



SANYO Semiconductors

# DATA SHEET

## 2SB1302 — PNP Epitaxial Planar Silicon Transistor

### High-Current Switching Applications

#### Applications

- DC-DC converters, motor drivers, relay drivers, lamp drivers.

#### Features

- Adoption of FBET, MBIT processes.
- Low collector-to-emitter saturation voltage.
- Large current capacity.
- Fast switching speed.
- Ultrasmall size making it easy to provide high-density, small-sized hybrid IC's.

#### Specifications

**Absolute Maximum Ratings** at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	VCBO		-25	V
Collector-to-Emitter Voltage	VCEO		-20	V
Emitter-to-Base Voltage	VEBO		-5	V
Collector Current	IC		-5	A
Collector Current (Pulse)	ICP		-8	A
Collector Dissipation	PC	Mounted on a ceramic board (250mm <sup>2</sup> ×0.8mm)	1.3	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Marking : BJ

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# 2SB1302

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=-20V, I_E=0A$			-500	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=-4V, I_C=0A$			-500	nA
DC Current Gain	$h_{FE1}$	$V_{CE}=-2V, I_C=-500mA$	100*		400*	
	$h_{FE2}$	$V_{CE}=-2V, I_C=-4A$	60			
Gain-Bandwidth Product	$f_T$	$V_{CE}=-5V, I_C=-200mA$		320		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=-10V, f=1MHz$		60		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-3A, I_B=-60mA$		-250	-500	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-3A, I_B=-60mA$		-1.0	-1.3	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-10\mu A, I_E=0A$	-25			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-1mA, R_{BE}=\infty$	-20			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-10\mu A, I_C=0A$	-5			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		40		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		200		ns
Fall Time	$t_f$	See specified Test Circuit.		10		ns

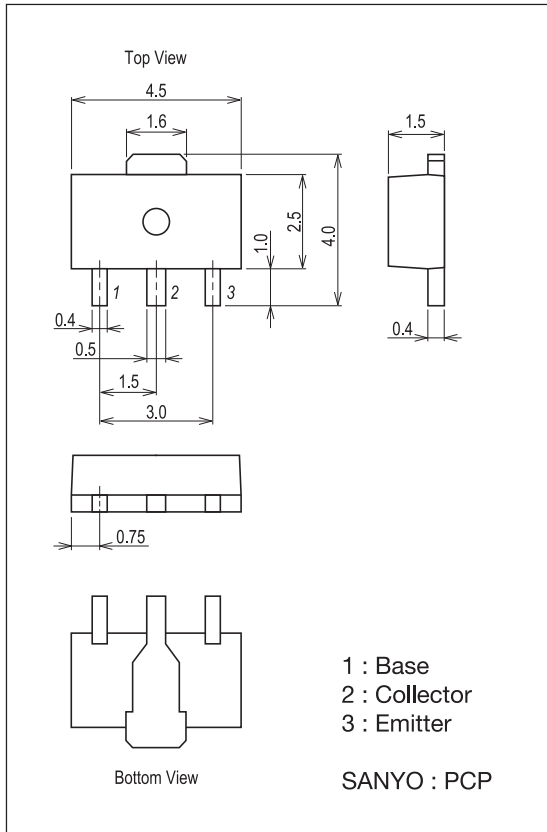
\*: The 2SB1302 is classified by 500mA  $h_{FE}$  as follows:

Rank	R	S	T
$h_{FE}$	100 to 200	140 to 280	200 to 400

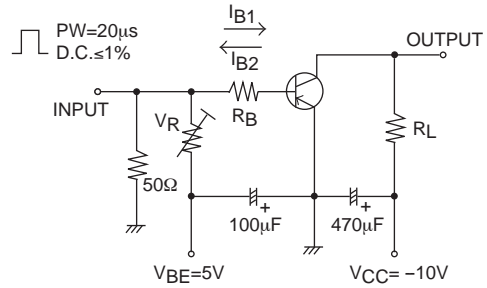
## Package Dimensions

unit : mm (typ)

