



2SB1394/2SD2099

Compact Motor Driver Applications

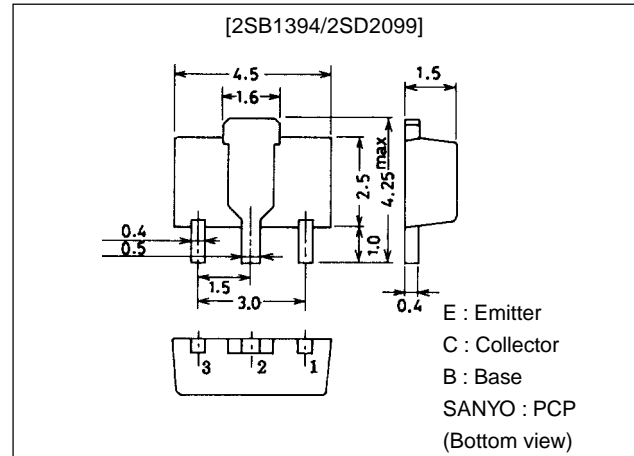
Features

- 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 | μA |
| 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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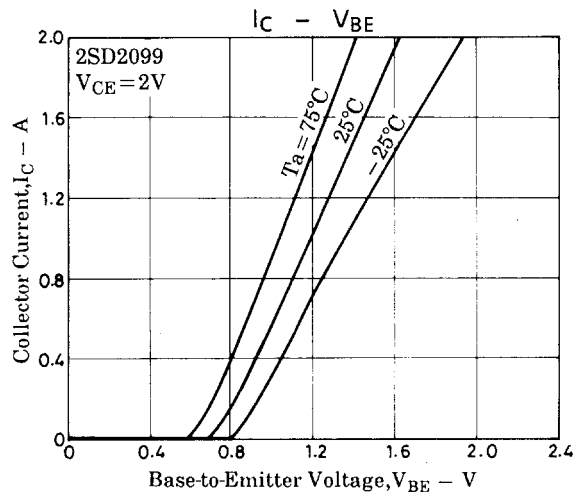
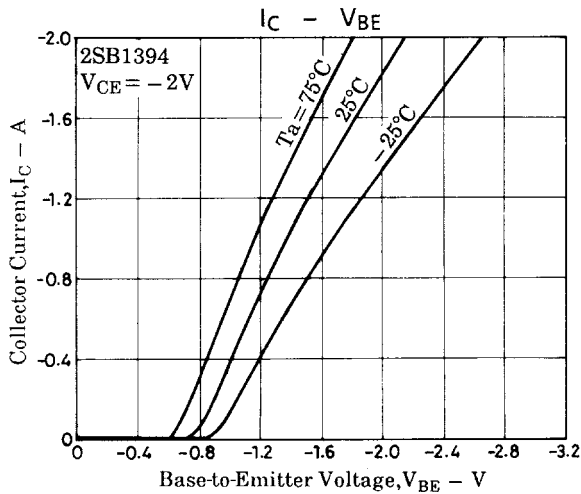
