

<b>SANYO</b>	No.2086B	<b>2SB1204/2SD1804</b>
		PNP/NPN Epitaxial Planar Silicon Transistors <b>High-Current Switching Applications</b>

**Applications**

- Relay drivers, high-speed inverters, converters, and other general high-current switching applications

**Features**

- Low collector-to-emitter saturation voltage
- High current and high  $f_T$
- Excellent linearity of  $h_{FE}$
- Fast switching time
- Small and slim package making it easy to make 2SB1204/2SD1804-applied sets smaller

( ) : 2SB1204

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

			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	$I_C$	(-)	8 A
Collector Current(Pulse)	$I_{CP}$	(-)	12 A
Collector Dissipation	$P_C$		1 W
		$T_c = 25^\circ\text{C}$	20 W
Junction Temperature	$T_j$		150 $^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150 $^\circ\text{C}$

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

			min	typ	max	unit
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	$h_{FE(1)}$	$V_{CE} = (-)2\text{V}, I_C = (-)0.5\text{A}$	70*		400*	
	$h_{FE(2)}$	$V_{CE} = (-)2\text{V}, I_C = (-)6\text{A}$	35			
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)5\text{V}, I_C = (-)1\text{A}$		180		MHz
				(130)		
Output Capacitance	$C_{ob}$	$V_{CB} = (-)10\text{V}, f = 1\text{MHz}$		(95)65		pF

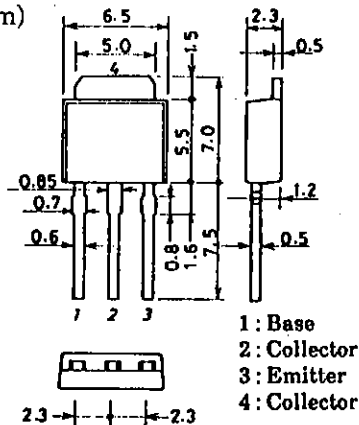
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\* : The 2SB1204/2SD1804 are classified by 0.5A  $h_{FE}$  as follows :

70	Q	140	100	R	200	140	S	280	200	T	400
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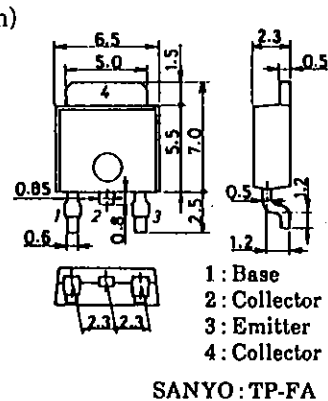
**Package Dimensions 2045B**

(unit: mm)



**Package Dimensions 2044B**

(unit: mm)

