



## 2SB829/2SD1065

### 50V/15A Switching Applications

#### Applications

- Relay drivers, high-speed inverters, converters, and other general high-current switching applications.

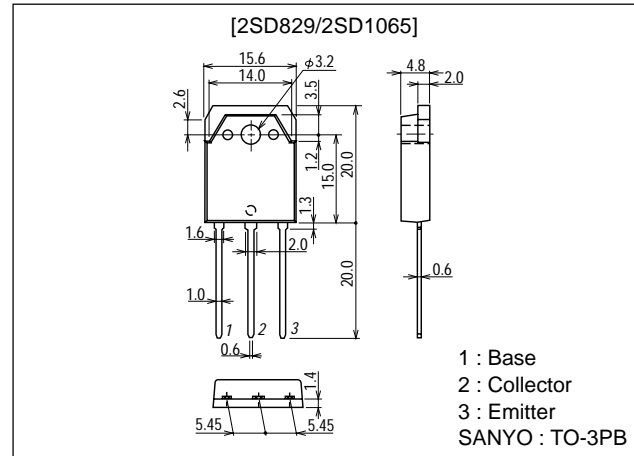
#### Features

- Low-saturation collector-to-emitter voltage :  $V_{CE(sat)} = -0.5V$  max.
- Wide ASO leading to high resistance to breakdown.

#### Package Dimensions

unit:mm

2022A



() : 2SB829

#### Specifications

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

| Parameter                    | Symbol    | Conditions         | Ratings     | Unit       |
|------------------------------|-----------|--------------------|-------------|------------|
| Collector-to-Base Voltage    | $V_{CB0}$ |                    | (-60)       | V          |
| Collector-to-Emitter Voltage | $V_{CEO}$ |                    | (-50)       | V          |
| Emitter-to-Base Voltage      | $V_{EBO}$ |                    | (-6)        | V          |
| Collector Current            | $I_C$     |                    | (-15)       | A          |
| Collector Current (Pulse)    | $I_{CP}$  |                    | (-20)       | A          |
| Collector Dissipation        | $P_C$     | $T_c = 25^\circ C$ | 90          | W          |
| Junction Temperature         | $T_j$     |                    | 150         | $^\circ C$ |
| Storage Temperature          | $T_{stg}$ |                    | -55 to +150 | $^\circ C$ |

Electrical Characteristics at  $T_a = 25^\circ C$ 

| Parameter                               | Symbol        | Conditions                    | Ratings |         |        | Unit |
|---|---------------|-------------------------------|---------|---------|--------|------|
|   |               |                               | min     | typ     | max    |      |
| Collector Cutoff Current                | $I_{CBO}$     | $V_{CB} = (-)40V, I_E = 0$    |         |         | (-0.1) | mA   |
| Emitter Cutoff Current                  | $I_{EBO}$     | $V_{EB} = (-)4V, I_C = 0$     |         |         | (-0.1) | mA   |
| DC Current Gain                         | $h_{FE1}$     | $V_{CE} = (-)2V, I_C = (-)1A$ | 70*     |         | 280*   |      |
|   | $h_{FE2}$     | $V_{CE} = (-)2V, I_C = (-)8A$ | 30      |         |        |      |
| Gain-Bandwidth Product                  | $f_T$         | $V_{CE} = (-)5V, I_C = (-)1A$ |         | 20      |        | MHz  |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = (-)8A, I_B = (-)0.4A$  |         | (-0.26) | (-0.5) | V    |
|   |               |                               |         | 0.18    | 0.4    | V    |

\* : The 2SB829/2SD1065 are classified by  $1A h_{FE}$  as follows :

Continued on next page.

