



## 2SB1223/2SD1825

### Driver Applications

#### Applications

- Suitable for use in control of motor drivers, printer hammer drivers, and constant-voltage regulators.

#### Features

- High DC current gain.
- Large current capacity and wide ASO.
- Micaless package facilitating mounting.

( ) : 2SB1223

#### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-)-70	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-)-60	V
Emitter-to-Base Voltage	$V_{EBO}$		(-)-6	V
Collector Current	$I_C$		(-)-4	A
Collector Current (Pulse)	$I_{CP}$		(-)-6	A
Collector Dissipation	$P_C$		2.0	W
		$T_c=25^\circ\text{C}$	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	$I_{CB0}$	$V_{CB} = (-)40\text{V}, I_E = 0$			(-)-0.1	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)5\text{V}, I_C = 0$			(-)-3.0	mA
DC Current Gain	$h_{FE}$	$V_{CE} = (-)2\text{V}, I_C = (-)2\text{A}$	2000	5000		
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)5\text{V}, I_C = (-)2\text{A}$		20		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)2\text{A}, I_B = (-)4\text{mA}$		0.9	(-)-1.5	V
				(-)-1.0		V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)2\text{A}, I_B = (-)4\text{mA}$			(-)-2.0	V

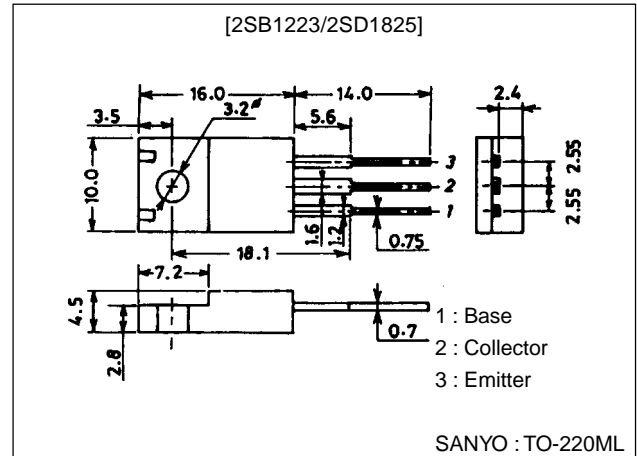
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#### Package Dimensions

unit:mm

2041A



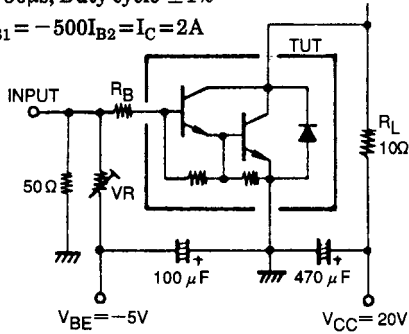
# 2SB1223/2SD1825

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)5mA, I_E=0$	(-70)			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)50mA, R_{BE}=\infty$	(-60)			V
Turn-ON Time	$t_{on}$	See specified Test Circuit		0.6		$\mu s$
Storage Time	$t_{stg}$	See specified Test Circuit		(0.5)		$\mu s$
				2.7		$\mu s$
Fall Time	$t_f$	See specified Test Circuit		(1.4)		$\mu s$
				1.6		$\mu s$
				(1.2)		$\mu s$

## Switching Time Test Circuit

PW = 50 $\mu s$ , Duty cycle  $\leq 1\%$

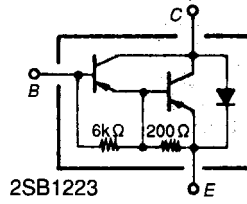
500I<sub>B1</sub> = -500I<sub>B2</sub> = I<sub>C</sub> = 2A



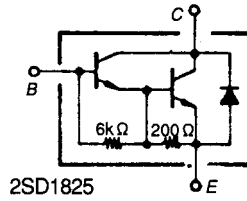
(For PNP, the polarity is reversed.)

