



## 2SB1121/2SD1621

### High-Current Driver 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.
- Very small size making it easy to provide high-density, small-sized hybrid IC's.

( ) : 2SB1121

#### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-)30	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-)25	V
Emitter-to-Base Voltage	$V_{EBO}$		(-)6	V
Collector Current	$I_C$		(-)2	A
Collector Current (Pulse)	$I_{CP}$		(-)5	A
Collector Dissipation	$P_C$		500	mW
		Mounted on ceramic board (250mm <sup>2</sup> ×0.8mm)	1.3	W
Junction Temperature	$T_J$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

##### Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CB0}$	$V_{CB} = (-)20V, I_E = 0$			(-)0.1	μA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)4V, I_C = 0$			(-)0.1	μA
DC Current Gain	$h_{FE1}$	$V_{CE} = (-)2V, I_C = (-)100mA$	100*		560*	
	$h_{FE2}$	$V_{CE} = (-)2V, I_C = (-)1.5A$	65			
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)10V, I_C = (-)50mA$		150		MHz

\* ; The 2SB1121/2SD1621 are classified by 100mA  $h_{FE}$  as follows :

100	R	200	140	S	280	200	T	400	280	U	560
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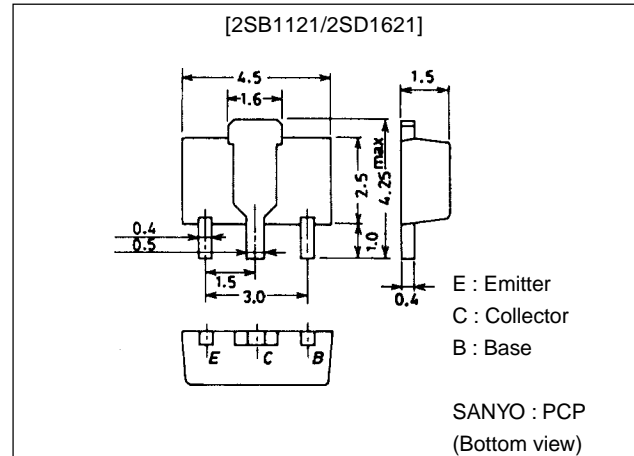
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#### Package Dimensions

unit:mm

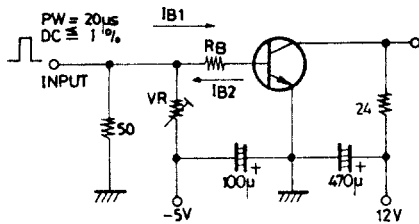
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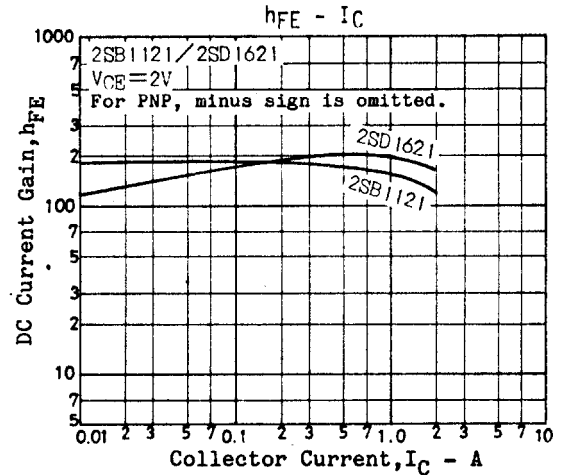
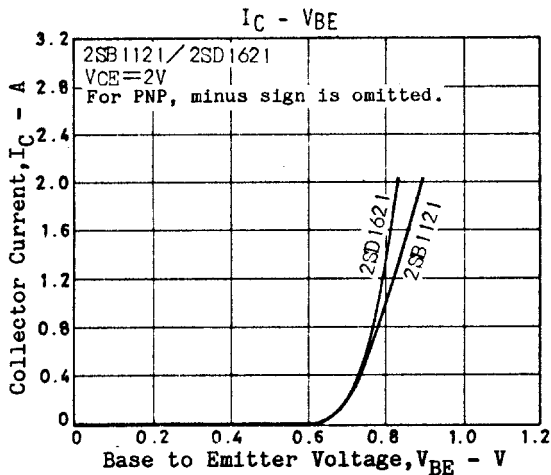
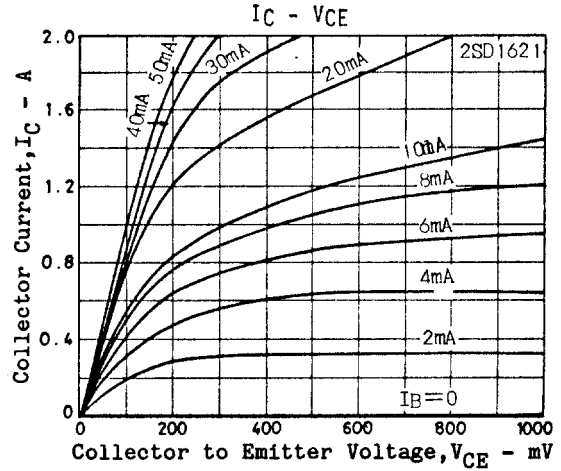
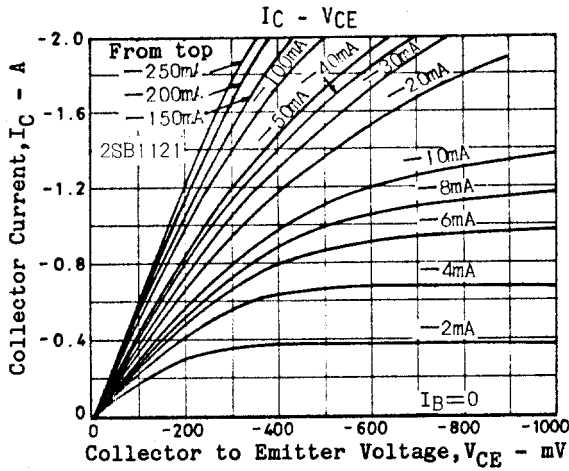
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)1.5A, I_B=(-)75mA$		0.18	0.4	V
				(-0.35)	(-0.6)	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)1.5A, I_B=(-)75mA$		(-0.85)	(-1.2)	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-30)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-25)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-6)			V
Output Capacitance	$C_{ob}$	$V_{CB}(-)10V, f=1MHz$		19		pF
				(32)		pF
Turn-ON Time	$t_{on}$	See specified Test Circuit.		60		ns
				(60)		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		500		ns
				(350)		ns
Fall Time	$t_f$	See specified Test Circuit.		25		ns
				(25)		ns

