

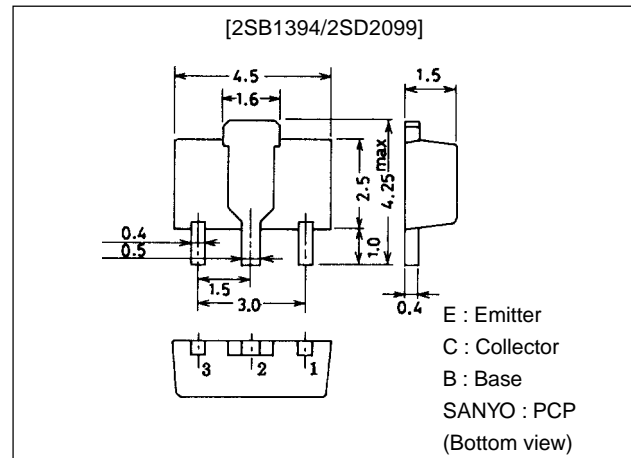
**2SB1394/2SD2099****Compact Motor Driver Applications****Features**

- Contains input resistance ( $R_1$ ), base-to-emitter resistance ( $R_{BE}$ ).
- Contains diode between collector and emitter.
- Low saturation voltage.
- Large current capacity.
- Small-sized package making it easy to provide high-density, small-sized hybrid ICs.

**Package Dimensions**

unit:mm

2038A



() : 2SB1394

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		(-)40	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-)30	V
Emitter-to-Base Voltage	$V_{EBO}$		(-)6	V
Collector Current	$I_C$		(-)3	A
Collector Current (Pulse)	$I_{CP}$		(-)5	A
Collector Dissipation	$P_C$	Mounted on ceramic board (250mm $\times$ 0.8mm)	1.5	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	$I_{CBO}$	$V_{CB} = (-)30\text{V}$ , $I_E = 0$			(-)1.0	$\mu\text{A}$
DC Current Gain	$h_{FE1}$	$V_{CE} = (-)2\text{V}$ , $I_C = (-)0.5\text{A}$	(-)70			
	$h_{FE2}$	$V_{CE} = (-)2\text{V}$ , $I_C = (-)2\text{A}$	(-)50			
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)2\text{V}$ , $I_C = (-)0.5\text{A}$		100		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = (-)10\text{V}$ , $f = 1\text{MHz}$		(55)40		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)1\text{A}$ , $I_B = (-)50\text{mA}$		0.12	0.3	V
				(-0.18)	(-0.4)	V