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

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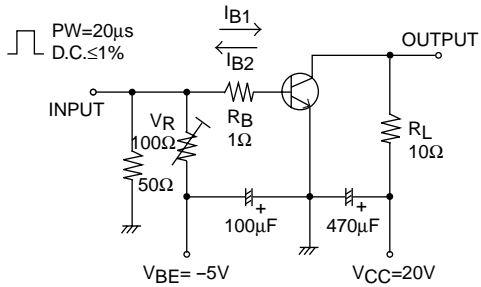
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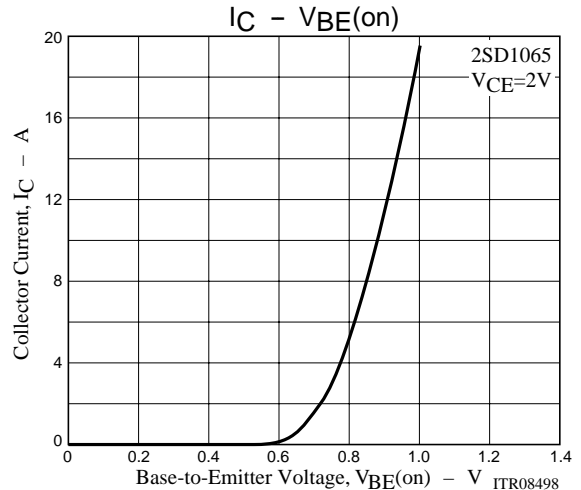
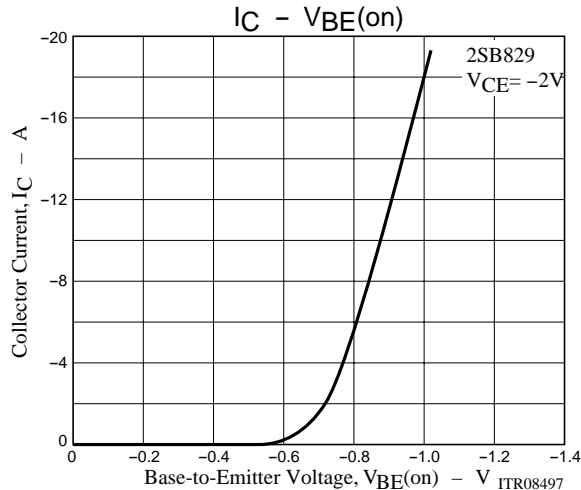
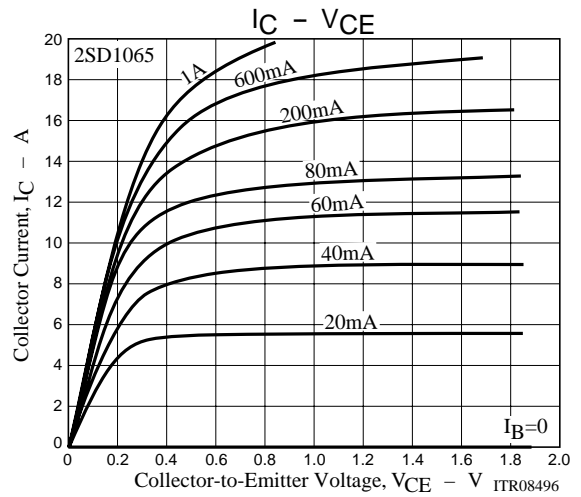
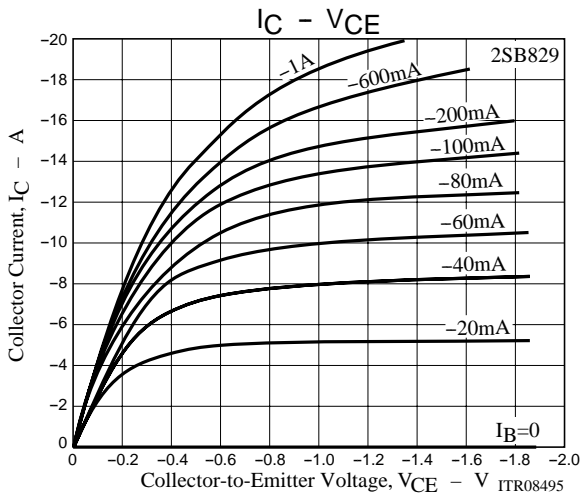
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| Parameter                              | Symbol        | Conditions                  | Ratings |       |     | Unit    |
|--|---------------|-----------------------------|---------|-------|-----|---------|
|  |               |                             | min     | typ   | max |         |
| Collector-to-Base Breakdown Voltage    | $V_{(BR)CBO}$ | $I_C=(-)1mA, I_E=0$         | (-)60   |       |     | V       |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=(-)1mA, R_{BE}=\infty$ | (-)50   |       |     | 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   |     | $\mu s$ |
| Fall Time                              | $t_f$         | See specified Test Circuit  |         | (0.5) |     | $\mu s$ |
|  |               |                             |         | 1.0   |     | $\mu s$ |
| Storage Time                           | $t_{stg}$     | See specified Test Circuit  |         | 0.1   |     | $\mu s$ |