Unit (resistance :  $\Omega$ , capacitance : F)

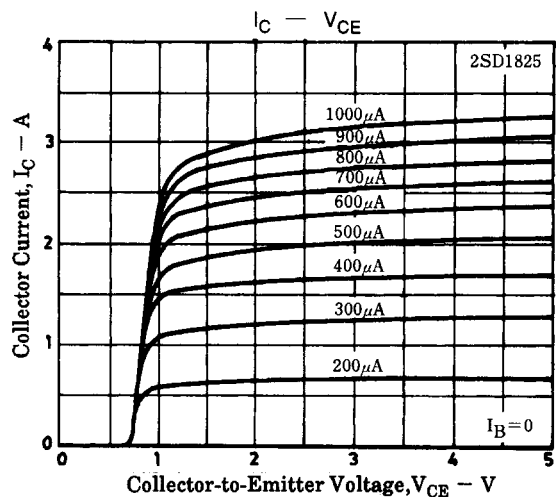
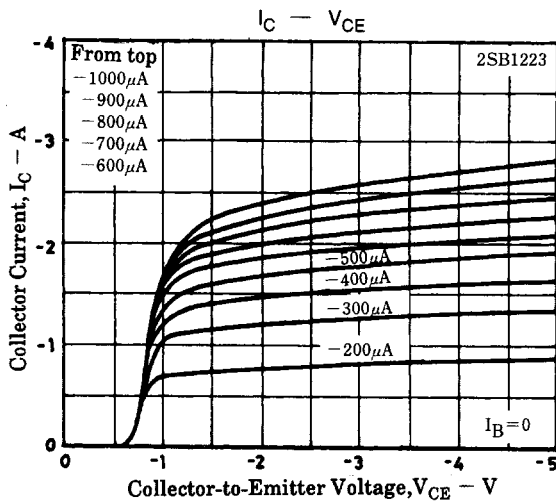
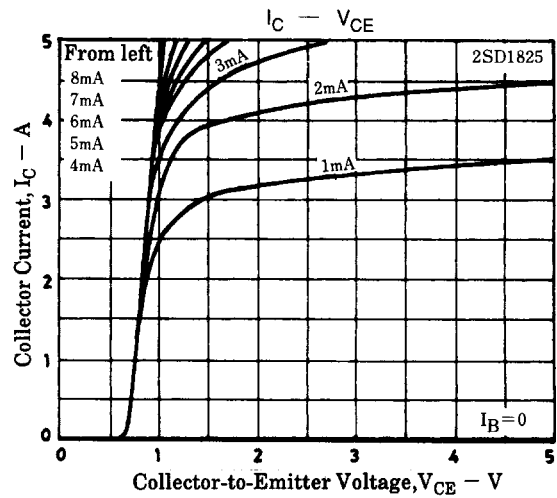
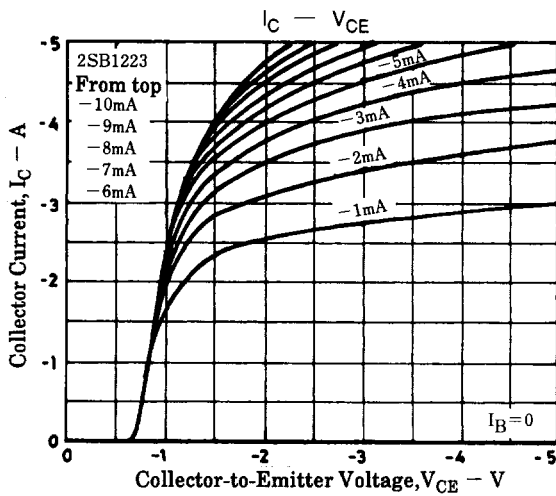
## Electrical Connection



