



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## 2SB1123 / 2SD1623 — PNP / NPN Epitaxial Planar Silicon Transistors

### High-Current Switching Applications

#### Applications

- Voltage regulators, relay drivers, lamp drivers, electrical equipment.

#### Features

- Adoption of FBET, MBIT processes.
- Low collector-to-emitter saturation voltage.
- Large current capacity and wide ASO.
- Fast switching speed.
- The ultraminiature package facilitates higher-density mounting, thus allows the applied hybrid IC's further miniaturization.

#### Specifications ( ) : 2SB1123

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	VCBO		(-)60	V
Collector-to-Emitter Voltage	VCEO		(-)50	V
Emitter-to-Base Voltage	VEBO		(-)6	V
Collector Current	IC		(-)2	A
Collector Current (Pulse)	ICP		(-)4	A
Collector Dissipation	PC		0.5	W
		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 2SB1123 : BF

2SD1623 : DF

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**SANYO Semiconductor Co., Ltd.**

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# 2SB1123 / 2SD1623

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=(-)50V, I_E=0A$			(-) $100$	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)4V, I_C=0A$			(-) $100$	nA
DC Current Gain	$h_{FE1}$	$V_{CE}=(-)2V, I_C=(-)100mA$	100*		560*	
	$h_{FE2}$	$V_{CE}=(-)2V, I_C=(-)1.5A$	40			
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10V, I_C=(-)50mA$		150		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=(-)10V, f=1MHz$		(22)12		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)1A, I_B=(-)50mA$		(-0.3)0.15	(-0.7)0.4	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)1A, I_B=(-)50mA$		(-) $0.9$	(-) $1.2$	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0A$	(-) $60$			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-) $50$			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0A$	(-) $6$			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		(60)60		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		(450)550		ns
Fall Time	$t_f$	See specified Test Circuit.		(30)30		ns

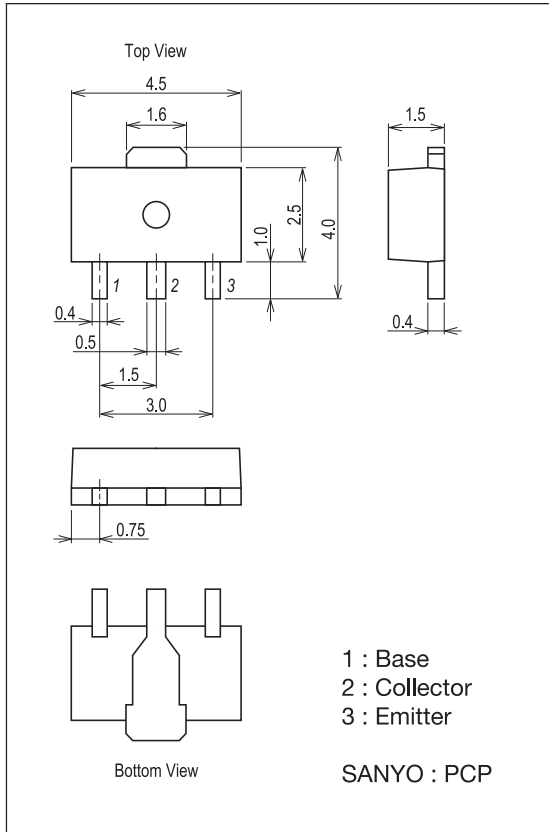
\*: The 2SB1123 / 2SD1623 are classified by 100mA  $h_{FE}$  as follows:

Rank	R	S	T	U
$h_{FE}$	100 to 200	140 to 280	200 to 400	280 to 560

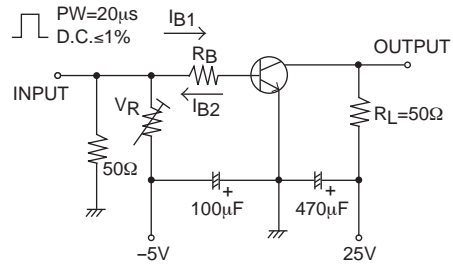
## Package Dimensions

unit : mm (typ)