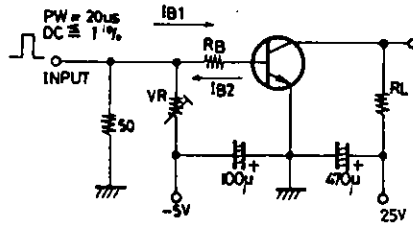


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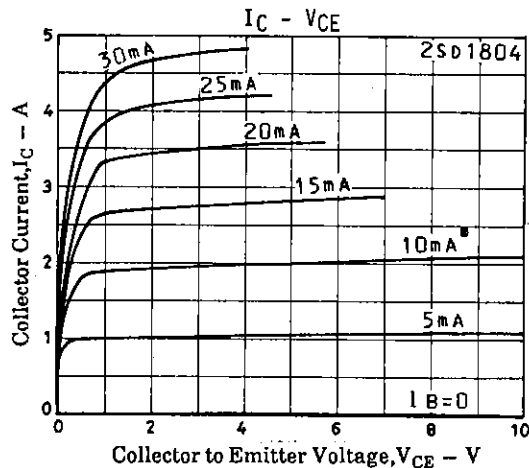
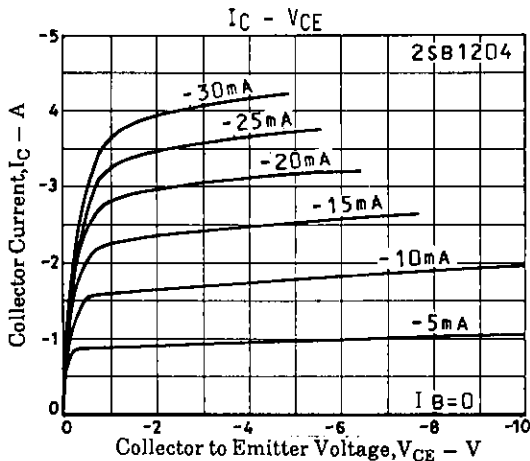
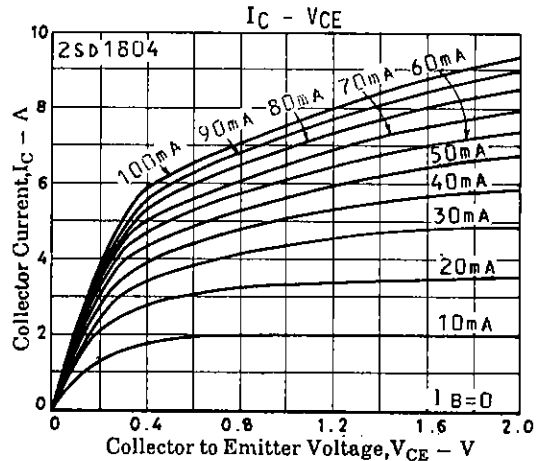
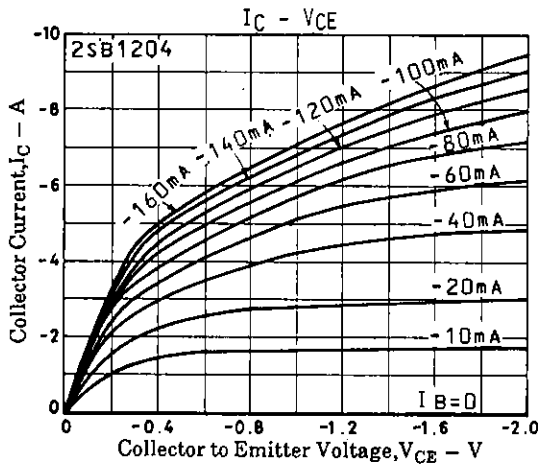
			min	typ	max	unit
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)4A, I_B = (-)0.2A$		200	400	mV
				(-250)	(-500)	
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)4A, I_B = (-)0.2A$		(-)	0.95 (-)1.3	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)10\mu A, I_E = 0$	(-)	60		V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1mA, R_{BE} = \infty$	(-)	50		V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)10\mu A, I_C = 0$	(-)	6		V
Turn-on Time	$t_{on}$	See specified Test Circuit.		(50)		ns
Storage Time	$t_{stg}$	"		(450)500		ns
Fall Time	$t_f$	"		20		ns

