



2SB1394/2SD2099

Compact Motor Driver Applications

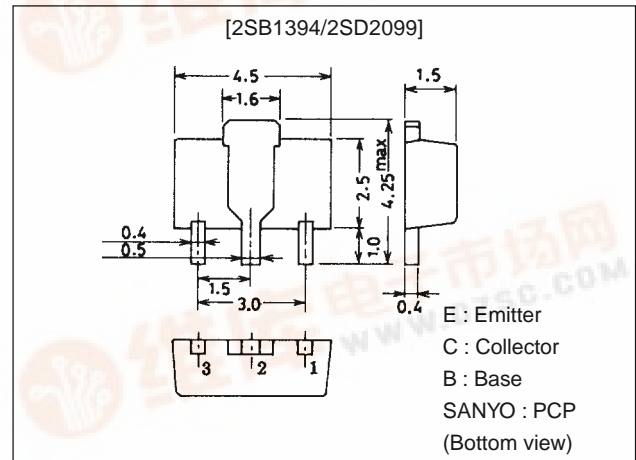
Features

- 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



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Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		(-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 ² ×0.8mm)	1.5	W
Junction Temperature	T_j		150	°C
Storage Temperature	T_{stg}		-55 to +150	°C

Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB} = (-)30V, I_E = 0$			(-1.0)	μA
DC Current Gain	h_{FE1}	$V_{CE} = (-)2V, I_C = (-)0.5A$	(-70)			
	h_{FE2}	$V_{CE} = (-)2V, I_C = (-)2A$	(-50)			
Gain-Bandwidth Product	f_T	$V_{CE} = (-)2V, I_C = (-)0.5A$		100		MHz
Output Capacitance	C_{ob}	$V_{CB} = (-)10V, f = 1\text{MHz}$		(55)40		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)1A, I_B = (-)50\text{mA}$		0.12	0.3	V
				(-0.18)	(-0.4)	V

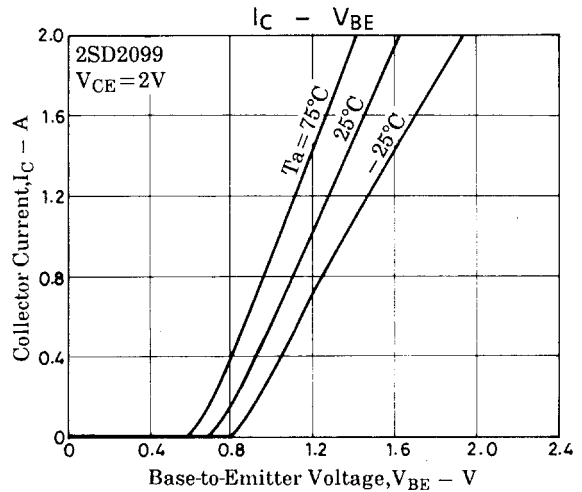
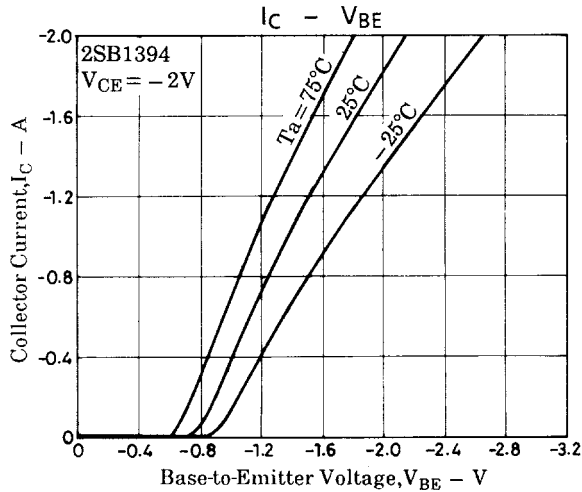
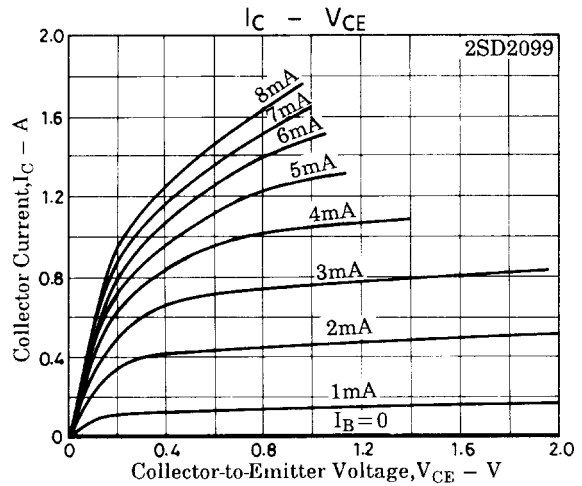
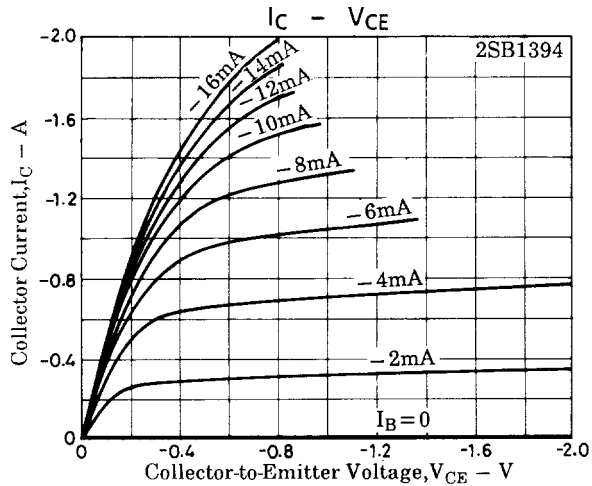
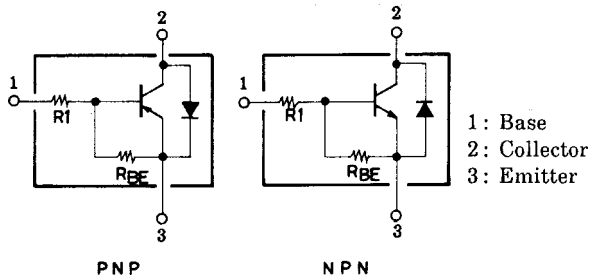
Marking : 2SB1394 : BN
2SD2099 : DL

