage	V_{CEO}		–50	V
Emitter-to-Base Voltage	V_{EBO}		–6	V
Collector Current	I_C		–2	A
Collector Current (Pulse)	I_{CP}		–4	A
Base Current	I_B		–400	mA
Collector Dissipation	P_C	Mounted on ceramic board (250mm²×0.8mm)	1.3	W
Junction Temperature	Tj		150	˚C
[SBD]				
Repetitive Peak Reverse Voltage	V_{RRM}		50	V
Non-repetitive Peak Reverse Surge Voltage	V_{RSM}		55	V
Average Rectified Current	I_O		500	mA
Surge Forward Current	I_{FSM}	50Hz sine wave, 1cycle	5	A
Junction Temperature	Tj		–55 to +125	˚C
Storage Temperature	Tstg		–55 to +125	˚C

Marking:105

Continued on next page.

Electrical Connection



1:Base
2:Common
3:Emitter
4:Common
5:Anode
6:Common
7:Common
(Common:Collcector, Cathode)

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

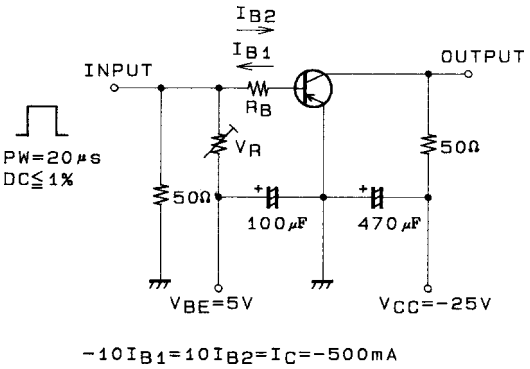
Continued from preceding page.

Electrical Characteristics at Ta=25˚C

.Parameter	Symbol	Conditons	Ratings			Unit
			min	typ	max	
[TR]						
Collector Cutoff Current	I_{CBO}	V_{CB}=–50V, I_E=0			–0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=–4V, I_C=0			–0.1	μA
DC Current Gain	$h_{FE}1$	V_{CE}=–2V, I_C=–100mA	140		560	
	$h_{FE}2$	V_{CE}=–2V, I_C=–1.5A	40			
Gain-Bandwidth Product	f_T	V_{CE}=–10V, I_C=–50mA		150		MHz
Output Capacitance	Cob	V_{CE}=–10V, f=1MHz		22		pF
C-E Saturation Voltage	$V_{CE(sat)}$	I_C=–1.0A, I_B=–50mA		–0.3	–0.7	V
B-E Saturation Voltage	$V_{BE(sat)}$	I_C=–1.0A, 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, IC=0	–6			V
Turn-ON Time	t_{on}	See specified Test Circuit		60		ns
Storage Time	tstg	See specified Test Circuit		450		ns
Fall Time	t_f	See specified Test Circuit		30		ns
[SBD]						
Reverse Voltage	V_R	I_R=200μA	50			V
Forward Voltage	V_F	I_F=500mA			0.55	V
Reverse Current	I_R	V_R=25V			50	μA
Interterminal Capacitance	C	V_R=10V, f=1MHz		22		pF
Reverse Recovery Time	t_{rr}	I_F=I_R=100mA, See specified Test Circuit			10	ns
Thermal Resistance	Rthj-a	Mounted on ceramic board (250mm²×0.8mm)		120		˚C/W

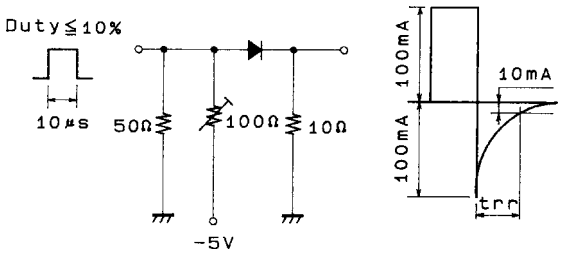
Switching Time Test Circuit

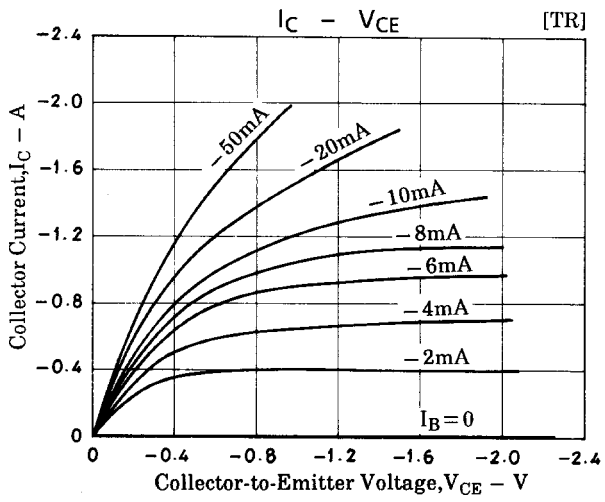
(TR)

