



# ~~2SB1229/2SD1835~~

## Driver Applications

An ON Semiconductor Company

### Applications

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

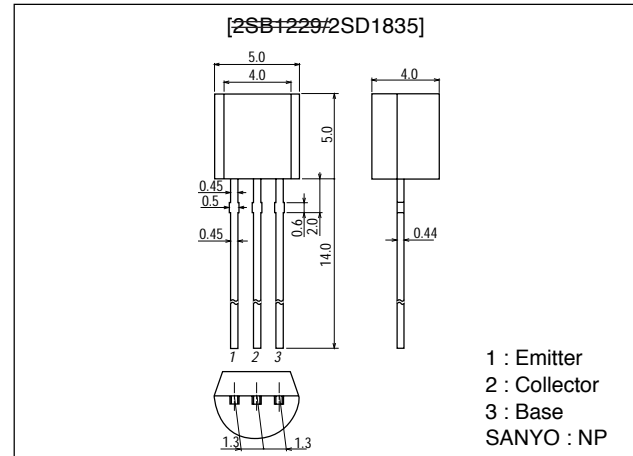
### Features

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

### Package Dimensions

unit:mm

2003B



(-) : 2SB1229

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		$\approx 60$	V
Collector-to-Emitter Voltage	$V_{CE0}$		$\approx 50$	V
Emitter-to-Base Voltage	$V_{EB0}$		$\approx 6$	V
Collector Current	$I_C$		$\approx 2$	A
Collector Current (Pulse)	$I_{CP}$		$\approx 3$	A
Collector Dissipation	$P_C$		0.75	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	$I_{CBO}$	$V_{CB} = \approx 50\text{V}$ , $I_E = 0$			$\approx 100$	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = \approx 4\text{V}$ , $I_C = 0$			$\approx 100$	nA
DC Current Gain	$h_{FE1}$	$V_{CE} = \approx 2\text{V}$ , $I_C = \approx 100\text{mA}$	100*		560*	
	$h_{FE2}$	$V_{CE} = \approx 2\text{V}$ , $I_C = \approx 1.5\text{A}$	40			
Gain-Bandwidth Product	$f_T$	$V_{CE} = \approx 10\text{V}$ , $I_C = \approx 50\text{mA}$		150		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = \approx 10\text{V}$ , $f = 1\text{MHz}$		12(22)		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = \approx 1\text{A}$ , $I_B = \approx 50\text{mA}$		0.15	0.4	V
				$\approx 0.3$	$\approx 0.7$	V

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**SANYO Electric Co., Ltd. Semiconductor Company**

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## 2SB1229/2SD1835

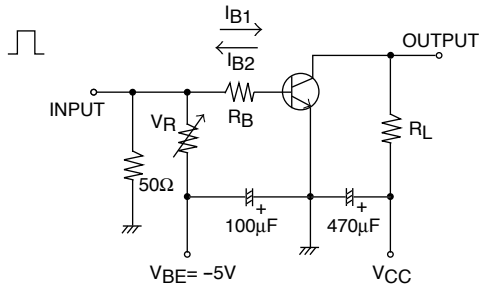
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C \approx 1A, I_B \approx 50mA$		$\approx 0.9$	$\approx 1.2$	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C \approx 10\mu A, I_E = 0$	$\approx 60$			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C \approx 1mA, R_{BE} = \infty$	$\approx 50$			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E \approx 10\mu A, I_C = 0$	$\approx 6$			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

