



2SB1216/2SD1816

High-Current Switching Applications

Applications

- Suitable for relay drivers, high-speed inverters, converters, and other general high-current switching applications.

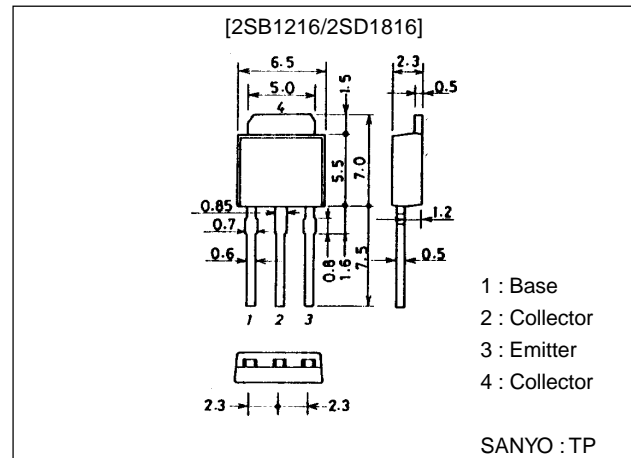
Features

- Low collector-to-emitter saturation voltage.
- Good linearity of h_{FE} .
- Small and slim package facilitating compactness of sets.
- High f_T .
- Fast switching time.

Package Dimensions

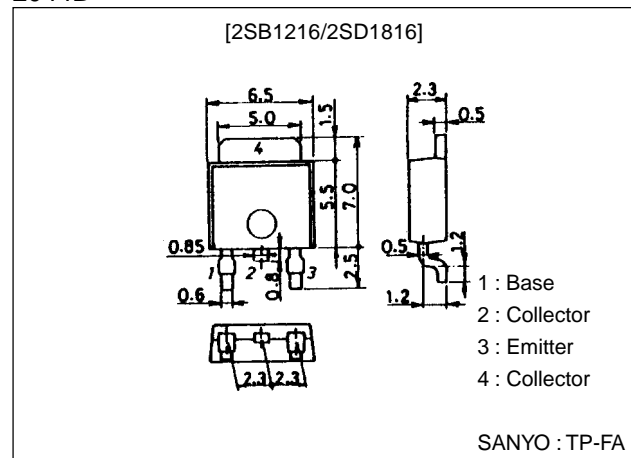
unit:mm

2045B



unit:mm

2044B



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Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(-120)	V
Collector-to-Emitter Voltage	V_{CEO}		(-100)	V
Emitter-to-Base Voltage	V_{EBO}		(-6)	V
Collector Current	I_C		(-4)	A
Collector Current (Pulse)	I_{CP}		(-8)	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	$^\circ\text{C}$

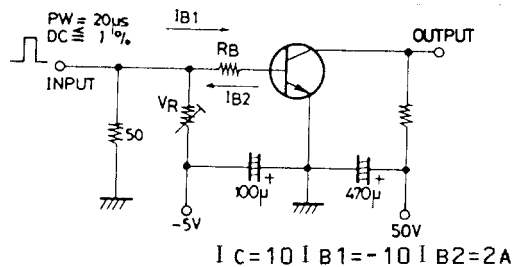
Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=(-)100\text{V}, I_E=0$			(-1)	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4\text{V}, I_C=0$			(-1)	μA
DC Current Gain	h_{FE1}	$V_{CE}=(-)5\text{V}, I_C=(-)0.5\text{A}$	70*		400*	
	h_{FE2}	$V_{CE}=(-)5\text{V}, I_C=(-)3\text{A}$	40			
Gain-Bandwidth Product	f_T	$V_{CE}=(-)10\text{V}, I_C=(-)0.5\text{A}$		(130)		MHz
				180		MHz
Output Capacitance	C_{ob}	$V_{CB}=(-)10\text{V}, f=1\text{MHz}$		(65)40		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)2\text{A}, I_B=(-)0.2\text{A}$		150	400	mV
				(-200)	(-500)	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)2\text{A}, I_B=(-)0.2\text{A}$		(-0.9)	(-1.2)	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu\text{A}, I_E=0$	(-120)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1\text{mA}, R_{BE}=\infty$	(-100)			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		100		ns
Storage Time	t_{stg}	See specified Test Circuit		(800)		ns
				900		ns
Fall Time	t_f	See specified Test Circuit		50		ns