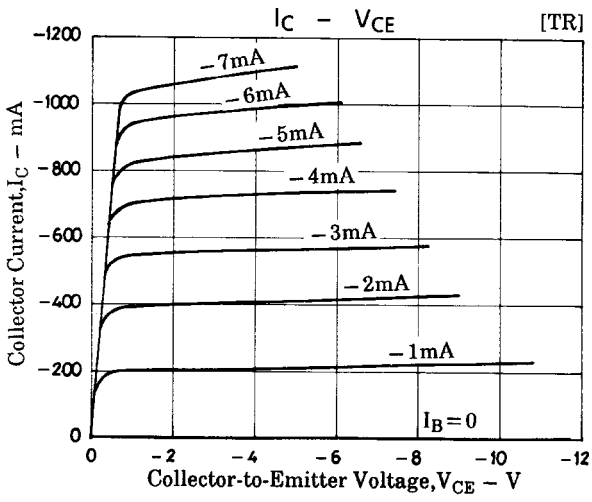


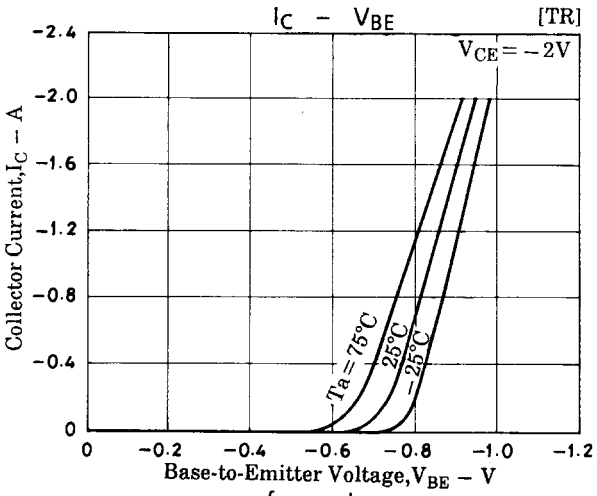
$-10I_{B1}=10I_{B2}=I_C=-500mA$

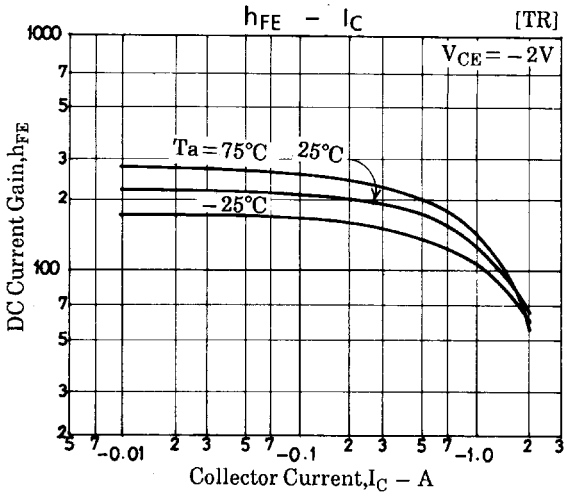
(SBD)