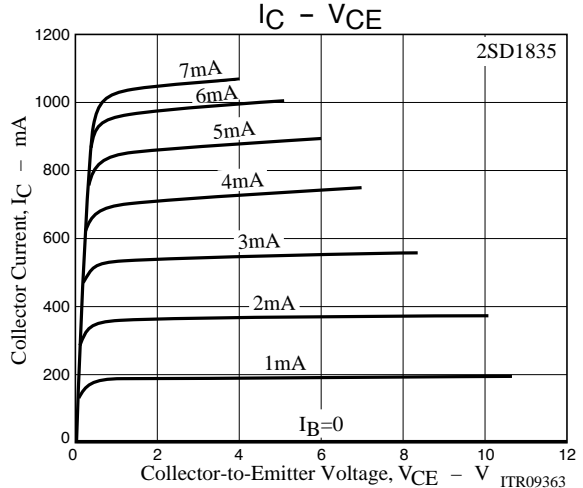
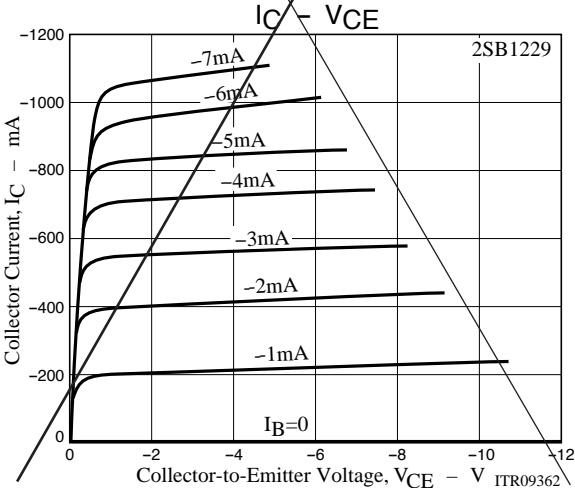
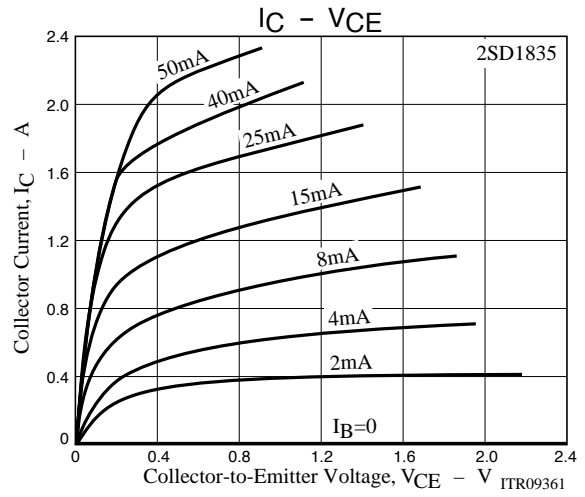
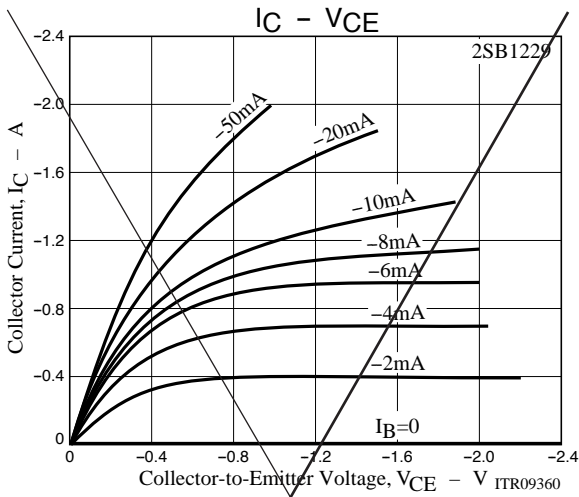
\* : The 2SB1229/2SD1835 are classified by 100mA  $h_{FE}$  as follows :

