PNP/NPN Epitaxial Planar Silicon Transistor



# 2SB631,631K/2SD600,600K 100V/120V, 1A Low-Frequency Power Amplifier Applications

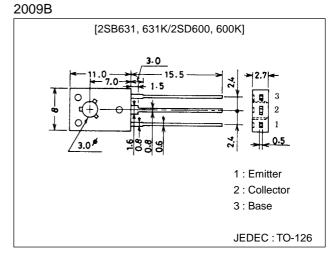
### Features

 $\cdot$  High breakdown voltage V\_{CEO} 100/120V, High current 1A.

 $\cdot$  Low saturation voltage, excellent  $h_{\text{FE}}$  linearity.

### **Package Dimensions**

unit:mm



### (): 2SB631, 631K

# **Specifications**

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

| Parameter                    | Symbol           | Conditions | 2SB631, D600 | 2SB631K, D600K | Unit |
|------------------------------|------------------|------------|--------------|----------------|------|
| Collector-to-Base Voltage    | VCBO             |            | (-)100       | (–)120         | V    |
| Collector-to-Emitter Voltage | VCEO             |            | (–)100       | (–)120         | V    |
| Emitter-to-Base Voltage      | V <sub>EBO</sub> |            |              | (–)5           | V    |
| Collector Current            | ۱ <sub>C</sub>   |            |              | (–)1           | A    |
| Collector Current (Pulse)    | ICP              |            |              | (–)2           | A    |
| Collector Dissipation        | PC               |            |              |                | W    |
|                              |                  | Tc=25°C    |              | 8              | W    |
| Junction Temperature         | Tj               |            |              | 150            | °C   |
| Storage Temperature          | Tstg             |            |              | -55 to +150    | °C   |

#### **Electrical Characteristics at Ta = 25°C**

| Parameter                             | Symbol                | Conditions                                 |              | Ratings |     |      | Unit |
|---------------------------------------|-----------------------|--|--------------|---------|-----|------|------|
| Falanielei                            | Symbol                |  |              | min     | typ | max  | Onit |
| Collector-to-Base Breakdown Voltage   | V(BR)CBO              | I <sub>C</sub> =(-)10μA, I <sub>E</sub> =0 | B631, D600   | (–)100  |     |      | V    |
|                                       |                       |  | B631K, D600K | (–)120  |     |      | V    |
| Collector-to-Emitter Brakdown Voltage | V <sub>(BR)</sub> CEO | I <sub>C</sub> =(–)1mA, R <sub>BE</sub> =∞ | B631, D600   | (–)100  |     |      | V    |
|                                       |                       |  | B631K, D600K | (–)120  |     |      | V    |
| Emitter-to-Base Breakdown Voltage     | V(BR)EBO              | I <sub>E</sub> =(–)10μΑ, I <sub>C</sub> =0 |              | (–)5    |     |      | V    |
| Collector Cutoff Current              | ICBO                  | V <sub>CB</sub> =(-)50V, I <sub>E</sub> =0 |              |         |     | (–)1 | μΑ   |
| Emitter Cutoff Current                | I <sub>EBO</sub>      | V <sub>EB</sub> =(-)4V, I <sub>C</sub> =0  |              |         |     | (–)1 | μΑ   |

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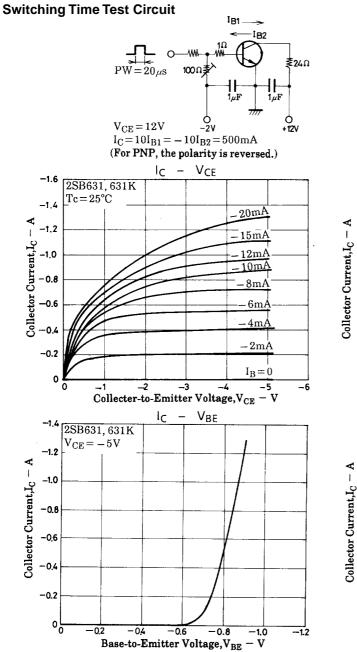
SANYO Electric Co., Ltd. Semiconductor Bussiness Headquaters TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

