



## 2SB1229/2SD1835

### Driver Applications

#### Applications

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

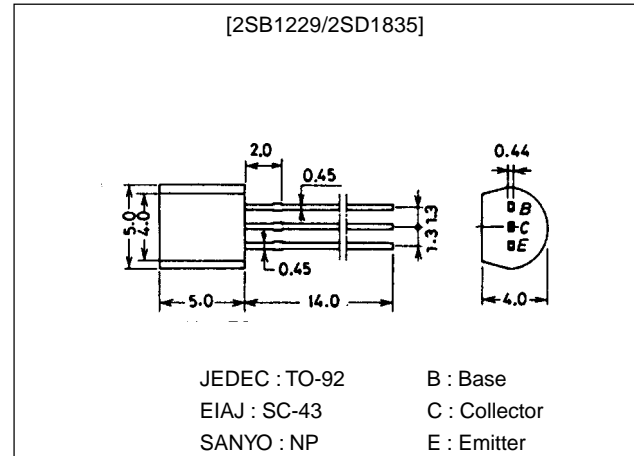
#### Features

- Adoption of FBET, MBIT processes.
- Large current capacity.
- Low collector-to-emitter saturation voltage.
- Fast switching time.

#### Package Dimensions

unit:mm

2003A



() : 2SB1229

#### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-)-60	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-)-50	V
Emitter-to-Base Voltage	$V_{EBO}$		(-)-6	V
Collector Current	$I_C$		(-)-2	A
Collector Current (Pulse)	$I_{CP}$		(-)-3	A
Collector Dissipation	$P_C$		0.75	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	$I_{CBO}$	$V_{CB} = (-)50V, I_E = 0$			(-)-100	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)4V, I_C = 0$			(-)-100	nA
DC Current Gain	$h_{FE1}$	$V_{CE} = (-)2V, I_C = (-)100mA$	100*		560*	
	$h_{FE2}$	$V_{CE} = (-)2V, I_C = (-)1.5A$	40			
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)10V, I_C = (-)50mA$		150		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = (-)10V, f = 1MHz$		12(22)		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)1A, I_B = (-)50mA$		0.15	0.4	V
				(-)-0.3	(-)-0.7	V

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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

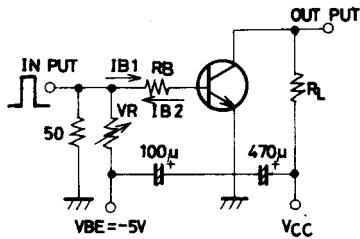
## 2SB1229/2SD1835

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)1A, I_B=(-)50mA$		(-0.9)	(-1.2)	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-60)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-50)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-6)			V
Turn-ON Time	$t_{on}$	See specified Test Circuit		60(60)		ns
Storage Time	$t_{stg}$	See specified Test Circuit		550		ns
				(450)		ns
Fall Time	$t_f$	See specified Test Circuit		30		ns
				30		ns

