



## 2SB1124/2SD1624

### 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.
- Fast switching speed.
- Large current capacity and wide ASO.

( ) : 2SB1124

#### Specifications

##### Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-)60	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-)50	V
Emitter-to-Base Voltage	$V_{EBO}$		(-)6	V
Collector Current	$I_C$		(-)3	A
Collector Current (Pulse)	$I_{CP}$		(-)6	A
Collector Dissipation	$P_C$		500	mW
		Mounted on ceramic board (250mm <sup>2</sup> ×0.8mm)	1.5	W
Junction Temperature	$T_j$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

##### Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = (-)40\text{V}, I_E = 0$			(-)1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)4\text{V}, I_C = 0$			(-)1	$\mu\text{A}$
DC Current Gain	$h_{FE1}$	$V_{CE} = (-)2\text{V}, I_C = (-)100\text{mA}$	100*		560*	
	$h_{FE2}$	$V_{CE} = (-)2\text{V}, I_C = (-)3\text{A}$	35			
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)10\text{V}, I_C = (-)50\text{mA}$		150		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = (-)10\text{V}, f = 1\text{MHz}$		(39)		pF
				25		pF

\* ; The 2SB1124/2SD1624 are classified by 100mA  $h_{FE}$  as follows :

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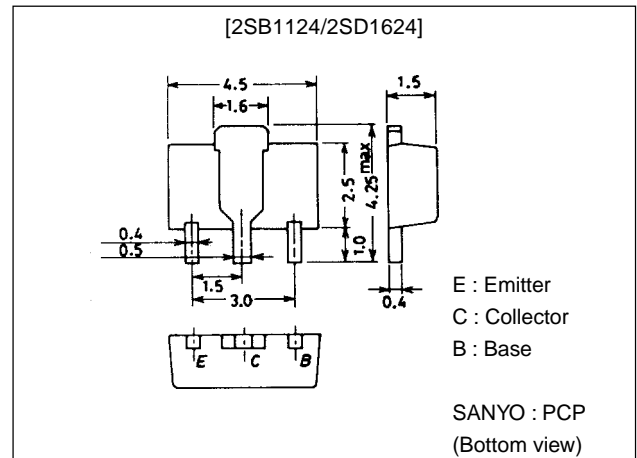
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#### Package Dimensions

unit:mm

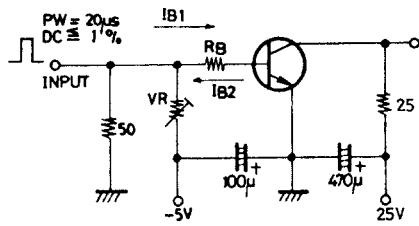
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# 2SB1124/2SD1624

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)2A, I_B=(-)100mA$		(-0.35)	(-0.7)	V
				0.19	0.5	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)2A, I_B=(-)100mA$		(-0.94)	(-1.2)	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-60)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-50)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-6)			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		70		ns
				(70)		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		650		ns
				(450)		ns
Fall Time	$t_f$	See specified Test Circuit.		35		ns
				(35)		ns

