



## 2SB1202/2SD1802

### High-Current Switching Applications

#### Applications

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

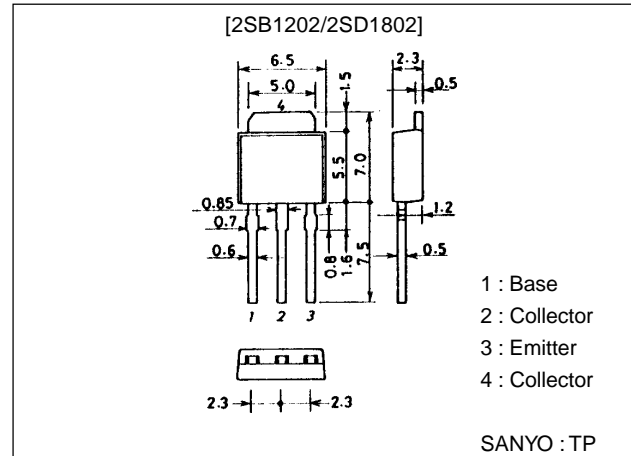
#### Features

- Adoption of FBET, MBIT processes.
- Large current capacity and wide ASO.
- Low collector-to-emitter saturation voltage.
- Fast switching speed.
- Small and slim package making it easy to make 2SB1202/2SD1802-used sets smaller.

#### Package Dimensions

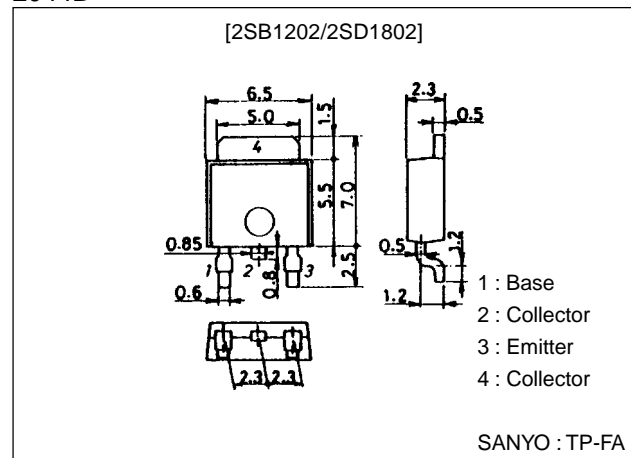
unit:mm

2045B



unit:mm

2044B



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# 2SB1202/2SD1802

( ) : 2SB1202

## Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
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	$I_C$		(-3)	A
Collector Current (Pulse)	$I_{CP}$		(-6)	A
Collector Dissipation	$P_C$		1	W
		$T_c=25^\circ\text{C}$	15	W
Junction Temperature	$T_J$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

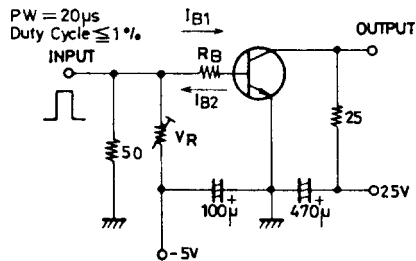
### Electrical Characteristics at Ta = 25°C

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

\* : The 2SB1202/2SD1802 are classified by 100mA  $h_{FE}$  as follows :

100	R	200	140	S	280	200	T	400	280	U	560
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### Switching Time Test Circuit