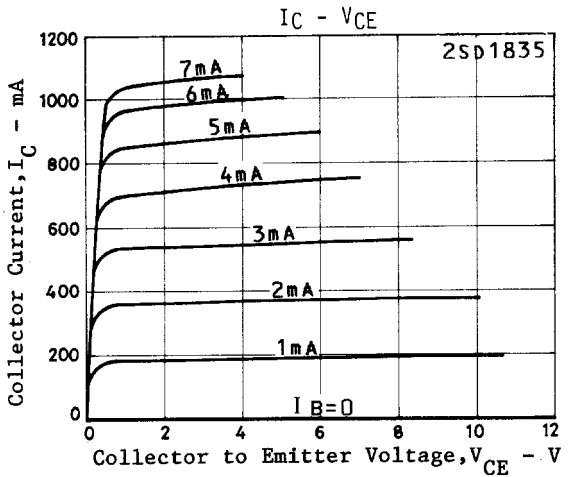
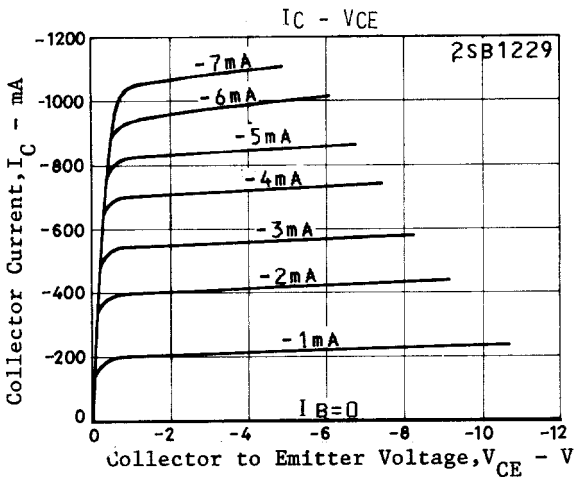
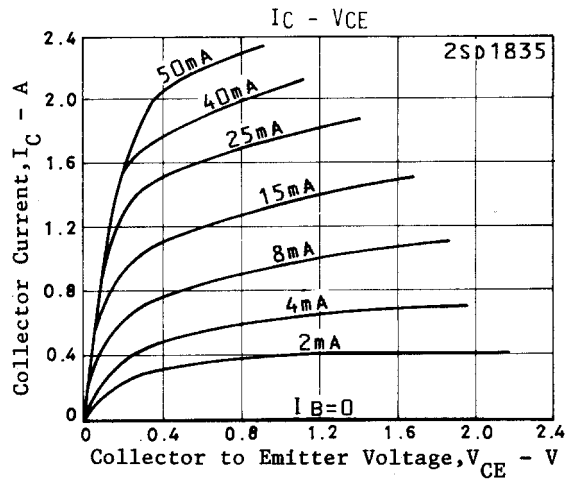
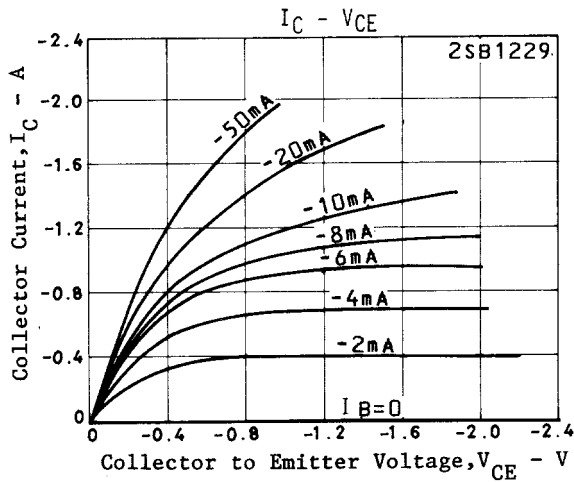
\* : The 2SB1229/2SD1835 are classified by 100mA  $h_{FE}$  as follows :