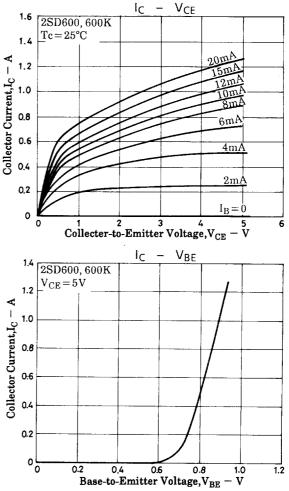
## 2SB631, 631K/2SD600, 600K

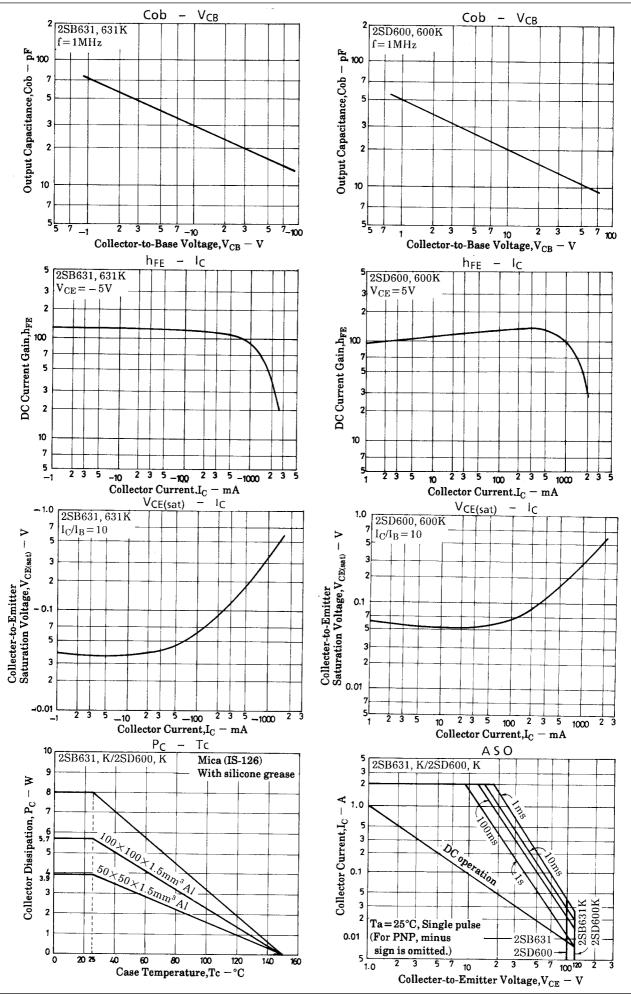
| Parameter                               | Symbol               | Conditions  |     | Ratings |        |      |
|---|----------------------|---|-----|---------|--------|------|
|   |                      |   | min | typ     | max    | Unit |
| DC Current Gain                         | h <sub>FE</sub> 1    | V <sub>CE</sub> =(-)5V, I <sub>C</sub> =(-)50mA   | 60* |         | 320*   |      |
|   | h <sub>FE</sub> 2    | V <sub>CE</sub> =(-)5V, I <sub>C</sub> =(-)500mA  | 20  |         |        |      |
| Gain-Bandwidth Product                  | fT                   | V <sub>CE</sub> =(-)10V, I <sub>C</sub> =(-)50mA  |     | (110)   |        | MHz  |
|   |                      |   |     | 130     |        | MHz  |
| Output Capacitance                      | C <sub>ob</sub>      | V <sub>CB</sub> =(-)10V, f=1MHz                   |     | (30)20  |        | pF   |
| Collector-to-Emitter Saturation Voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =(-)500mA, I <sub>B</sub> =(-)50mA |     | (–)0.15 | (–)0.4 | V    |
| Base-to-Emitter Saturation Voltage      | V <sub>BE(sat)</sub> | I <sub>C</sub> =(-)500mA, I <sub>B</sub> =(-)50mA |     | (–)0.85 | (–)1.2 | V    |
| Fall Time                               | t <sub>f</sub>       | See specified Test Circuit                        |     | (80)    |        | ns   |
|   |                      |   |     | 100     |        | ns   |
| Turn-OFF Time                           | toff                 | See specified Test Circuit                        |     | (100)   |        | ns   |
|   |                      |   |     | 500     |        | ns   |
| Storage Time                            | t <sub>stg</sub>     | See specified Test Circuit                        |     | (600)   |        | ns   |
|   |                      |   |     | 700     |        | ns   |

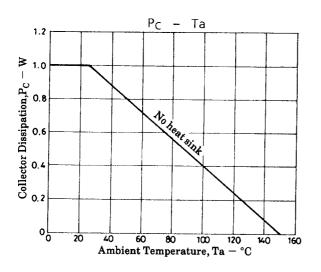
 $\ast$  : The 2SB631/2SD600 are classified by 50mA  $h_{FE}$  as follows :











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