Switching Time Test Circuit

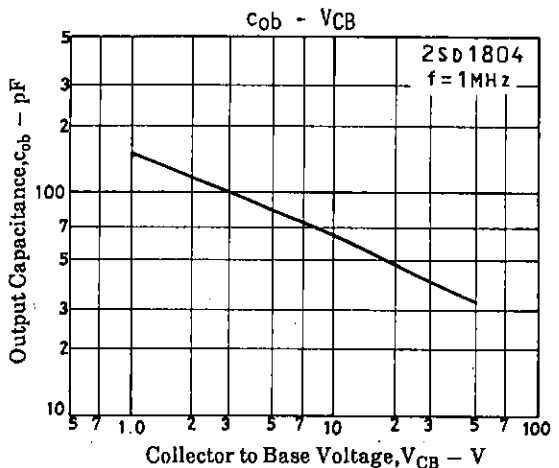
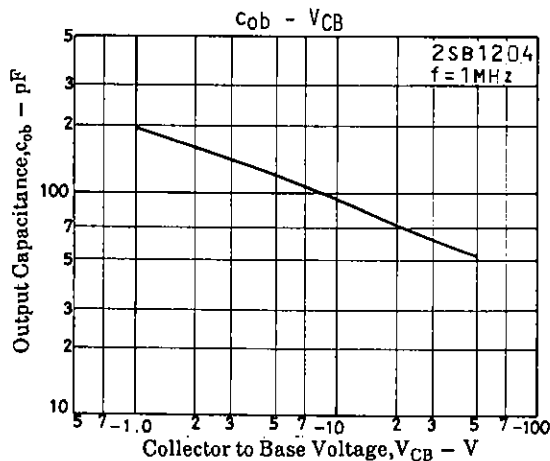
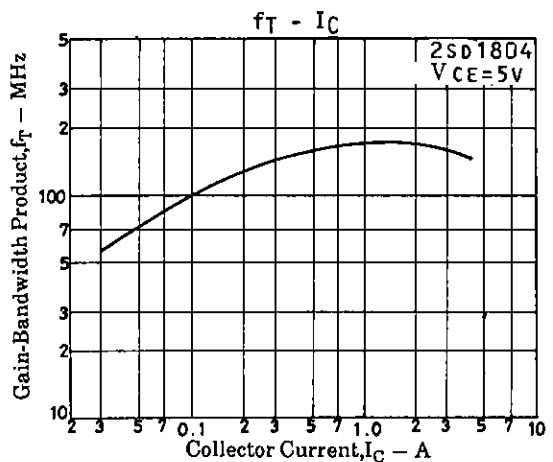
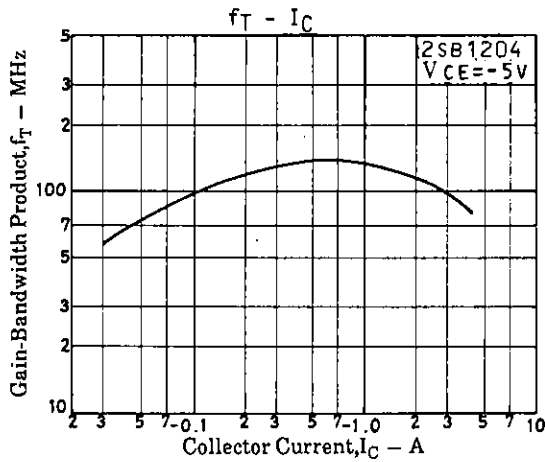