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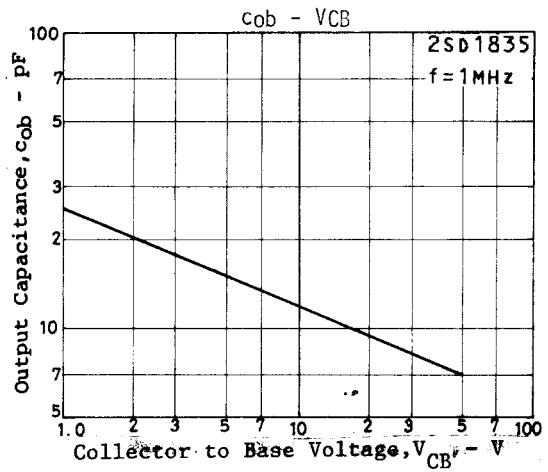
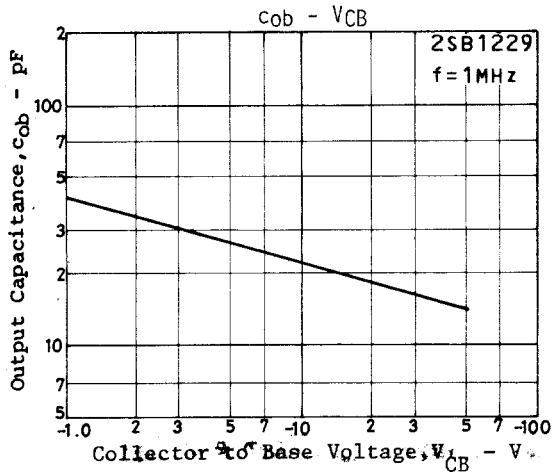
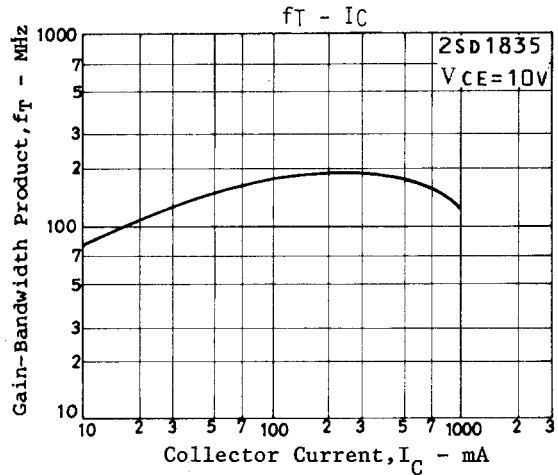
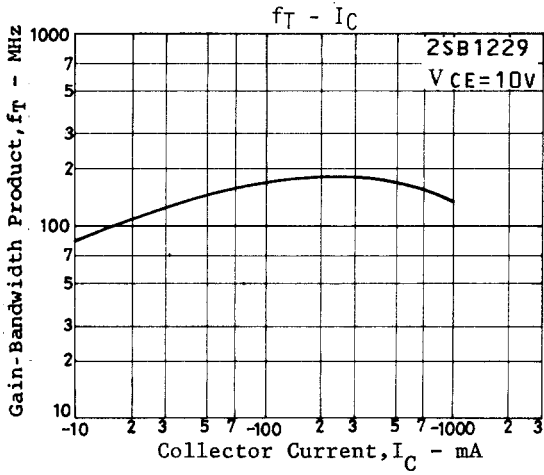
