

PNP/NPN Epitaxial Planar Silicon Transistors



2SB1201/2SD1801

High-Current Switching Applications

Applications

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

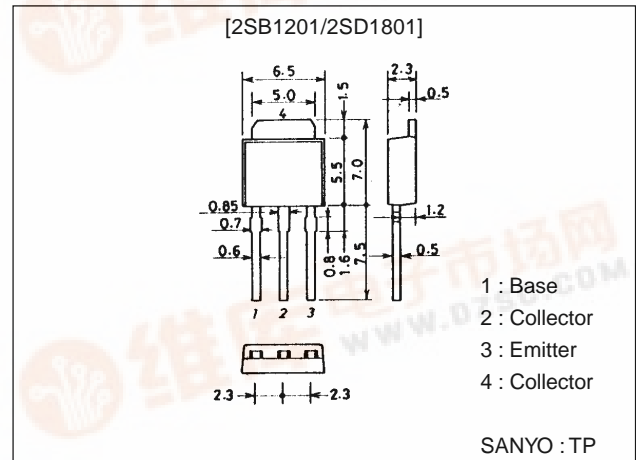
Features

- 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 2SB1201/2SD1801-used sets smaller.

Package Dimensions

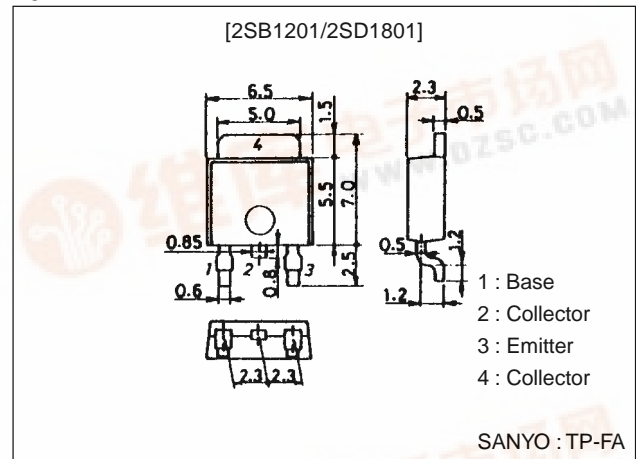
unit:mm

2045B



unit:mm

2044B



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2SB1201/2SD1801

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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_{CE0}		(-)50	V
Emitter-to-Base Voltage	V_{EB0}		(-)6	V
Collector Current	I_C		(-)2	A
Collector Current (Pulse)	I_{CP}		(-)4	A
Collector Dissipation	P_C		0.8	W
		$T_c=25^\circ\text{C}$	15	W
Junction Temperature	T_J		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

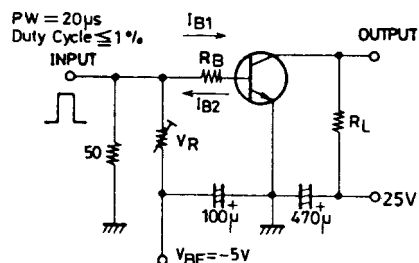
Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CB0}	$V_{CB} = (-)50\text{V}, I_E = 0$			(-)100	nA
Emitter Cutoff Current	I_{EB0}	$V_{EB} = (-)4\text{V}, I_C = 0$			(-)100	nA
DC Current Gain	h_{FE1}	$V_{CE} = (-)2\text{V}, I_C = (-)100\text{mA}$	100*		560*	
	h_{FE2}	$V_{CE} = (-)2\text{V}, I_C = (-)1.5\text{A}$	40			
Gain-Bandwidth Product	f_T	$V_{CE} = (-)10\text{V}, I_C = (-)50\text{mA}$		150		MHz
Output Capacitance	C_{ob}	$V_{CB} = (-)10\text{V}, f = 1\text{MHz}$		(22)12		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)1\text{A}, I_B = (-)50\text{mA}$		0.15	0.4	V
				(-)0.3	(-)0.7	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)1\text{A}, I_B = (-)50\text{mA}$		(-)0.9	(-)1.2	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		60		ns
Storage Time	t_{stg}	See specified Test Circuit		(450)		ns
				550		ns
Fall Time	t_f	See specified Test Circuit		30		ns