7007B-004

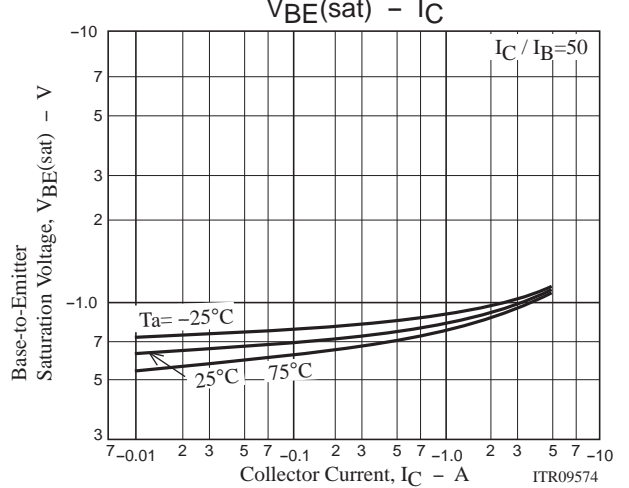
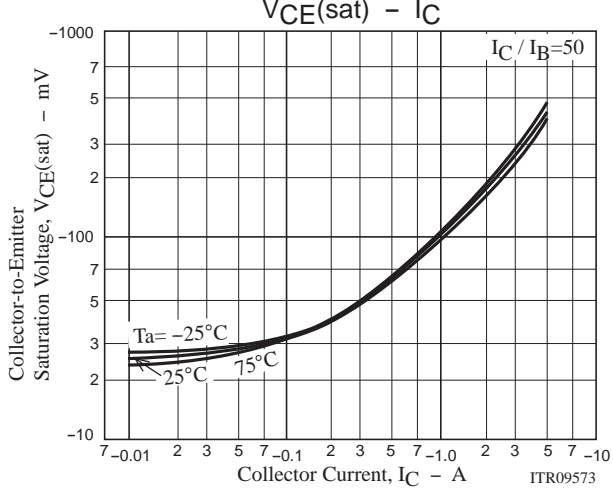
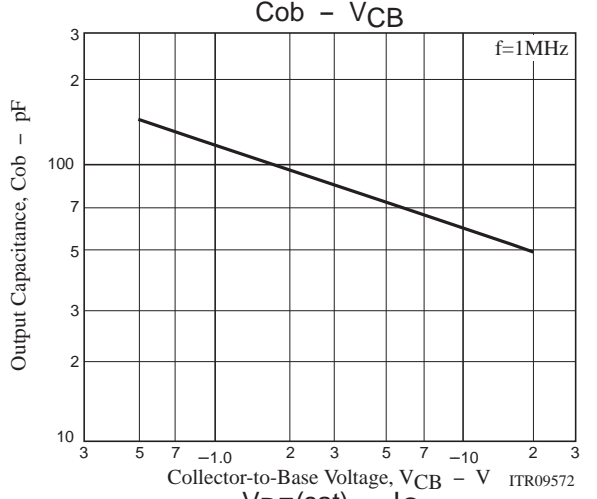
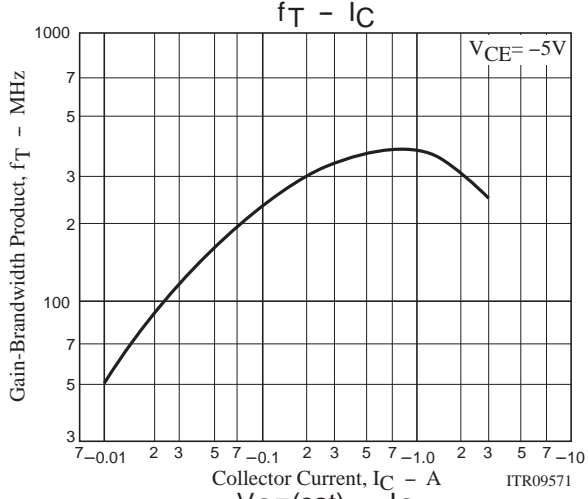
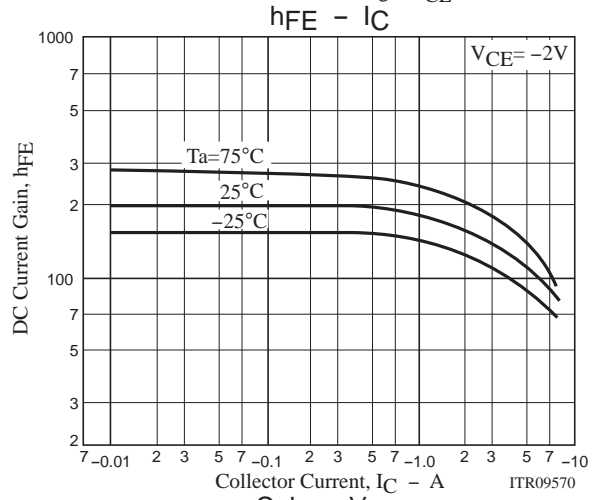
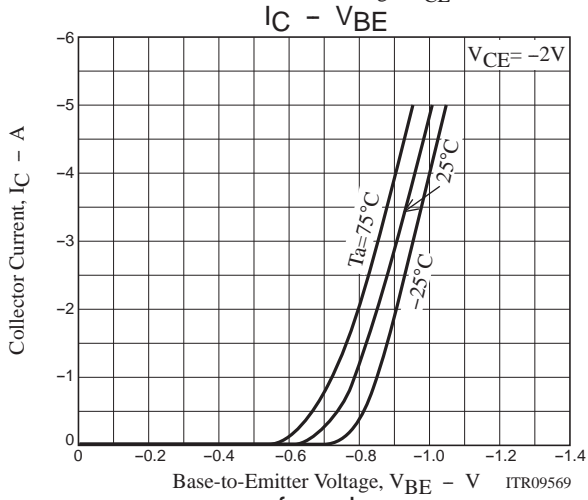
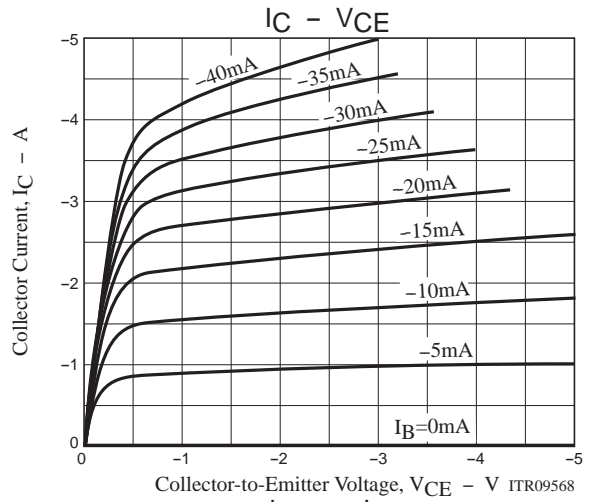
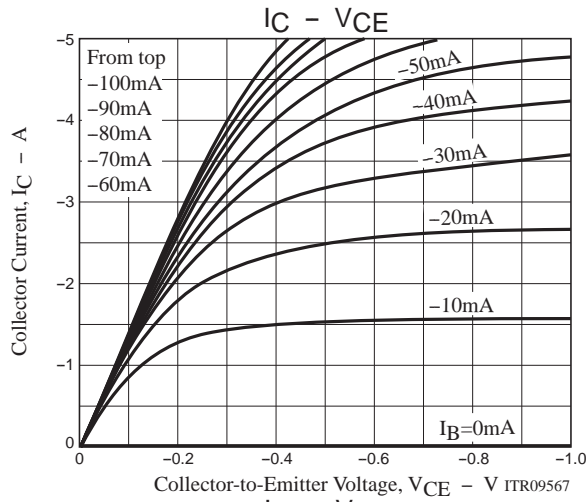