Marking : 2SB1394 : BN  
2SD2099 : DL

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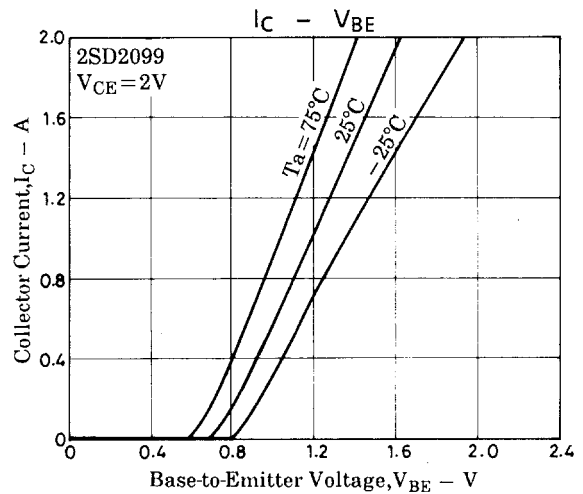
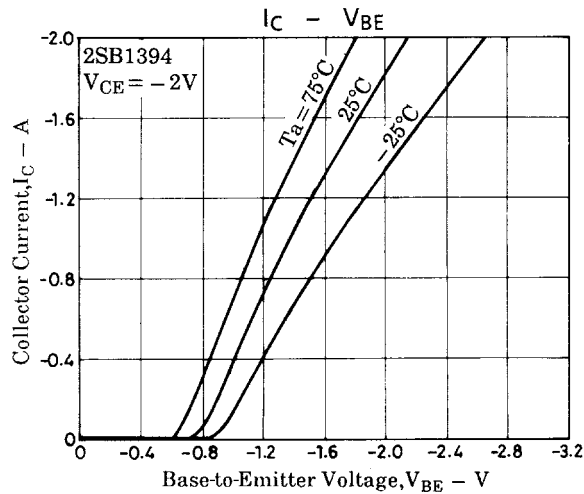
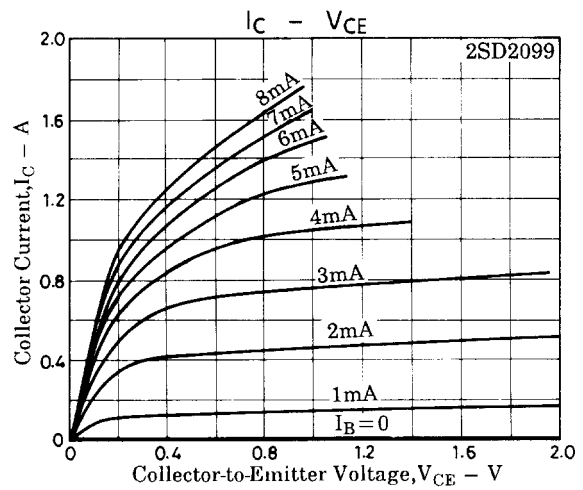
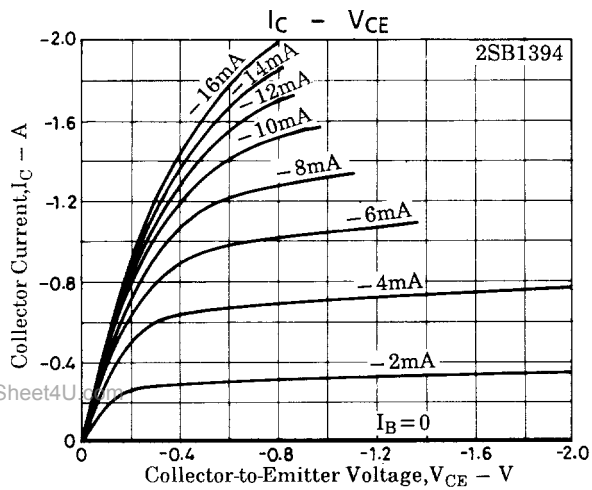
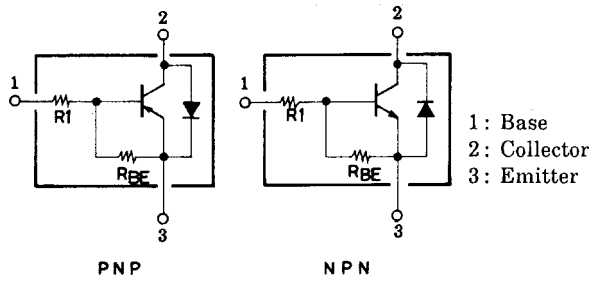
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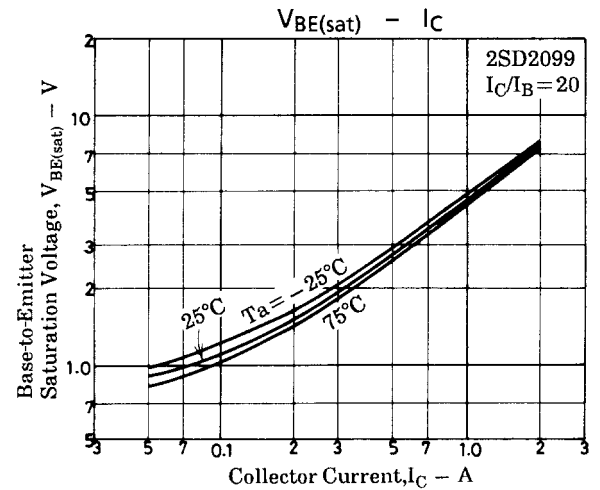