Rank	R	S	T	U
$h_{FE}$	100 to 200	140 to 280	200 to 400	280 to 560

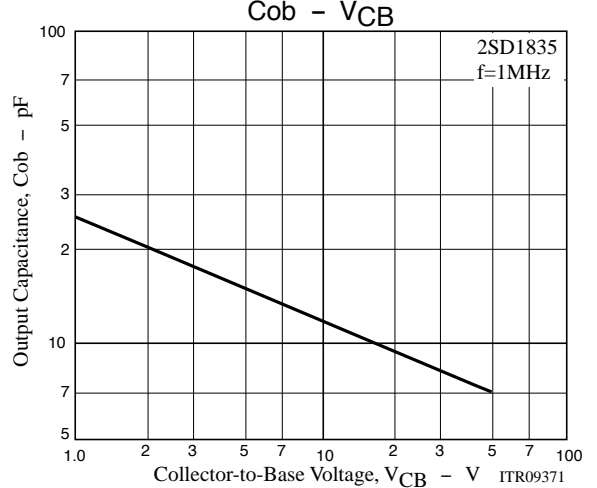
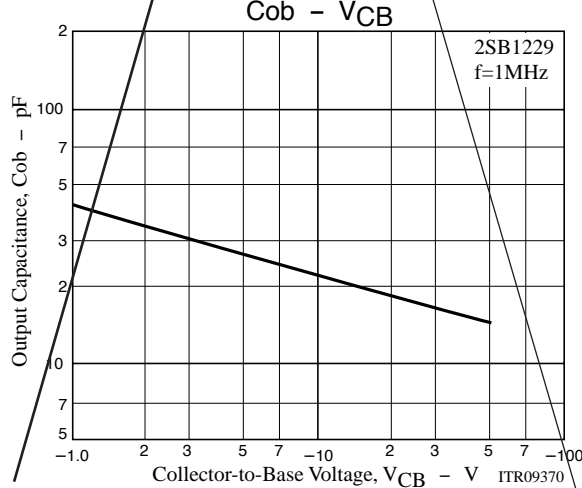
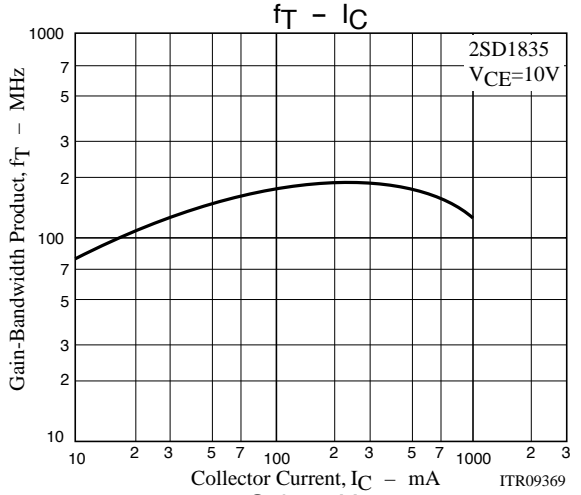
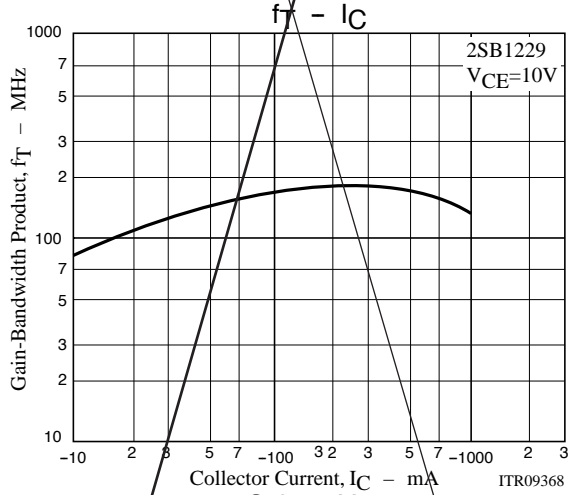