7007B-004

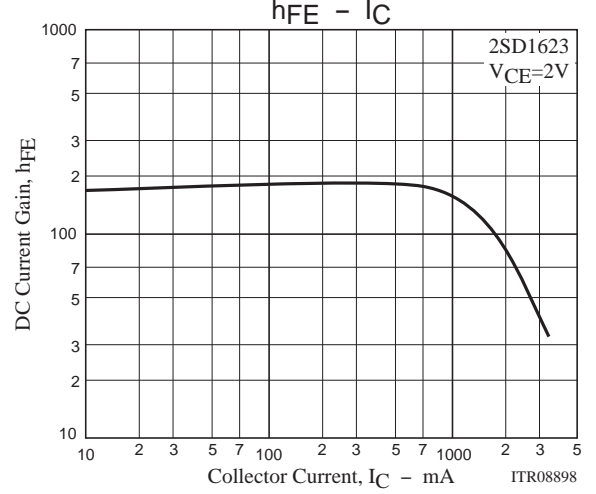
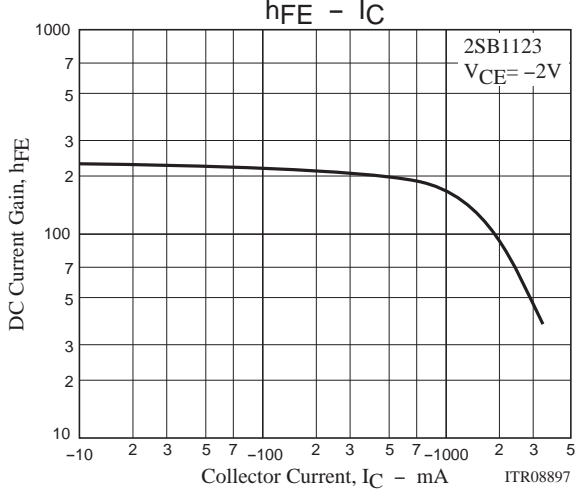
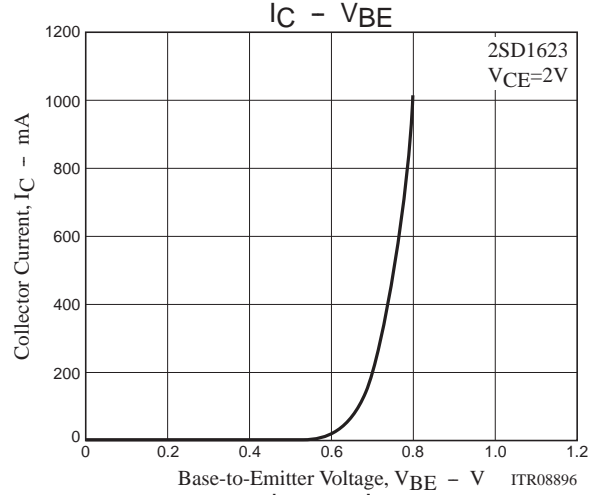
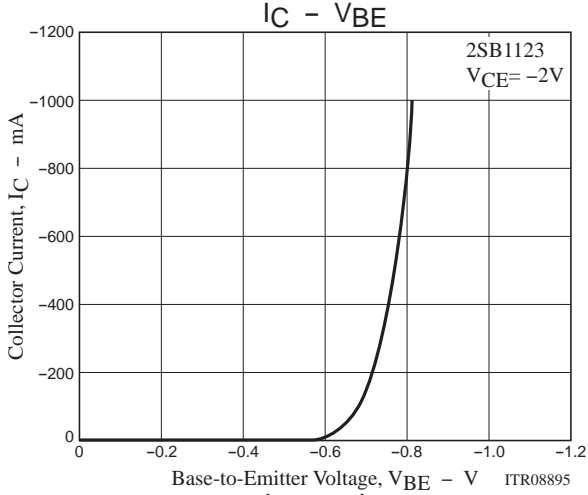
