

**SANYO****2SB1203/2SD1803****High-Current Switching Applications****Applications**

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

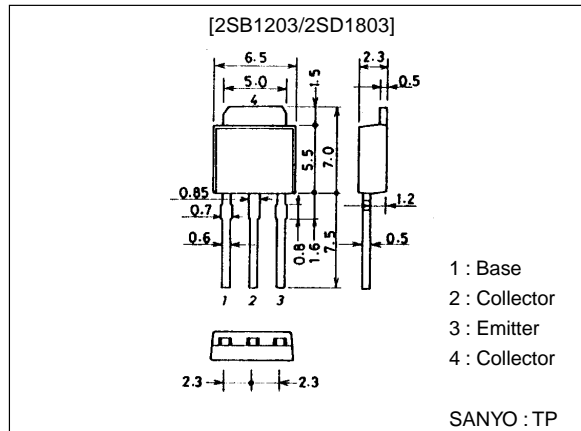
**Features**

- Low collector-to-emitter saturation voltage.
- High current and high  $f_T$ .
- Excellent linearity of  $h_{FE}$ .
- Fast switching speed.
- Small and slim package making it easy to make 2SB1203/2SD1803-applied sets smaller.

**Package Dimensions**

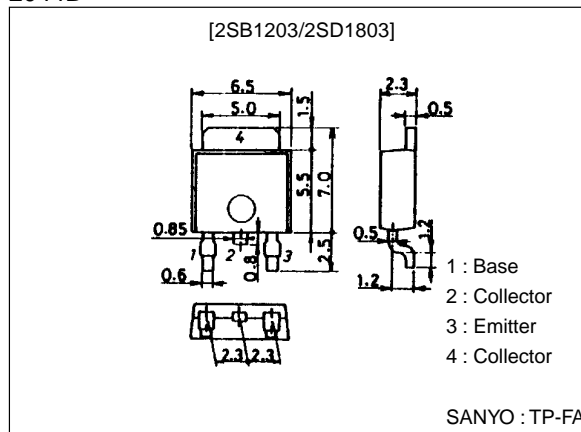
unit:mm

2045B



unit:mm

2044B



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**SANYO Electric Co.,Ltd. Semiconductor Business Headquarters**

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

92098HA (KT)/8309MO/3097AT, TS No.2085-1/5

# 2SB1203/2SD1803

( ) : 2SB1203

## 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	$I_C$		(-)5	A
Collector Current (Pulse)	$I_{CP}$		(-)8	A
Collector Dissipation	$P_C$		1	W
		Tc=25°C	20	W
Junction Temperature	$T_J$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

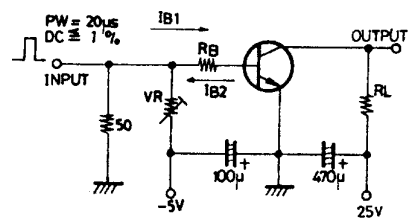
### Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=(-)40V, I_E=0$			(-)1	μA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)4V, I_C=0$			(-)1	μA
DC Current Gain	$h_{FE1}$	$V_{CE}=(-)2V, I_C=(-)0.5A$	70*		400*	
	$h_{FE2}$	$V_{CE}=(-)2V, I_C=(-)4A$	35			
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)5V, I_C=(-)1A$		(130)		MHz
				180		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=(-)10V, f=1MHz$		(60)40		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)3A, I_B=(-)0.15A$		220	400	mV
				(-280)	(-550)	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)3A, I_B=(-)0.15A$		(-)0.95	(-)1.3	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10μA, I_E=0$	(-)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=∞$	(-)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10μA, I_C=0$	(-)6			V
Turn-ON Time	$t_{on}$	See specified Test Circuit		50(50)		ns
Storage Time	$t_{stg}$	See specified Test Circuit		(450)		ns
				500		ns
Fall Time	$t_f$	See specified Test Circuit		(20)20		ns