## Switching Time Test Circuit

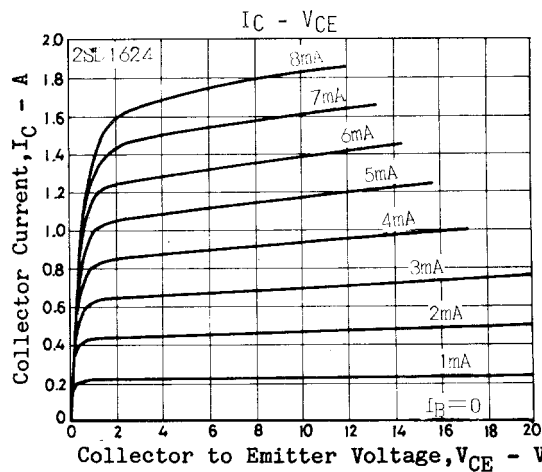
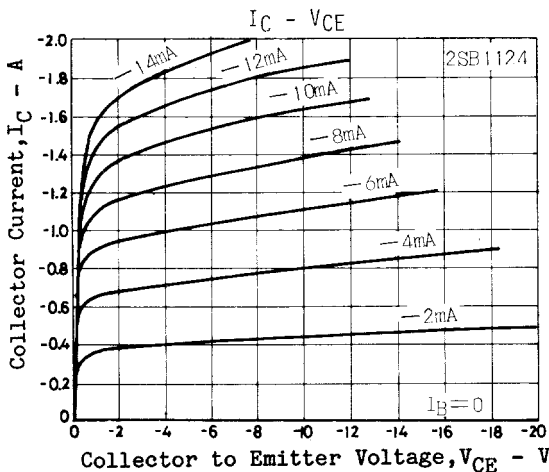
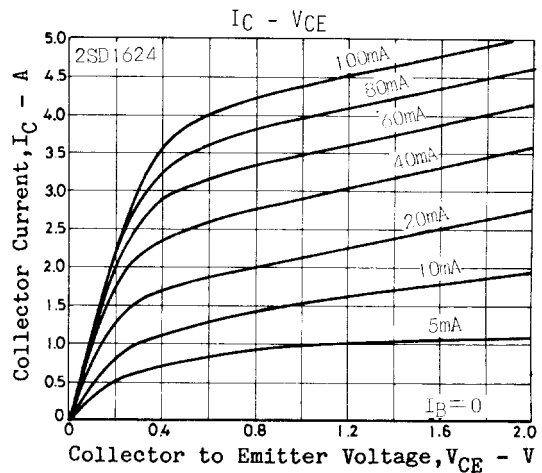
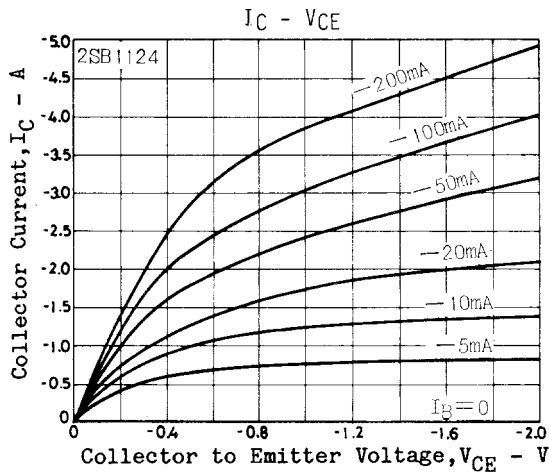


