



## 2SA1249/2SC3117

### 160V/1.5A Switching Applications

#### Uses

- Color TV sound output, converters, inverters.

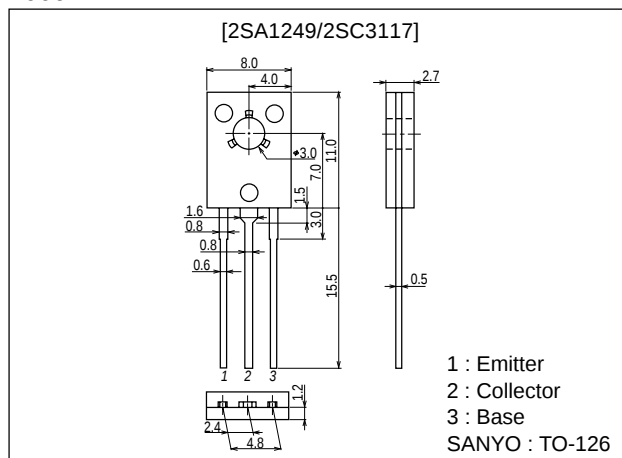
#### Features

- High breakdown voltage.
- Large current capacity.
- Adoption of MBIT process.

#### Package Dimensions

unit:mm

2009B



() : 2SA1249

#### Specifications

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      | $V_{EBO}$ |                          | (-)6        | V                |
| Collector Current            | $I_C$     |                          | (-)1.5      | A                |
| Collector Current (Pulse)    | $I_{CP}$  |                          | (-)2.5      | A                |
| Collector Dissipation        | $P_C$     | $T_c = 25^\circ\text{C}$ | 1           | W                |
|                              |           |                          | 10          | 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 | $I_{CBO}$ | $V_{CB} = (-)120\text{V}, I_E = 0$             |         |     | (-)1.0 | $\mu\text{A}$ |
| Emitter Cutoff Current   | $I_{EBO}$ | $V_{EB} = (-)4\text{V}, I_C = 0$               |         |     | (-)1.0 | $\mu\text{A}$ |
| DC Current Gain          | $h_{FE1}$ | $V_{CE} = (-)5\text{V}, I_C = (-)100\text{mA}$ | 100*    |     | 400*   |               |
|                          | $h_{FE2}$ | $V_{CE} = (-)5\text{V}, I_C = (-)10\text{mA}$  | 90*     |     |        |               |
| Gain-Bandwidth Product   | $f_T$     | $V_{CE} = (-)10\text{V}, I_C = (-)50\text{mA}$ |         | 120 |        | MHz           |

\* : 2SA1249/2SC3117 are classified by 100mA  $h_{FE}$  as follows:

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

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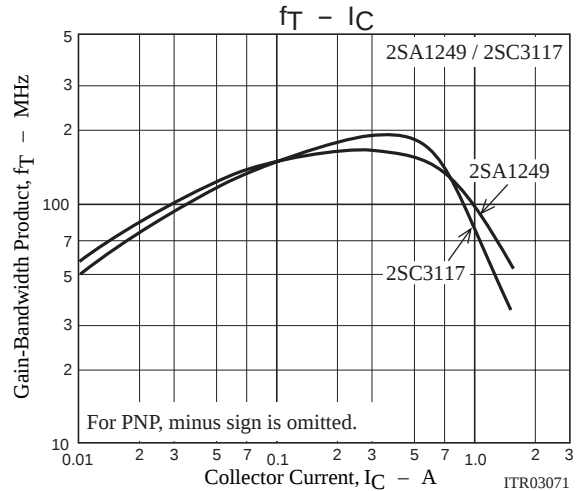
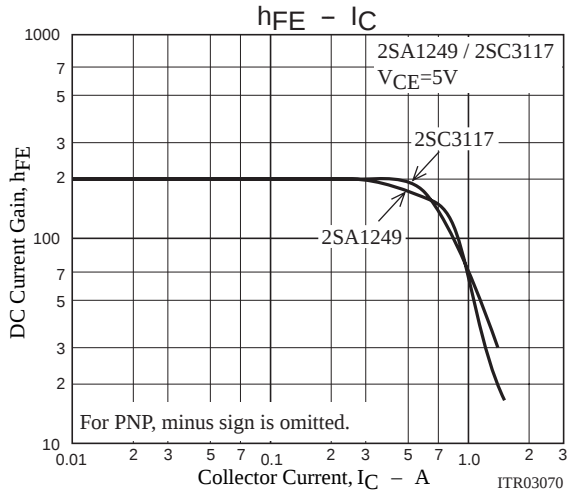
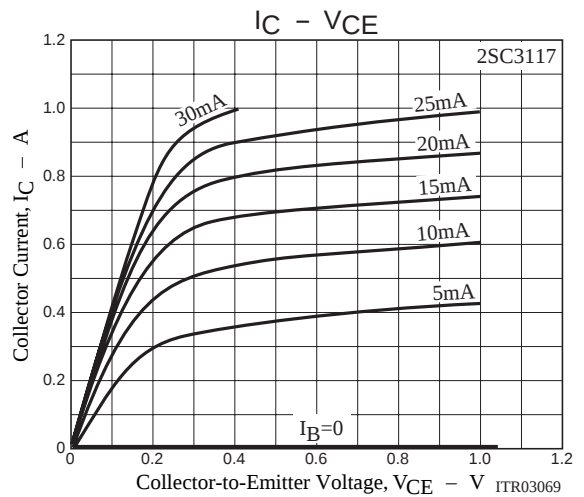
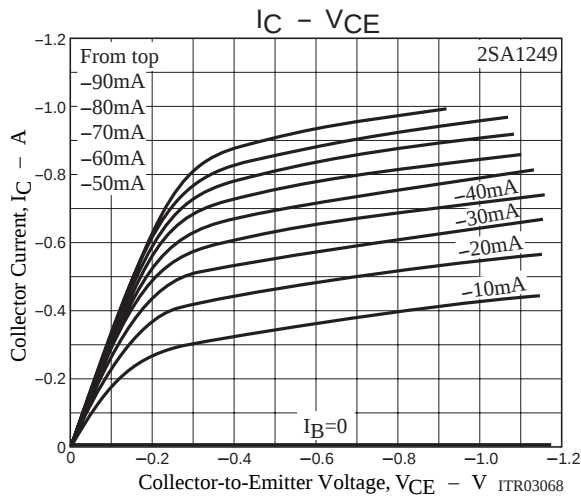
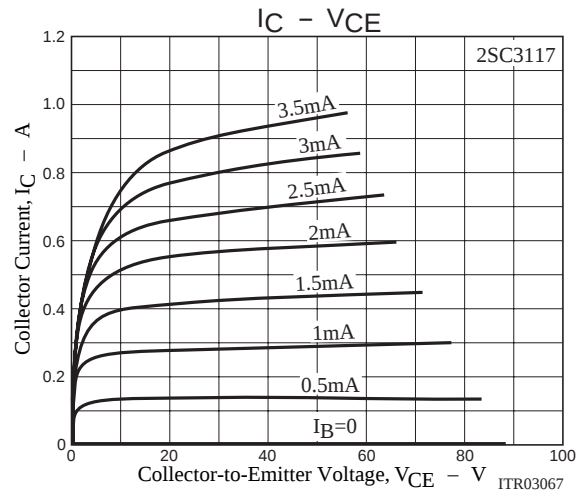
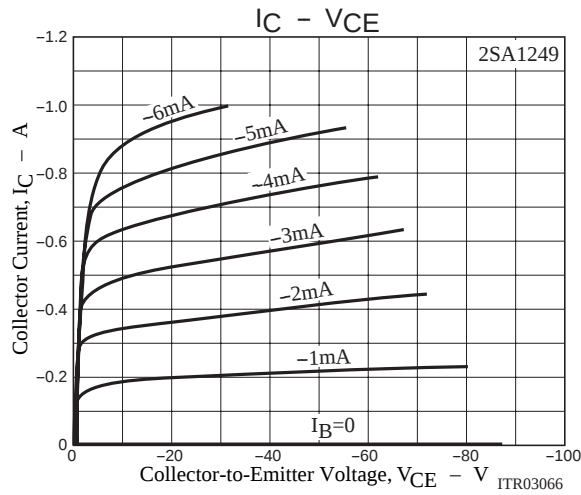
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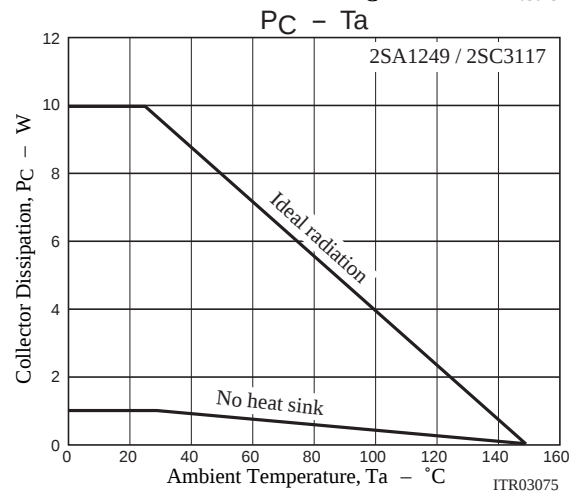
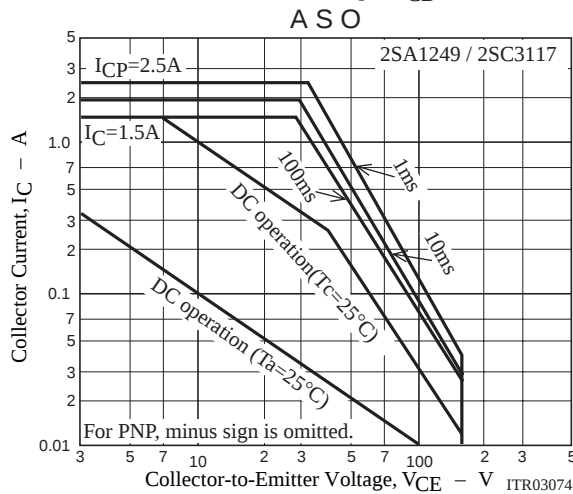
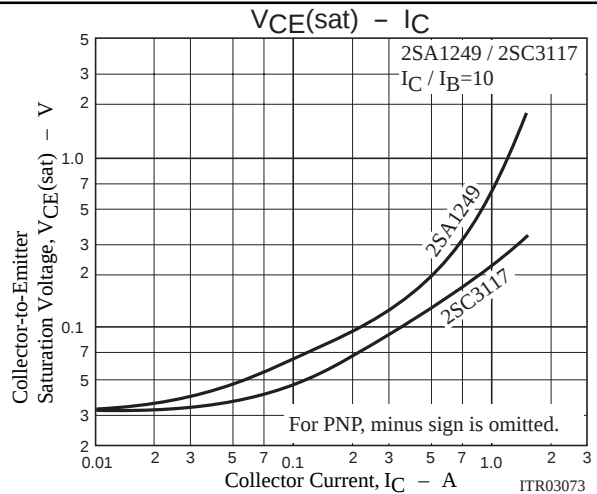
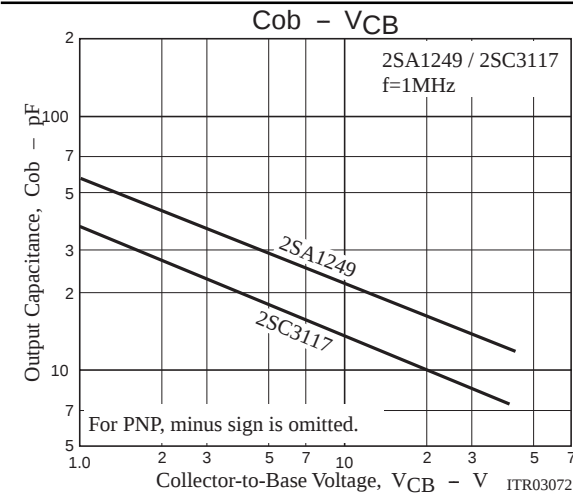
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| Parameter                               | Symbol        | Conditions                  | Ratings |                |         | Unit    |
|-----------------------------------------|---------------|-----------------------------|---------|----------------|---------|---------|
|                                         |               |                             | min     | typ            | max     |         |
| Output Capacitance                      | $C_{ob}$      | $V_{CB}=(-)10V, f=1MHz$     |         | (22)           |         | pF      |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=(-)500mA, I_B=(-)50mA$ |         | (-0.2)         | (-0.5)  | V       |
| Base-to-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C=(-)500mA, I_B=(-)50mA$ |         | (-)0.85        | (-)0.12 | V       |
| Collector-to-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C=(-)10\mu A, I_E=0$     | (-)180  |                |         | V       |
| Collector-to-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C=(-)1mA, R_{BE}=\infty$ | (-)160  |                |         | V       |
| Emitter-to-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E=(-)10\mu A, I_C=0$     | (-)6    |                |         | V       |
| Turn-ON Time                            | $t_{on}$      | See Specified Test Circuit  |         | 0.04           |         | $\mu s$ |
| Storage Time                            | $t_{stg}$     | See Specified Test Circuit  |         | (0.7)<br>1.2   |         | $\mu s$ |
| Fall Time                               | $t_f$         | See Specified Test Circuit  |         | (0.04)<br>0.08 |         | $\mu s$ |



## 2SA1249/2SC3117



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