



**SANYO Semiconductors**

# DATA SHEET

## 2SA1209 / 2SC2911 — PNP / NPN Epitaxial Planar Silicon Transistors 160V / 140mA High-Voltage Switching and AF 100W Predriver Applications

### Features

- Adoption of FBET process.
- High breakdown voltage.
- Good linearity of  $h_{FE}$  and small  $C_{ob}$ .
- Fast switching time.

### Specifications ( ) : 2SA1209

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

| Parameter                    | Symbol    | Conditions               | Ratings     | Unit               |
|------------------------------|-----------|--------------------------|-------------|--------------------|
| Collector-to-Base Voltage    | $V_{CBO}$ |                          | (-)180      | V                  |
| Collector-to-Emitter Voltage | $V_{CEO}$ |                          | (-)160      | V                  |
| Emitter-to-Base Voltage      | $V_{EBO}$ |                          | (-)5.0      | V                  |
| Collector Current            | $I_C$     |                          | (-)140      | mA                 |
| Collector Current (Pulse)    | $I_{CP}$  |                          | (-)200      | mA                 |
| Collector Dissipation        | $P_C$     |                          | 1.0         | W                  |
|                              |           | $T_c=25^{\circ}\text{C}$ | 10          | W                  |
| Junction Temperature         | $T_J$     |                          | 150         | $^{\circ}\text{C}$ |
| Storage Temperature          | $T_{stg}$ |                          | -55 to +150 | $^{\circ}\text{C}$ |

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Electrical Characteristics at Ta=25°C

| Parameter                               | Symbol        | Conditions                   | Ratings |               |             | Unit    |
|-----------------------------------------|---------------|------------------------------|---------|---------------|-------------|---------|
|                                         |               |                              | min     | typ           | max         |         |
| Collector Cutoff Current                | $I_{CBO}$     | $V_{CB}=(-)80V, I_E=0A$      |         |               | $(-)0.1$    | $\mu A$ |
| Emitter Cutoff Current                  | $I_{EBO}$     | $V_{EB}=(-)4V, I_C=0A$       |         |               | $(-)0.1$    | $\mu A$ |
| DC Current Gain                         | $h_{FE}$      | $V_{CE}=(-)5V, I_C=(-)10mA$  | 100*    |               | 400*        |         |
| Gain-Bandwidth Product                  | $f_T$         | $V_{CE}=(-)10V, I_C=(-)10mA$ |         | 150           |             | MHz     |
| Output Capacitance                      | $C_{ob}$      | $V_{CB}=(-)10V, f=1MHz$      |         | (4.0)3.0      |             | pF      |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=(-)50mA, I_B=(-)5mA$    |         | $(-0.14)0.07$ | $(-0.4)0.3$ | V       |
| Turn-On Time                            | $t_{on}$      | See specified Test Circuit.  |         | 0.1           |             | $\mu s$ |
| Storage Time                            | $t_{stg}$     | See specified Test Circuit.  |         | 1.5           |             | $\mu s$ |
| Fall Time                               | $t_f$         | See specified Test Circuit.  |         | 0.1           |             | $\mu s$ |

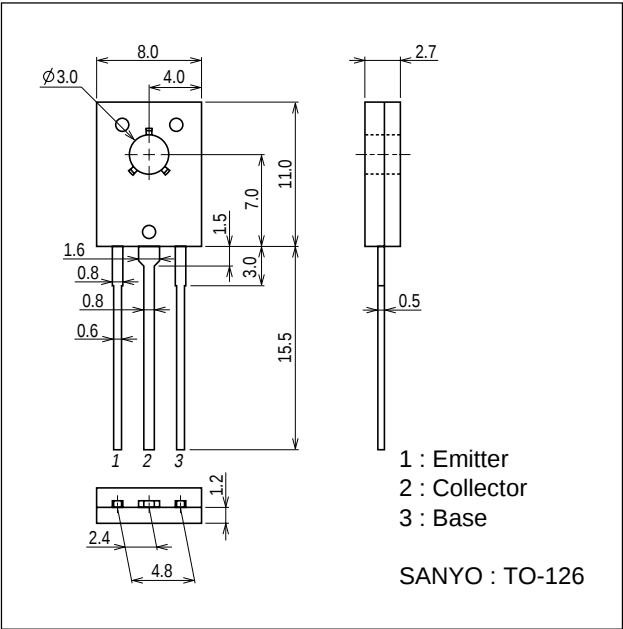
\* : The 2SA1209/2SC2911 are classified by 10mA  $h_{FE}$  as follows :

| Rank     | R          | S          | T          |
|----------|------------|------------|------------|
| $h_{FE}$ | 100 to 200 | 140 to 280 | 200 to 400 |

