



## 2SB1471/2SD2223

### Driver Applications

#### Applications

- Motor drivers, printer hammer drivers, relay drivers, voltage regulator control.

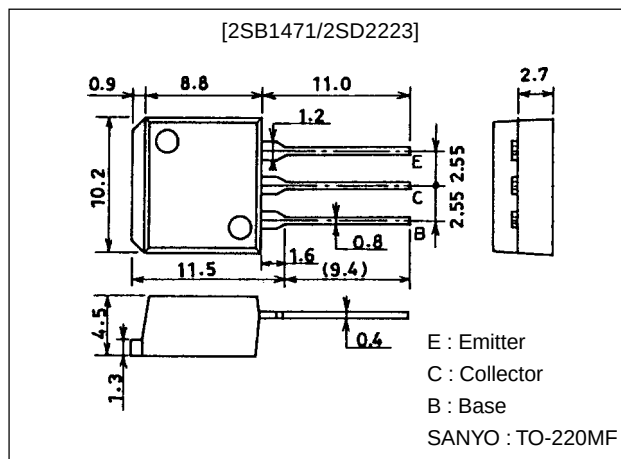
#### Features

- Suitable for sets whose height is restricted.
- High DC current gain.
- Large current capacity and wide ASO.

#### Package Dimensions

unit:mm

2049B



() : 2SB1471

#### Specifications

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

| Parameter                    | Symbol    | Conditions             | Ratings     | Unit |
|------------------------------|-----------|------------------------|-------------|------|
| Collector-to-Base Voltage    | $V_{CBO}$ |                        | (-)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        | $P_C$     |                        | 1.65        | W    |
|                              |           | $T_c=25^\circ\text{C}$ | 30          | 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                | $I_{CBO}$     | $V_{CB}=(-)40\text{V}, I_E=0$           |         |        | (-)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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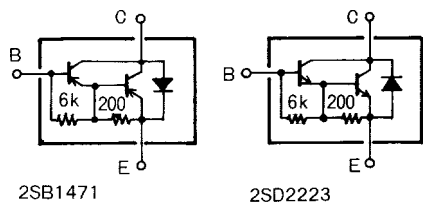
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

O2098HA (KT)/N120MH, JK (KOTO) No.3365-1/4

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| 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.  |         | (0.5) |     | $\mu s$ |
| Storage Time                           | $t_{stg}$     | See specified test circuit.  |         | 0.6   |     | $\mu s$ |
|                                        |               |                              |         | (1.4) |     | $\mu s$ |
| Fall Time                              | $t_f$         | See specified test circuit.  |         | 2.7   |     | $\mu s$ |
|                                        |               |                              |         | (1.2) |     | $\mu s$ |
|                                        |               |                              |         | 1.6   |     | $\mu s$ |