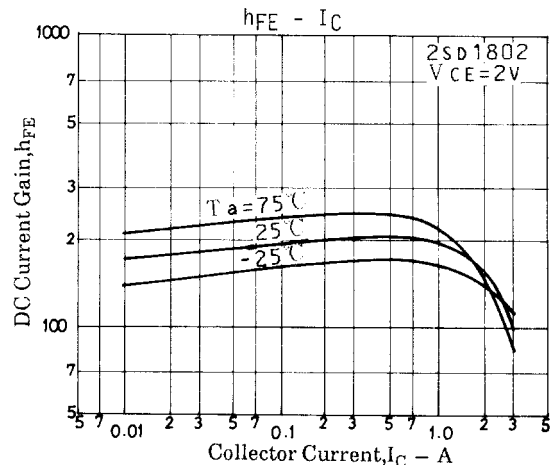
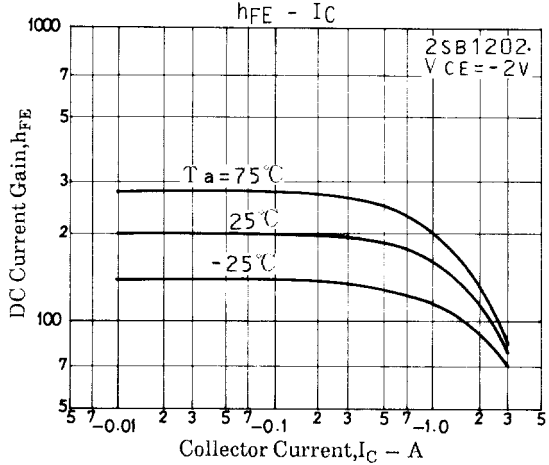
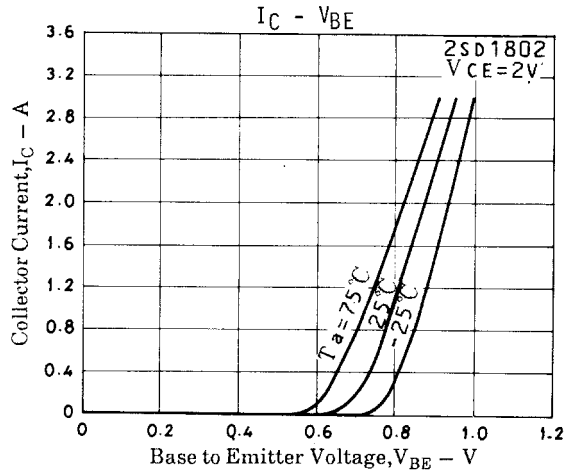
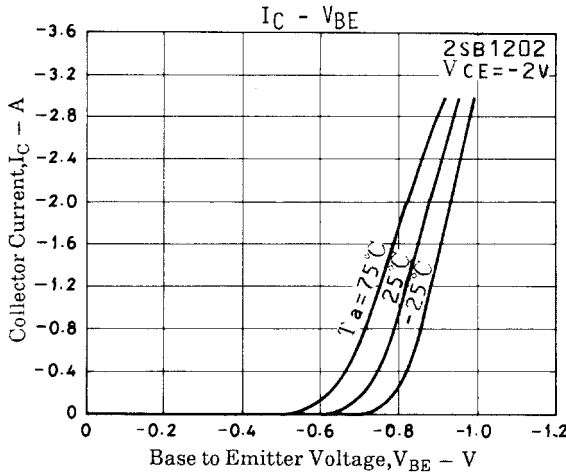
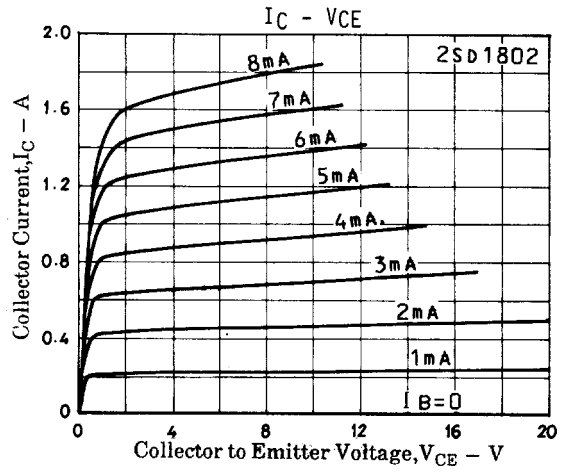
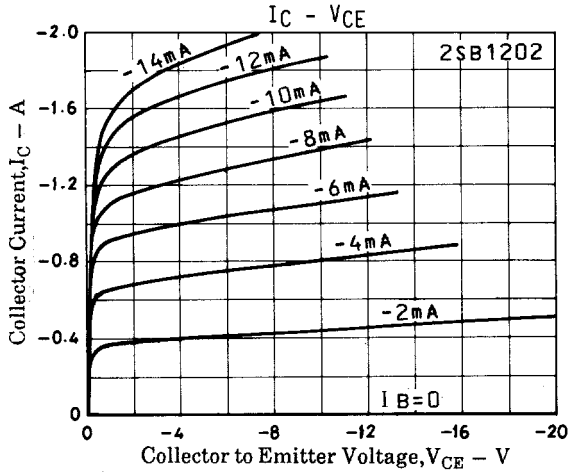
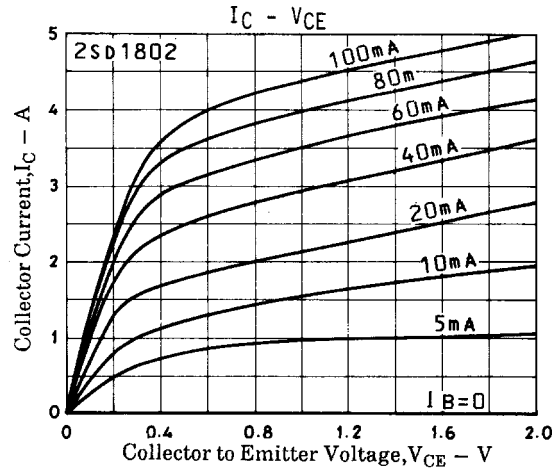
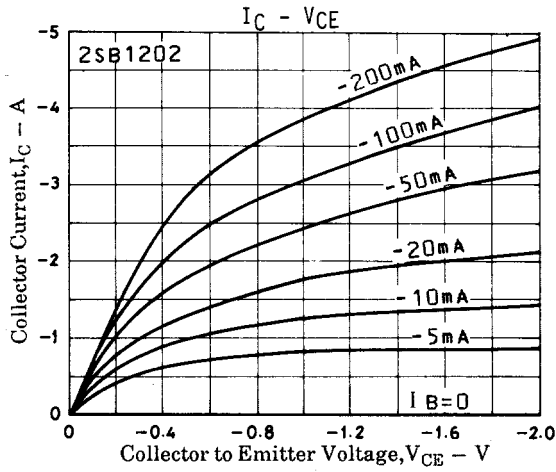