* : The 2SB1201/2SD1801 are classified by 100mA h_{FE} as follows :

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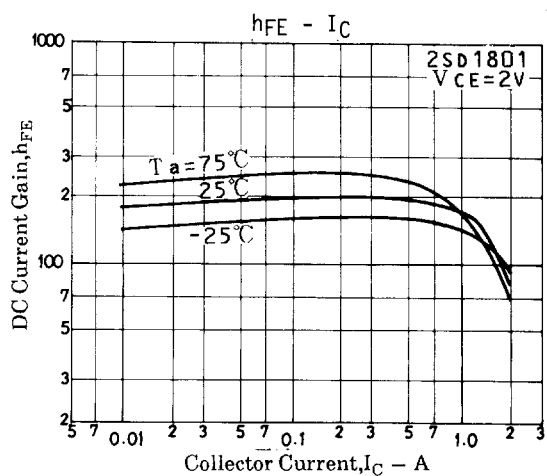
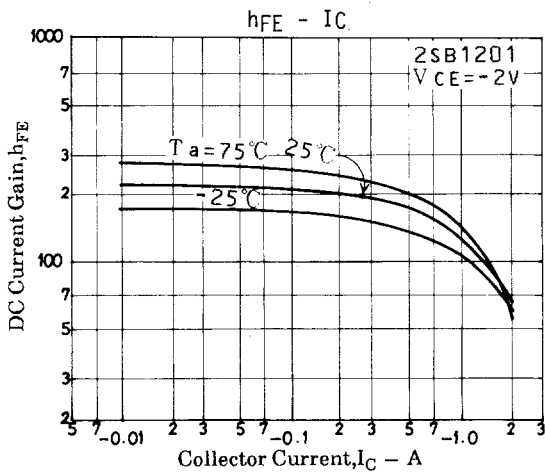
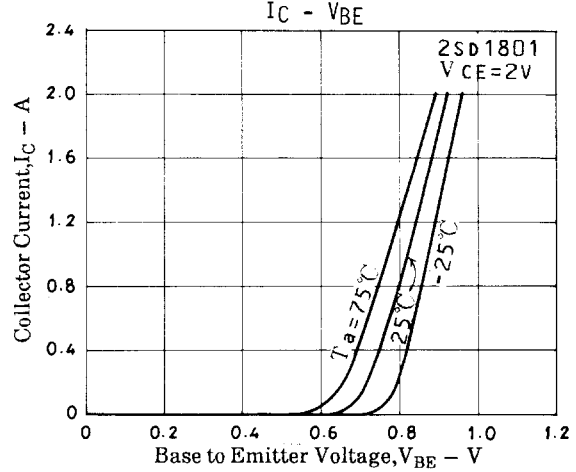
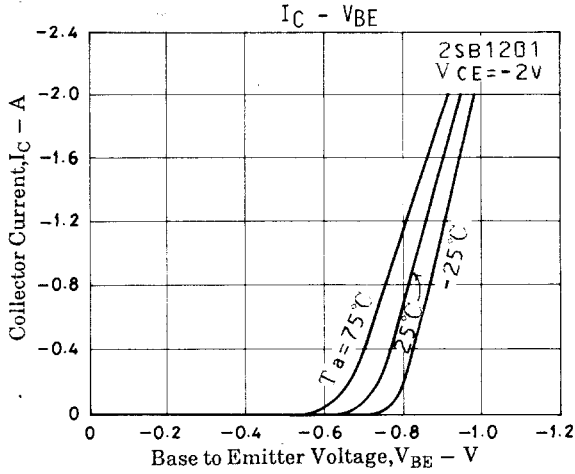
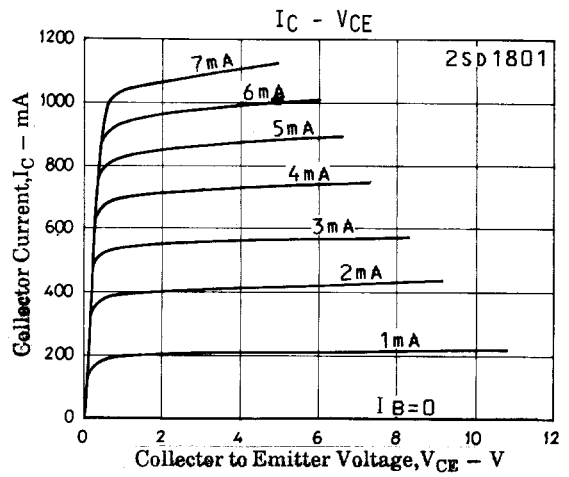
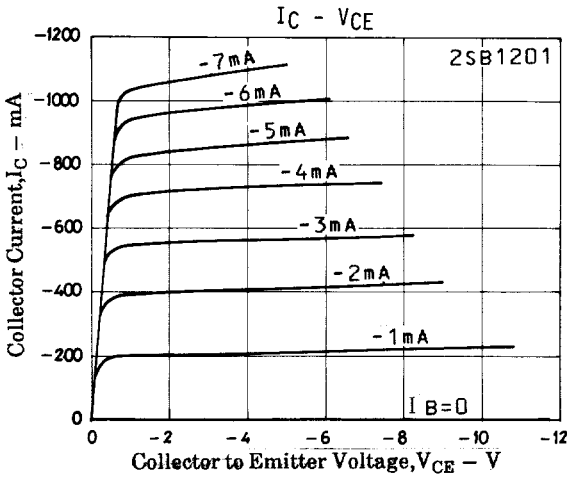
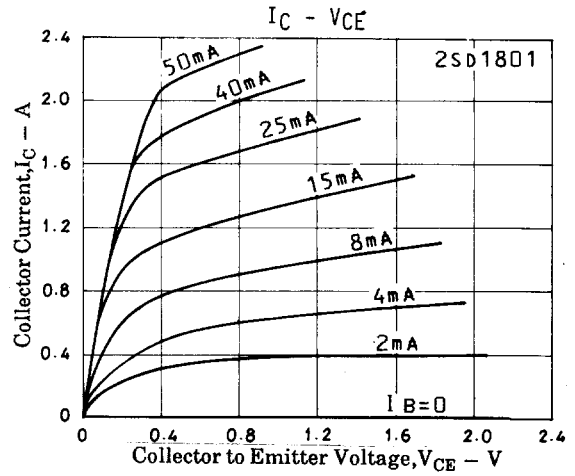
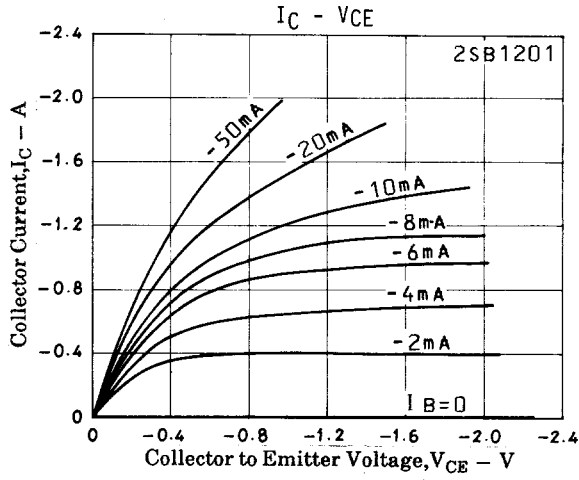
Switching Time Test Circuit