* : The 2SB1216/2SD1816 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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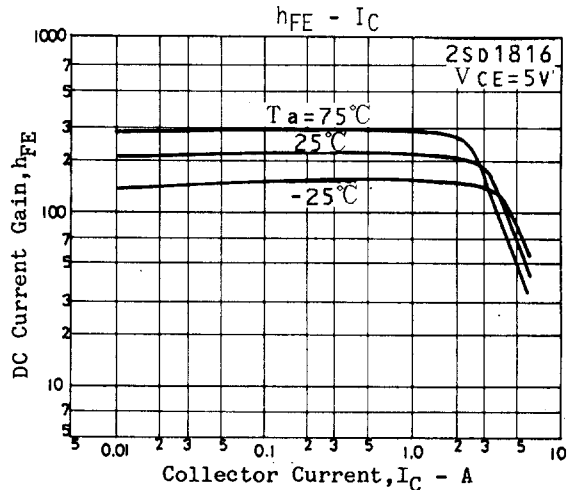
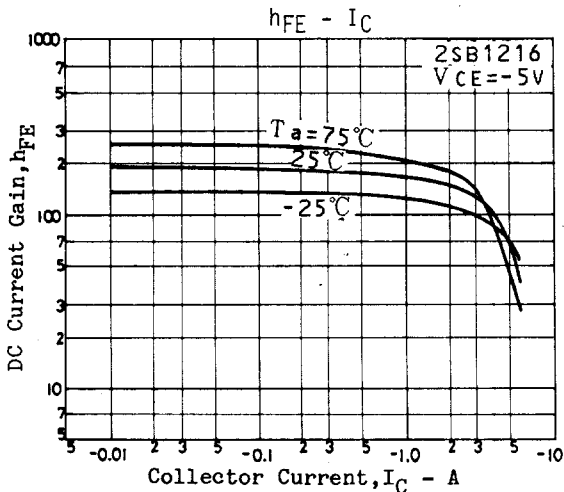
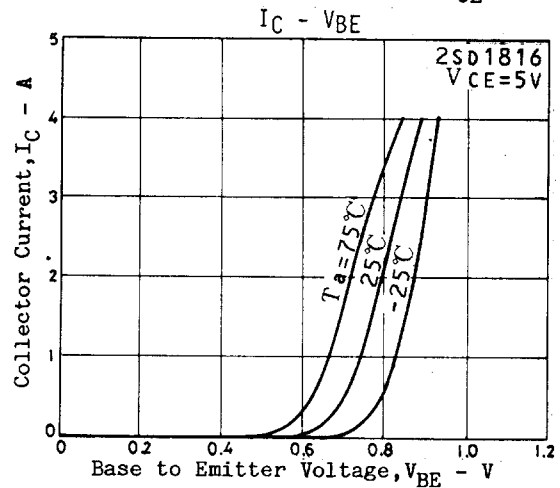