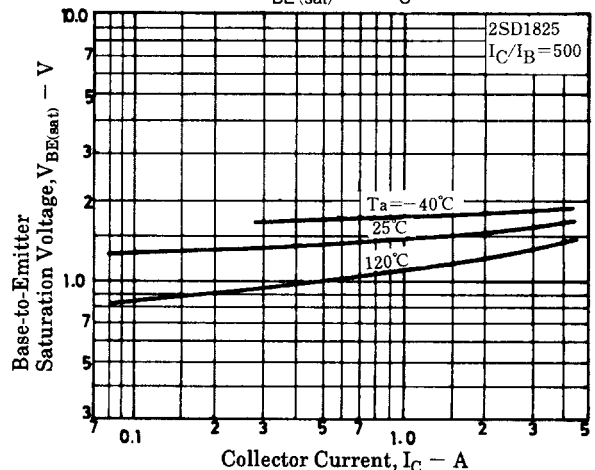
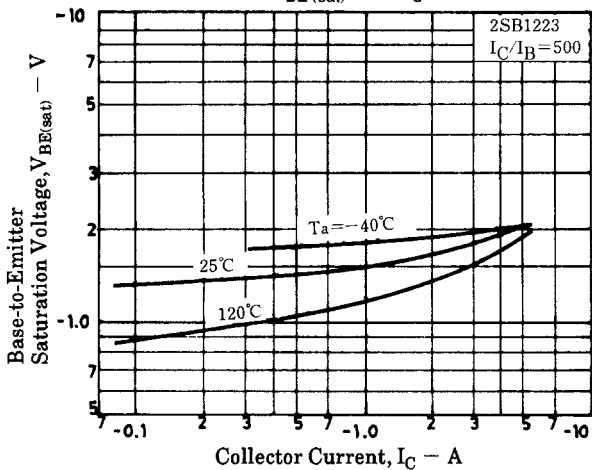
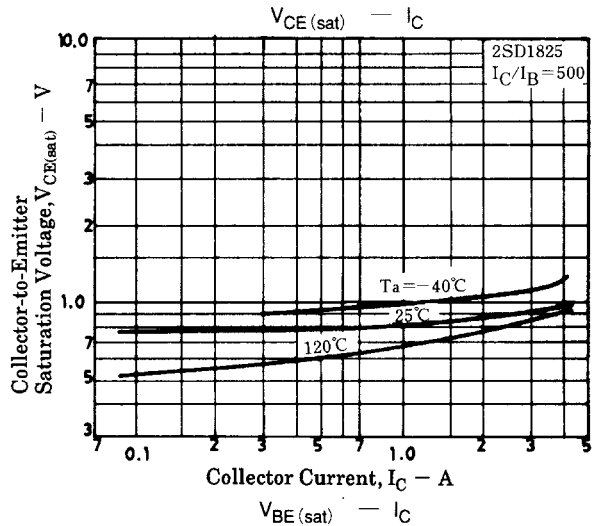
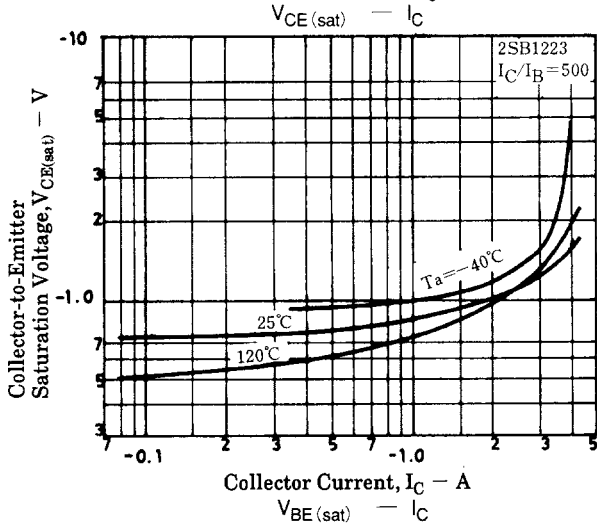
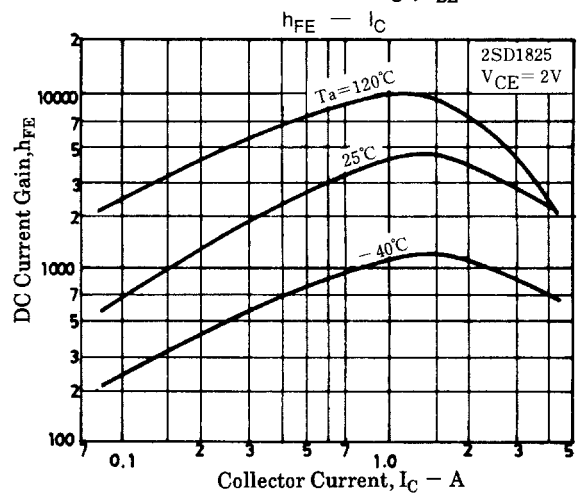