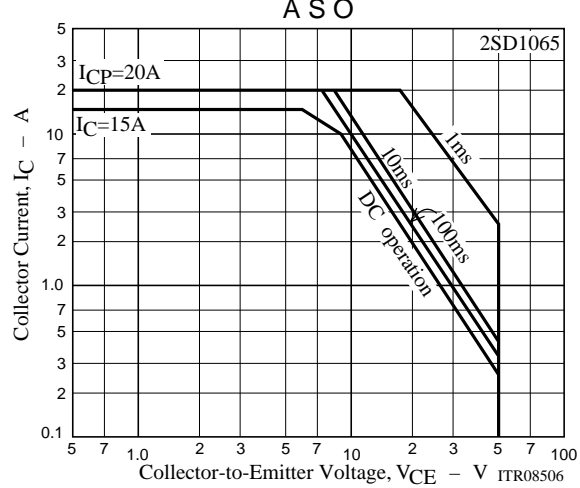
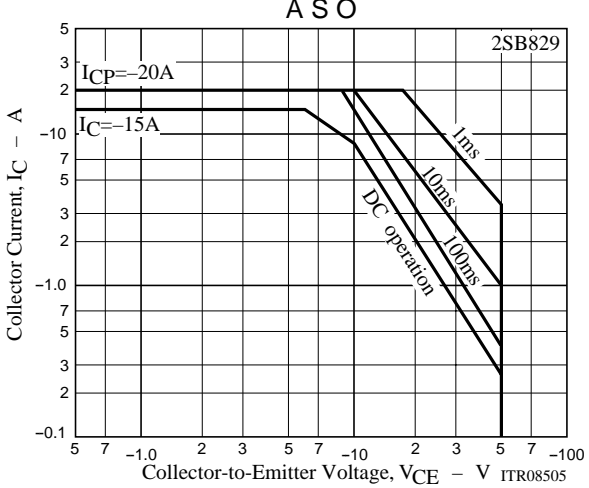
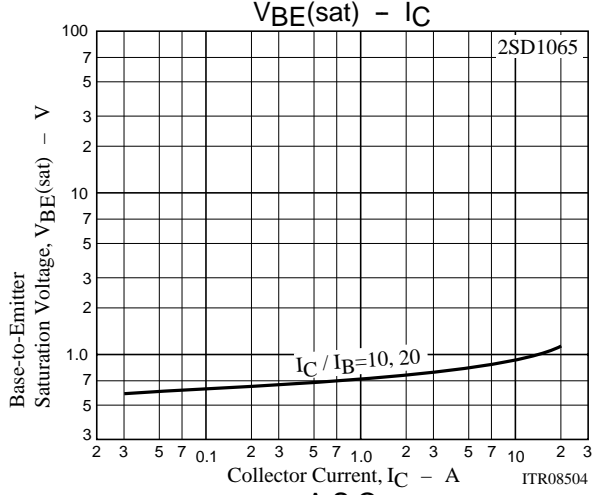
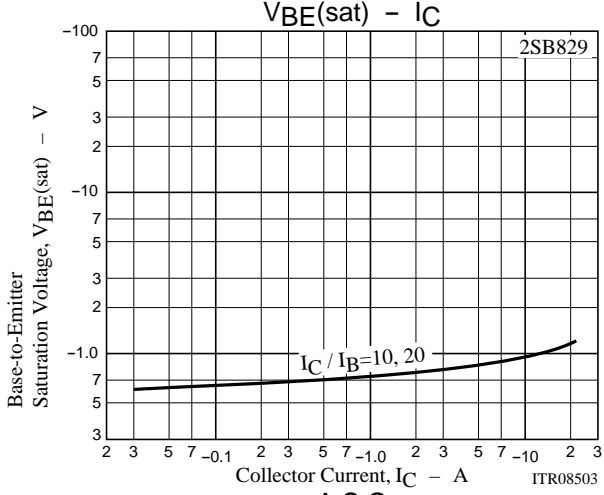
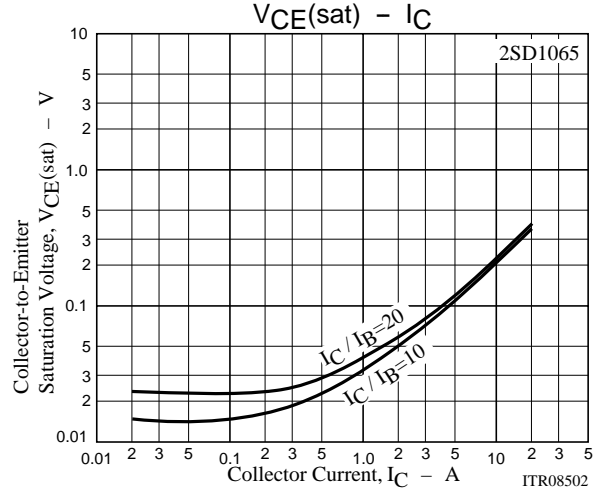
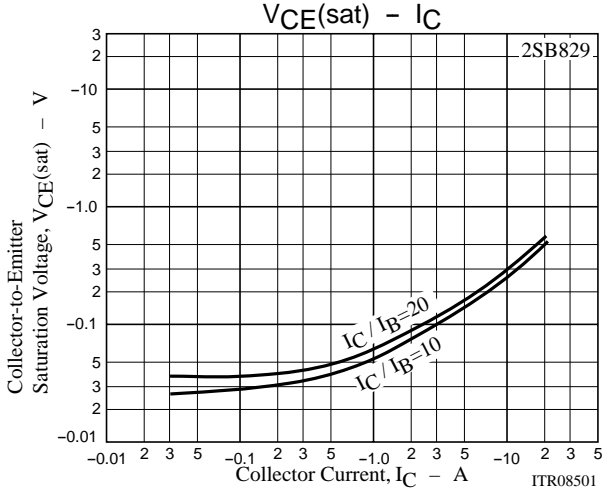
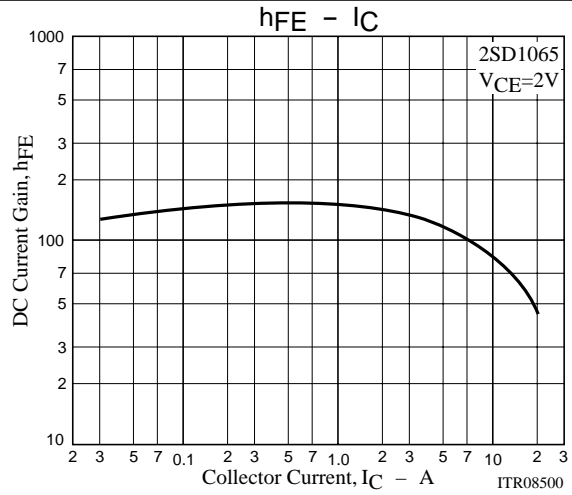