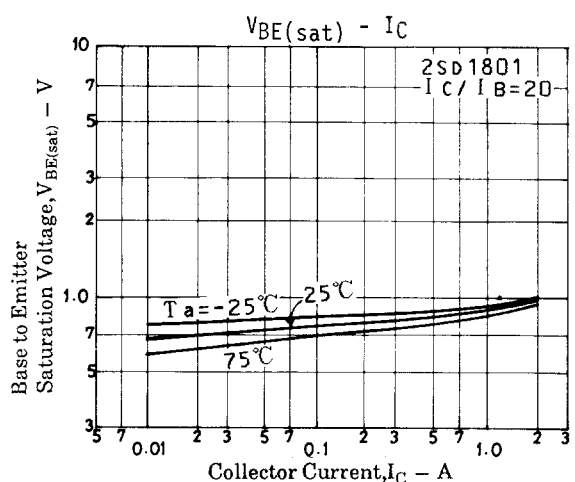
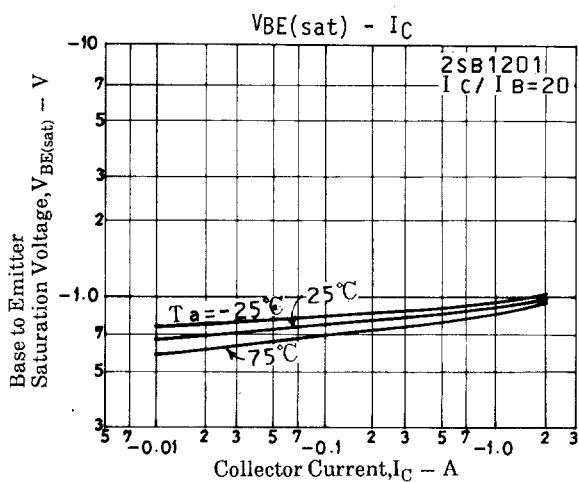
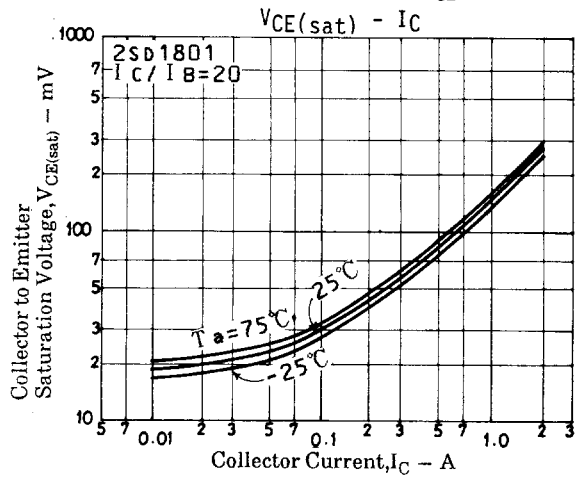
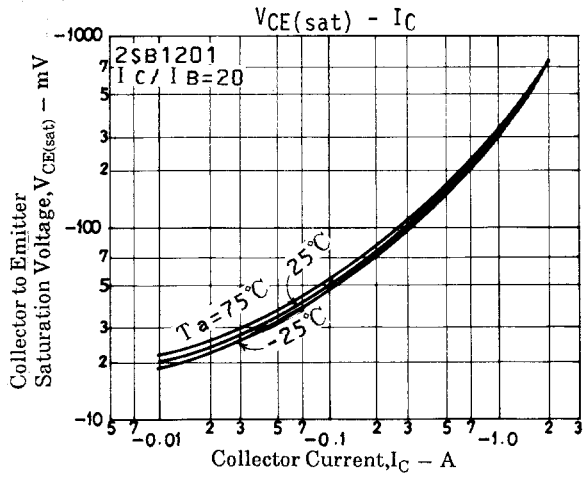
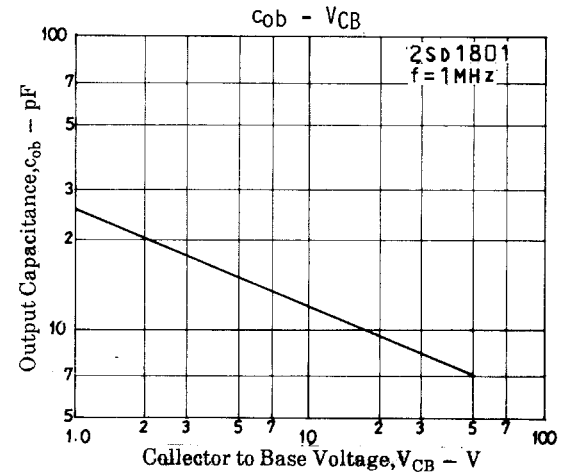
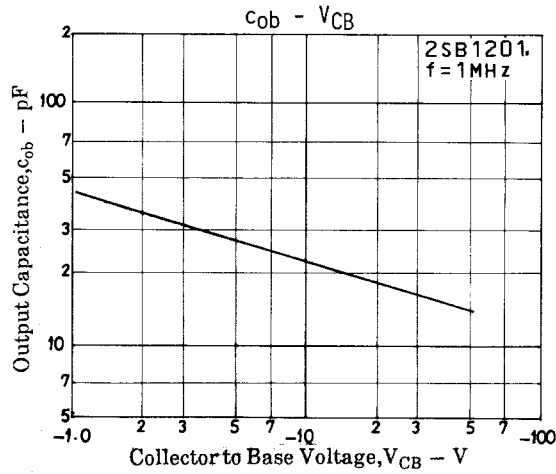