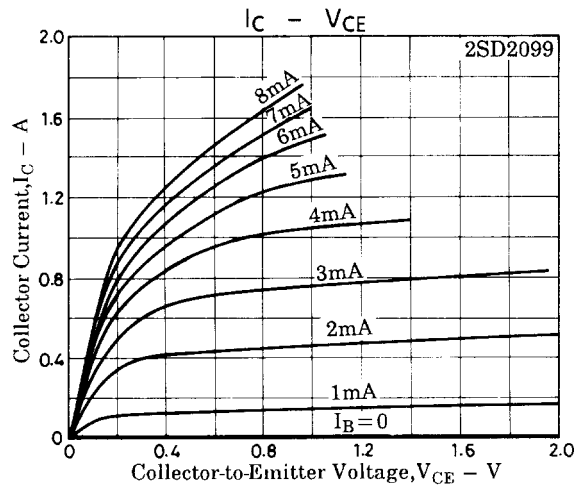
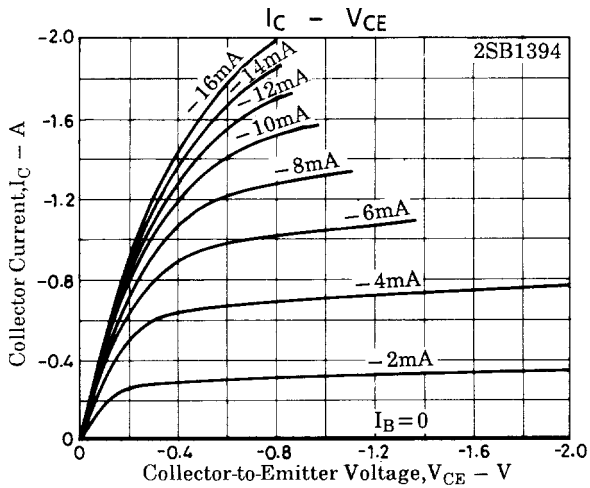
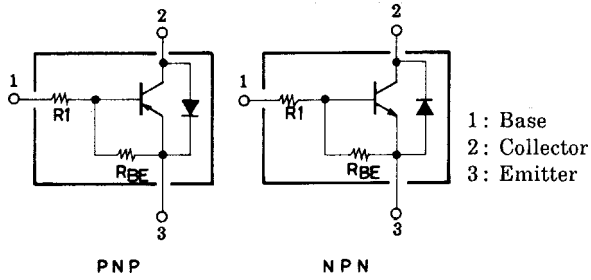
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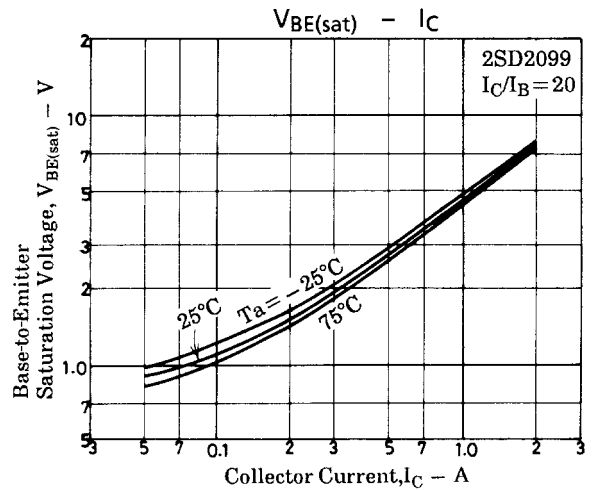
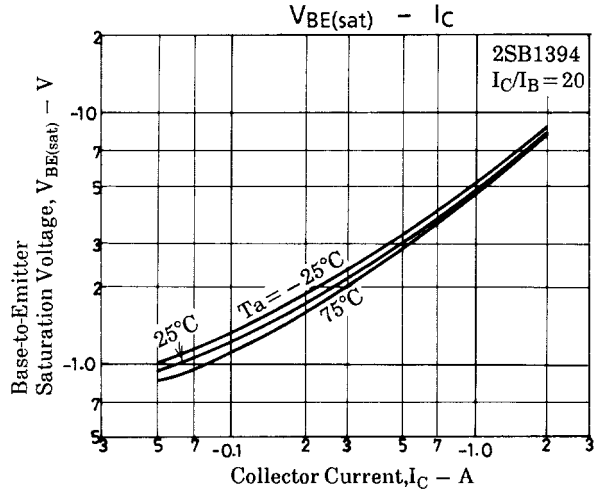
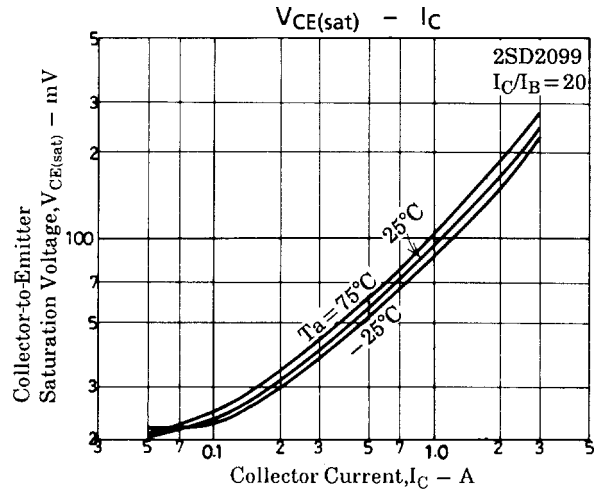
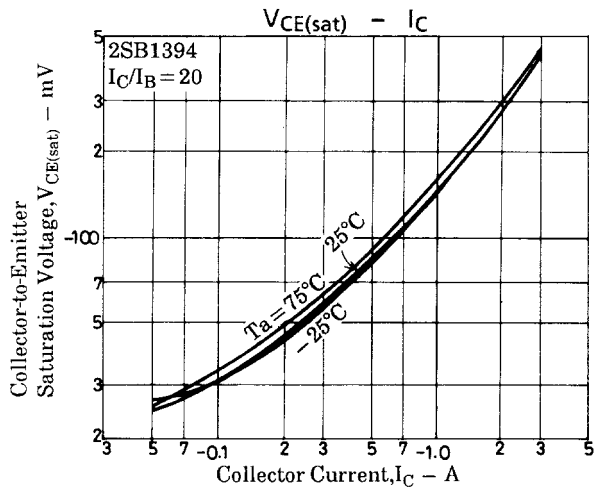
