

**2SB1454/2SD2202**

## High-Current Switching Applications

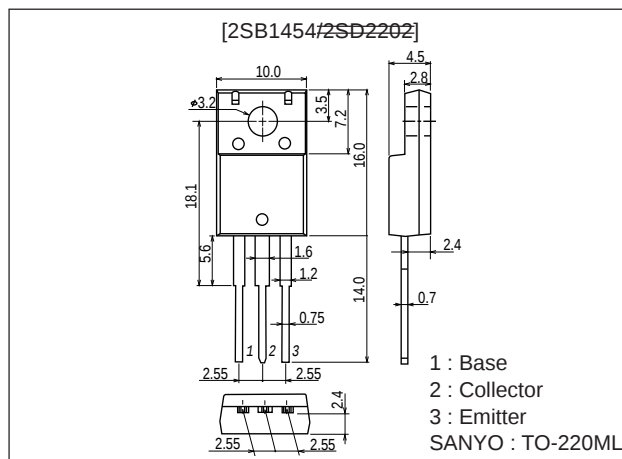
### Features

- Low collector-to-emitter saturation voltage.
- Large current capacity.
- Micaless package facilitating easy mounting.

### Package Dimensions

unit:mm

2041A



() : 2SB1454

### Specifications

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

| Parameter                    | Symbol    | Conditions             | Ratings     | Unit             |
|------------------------------|-----------|------------------------|-------------|------------------|
| Collector-to-Base Voltage    | $V_{CBO}$ |                        | (-)90       | V                |
| Collector-to-Emitter Voltage | $V_{CEO}$ |                        | (-)80       | V                |
| Emitter-to-Base Voltage      | $V_{EBO}$ |                        | (-)6        | V                |
| Collector Current            | $I_C$     |                        | (-)5        | A                |
| Collector Current (Pulse)    | $I_{CP}$  |                        | (-)9        | A                |
| Collector Dissipation        | $P_C$     |                        | 2.0         | W                |
|                              |           | $T_c=25^\circ\text{C}$ | 25          | 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 | $I_{CBO}$ | $V_{CB}=(-)80\text{V}, I_E=0$           |         |     | (-)0.1 | mA   |
| Emitter Cutoff Current   | $I_{EBO}$ | $V_{EB}=(-)4\text{V}, I_C=0$            |         |     | (-)0.1 | mA   |
| DC Current Gain          | $h_{FE1}$ | $V_{CE}=(-)2\text{V}, I_C=(-)1\text{A}$ | 70*     |     | 280*   |      |
|                          | $h_{FE2}$ | $V_{CE}=(-)2\text{V}, I_C=(-)3\text{A}$ | 30      |     |        |      |
| Gain-Bandwidth Product   | $f_T$     | $V_{CE}=(-)5\text{V}, I_C=(-)1\text{A}$ |         | 20  |        | MHz  |

\* : The 2SB1454/2SD2202 are classified by  $1\text{A } h_{FE}$  as follows :

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| Rank     | Q         | R          | S          |
|----------|-----------|------------|------------|
| $h_{FE}$ | 70 to 140 | 100 to 200 | 140 to 280 |