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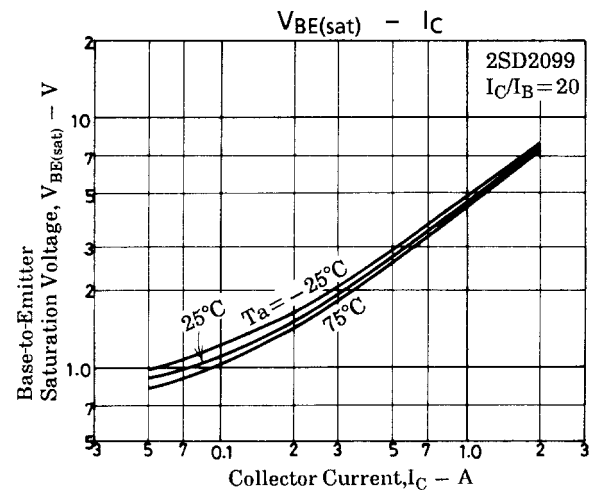
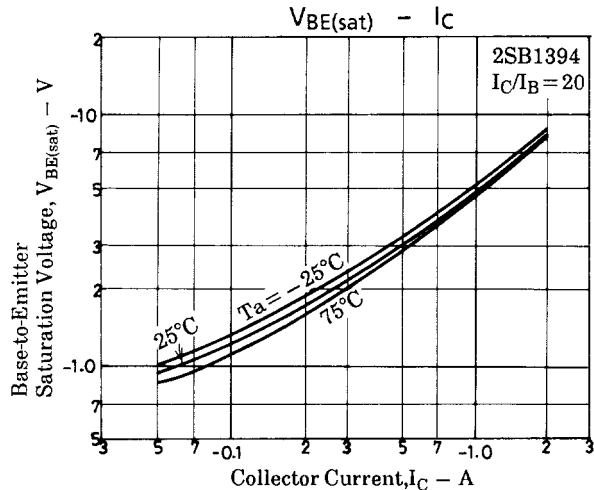
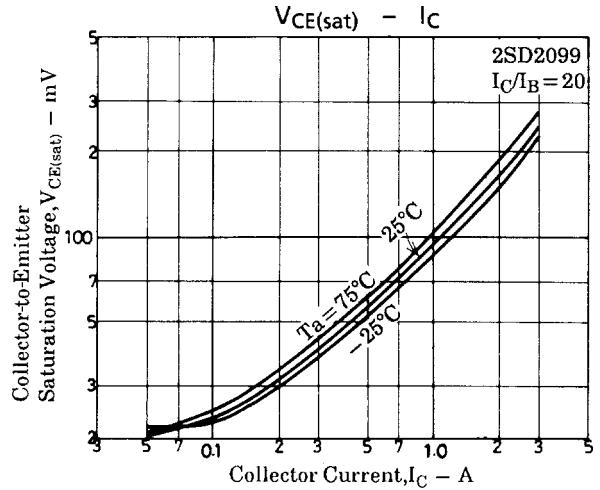
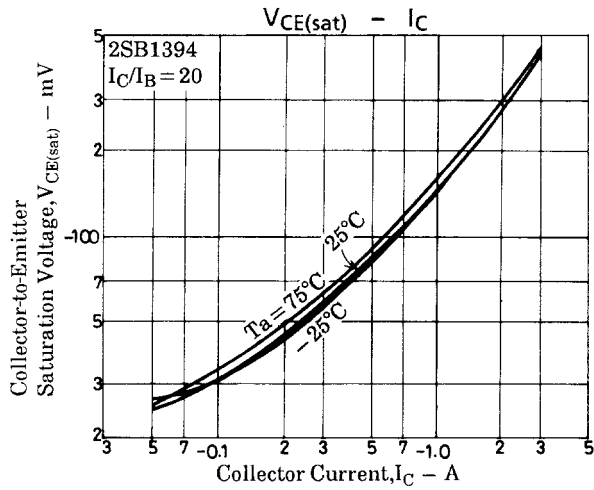
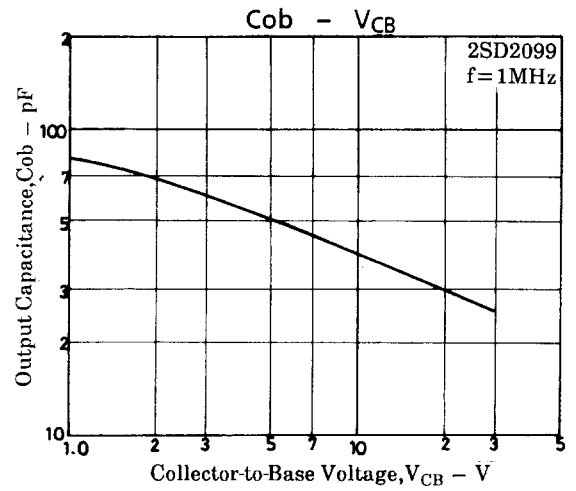
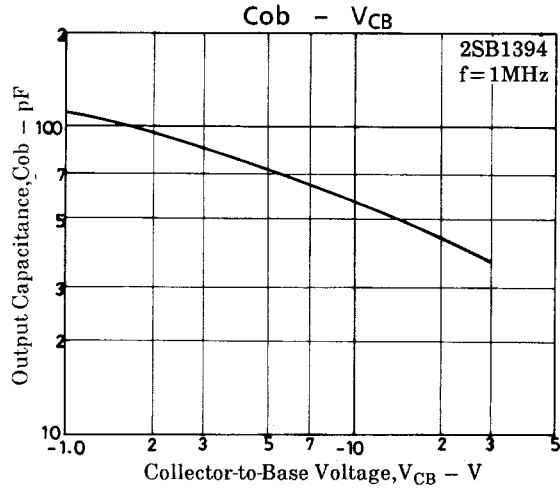
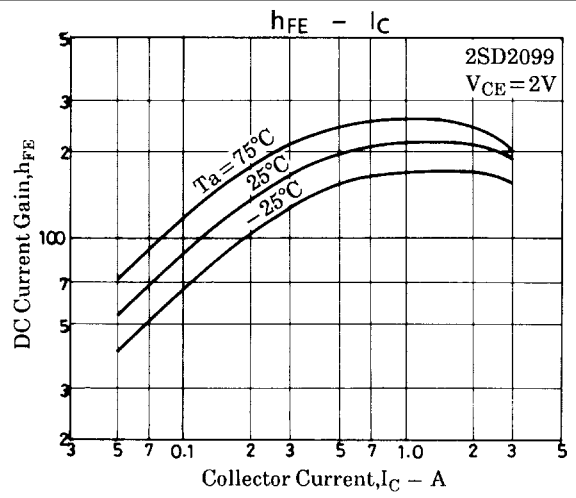
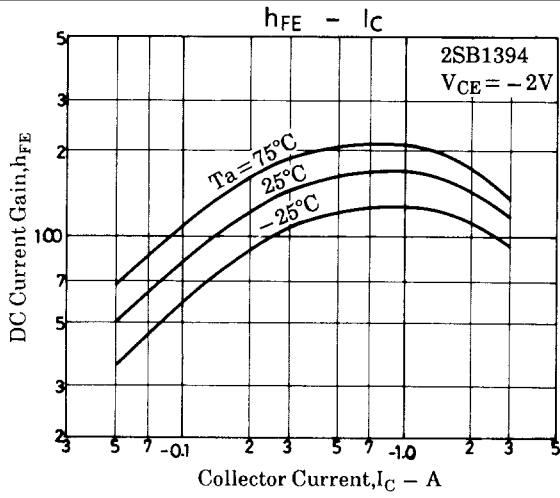
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Base-to-Emitter ON State Voltage	$V_{BE(ON)}$	$V_{CE}=(-)2V, I_C=(-)1A$	(-)0.7	(-)1.5	(-)4.0	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-)40			V
Collector-to-Emitter 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 Ω
Base Resistance	R_1		60	90	120	Ω