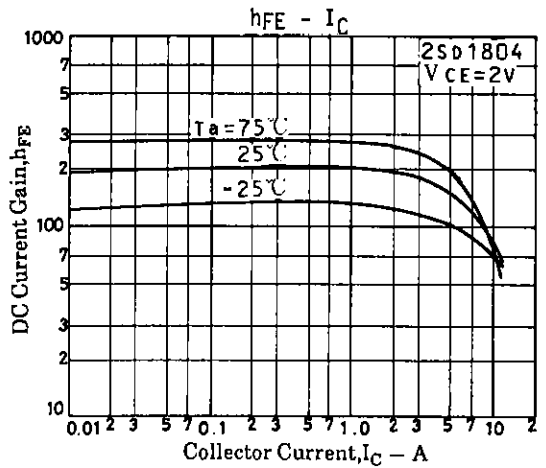
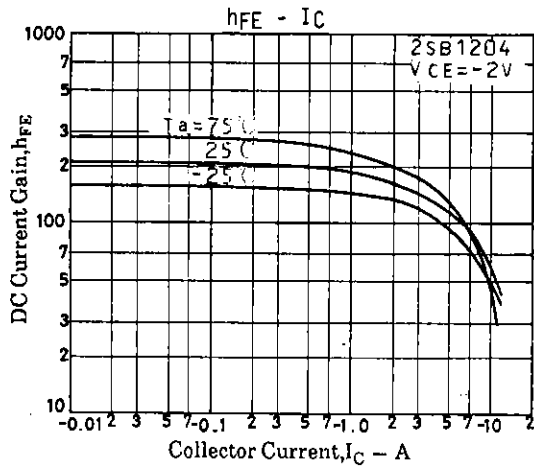
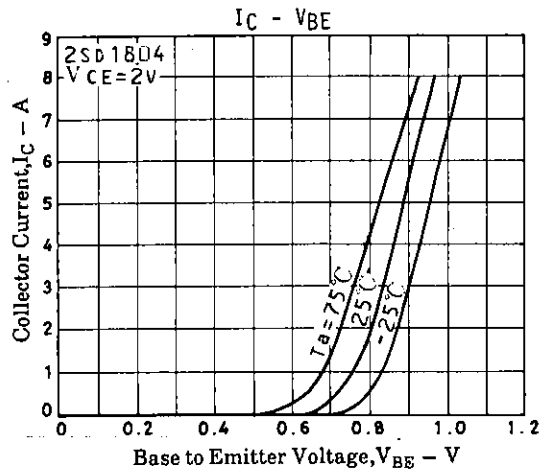
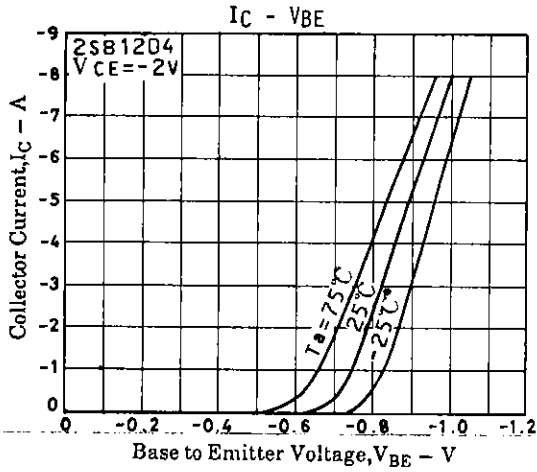


