

**SANYO****FC142**

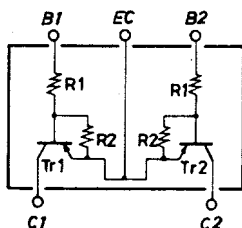
## PNP Epitaxial Planar Silicon Composite Transistor

### Switching Applications (with Bias Resistance)

#### Features

- On-chip bias resistance ( $R1=4.7k\Omega$ ,  $R2=10k\Omega$ ).
- Composite type with 2 transistors contained in the CP package currently in use, improving the mounting efficiency greatly.
- The FC142 is formed with two chips, being equivalent to the 2SA1653, placed in one package.
- Excellent in thermal equilibrium and pair capability.

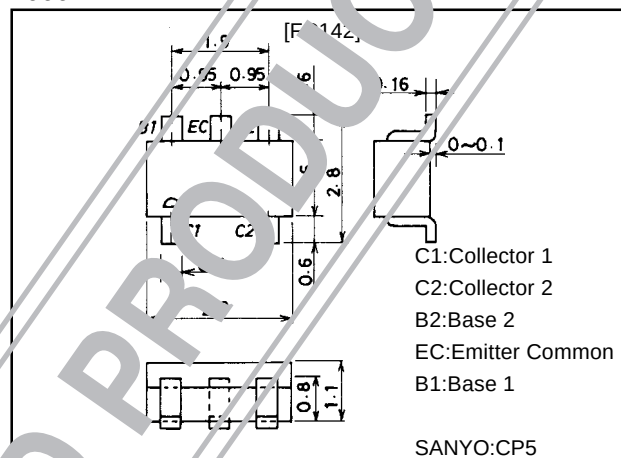
#### Electrical Connection



#### Package Dimensions

unit:mm

2066



#### Specifications

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

| Parameter                    | Symbol    | Conditions | Ratings     | Unit             |
|------------------------------|-----------|------------|-------------|------------------|
| Collector-to-Base Voltage    | $V_{CBO}$ |            | -50         | V                |
| Collector-to-Emitter Voltage | $V_{CEO}$ |            | -50         | V                |
| Emitter-to-Base Voltage      | $V_{EBO}$ |            | -6          | V                |
| Collector Current            | $I_C$     |            | -100        | mA               |
| Peak Collector Current       | $I_{CP}$  |            | -200        | mA               |
| Collector Dissipation        | $P_C$     | 1 unit     | 200         | mW               |
| Total Power Dissipation      | $P_T$     |            | 300         | mW               |
| Junction Temperature         |           |            | 150         | $^\circ\text{C}$ |
| Storage Temperature          | $T_{stg}$ |            | -55 to +150 | $^\circ\text{C}$ |