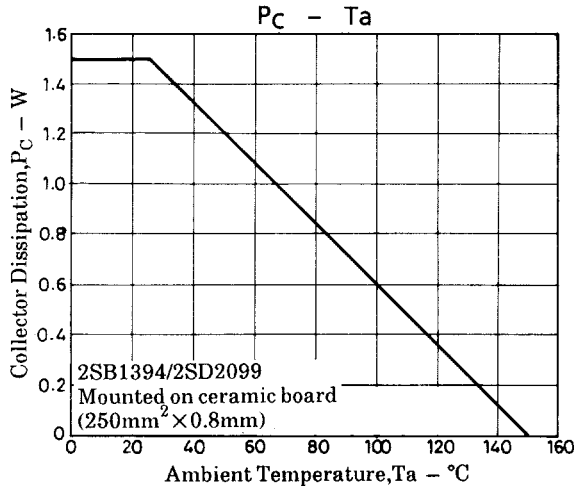
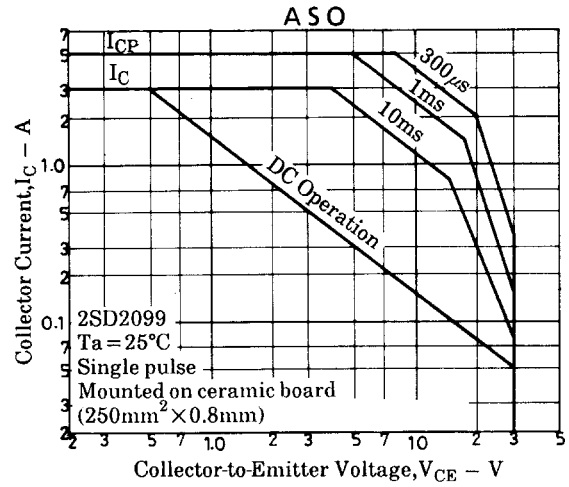
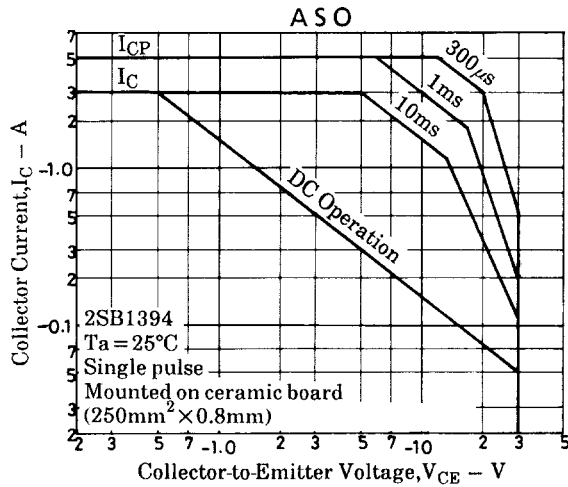
Electrical Connection



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