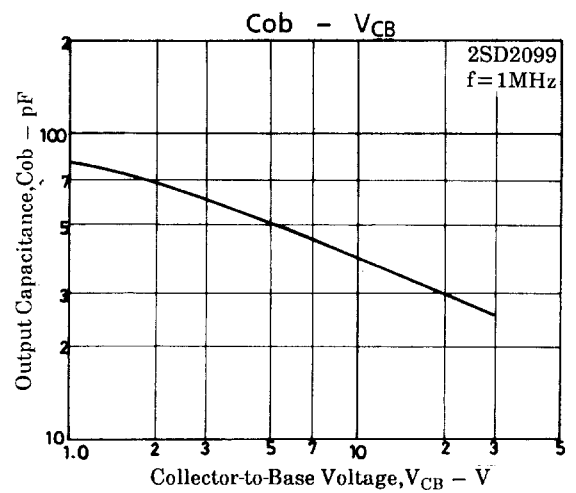
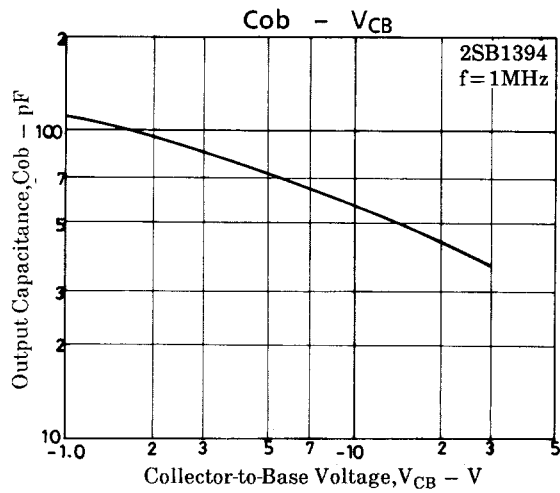
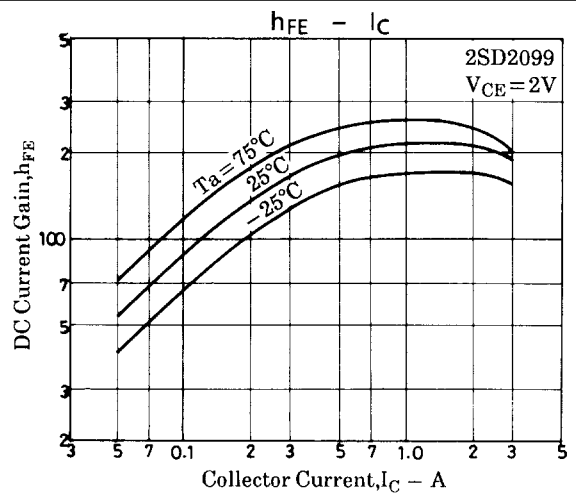
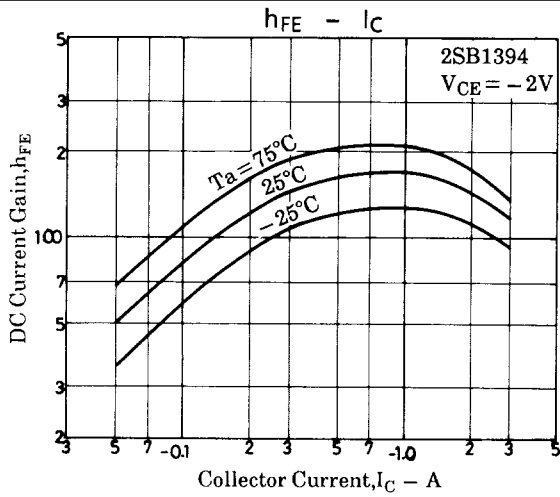
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|----------------------------------------|----------------|---------------------------------|---------|--------|--------|------------|