$$I_C = 10 \quad I_{B1} = -10 \quad I_{B2} = 1\text{A}$$

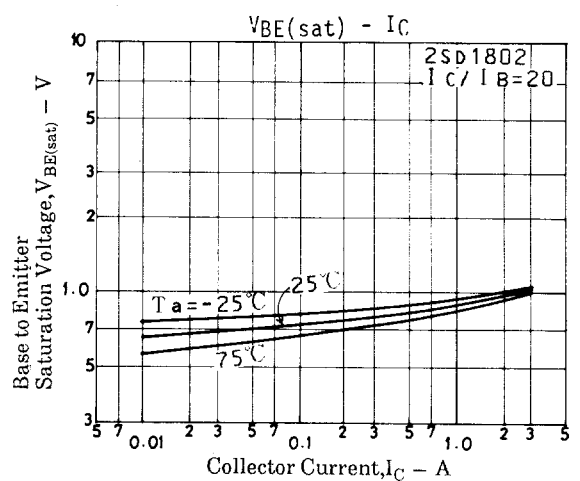
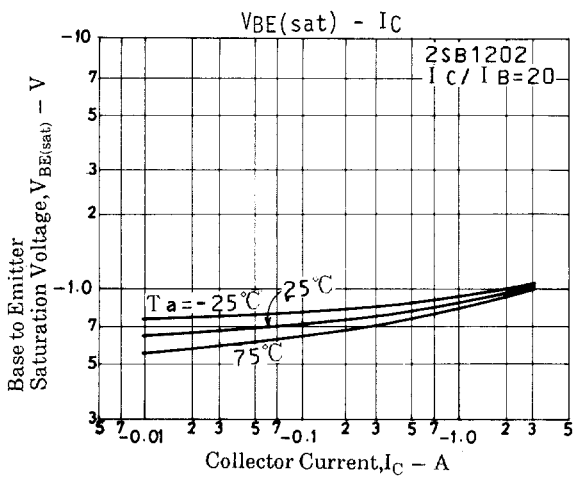
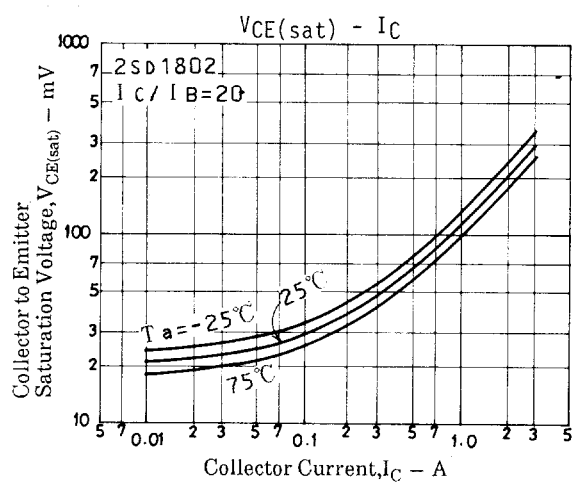
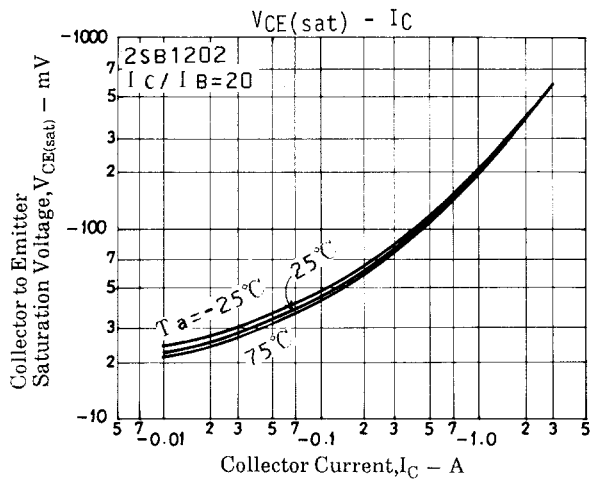
