

No.1290C

## 2SA1348/2SC3402

PNP/ NPN Epitaxial Planar Silicon Transistors

### Switching Applications (with Bias Resistance)

**Applications**

Switching circuit, inverter, interface circuit, driver

**Features**

- Built-in bias resistor (R<sub>1</sub>=10kΩ, R<sub>2</sub>=10kΩ).
- Small-sized package (SPA).

( ): 2SA1348

**Absolute Maximum Ratings/T<sub>a</sub>=25°C**

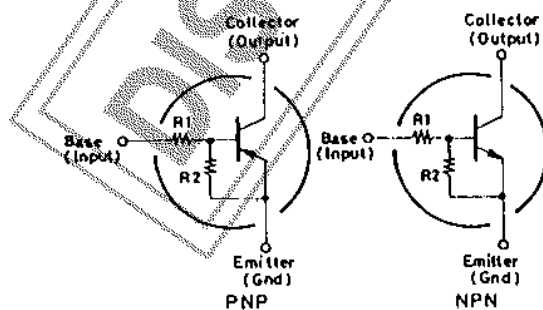
|                              |                  |             | unit |
|------------------------------|------------------|-------------|------|
| Collector to Base Voltage    | V <sub>CBO</sub> | (-)50       | V    |
| Collector to Emitter Voltage | V <sub>CEO</sub> | (-)50       | V    |
| Emitter to Base Voltage      | V <sub>EBO</sub> | (-)10       | V    |
| Collector Current            | I <sub>C</sub>   | (-)100      | mA   |
| Collector Current(Pulse)     | I <sub>CP</sub>  | (-)200      | mA   |
| Collector Dissipation        | P <sub>C</sub>   | 300         | mW   |
| Junction Temperature         | T <sub>j</sub>   | 150         | °C   |
| Storage Temperature          | T <sub>stg</sub> | -55 to +150 | °C   |

**Electrical Characteristics/T<sub>a</sub>=25°C**

|   |                      |   | min    | typ          | max    | unit |
|---|----------------------|---|--------|--------------|--------|------|
| Collector Cutoff Current                | I <sub>CBO</sub>     | V <sub>CB</sub> =(-)140V, I <sub>E</sub> =0       |        |              | (-)0.1 | μA   |
| Collector Cutoff Current                | I <sub>CEO</sub>     | V <sub>CE</sub> =(-)40V, I <sub>B</sub> =0        |        |              | (-)0.5 | μA   |
| Emitter Cutoff Current                  | I <sub>EBO</sub>     | V <sub>EB</sub> =(-)5V, I <sub>C</sub> =0         | (-)170 | (-)250       | (-)330 | μA   |
| DC Current Gain                         | h <sub>FE</sub>      | V <sub>CE</sub> =(-)5V, I <sub>C</sub> =(-)10mA   | 50     |              |        |      |
| Gain-bandwidth product                  | f <sub>T</sub>       | V <sub>CE</sub> =(-)10V, I <sub>C</sub> =(-)5mA   |        | 250<br>(200) |        | MHz  |
| Output Capacitance                      | C <sub>ob</sub>      | V <sub>CB</sub> =(-)10V, f=1MHz                   |        | 3.7<br>(5.5) |        | pF   |
| Collector to Emitter Saturation Voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =(-)10mA, I <sub>B</sub> =(-)0.5mA | (-)0.1 | (-)0.3       |        | V    |

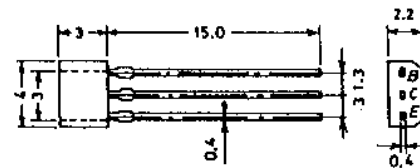
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**Electrical Connection**



**Case Outline 2033**

(unit: mm)



B: Base  
C: Collector  
E: Emitter  
SANYO: SPA

Specifications and information herein are subject to change without notice.

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|  |               |                                  | min    | typ    | max    | unit       |
|--|---------------|----------------------------------|--------|--------|--------|------------|
| Collector to Base Breakdown Voltage    | $V_{(BR)CBO}$ | $I_C=(-)10\mu A, I_E=0$          | (-)50  |        |        | V          |
| Collector to Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=(-)100\mu A, R_{BE}=\infty$ | (-)50  |        |        | V          |
| Input Off Voltage                      | $V_{I(off)}$  | $V_{CE}=(-)5V, I_C=(-)100\mu A$  | (-)0.8 | (-)1.1 | (-)1.5 | V          |
| Input On Voltage                       | $V_{I(on)}$   | $V_{CE}=(-)0.2V, I_C=(-)10mA$    | (-)1.0 | (-)2.0 | (-)4.0 | V          |
| Input Resistance                       | $R_1$         |                                  | 7.0    | 10     | 13     | k $\Omega$ |
| Input Resistance Ratio                 | $R_1/R_2$     |                                  | 0.9    | 1.0    | 1.1    |            |

■ Sample Application Circuit