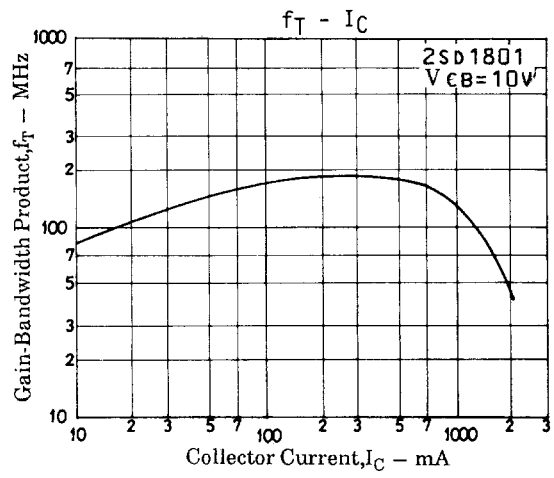
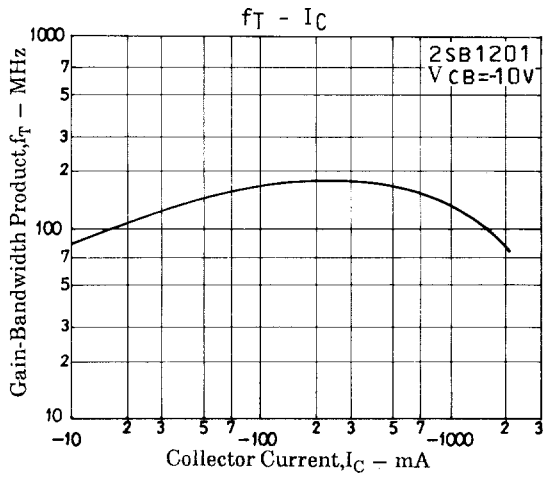
$I_C = 10\text{mA}, I_{B1} = -10\text{mA}, I_{B2} = 500\mu\text{A}, V_{CC} = 25\text{V}$
 (For PNP, the polarity is reversed.)