| | | | min | typ | max | |
| Base-to-Emitter ON State Voltage | $V_{BE(ON)}$ | $V_{CE}=(-)2V, I_C=(-)1A$ | (-)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 |

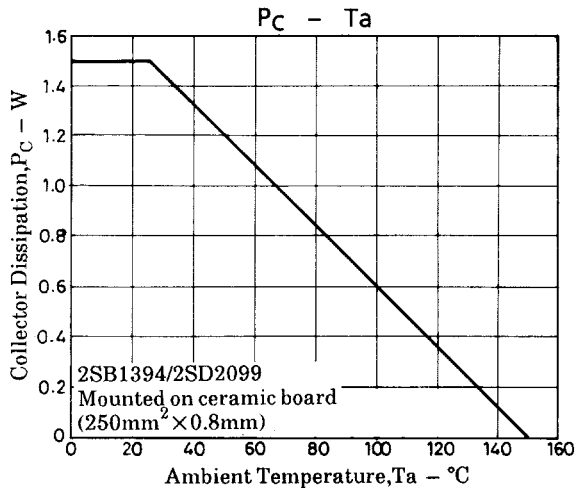
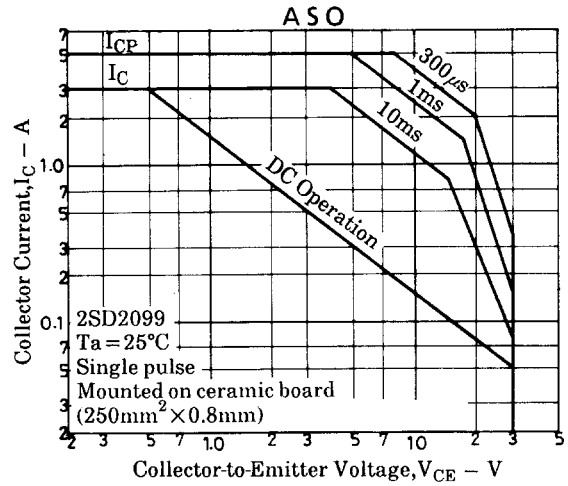
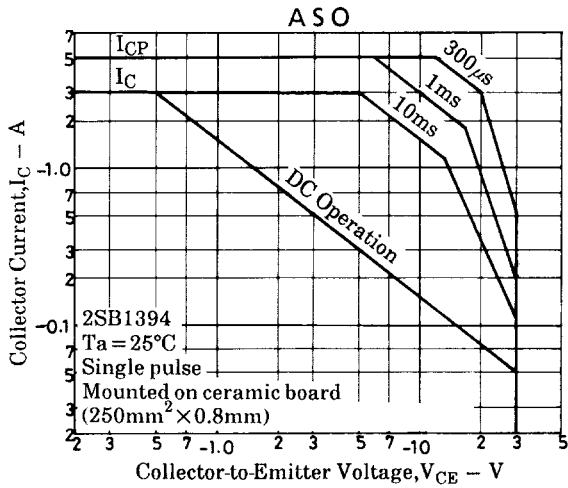
Electrical Connection



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