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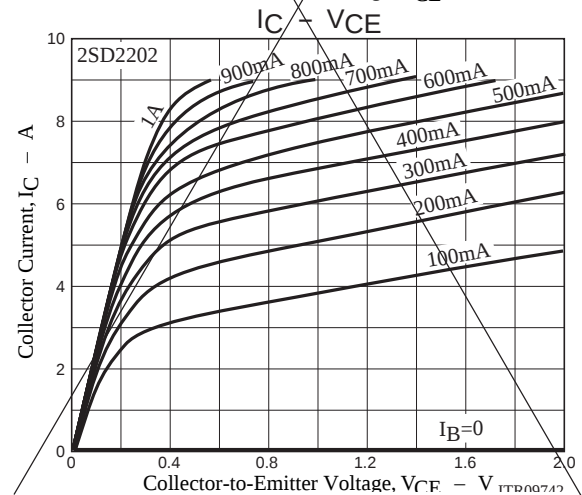
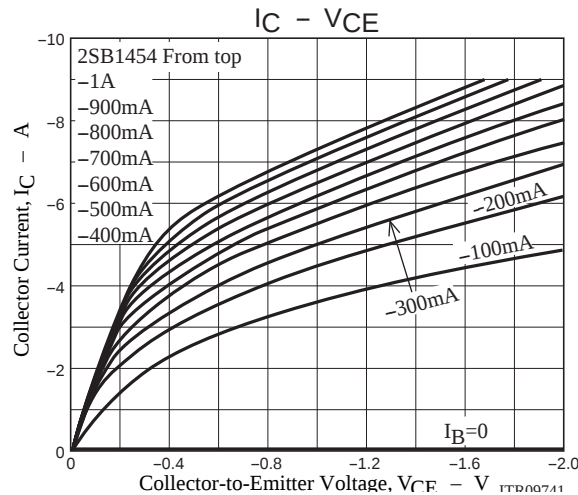
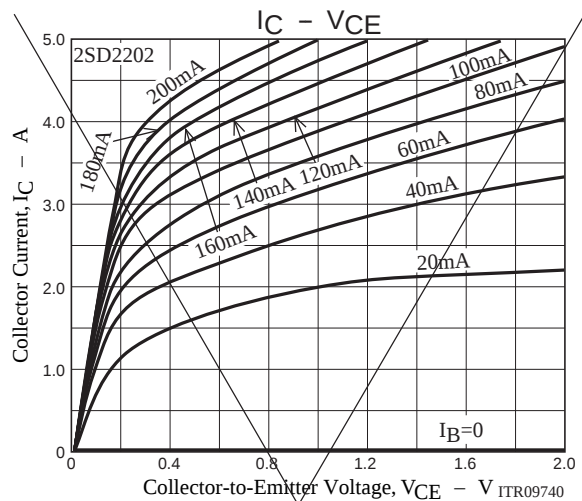
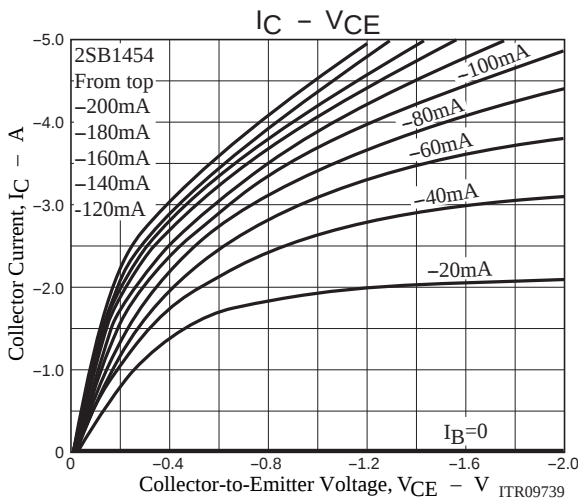
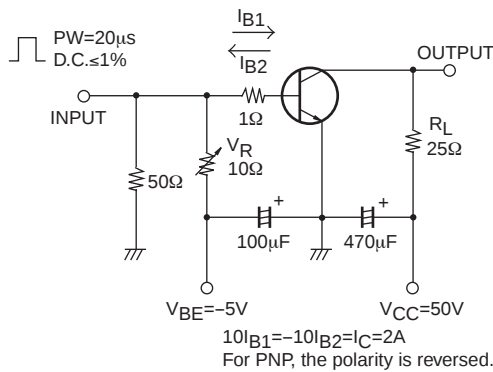
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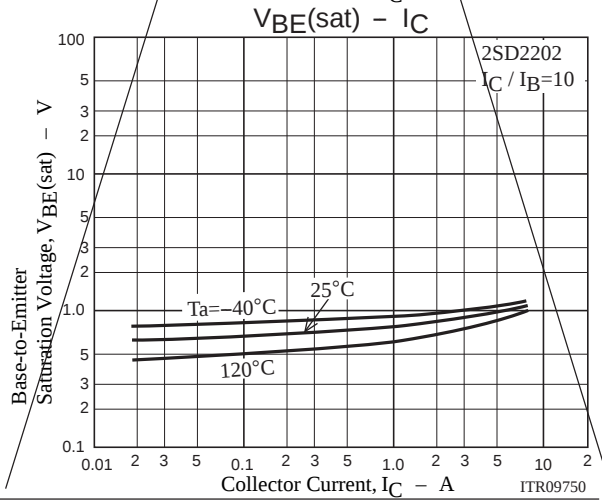
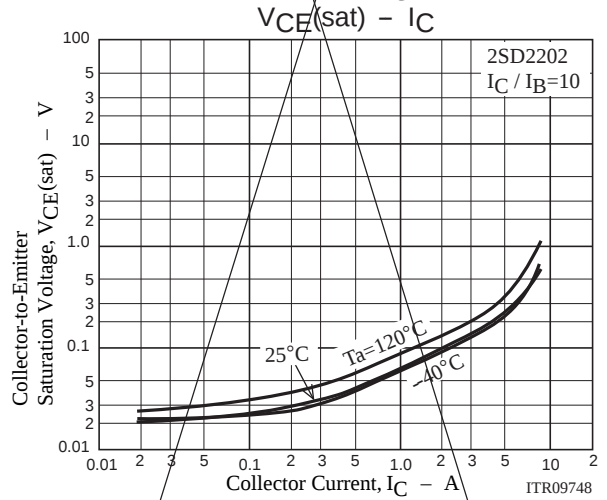
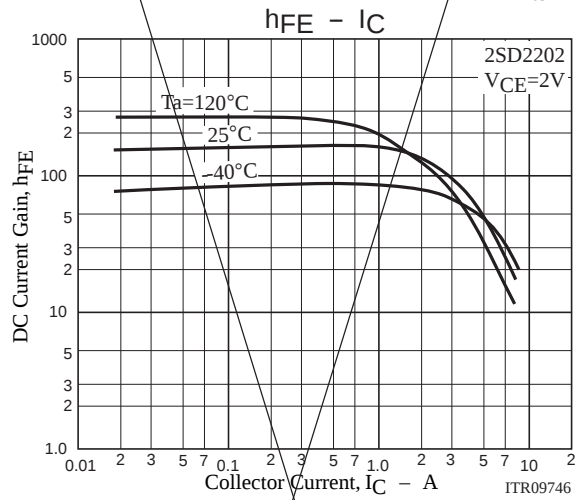
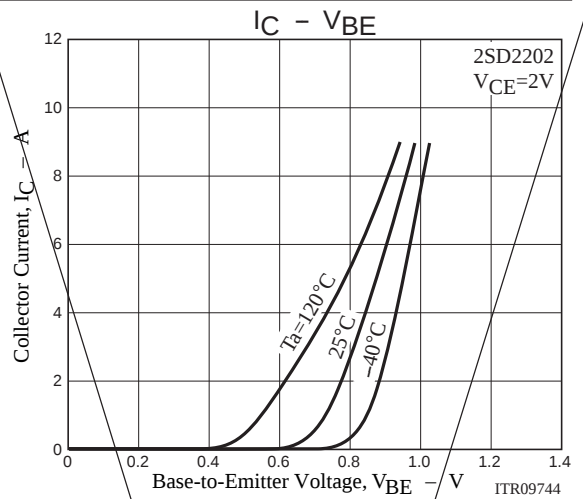
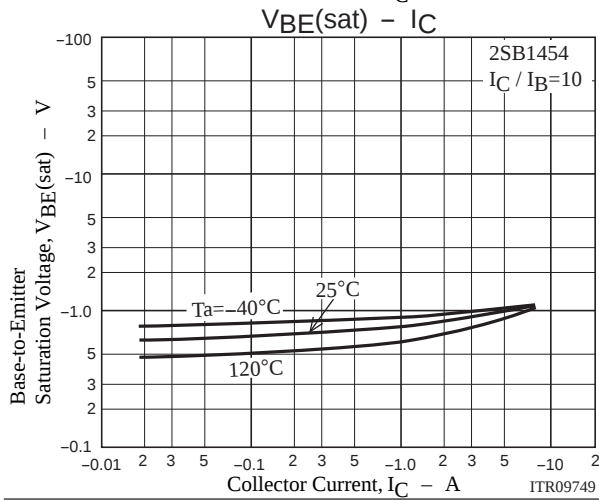
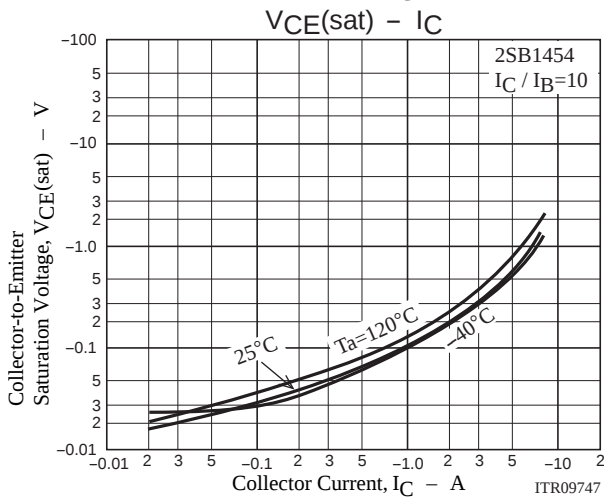
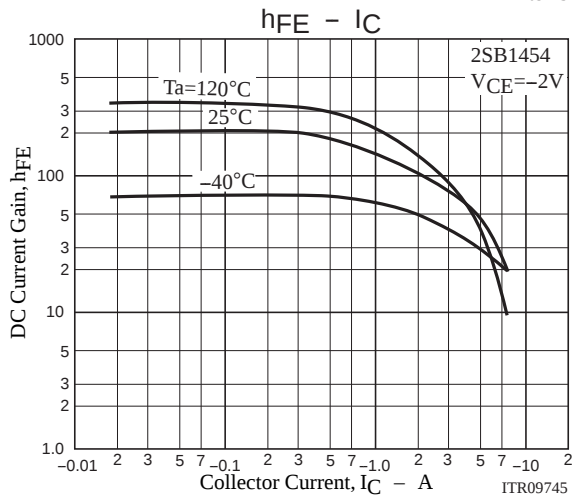
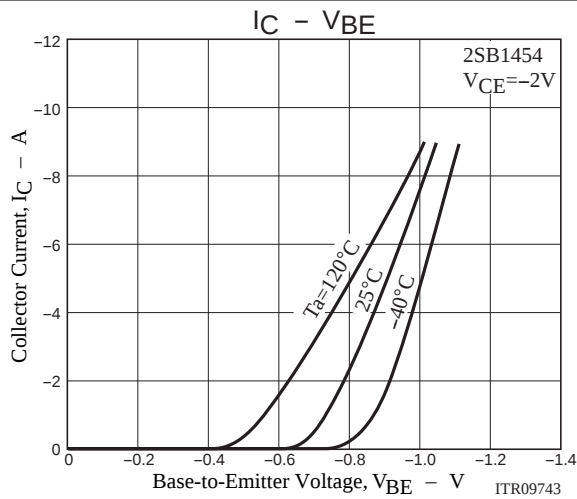
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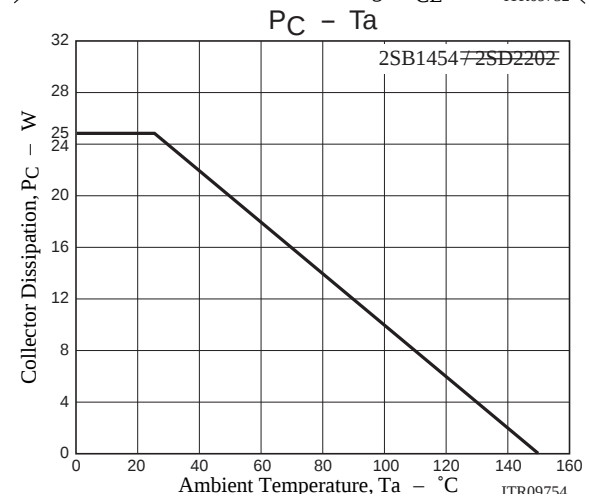