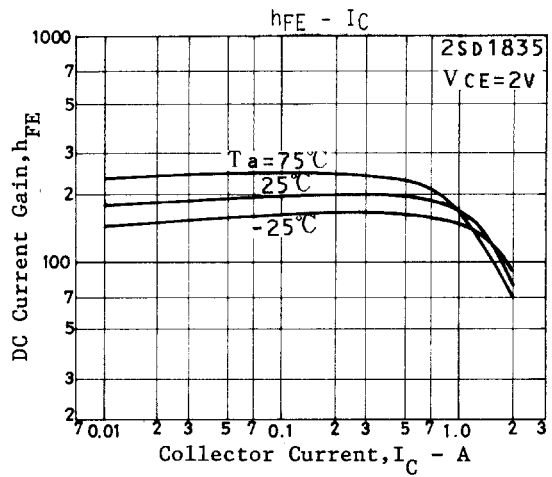
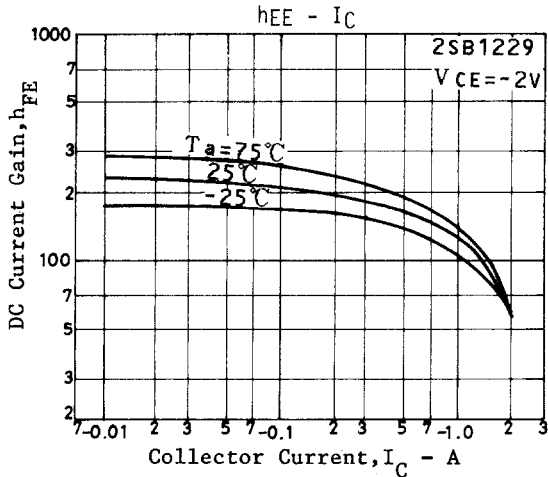
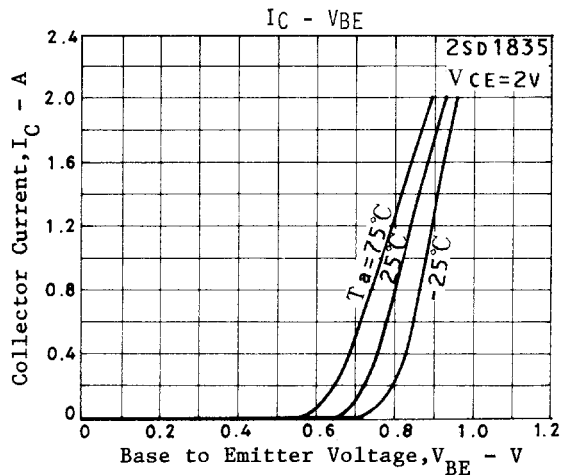
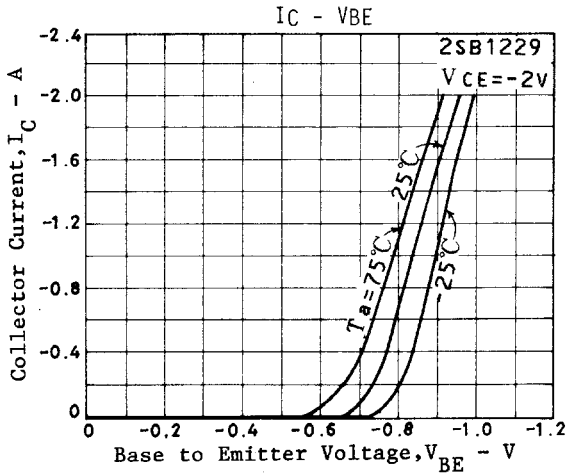
### Switching Time Test Circuit