\* : The 2SB1203/2SD1803 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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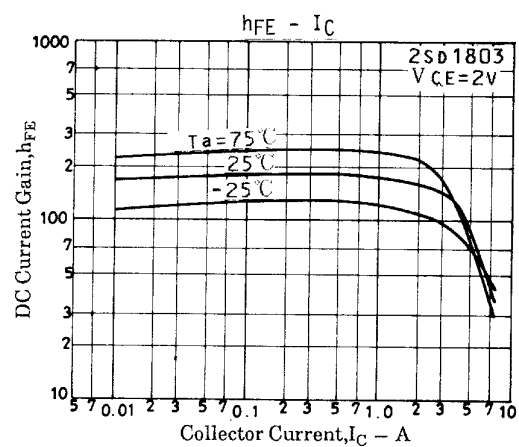
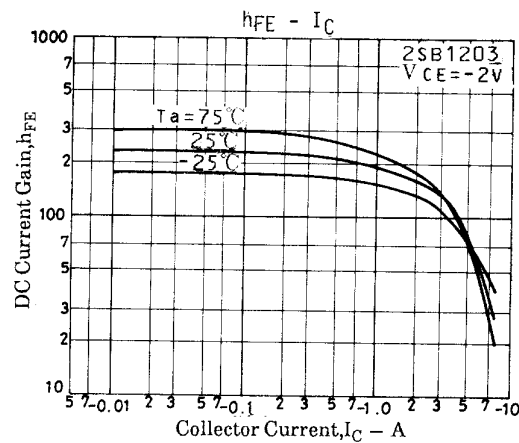
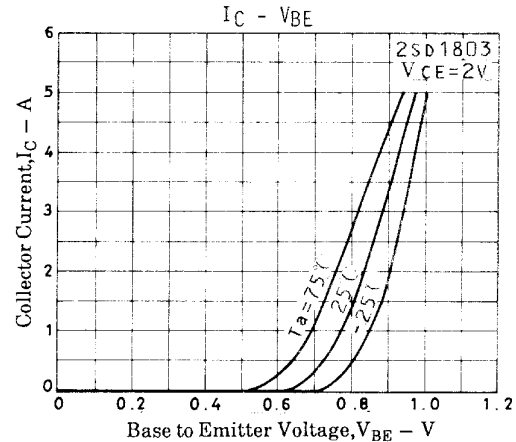
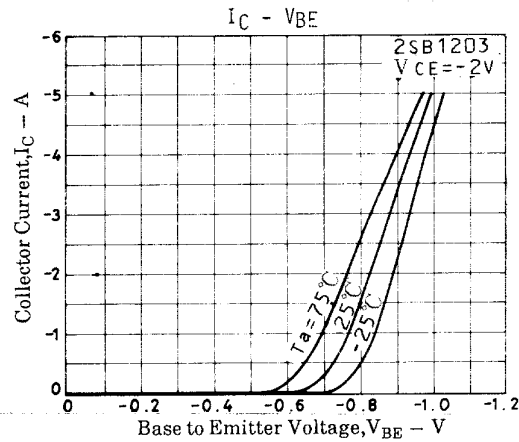
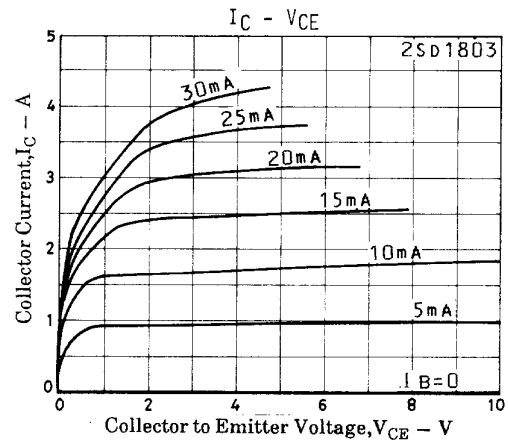
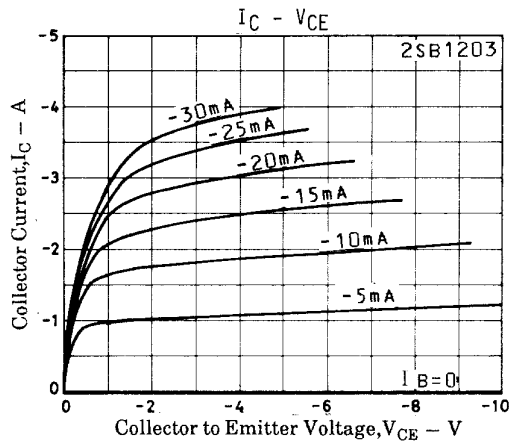
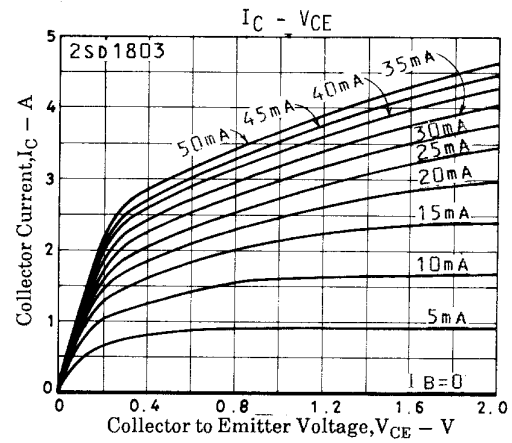
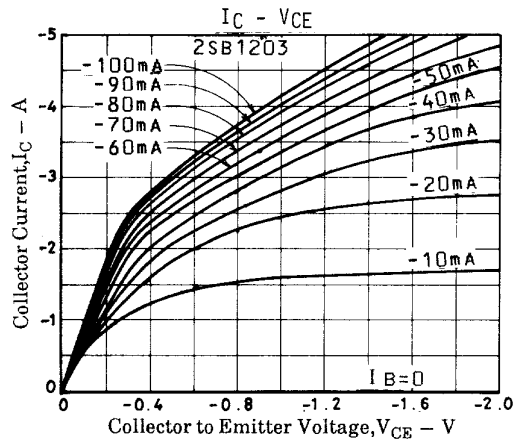
### Switching Time Test Circuit