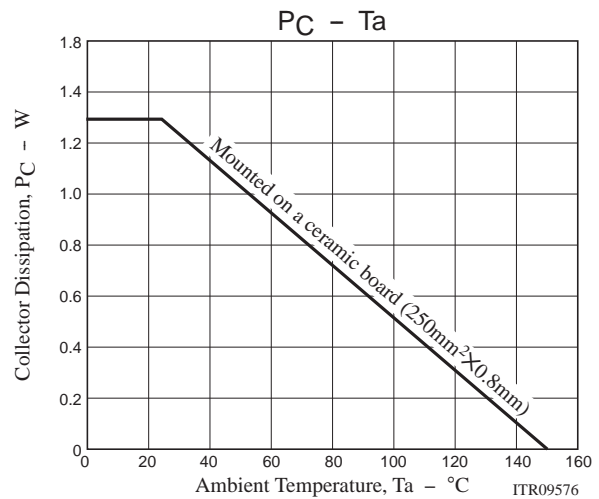
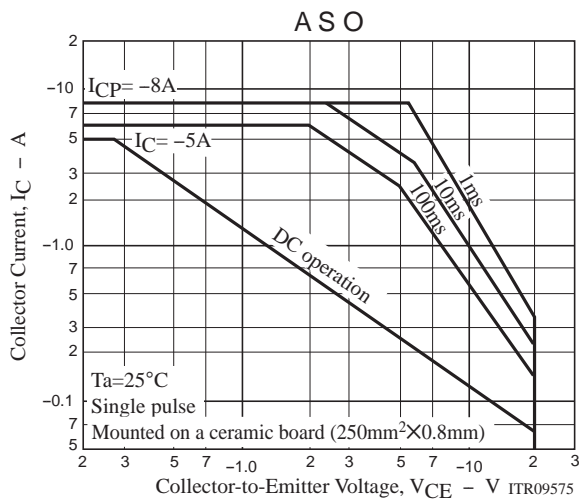
## Switching Time Test Circuit



$$I_C = 10I_{B1} = -10I_{B2} = -2A$$

# 2SB1302





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