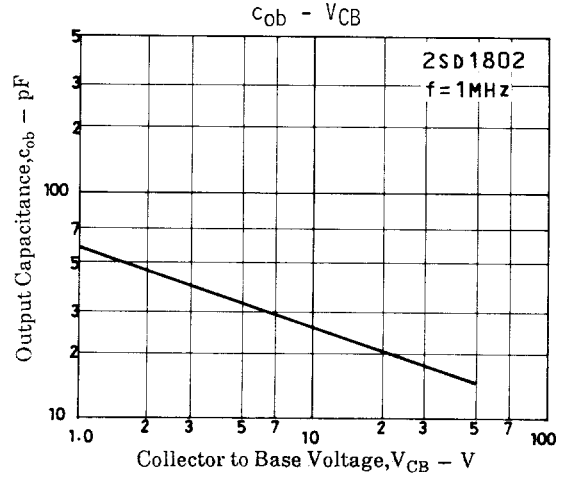
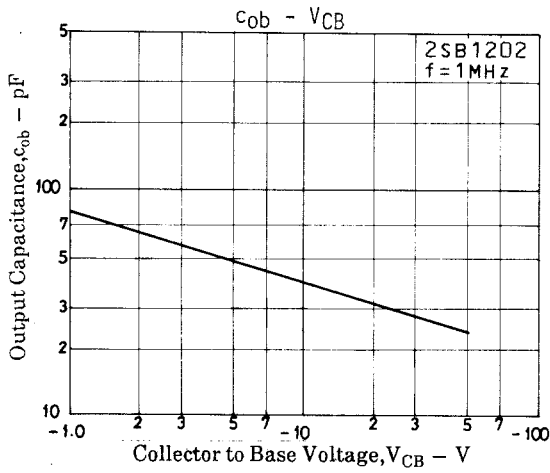
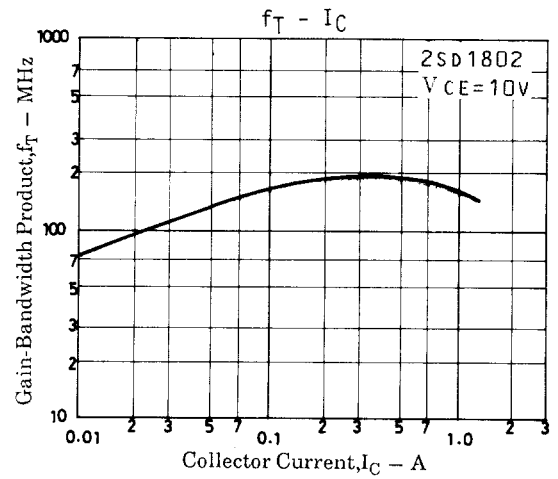
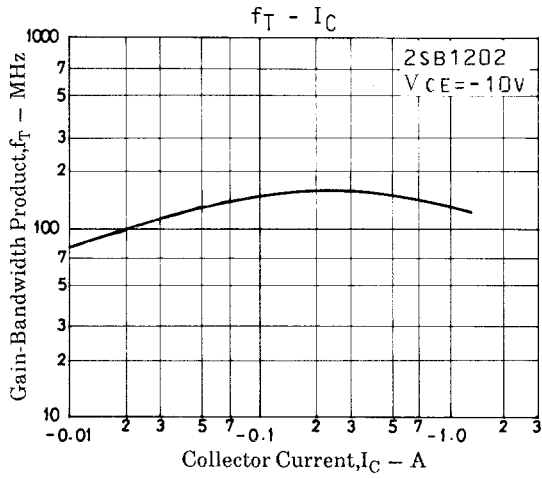
(For PNP, the polarity is reversed.)