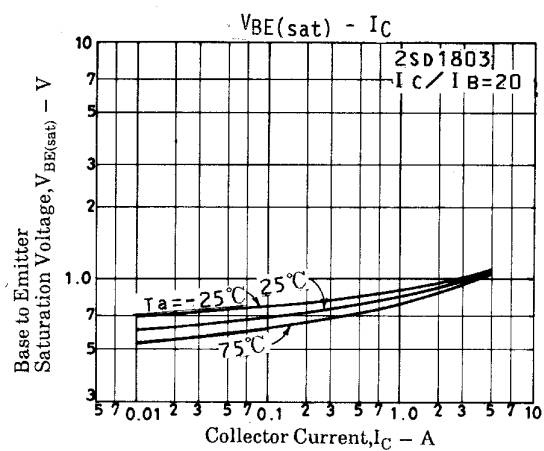
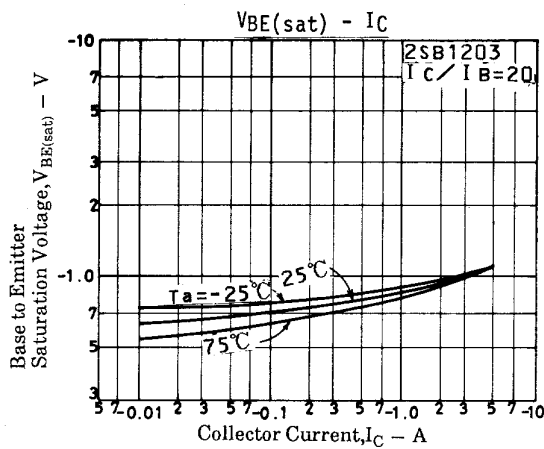
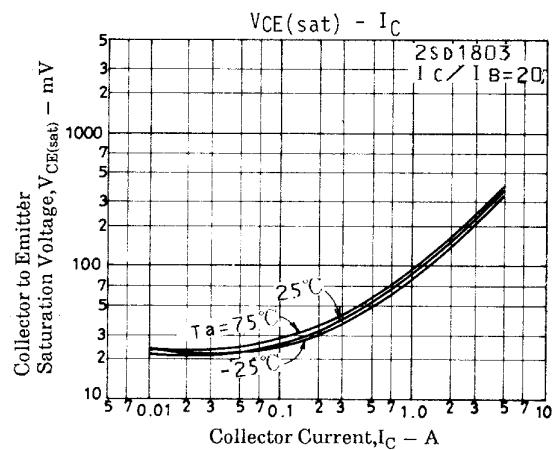
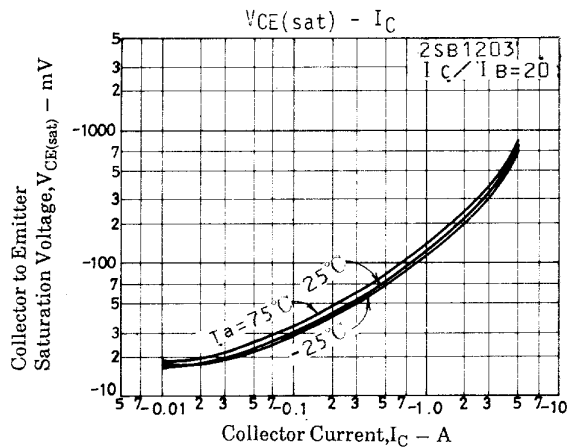
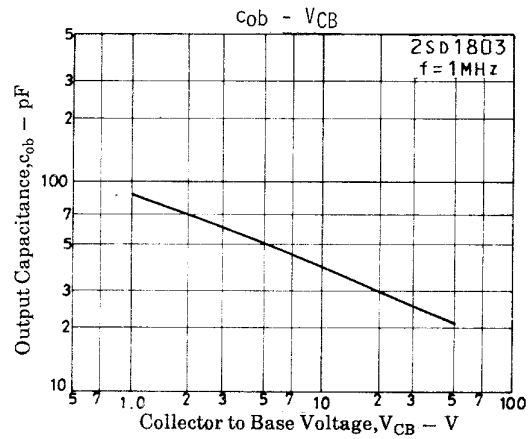
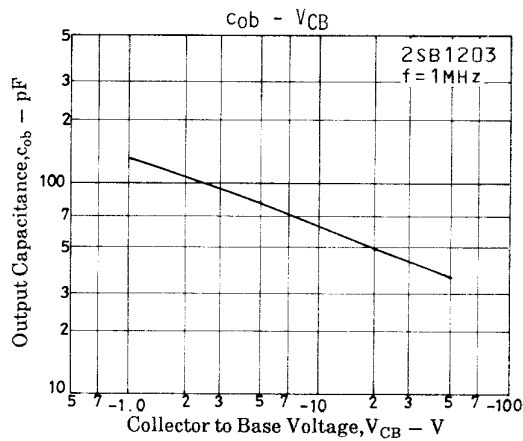
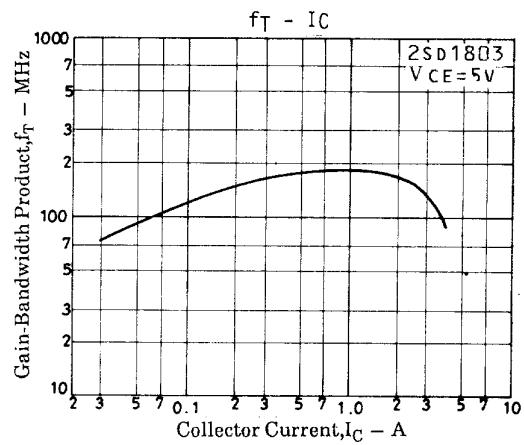
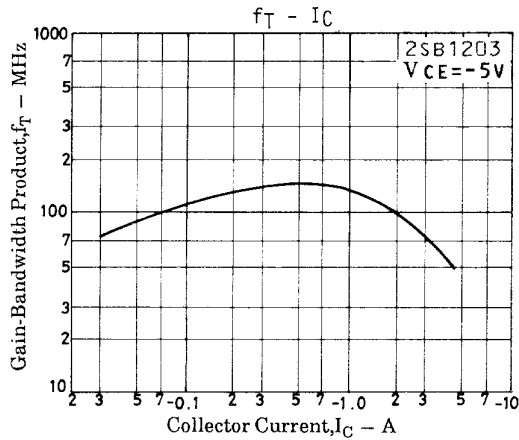
$$I_C = 10 I_{B1} = -10 I_{B2} = 2A$$