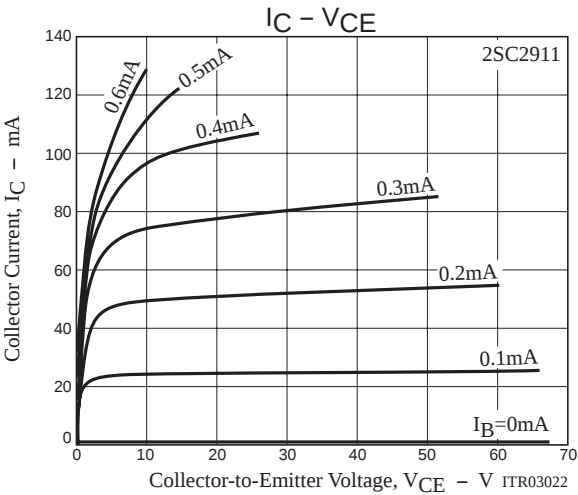
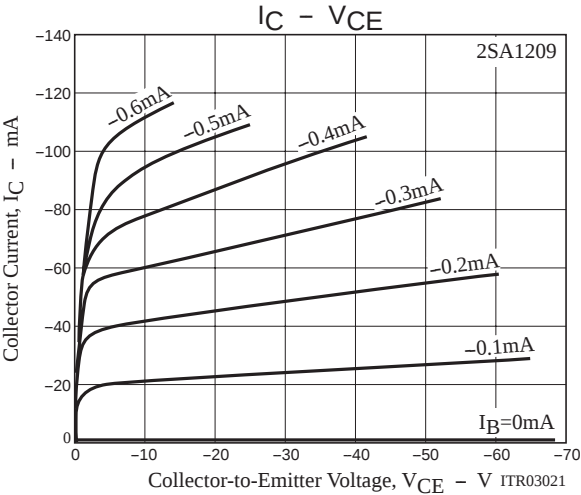
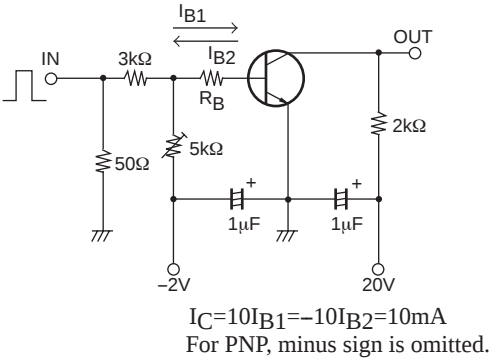
Package Dimensions

unit : mm (typ)