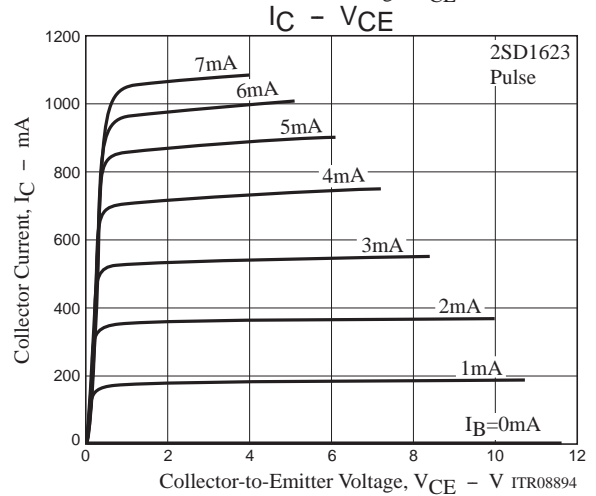
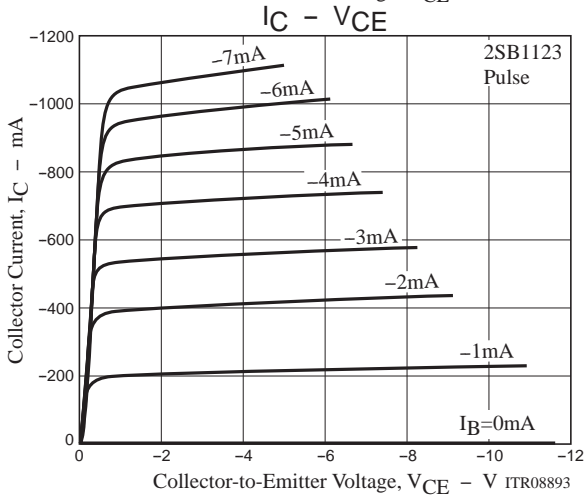
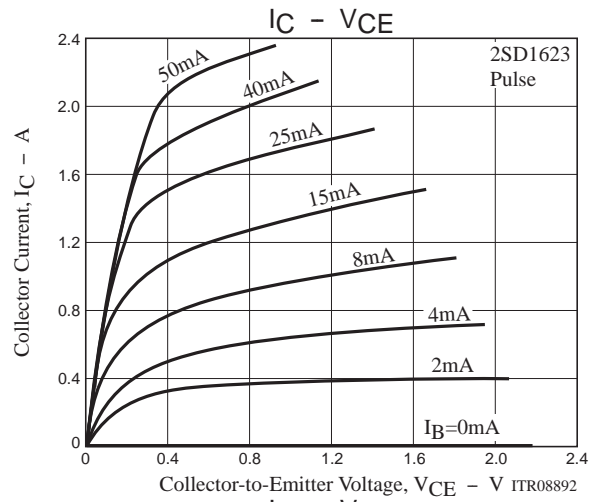
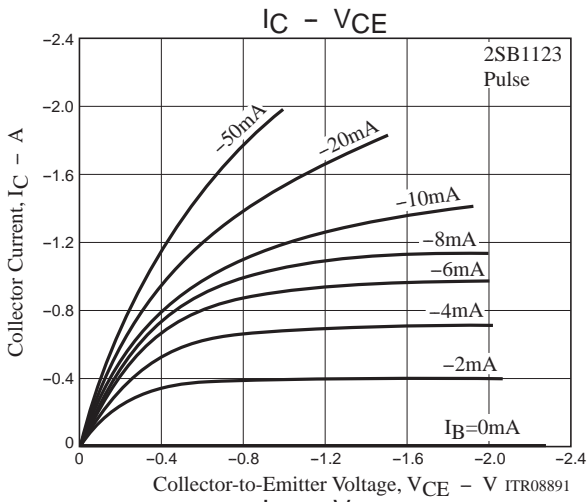