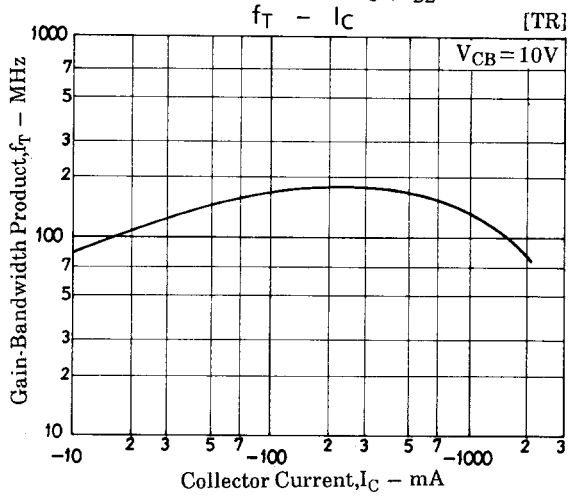


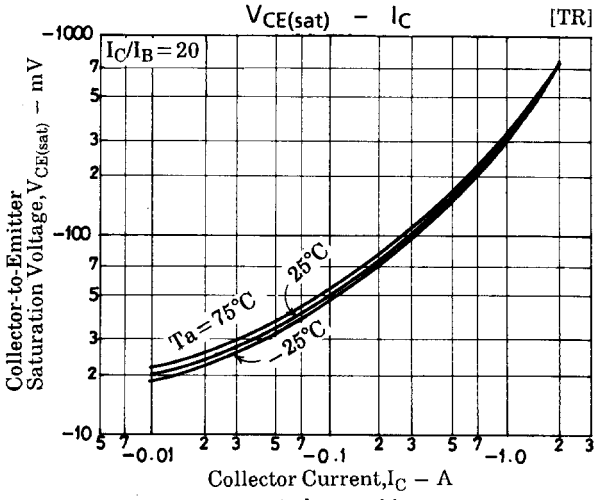


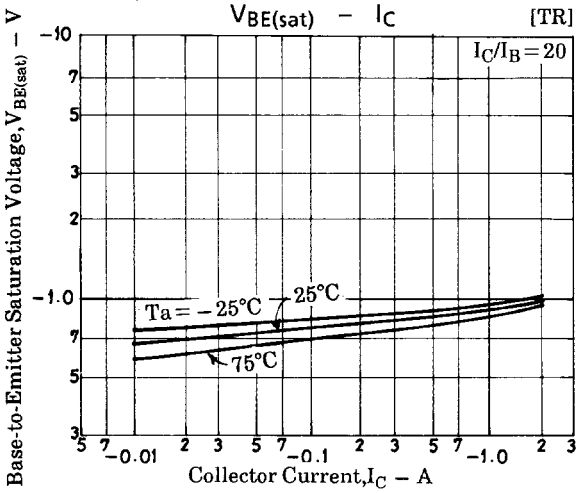


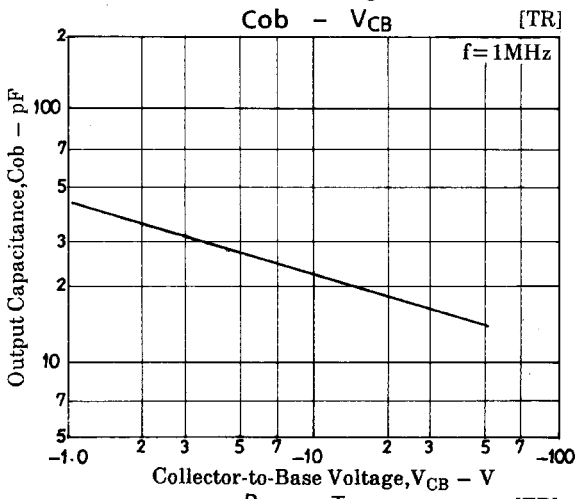

IC – VBE
[TR]
VCE = –2V
Collector Current,IC – A
Base-to-Emitter Voltage,VBE – V
Ta = 75°C
25°C
–25°C

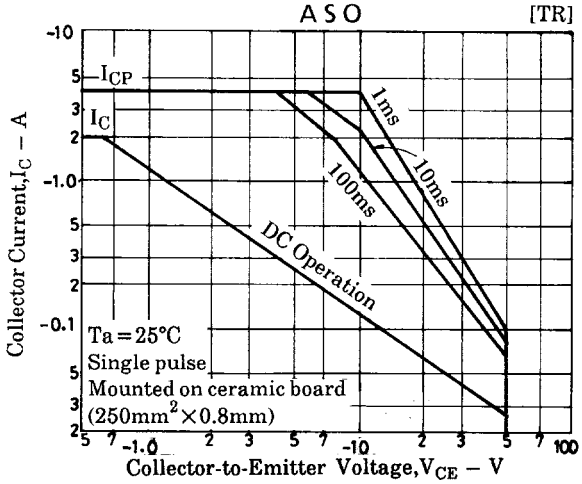

hFE – IC
[TR]
VCE = –2V
DC Current Gain,hFE
Collector Current,IC – A
Ta = 75°C
25°C
–25°C

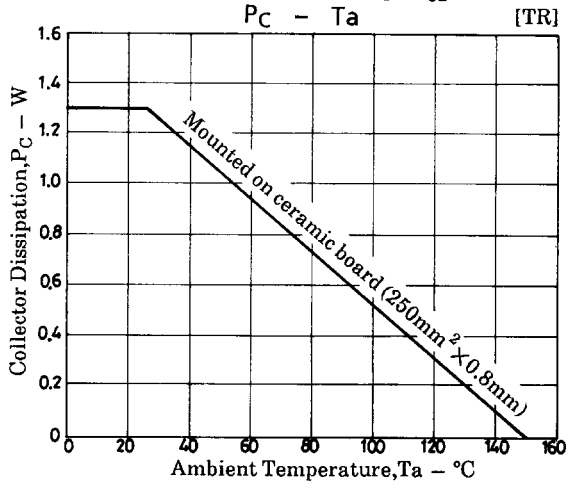

fT – IC
[TR]
VCB = 10V
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – mA


VCE(sat) – IC
[TR]
IC/IB = 20
Collector-to-Emitter Saturation Voltage,VCE(sat) – mV
Collector Current,IC – A
Ta = 75°C
25°C
–25°C


VBE(sat) – IC
[TR]
IC/IB = 20
Base-to-Emitter Saturation Voltage,VBE(sat) – V
Collector Current,IC – A
Ta = –25°C
25°C
75°C


Cob – VCB
[TR]
f = 1MHz
Output Capacitance,Cob – pF
Collector-to-Base Voltage,VCB – V


ASO
[TR]
ICP
IC
1ms
10ms
100ms
DC Operation
Ta = 25°C
Single pulse
Mounted on ceramic board
(250mm2×0.8mm)
Collector Current,IC – A
Collector-to-Emitter Voltage,VCE – V


PC – Ta
[TR]
Mounted on ceramic board (250mm2×0.8mm)
Collector Dissipation,PC – W
Ambient Temperature,Ta – °C