Unit (resistance : Ω , capacitance : F)

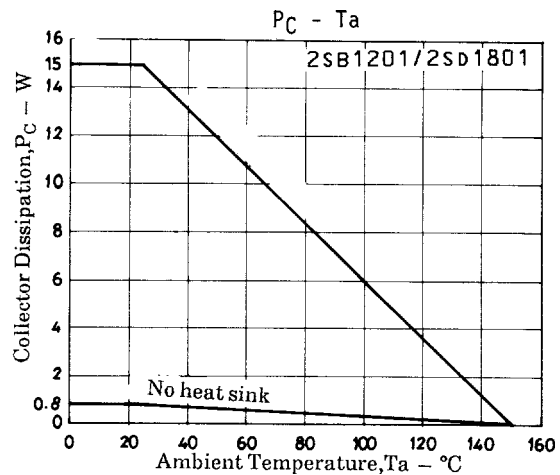
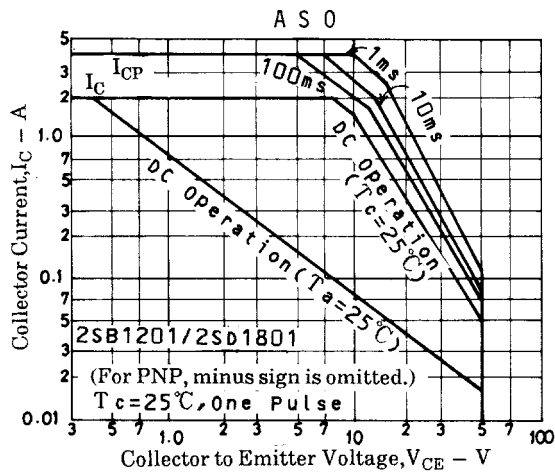
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