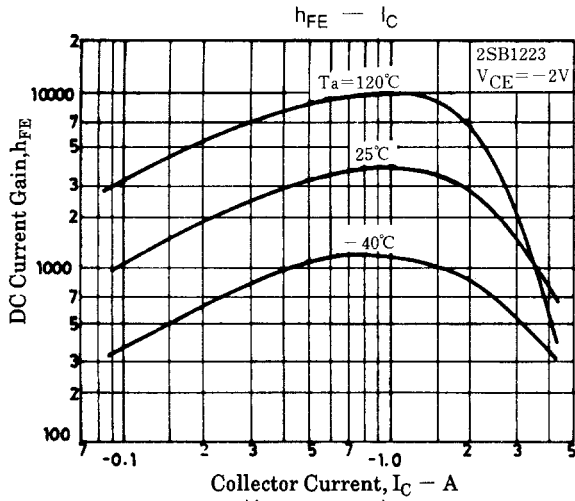
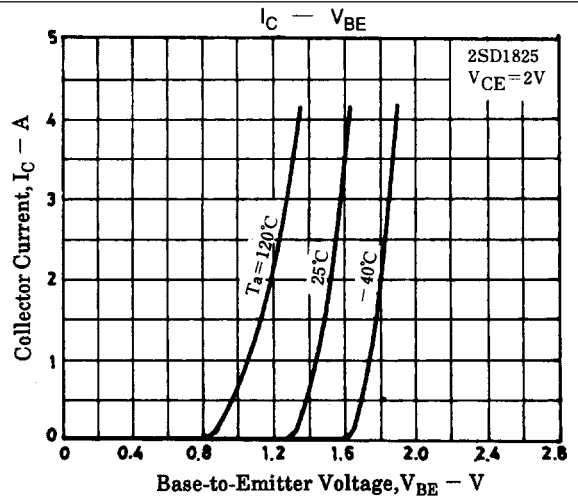
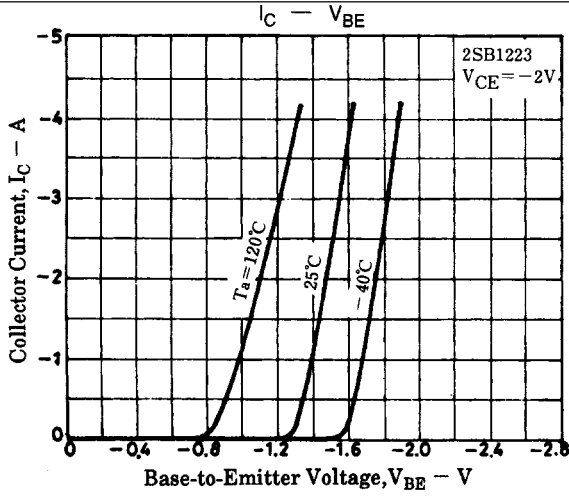
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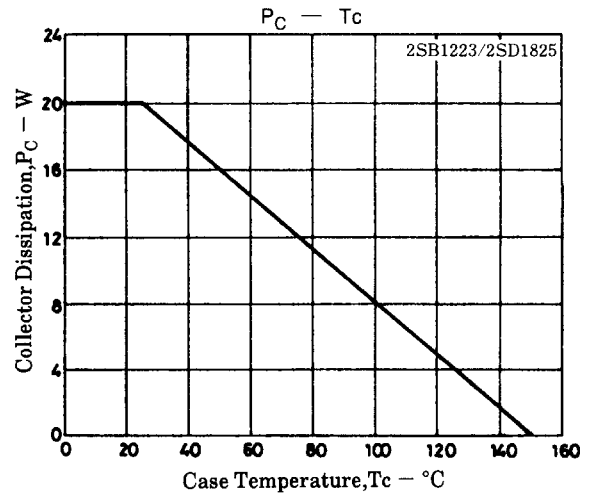