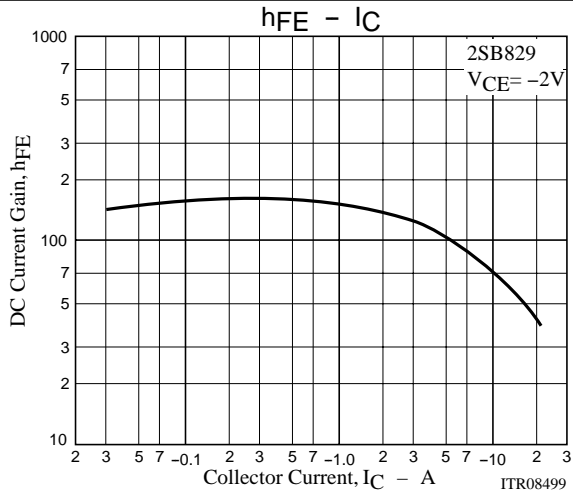
## Switching Time Test Circuit



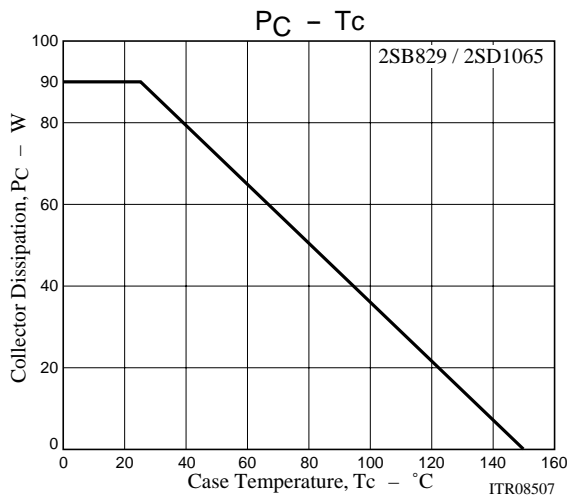
$I_C=10I_{B1} = -10I_{B2}=2A$   
(For PNP, the polarity is reversed.)



# 2SB829/2SD1065



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