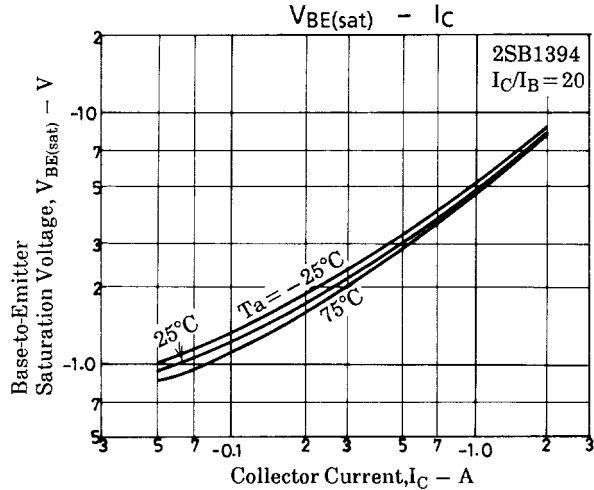
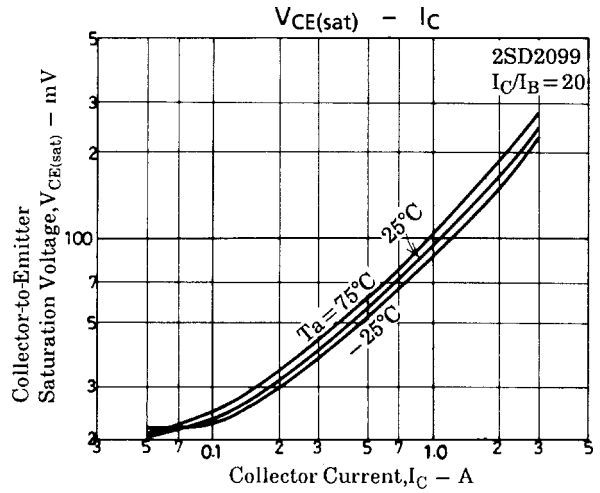
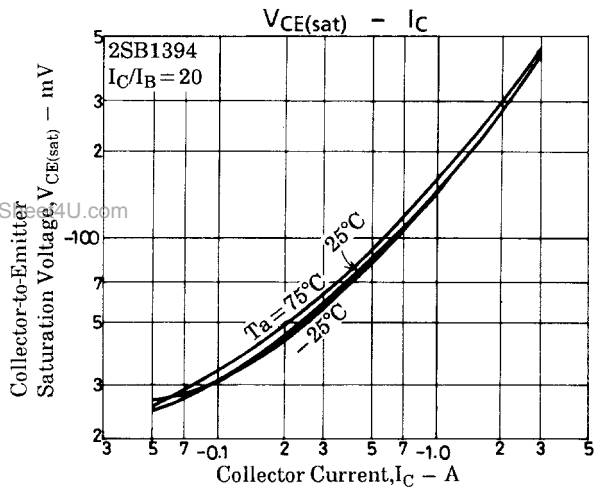
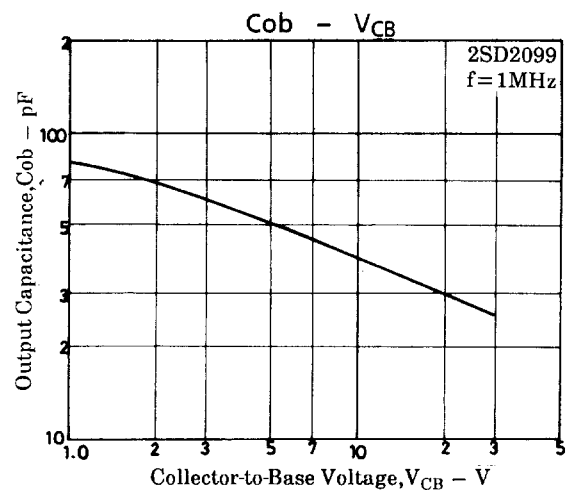
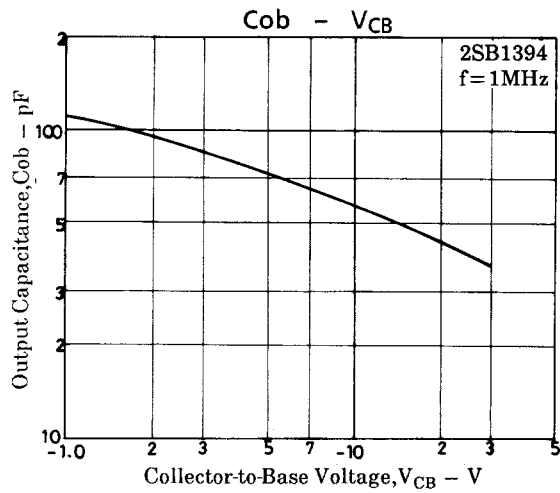
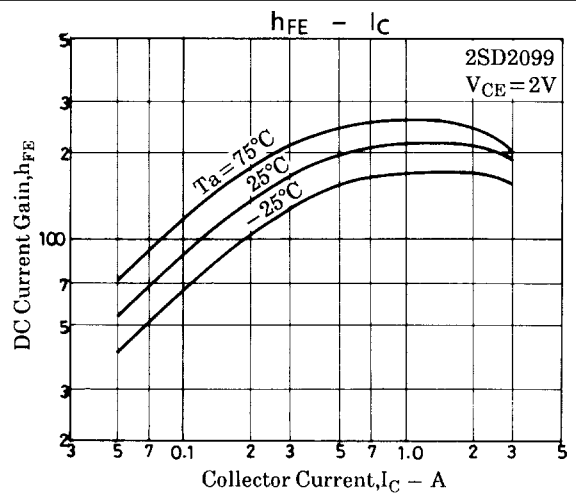
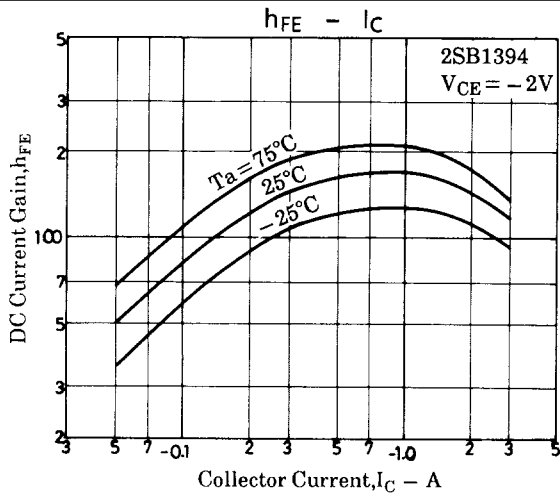
## 2SB1394/2SD2099