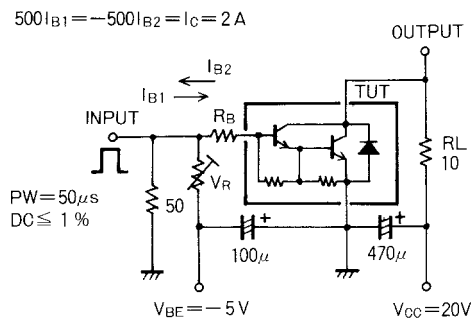
Electrical Connection



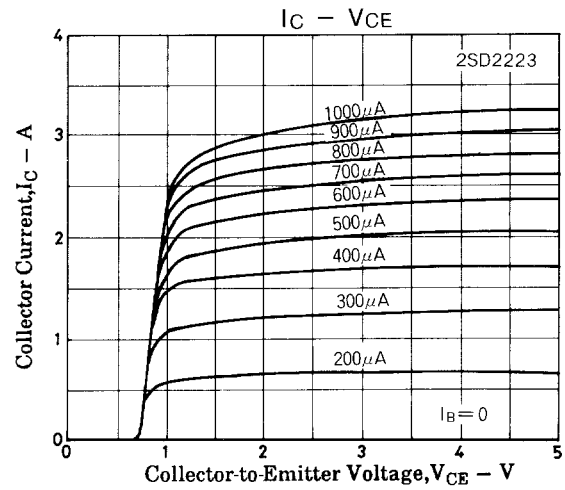
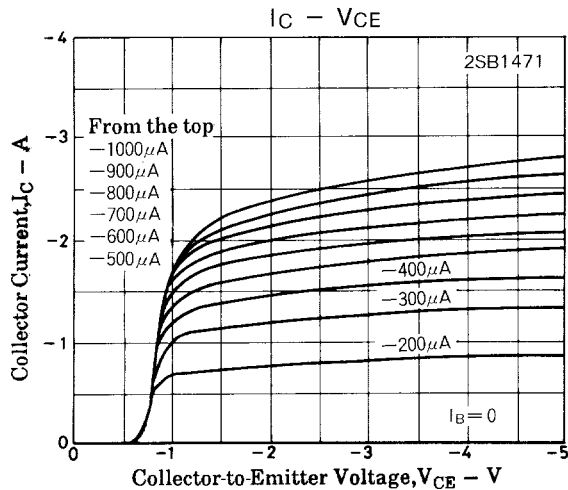
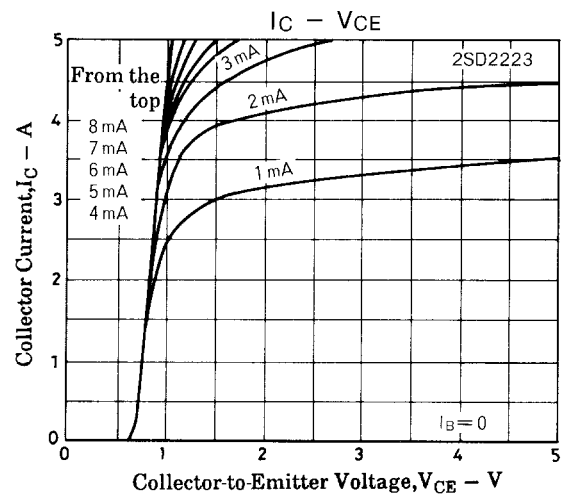
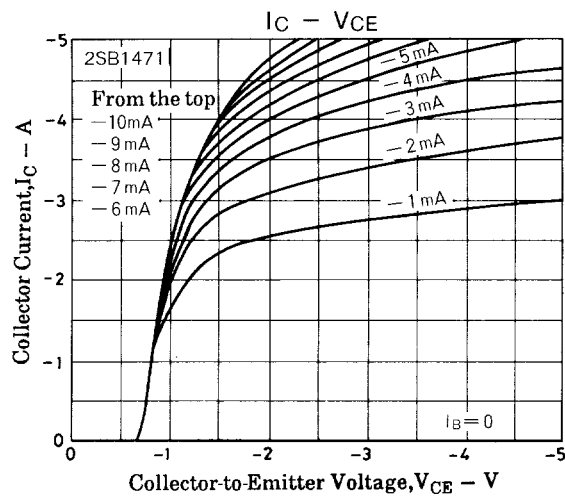
Unit (resistance:  $\Omega$ )