## Switching Time Test Circuit

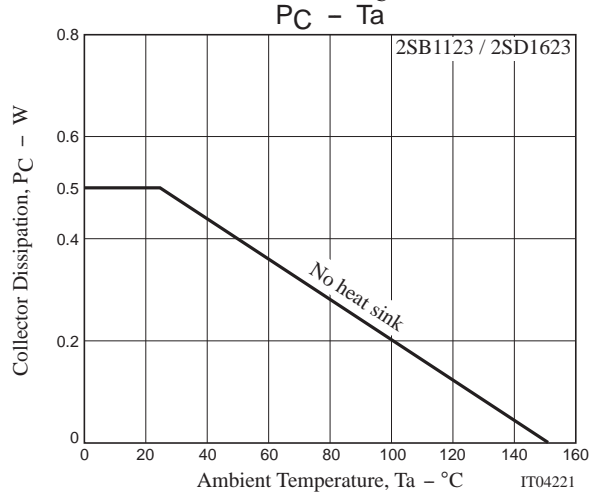
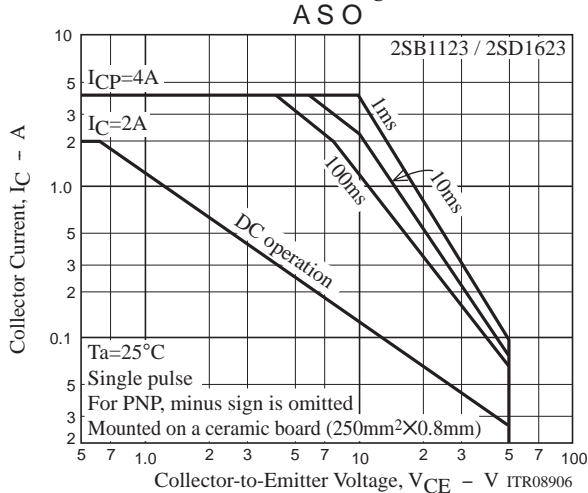
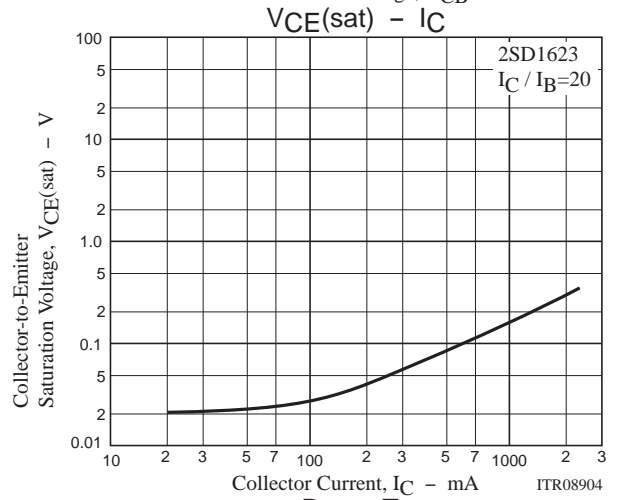
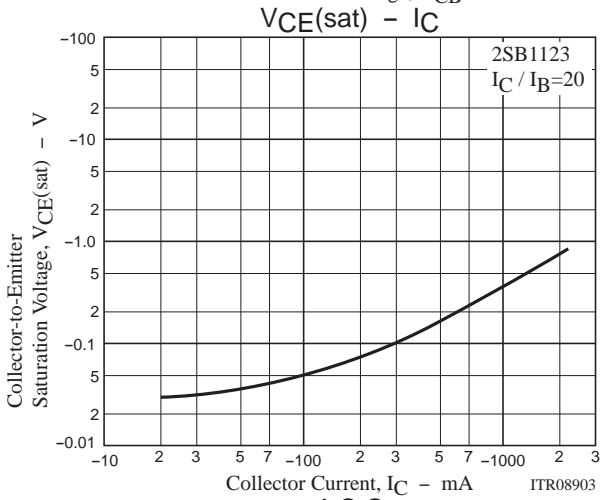
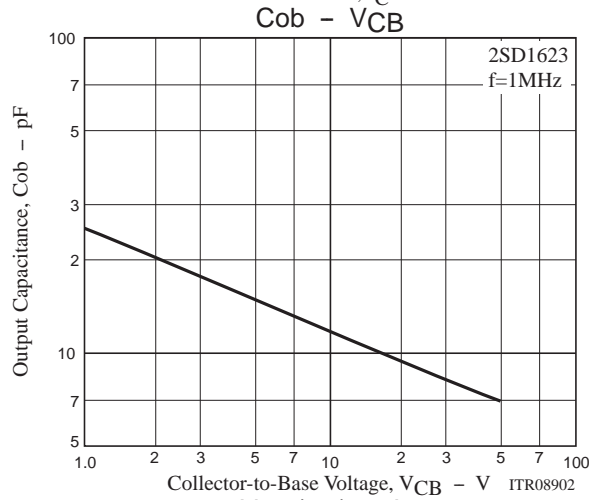
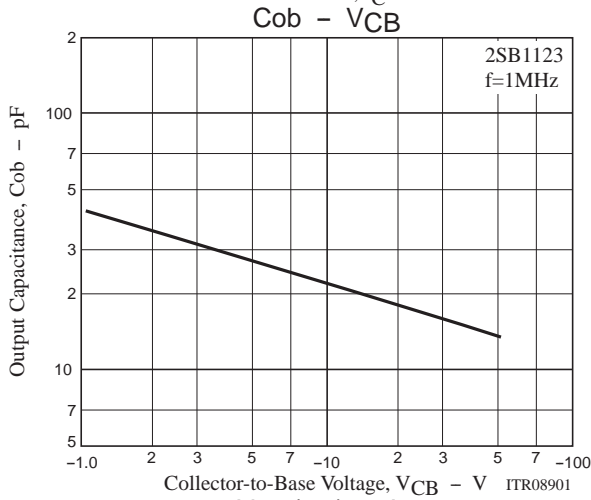