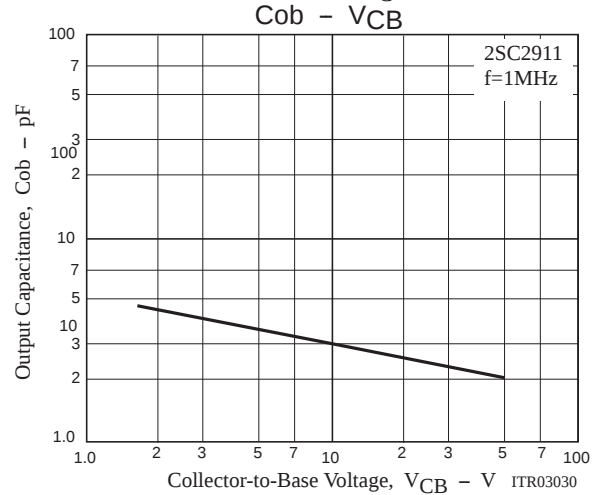
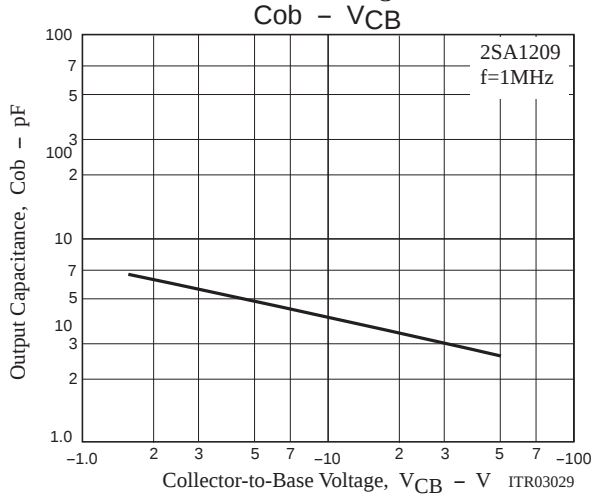
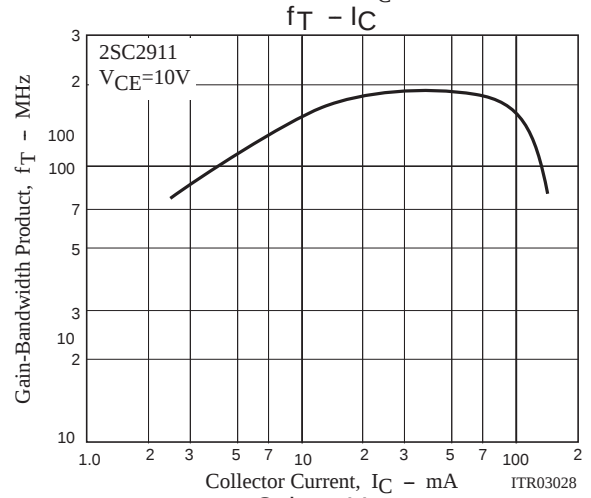
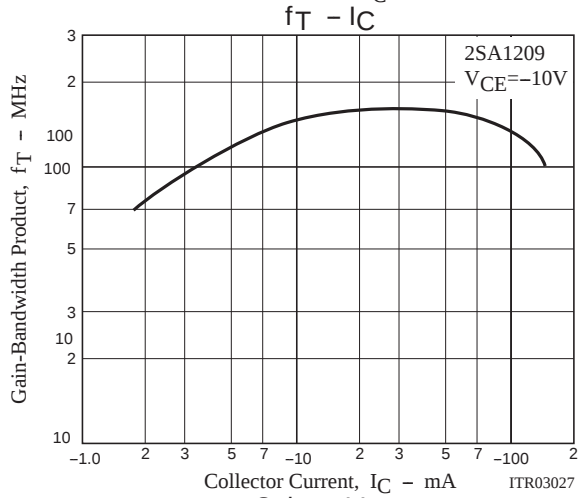
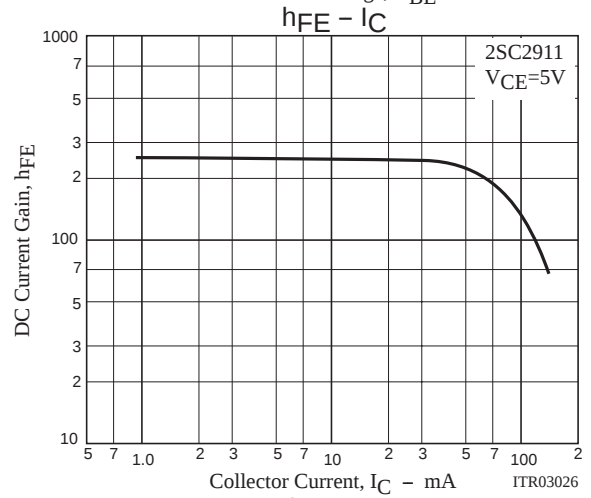
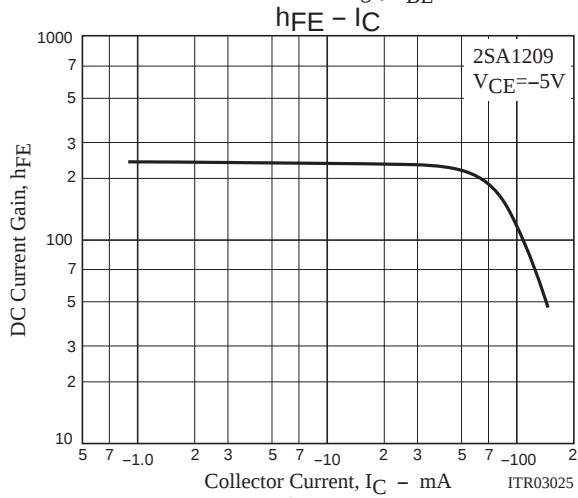
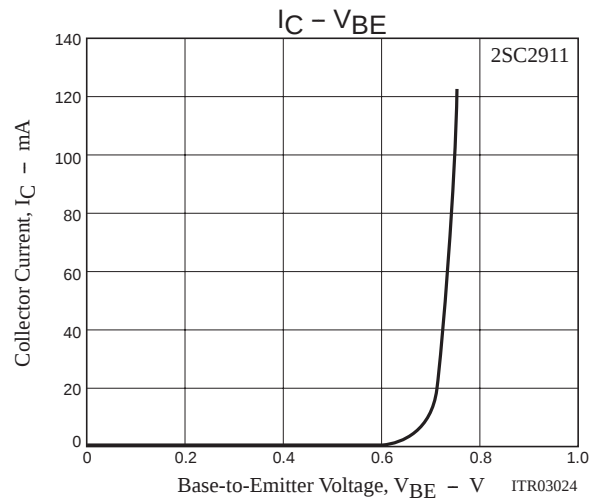
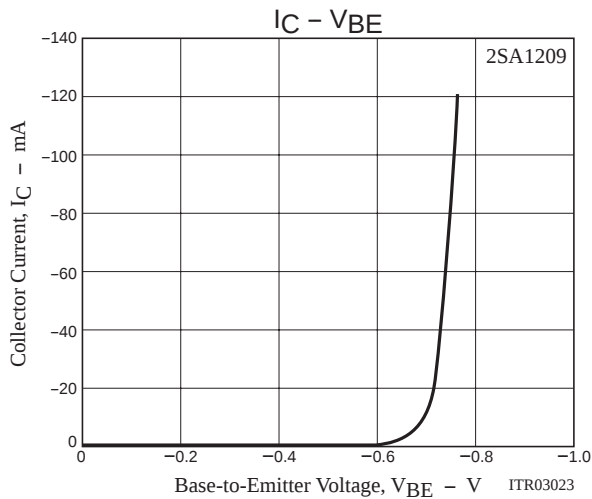
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Switching Time Test Circuit



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