Switching Time Test Circuit

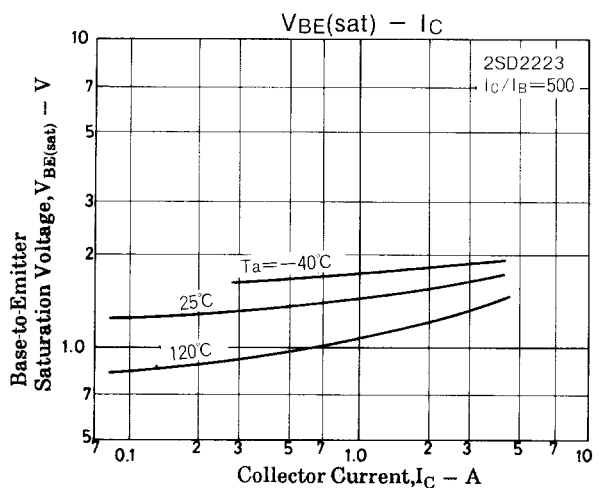
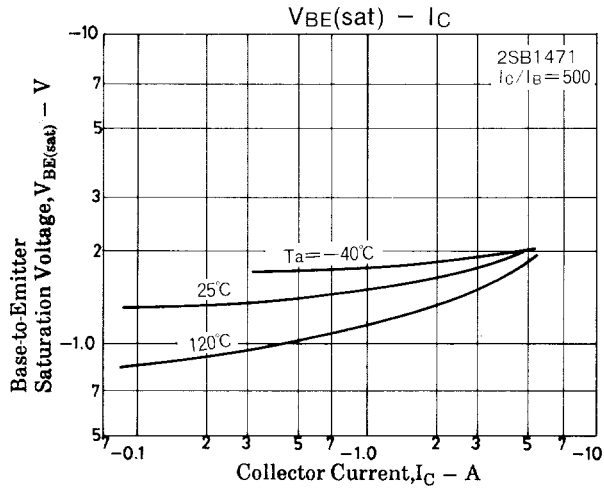
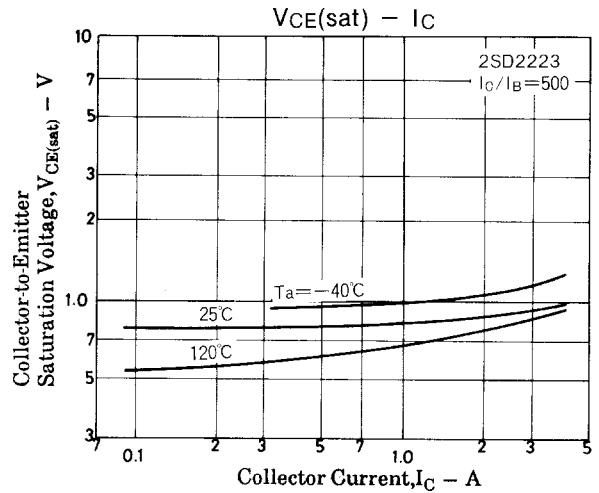
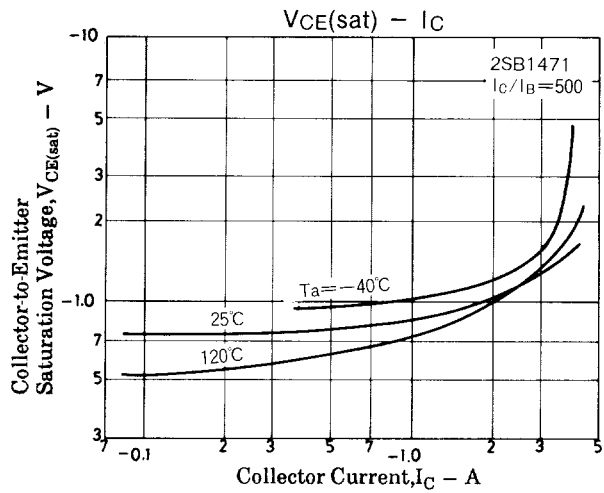
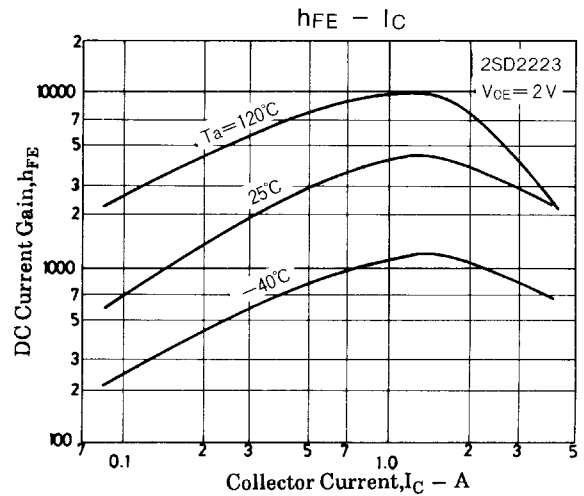
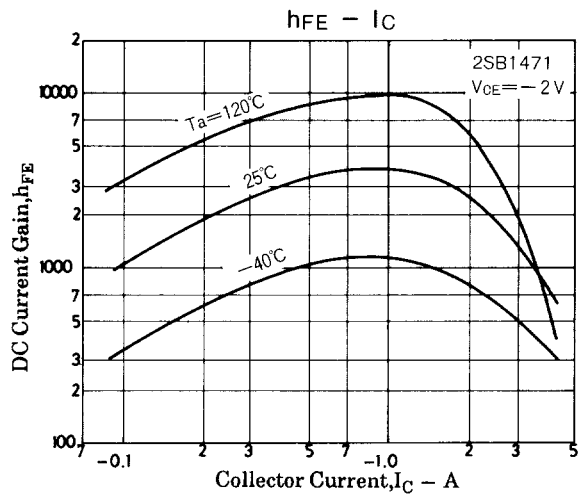
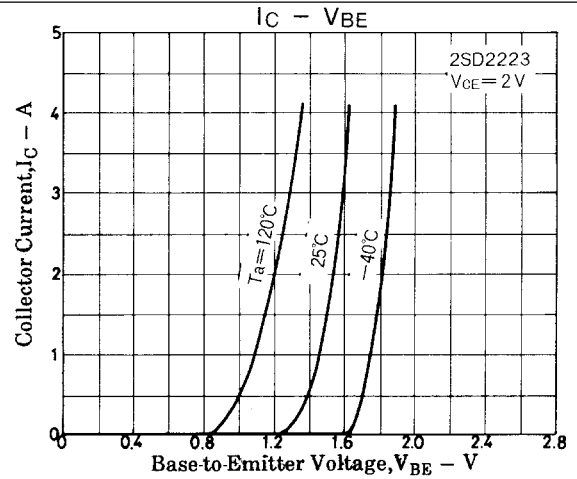
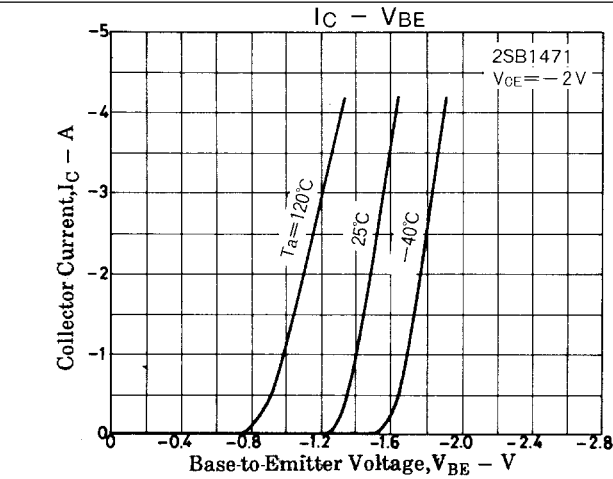
(For PNP, the polarity is reversed.)