## Switching Time Test Circuit

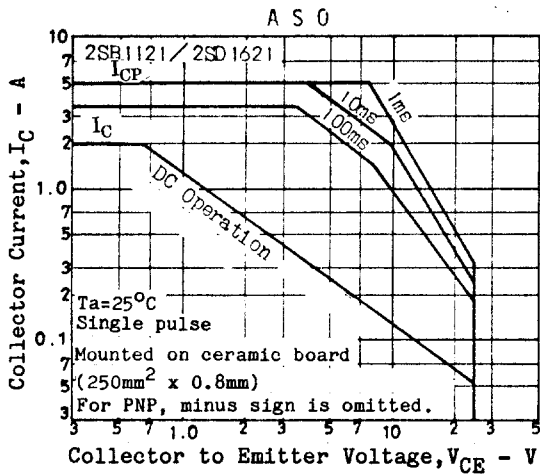
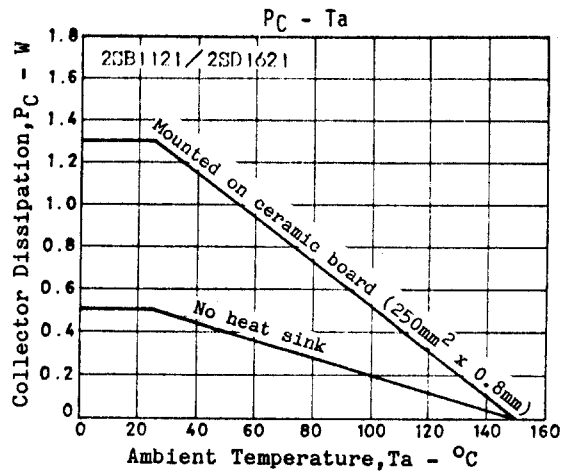
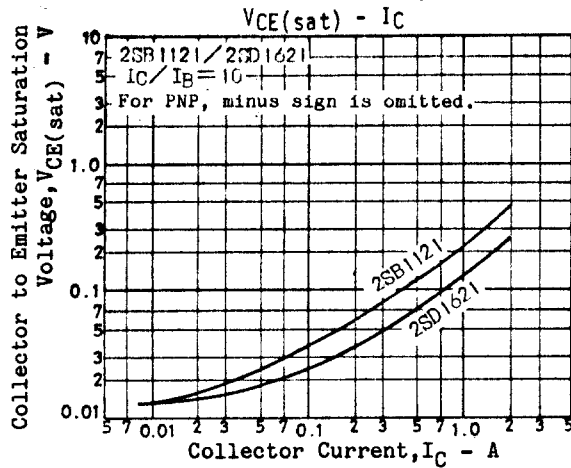
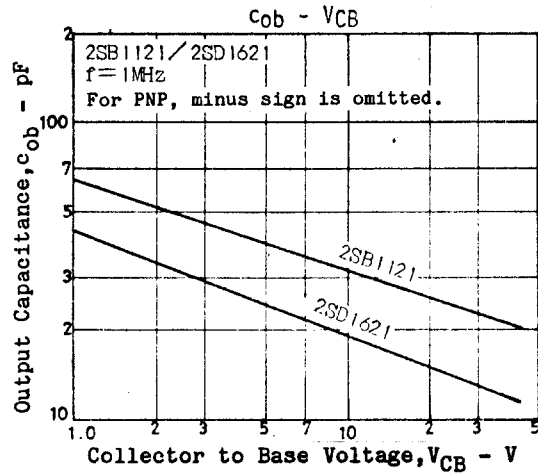
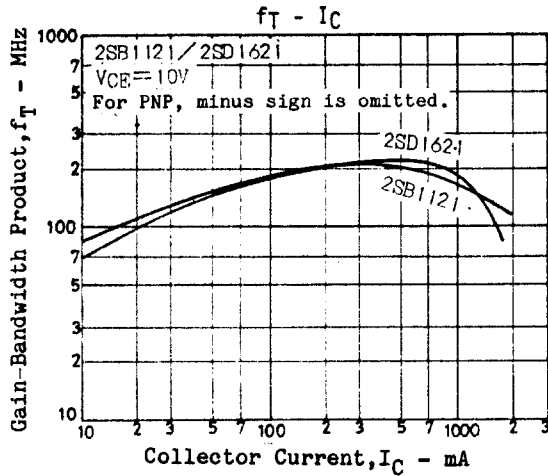


Marking 2SB1121:BD  
2SD1621:DD  
 $h_{FE}$  rank : R, S, T, U

$20I_{B1} = -20I_{B2} = I_C = 500mA$   
(For PNP, the polarity is reversed.)  
Unit (resistance :  $\Omega$ , capacitance : F)



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