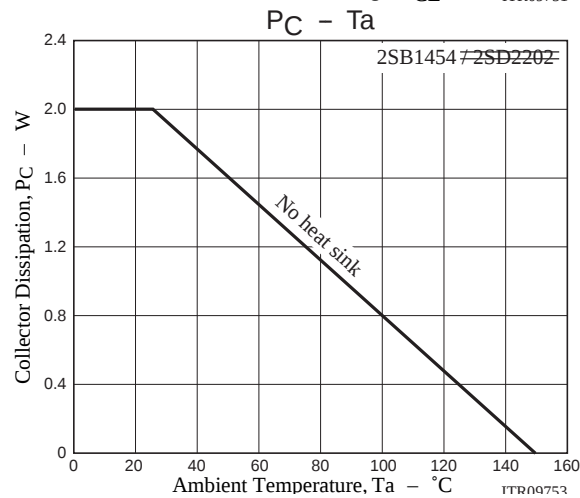
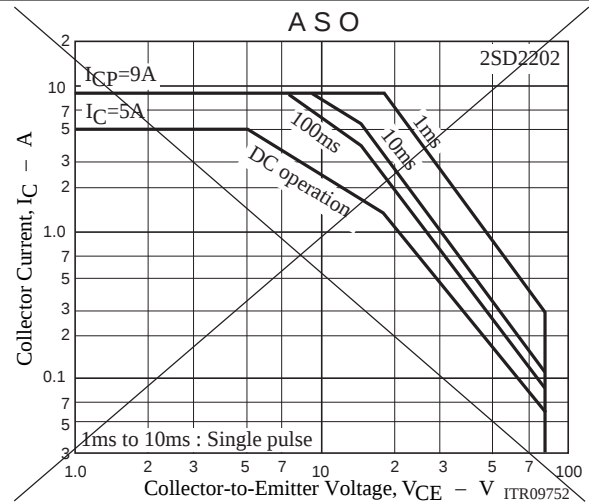
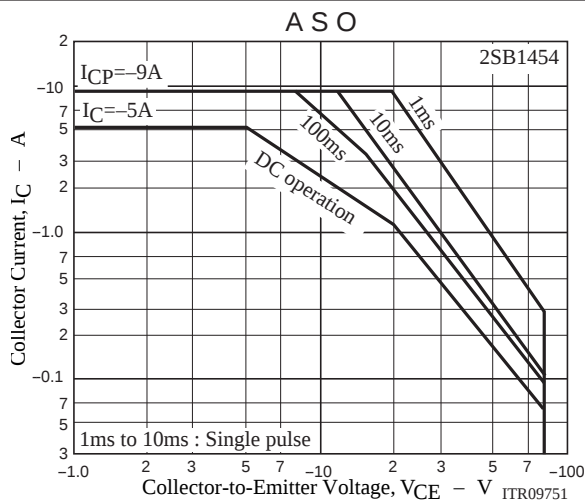
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| Parameter                               | Symbol        | Conditions                  | Ratings |                |                          | Unit    |
|-----------------------------------------|---------------|-----------------------------|---------|----------------|--------------------------|---------|
|                                         |               |                             | min     | typ            | max                      |         |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=(-)3A, I_B=(-)0.3A$    |         |                | <del>0.4</del><br>(-0.5) | V       |
| Collector-to-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C=(-)1mA, I_E=0$         | (-)90   |                |                          | V       |
| Collector-to-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C=(-)1mA, R_{BE}=\infty$ | (-)80   |                |                          | V       |
| Emitter-to-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E=(-)1mA, I_C=0$         | (-)6    |                |                          | V       |
| Turn-ON Time                            | $t_{on}$      | See specified test circuit. |         | (0.2)          |                          | $\mu s$ |
|                                         |               |                             |         | <del>0.1</del> |                          | $\mu s$ |
| Storage Time                            | $t_{stg}$     | See specified test circuit. |         | (0.7)          |                          | $\mu s$ |
|                                         |               |                             |         | <del>1.2</del> |                          | $\mu s$ |
| Fall Time                               | $t_f$         | See specified test circuit. |         | (0.2)          |                          | $\mu s$ |
|                                         |               |                             |         | <del>0.4</del> |                          | $\mu s$ |

Switching Time Test Circuit







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