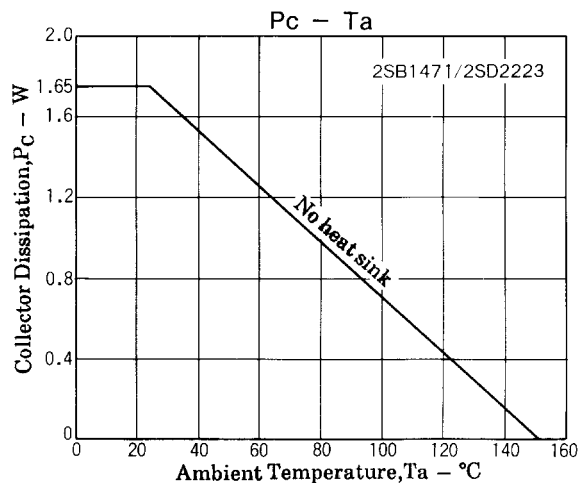
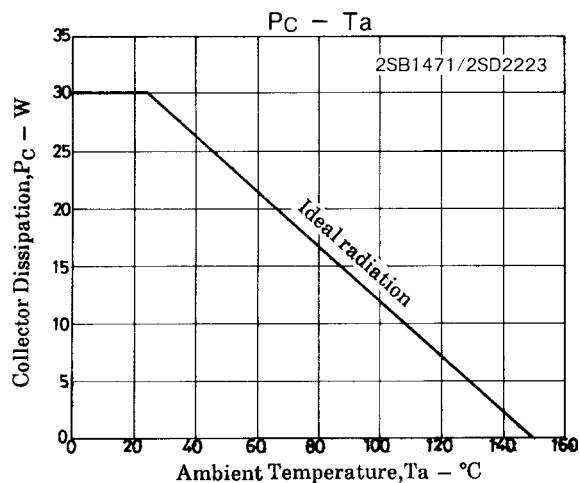
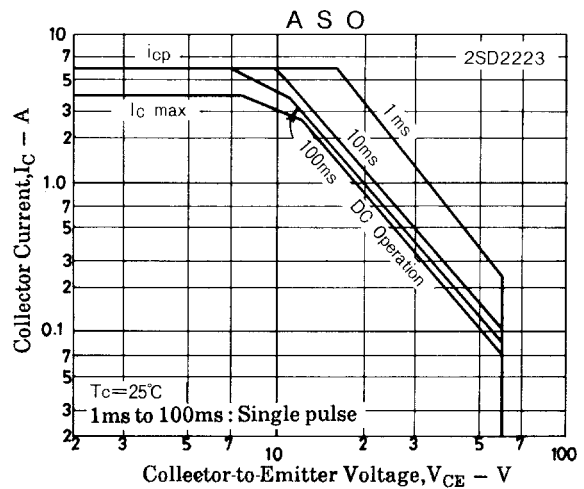
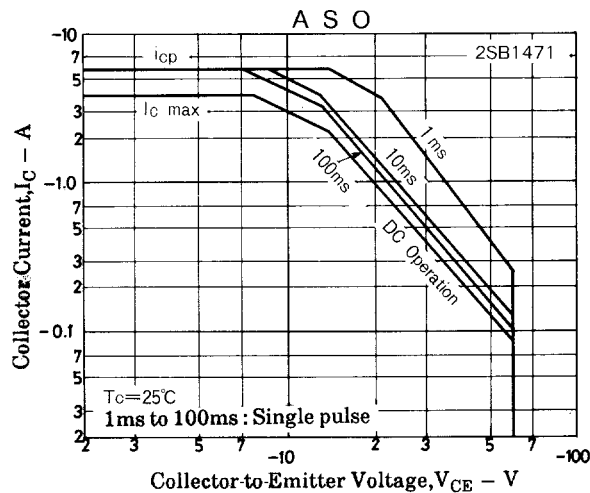


Unit (resistance:  $\Omega$ , capacitance: F)



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