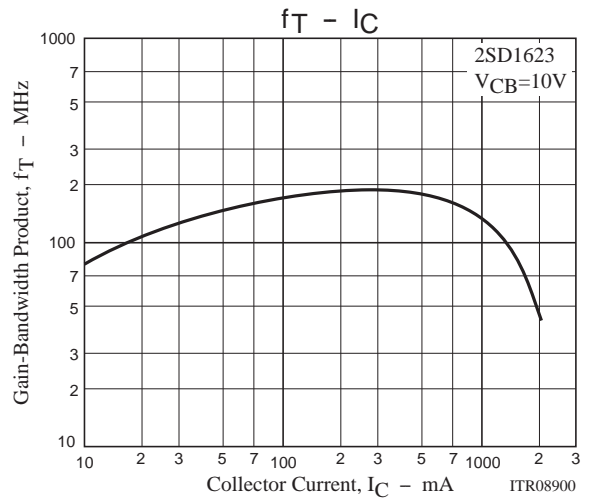
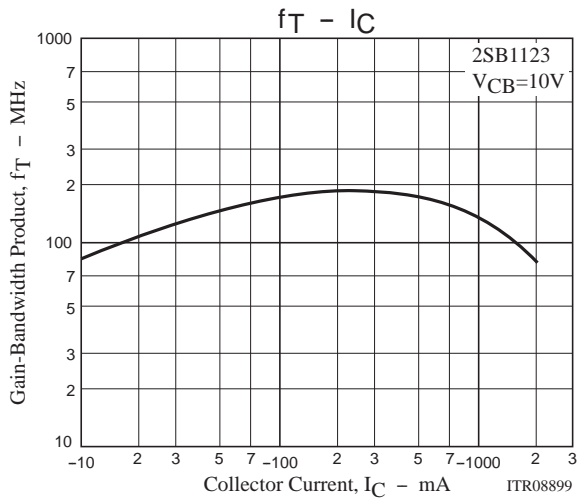


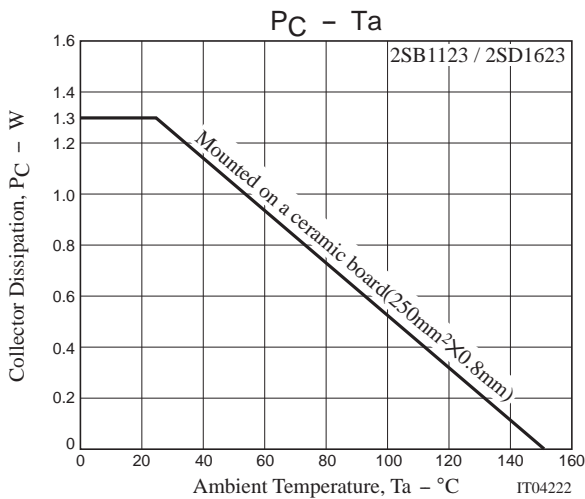
$I_C=10I_{B1} = -10I_{B2}=500mA$   
(For PNP, the polarity is reversed)

2SB1123 / 2SD1623



# 2SB1123 / 2SD1623





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