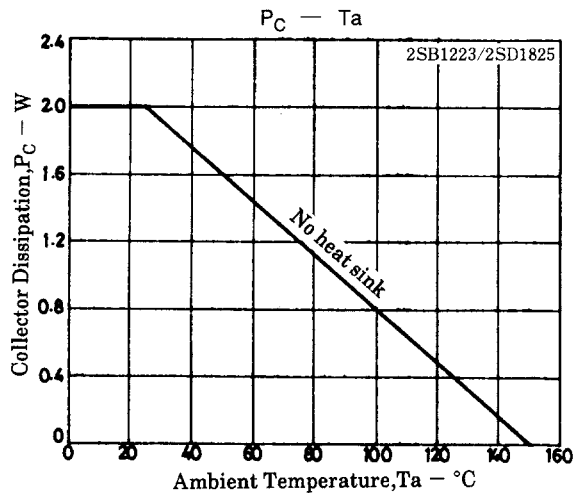
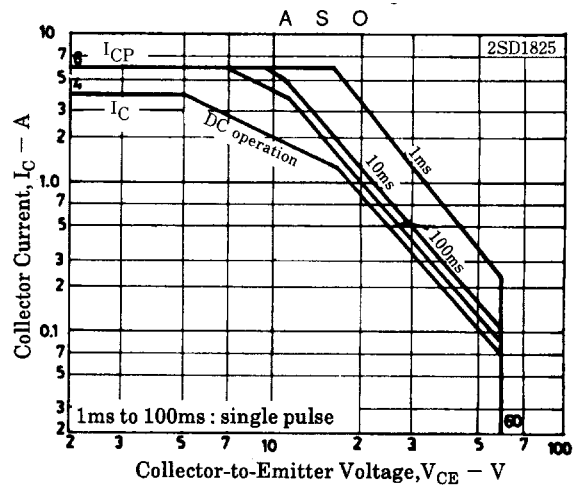
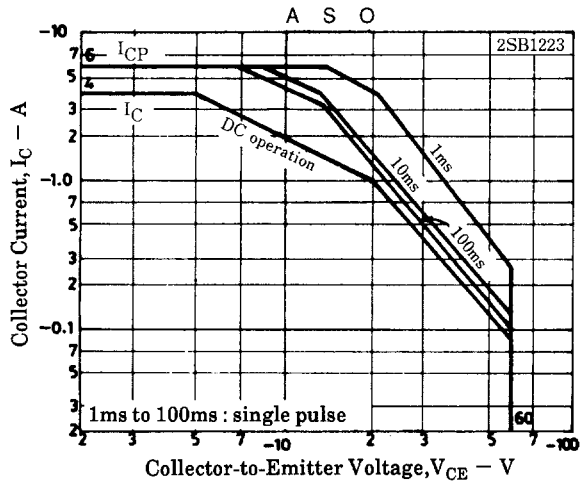
2SD1825



2SB1223/2SD1825



## 2SB1223/2SD1825



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