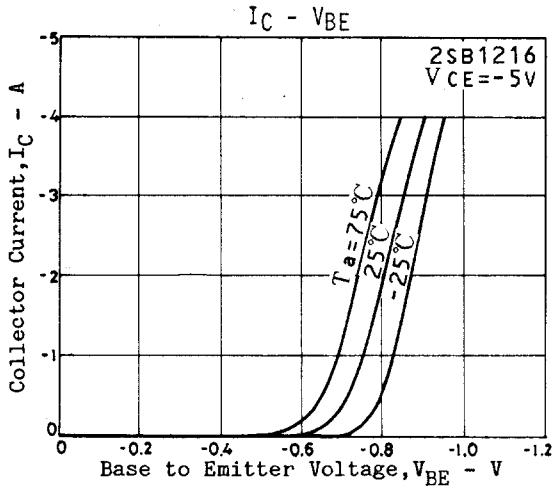
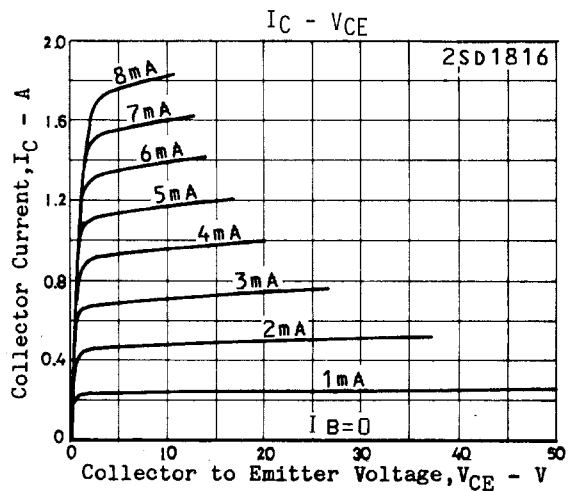
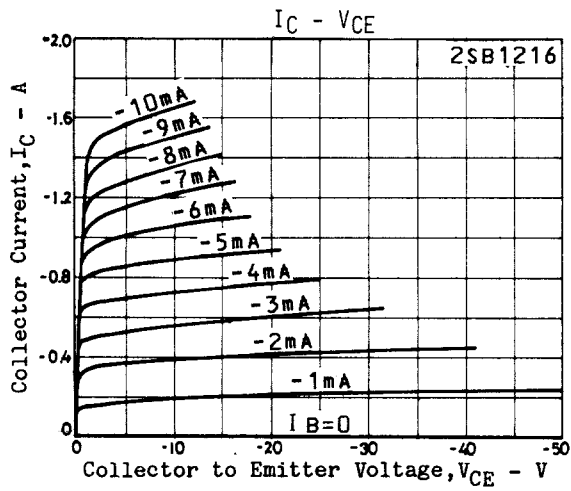
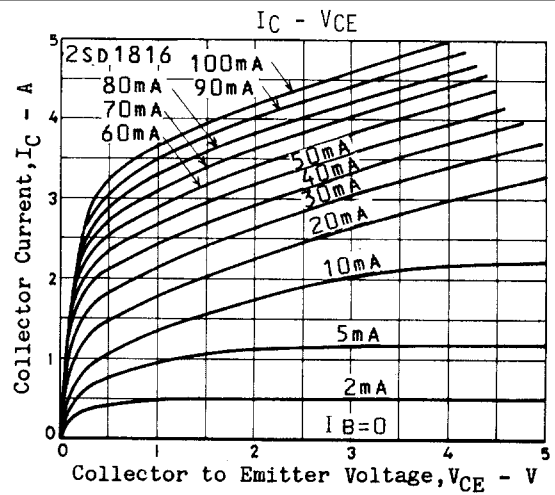
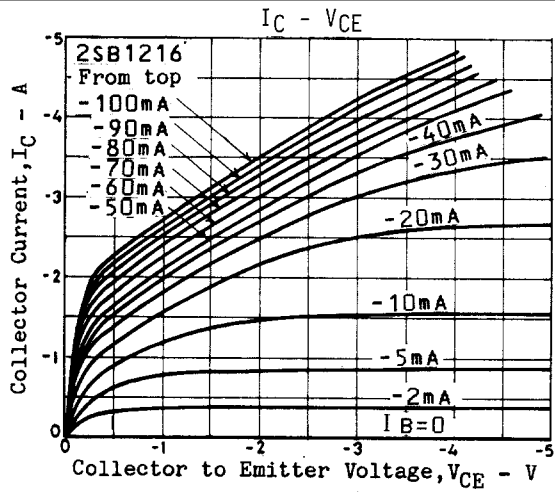
Switching Time Test Circuit