(For PNP, the polarity is reversed.)

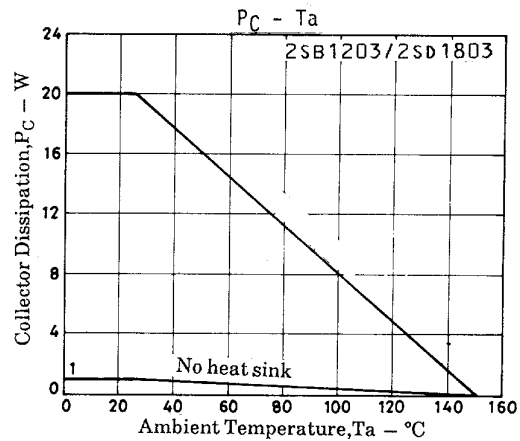
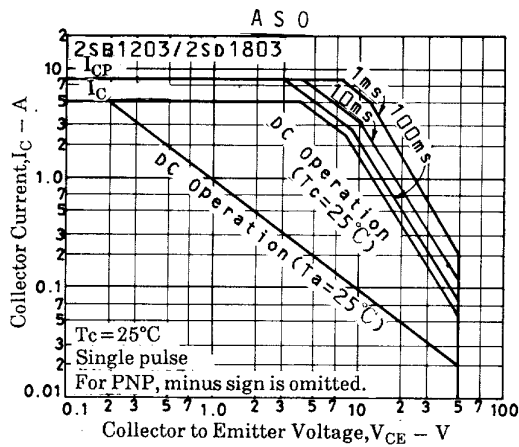
Unit (resistance : Ω, capacitance : F)



# 2SB1203/2SD1803



## 2SB1203/2SD1803



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