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Base-to-Emitter ON State Voltage	$V_{BE(ON)}$	$V_{CE}=(-)2V, I_C=(-)1A$	(-)0.7	(-)1.5	(-)4.0	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-)40			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO1}$	$I_C=(-)10\mu A, R_{BE}=\infty$	(-)40			V
	$V_{(BR)CEO2}$	$I_C=(-)10mA, R_{BE}=\infty$	(-)30			V
Diode Forward Voltage	$V_F$	$I_F=0.5A$			(-)1.5	V
Base-to-Emitter Resistance	$R_{BE}$			0.8		k $\Omega$
Base Resistance	$R_1$		60	90	120	$\Omega$

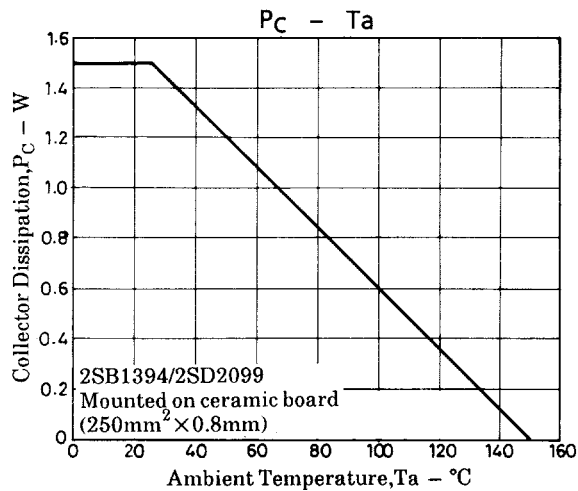
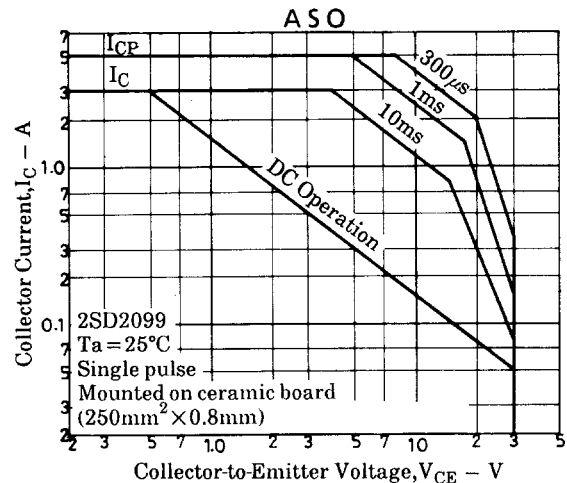
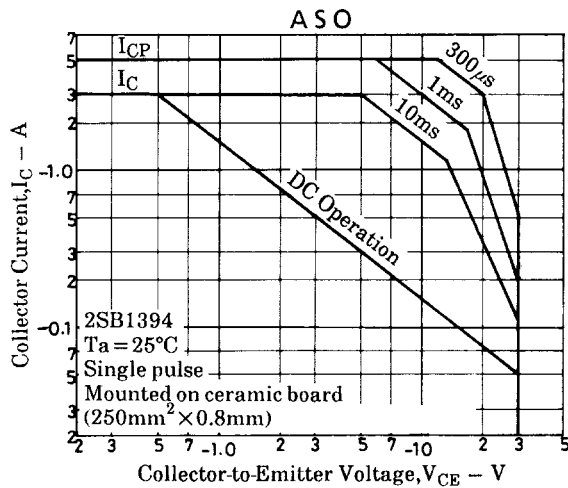
### Electrical Connection



## 2SB1394/2SD2099



## 2SB1394/2SD2099



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