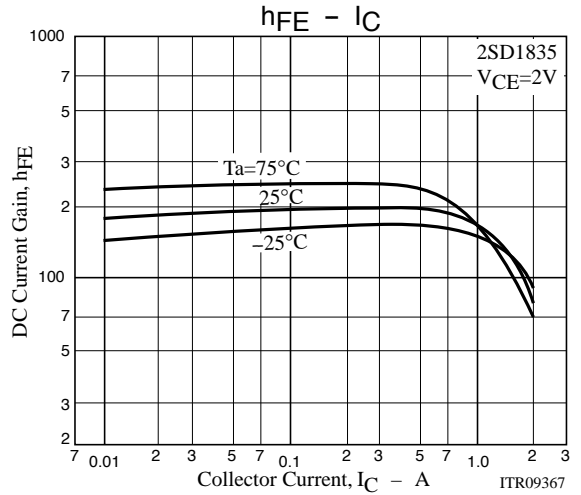
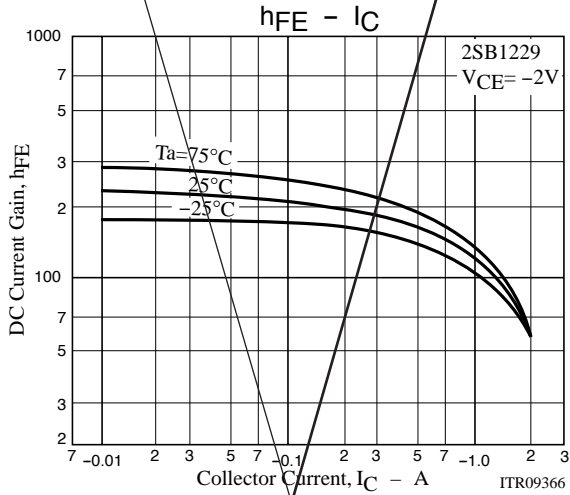
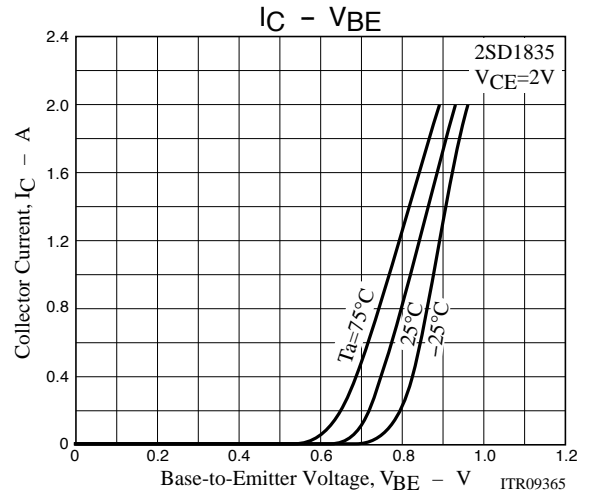
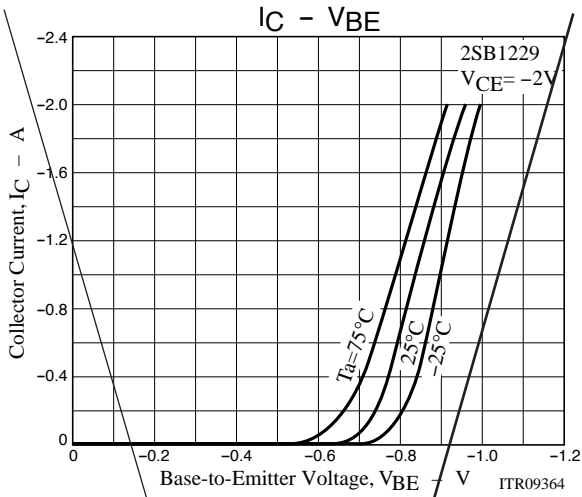
### Switching Time Test Circuit