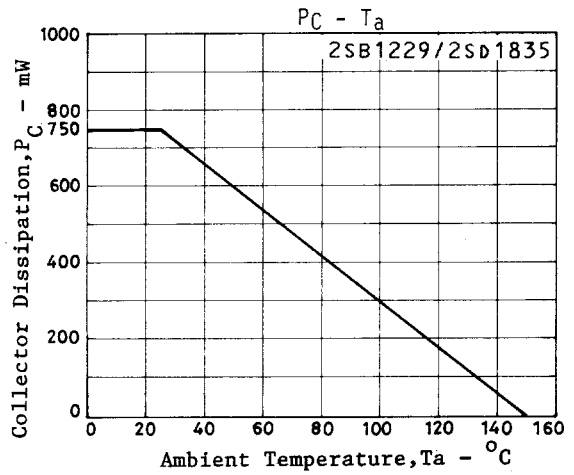
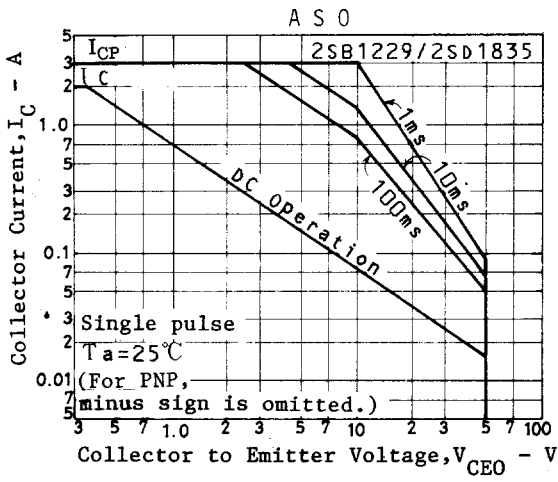
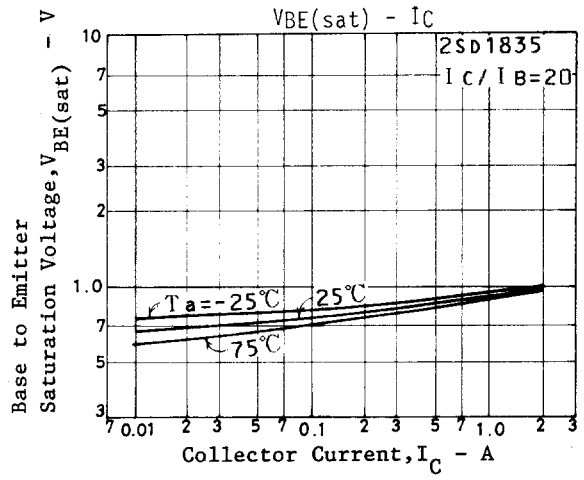
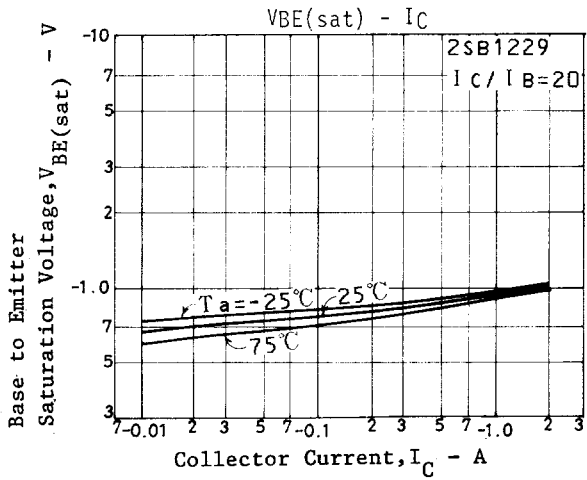
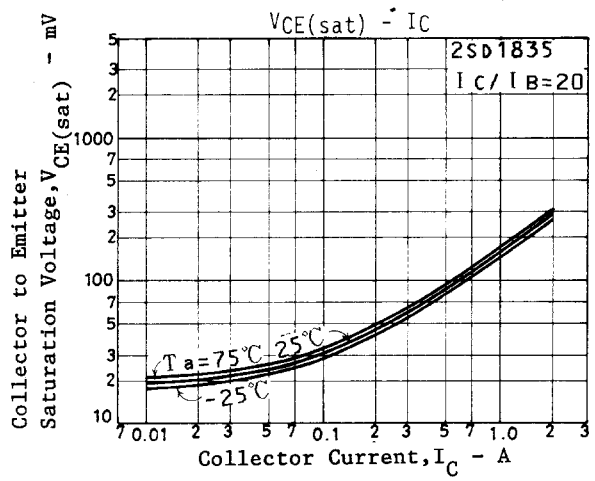
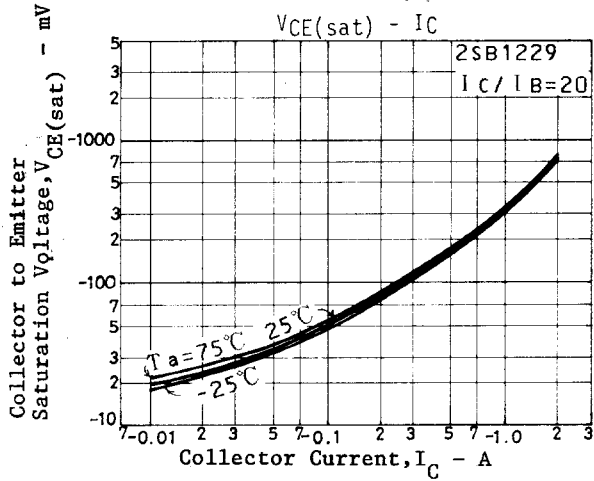
$10 I_{B1} = -10 I_{B2} = I_C = 500mA, V_{CC} = 25V$   
 (For PNP, the polarity is reversed.)  
 Unit (resistance :  $\Omega$ , capacitance : F)



2SB1229/2SD1835



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