Marking 2SB1124:BG  
2SD1624:DG  
 $h_{FE}$  rank : R, S, T, U

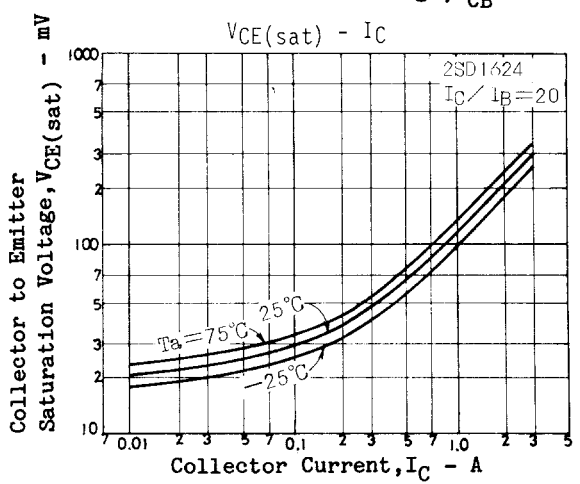
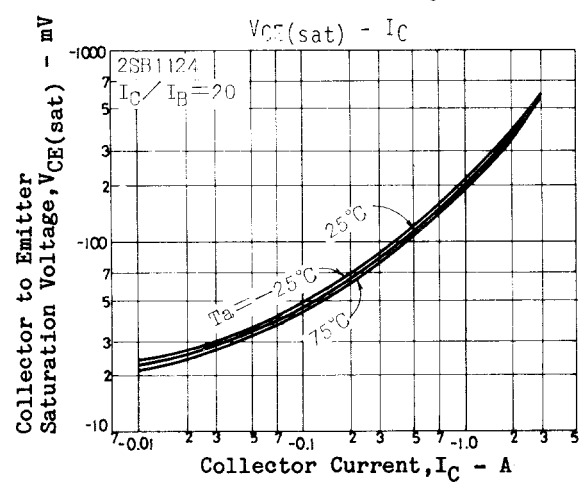
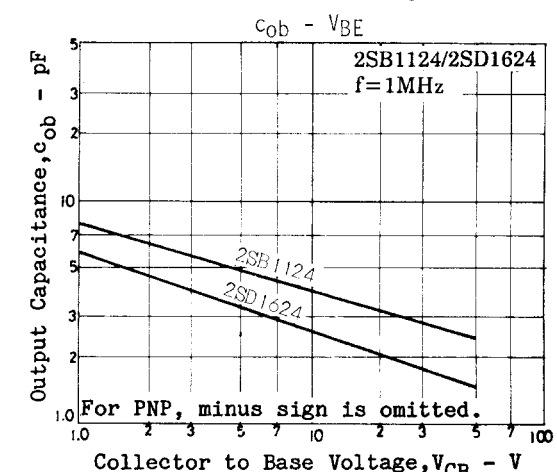
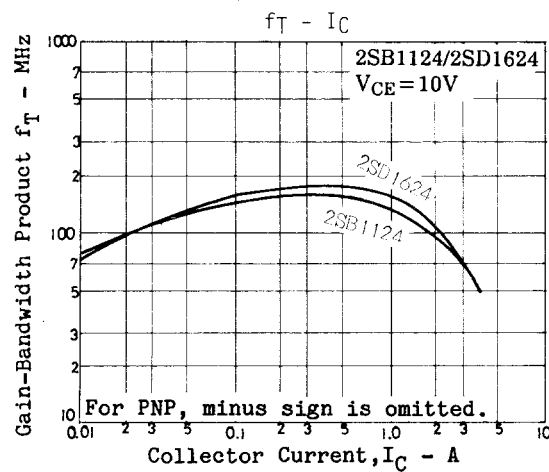
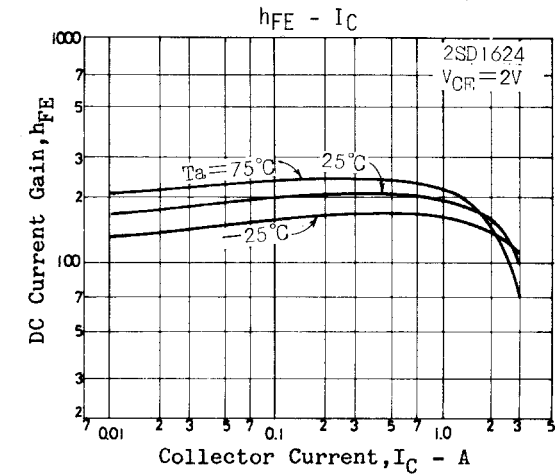
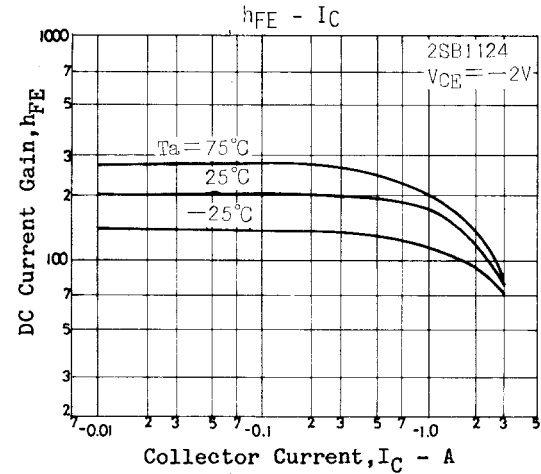
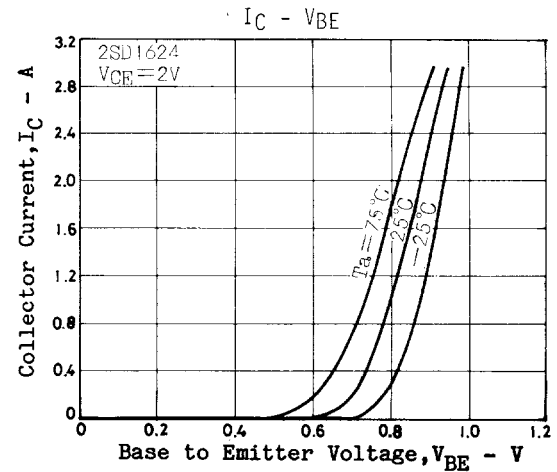
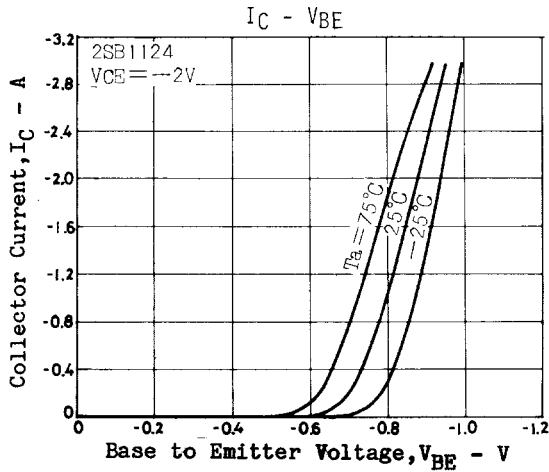
$$10I_{B1} = -10I_{B2} = I_C = 1A$$