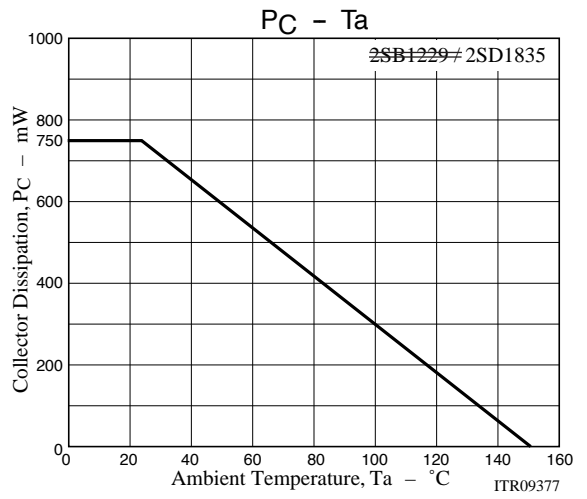
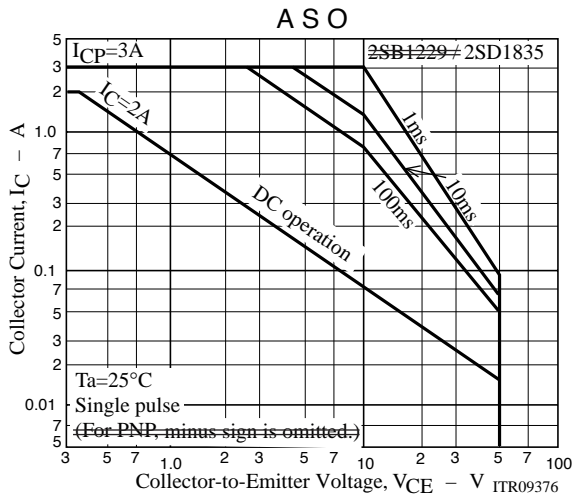
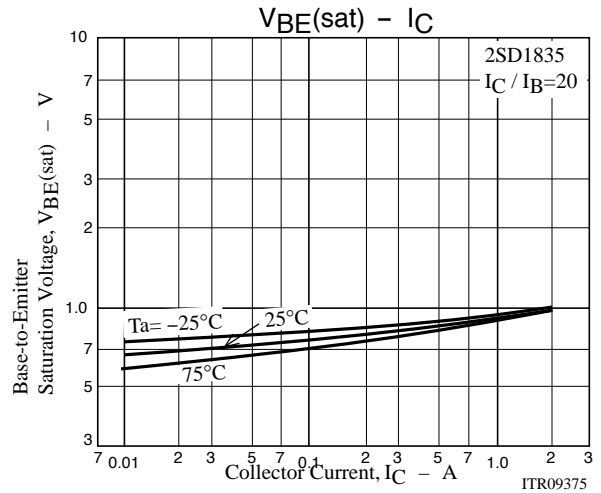
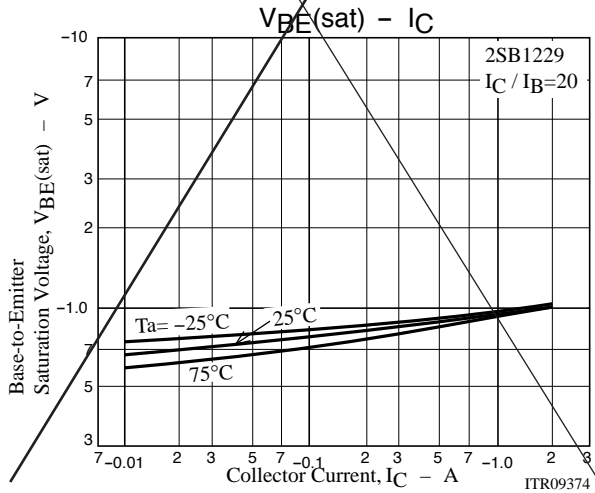
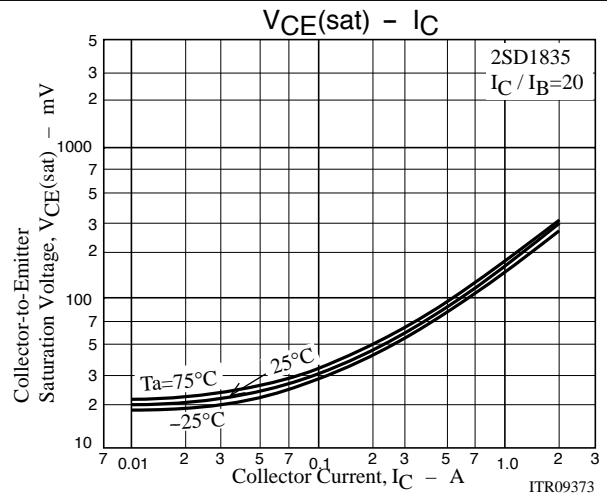
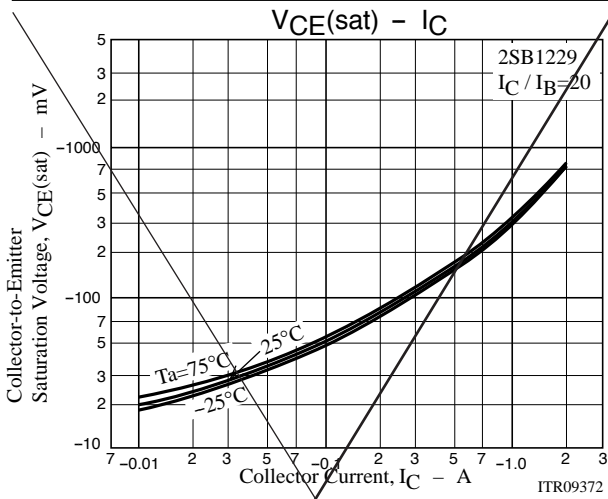
$I_C = 10I_B, I_{B1} = -10I_{B2} = 500mA, V_{CC} = 25V$   
 (For PNP, the polarity is reversed.)



# 2SB1229/2SD1835



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