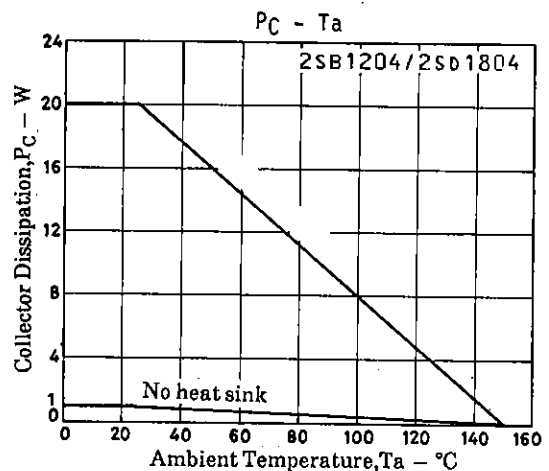
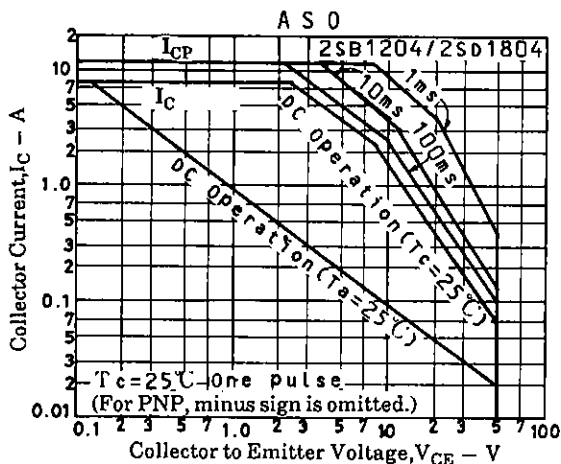
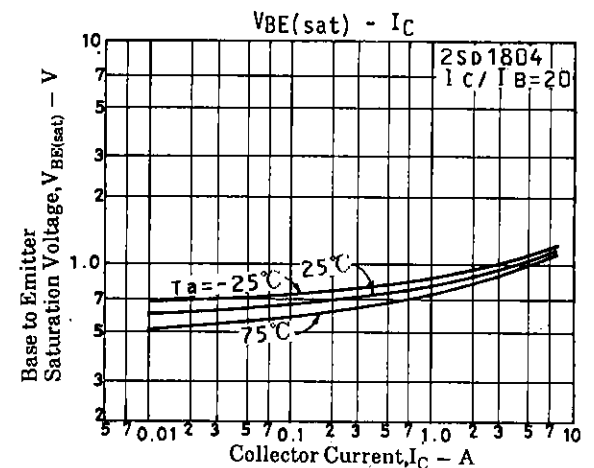
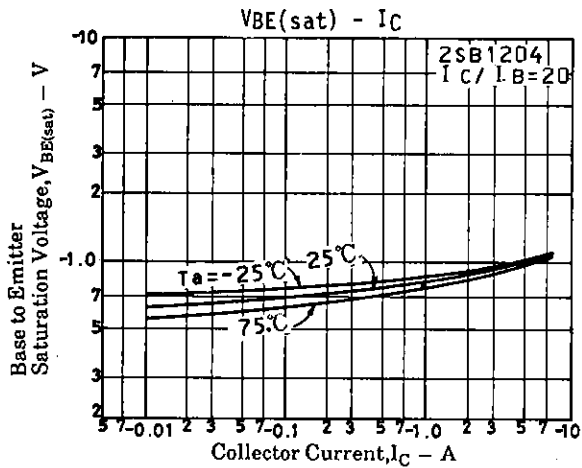
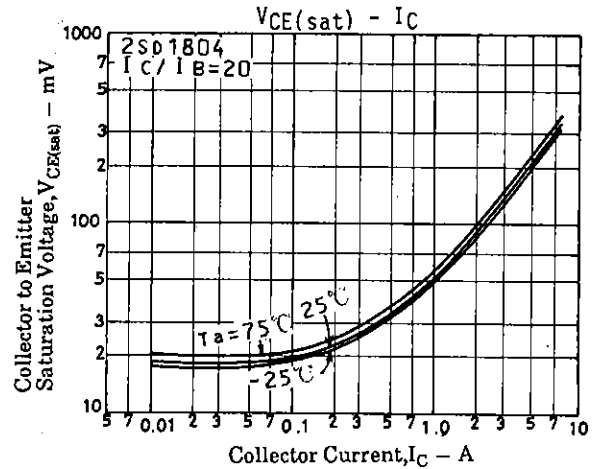
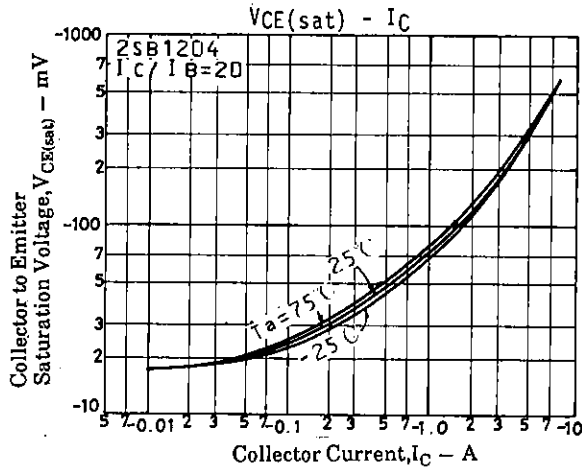
$I_C = 10 I_{B1} = -10 I_{B2} = 4A$   
 (For PNP, the polarity is reversed.)

Unit (Resistance :  $\Omega$ , Capacitance : F)



2SB1204/2SD1804





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