(For PNP, the polarity is reversed.)

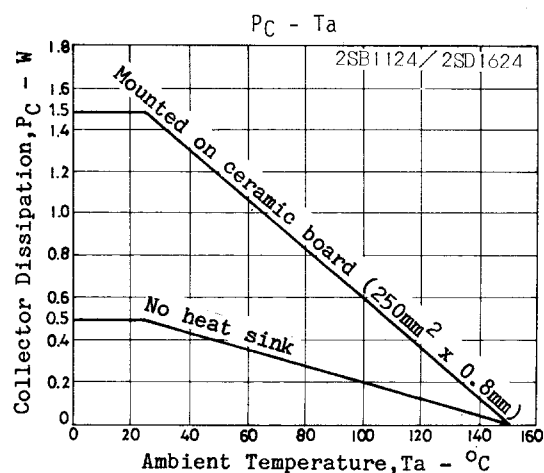
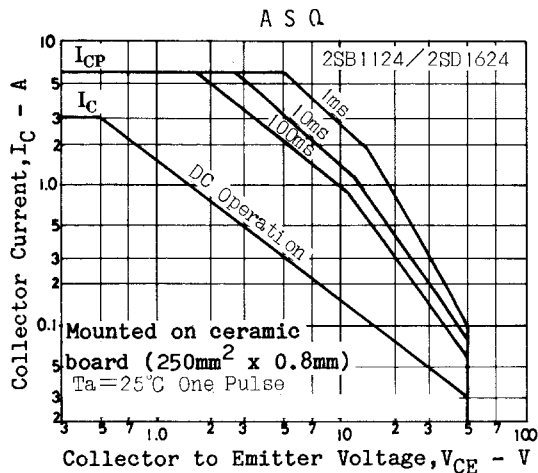
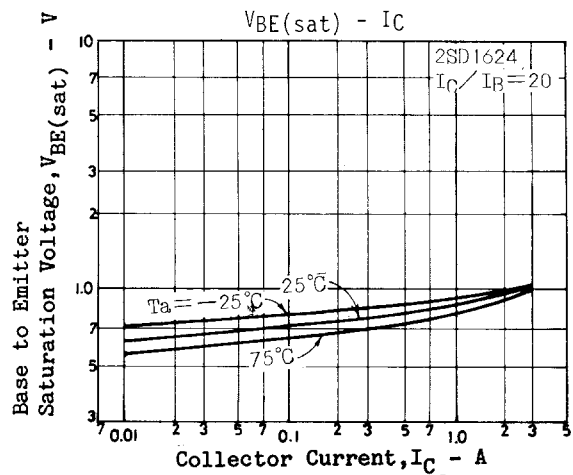
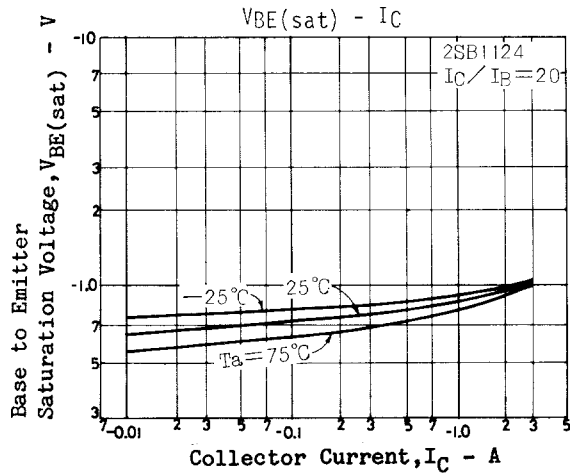
Unit (resistance :  $\Omega$ , capacitance : F)



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