##### Electrical Characteristics at $T_a = 25^\circ\text{C}$

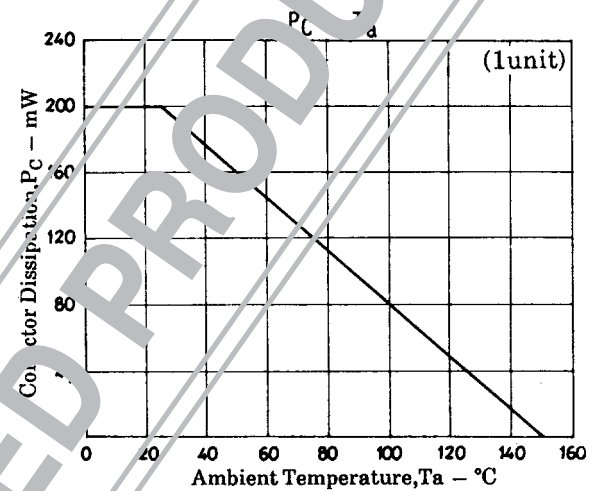
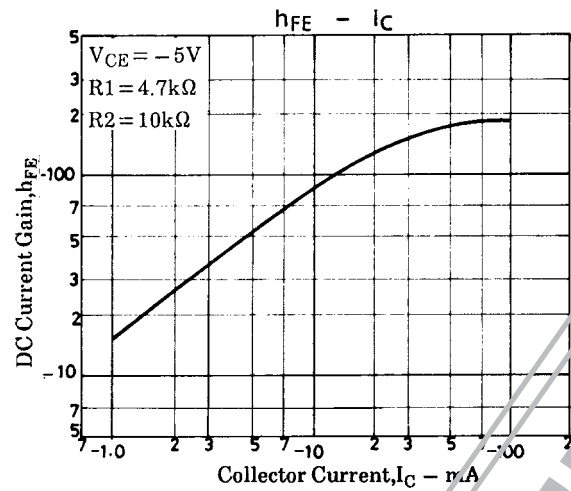
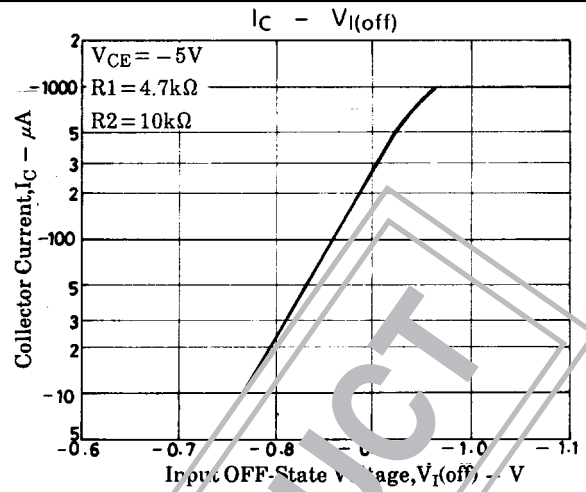
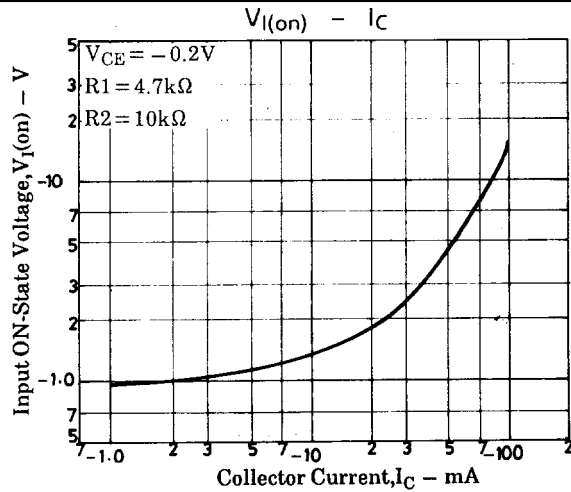
| Parameter                | Symbol        | Conditions                                  | Ratings |       |       | Unit          |
|--------------------------|---------------|---------------------------------------------|---------|-------|-------|---------------|
|                          |               |                                             | min     | typ   | max   |               |
| Collector Cutoff Current | $I_{CBO}$     | $V_{CB}=-40\text{V}$ , $I_E=0$              |         |       | -0.1  | $\mu\text{A}$ |
| Collector Cutoff Current | $I_{CEO}$     | $V_{CB}=-40\text{V}$ , $I_E=0$              |         |       | -0.5  | $\mu\text{A}$ |
| Emitter Cutoff Current   | $I_{EBO}$     | $V_{EB}=-5\text{V}$ , $I_C=0$               | -262    | -340  | -485  | $\mu\text{A}$ |
| DC Current Gain          | $h_{FE}$      | $V_{CE}=-5\text{V}$ , $I_C=-10\text{mA}$    | 50      |       |       |               |
| Gain-Bandwidth Product   | $f_T$         | $V_{CE}=-5\text{V}$ , $I_C=5\text{mA}$      |         | 200   |       | MHz           |
| Output Capacitance       | $C_{ob}$      | $V_{CB}=-10\text{V}$ , $f=1\text{MHz}$      |         | 5.1   |       | pF            |
| C-E Saturation Voltage   | $V_{CE(sat)}$ | $I_C=-10\text{mA}$ , $I_B=-0.5\text{mA}$    |         | -0.1  | -0.3  | V             |
| C-B Breakdown Voltage    | $V_{(BR)CBO}$ | $I_C=-10\mu\text{A}$ , $I_E=0$              | -50     |       |       | V             |
| C-E Breakdown Voltage    | $V_{(BR)CEO}$ | $I_C=-100\mu\text{A}$ , $R_{BE}=\infty$     | -50     |       |       | V             |
| Input OFF-State Voltage  | $V_{I(off)}$  | $V_{CE}=-5\text{V}$ , $I_C=-100\mu\text{A}$ | -0.7    | -0.85 | -0.95 | V             |
| Input ON-State Voltage   | $V_{I(on)}$   | $V_{CE}=-0.2\text{V}$ , $I_C=-10\text{mA}$  | -0.95   | -1.3  | -2.0  | V             |
| Input Resistance         | $R_1$         |                                             | 3.3     | 4.7   | 6.1   | $k\Omega$     |
| Resistance Ratio         | $R_1/R_2$     |                                             |         | 0.47  |       |               |

Note: The specifications shown above are for each individual transistor.

Marking:142

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