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

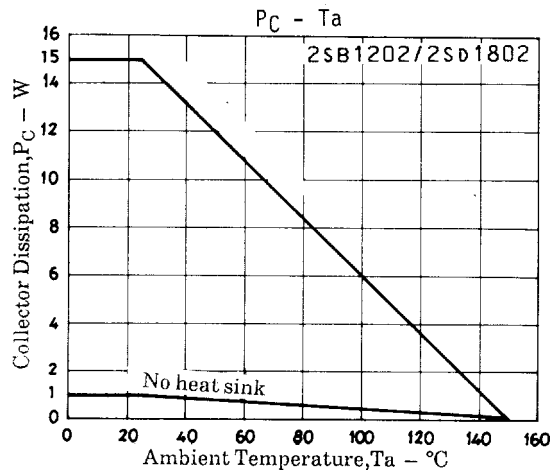
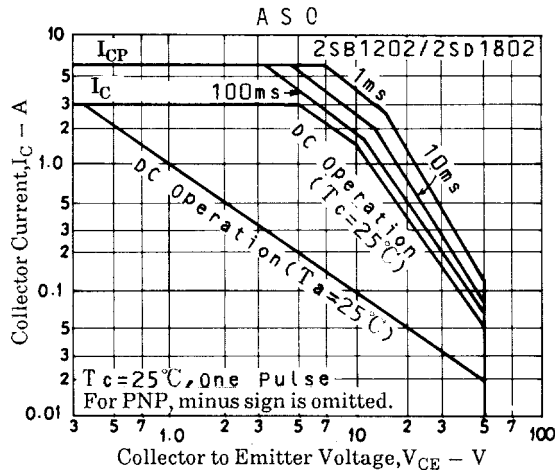
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