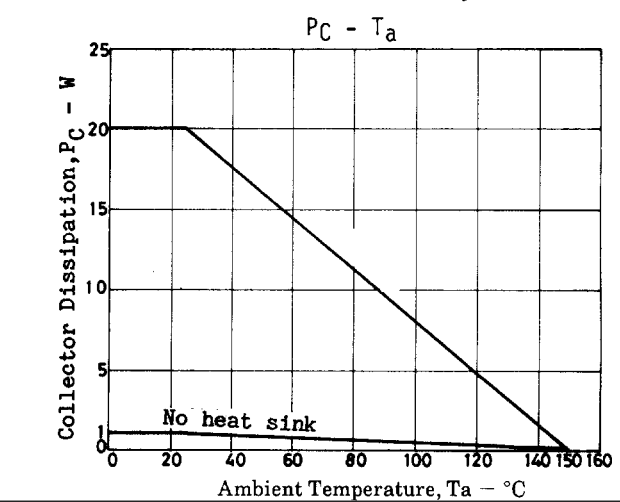
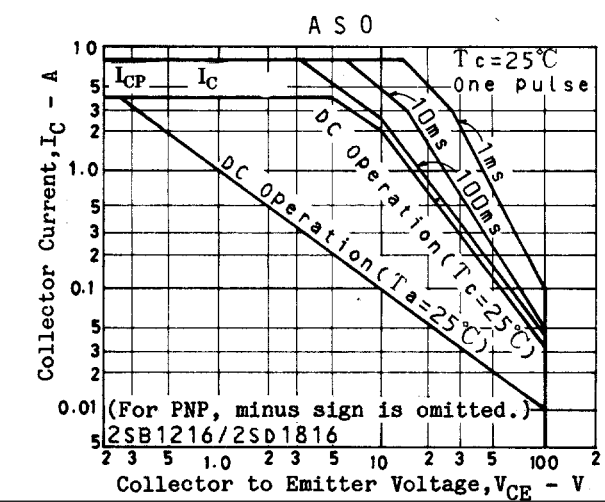
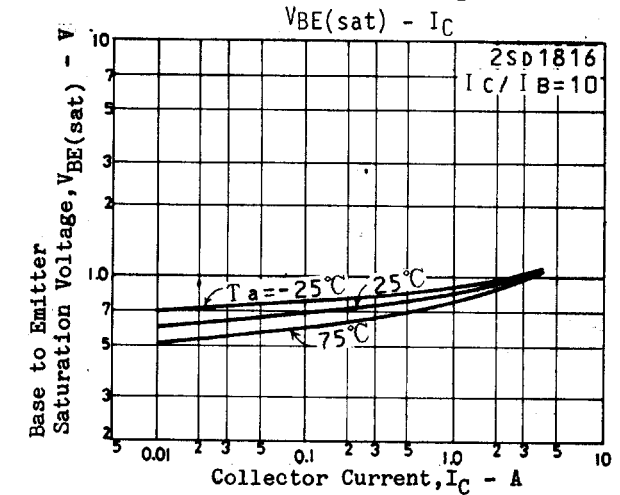
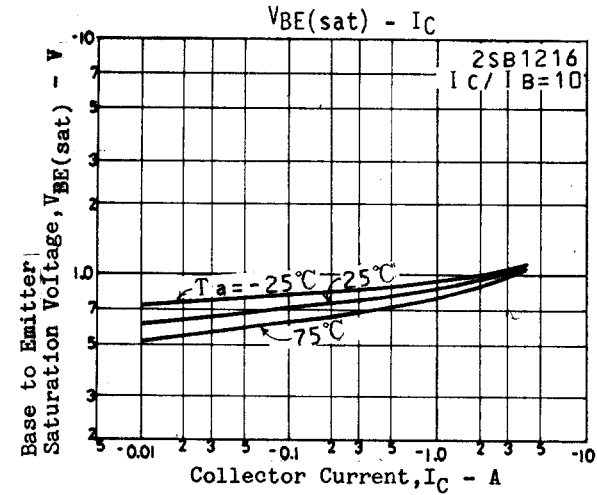
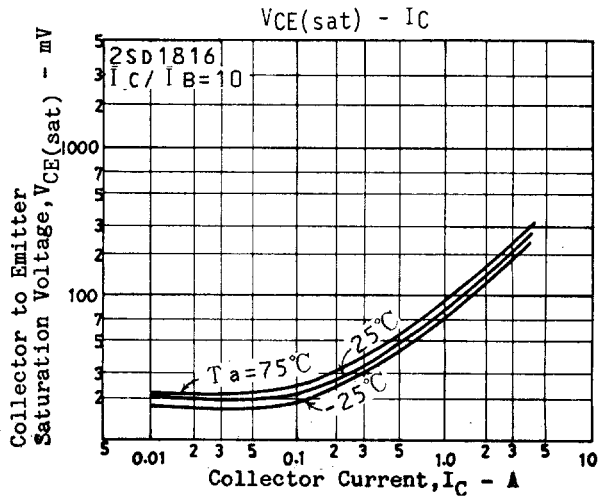
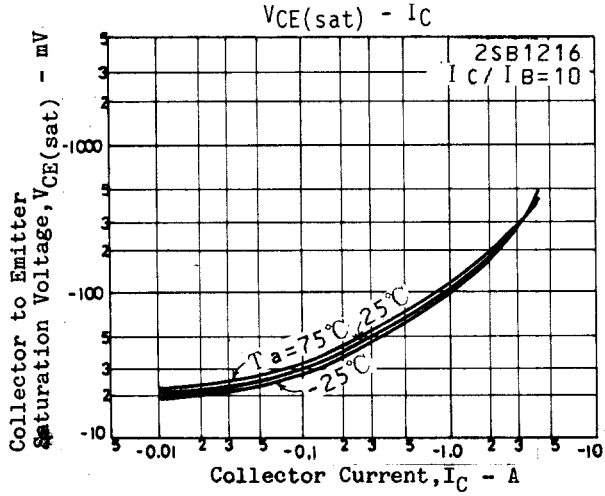
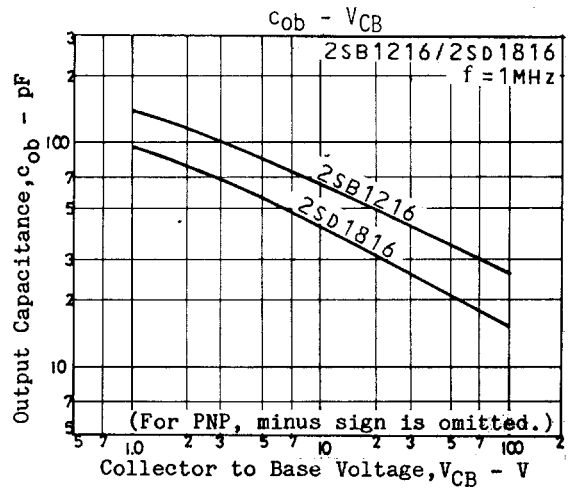
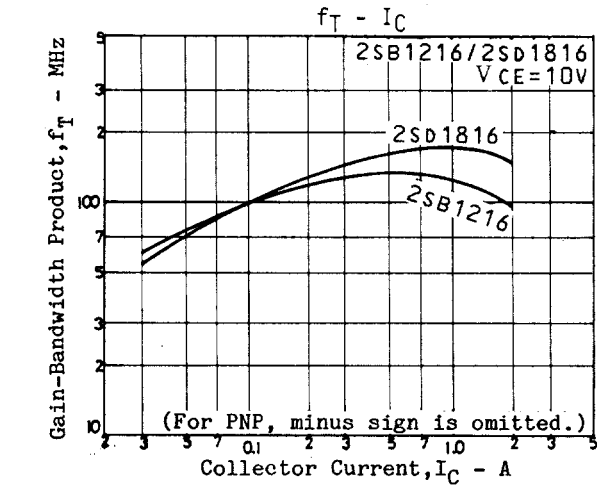
(For PNP, minus sign is omitted.)

Unit (resistance : Ω , capacitance : F)

2SB1216/2SD1816



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