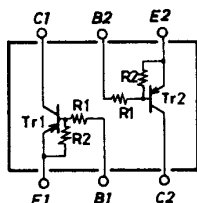


**FC109**

PNP Epitaxial Planar Silicon Composite Transistor

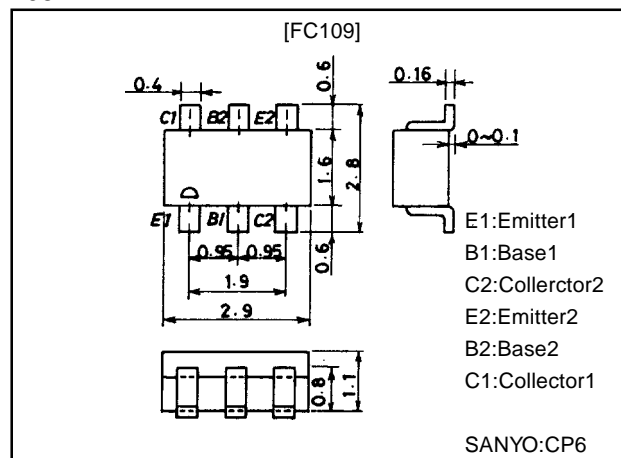
**Switching Applications****Features**

- On-chip bias resistors ( $R1=22k\Omega$ ,  $R2=22k\Omega$ )
- Composite type with 2 transistors contained in the CP package currently in use, improving the mounting efficiency greatly.
- The FC109 is formed with two chips, being equivalent to the 2SA1342, placed in one package.
- Excellent in thermal equilibrium and pair capability.

**Electrical Connection****Package Dimensions**

unit:mm

2067

**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      | $V_{EBO}$ |            | -10         | V                |
| Collector Current            | $I_C$     |            | -100        | mA               |
| Collector Current (Pulse)    | $I_{CP}$  |            | -200        | mA               |
| Collector Dissipation        | $P_C$     | 1 unit     | 200         | mW               |
| Total Dissipation            | $P_T$     |            | 300         | mW               |
| 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 | $I_{CBO}$     | $V_{CB}=-40\text{V}$ , $I_E=0$              |         |      | -0.1 | $\mu\text{A}$ |
| Collector Cutoff Current | $I_{CEO}$     | $V_{CE}=-40\text{V}$ , $I_B=0$              |         |      | -0.5 | $\mu\text{A}$ |
| Emitter Cutoff Current   | $I_{EBO}$     | $V_{EB}=-5\text{V}$ , $I_C=0$               | -70     | -113 | -160 | $\mu\text{A}$ |
| DC Current Gain          | $h_{FE}$      | $V_{CE}=-5\text{V}$ , $I_C=-5\text{mA}$     | 50      |      |      |               |
| Gain-Bandwidth Product   | $f_T$         | $V_{CE}=-10\text{V}$ , $I_C=-5\text{mA}$    |         | 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  | $V_{I(off)}$  | $V_{CE}=-5\text{V}$ , $I_C=-100\mu\text{A}$ | -0.8    | -1.1 | -1.5 | V             |
| Input ON-State Voltage   | $V_{I(on)}$   | $V_{CE}=-0.2\text{V}$ , $I_C=-5\text{mA}$   | -1.0    | -1.9 | -3.0 | V             |
| Input Resistance         | $R_1$         |   | 15      | 22   | 29   | $k\Omega$     |
| Resistance Ratio         | $R_1/R_2$     |   | 0.9     | 1.0  | 1.1  |               |

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

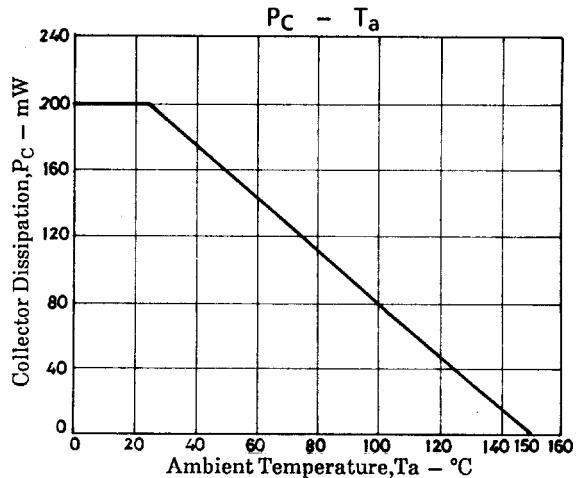
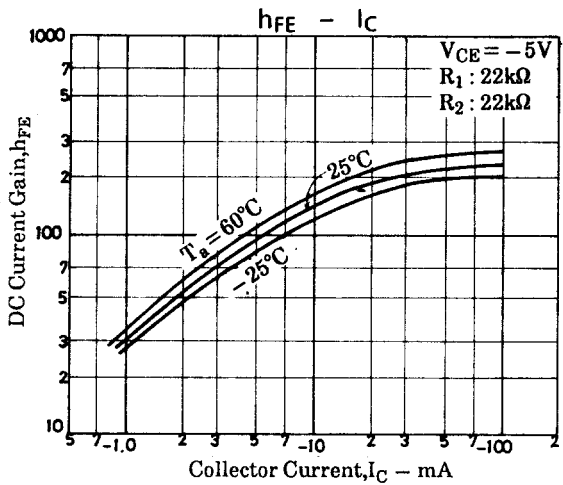
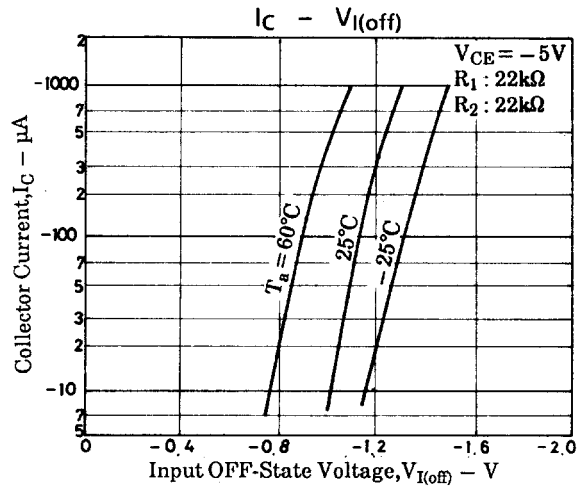
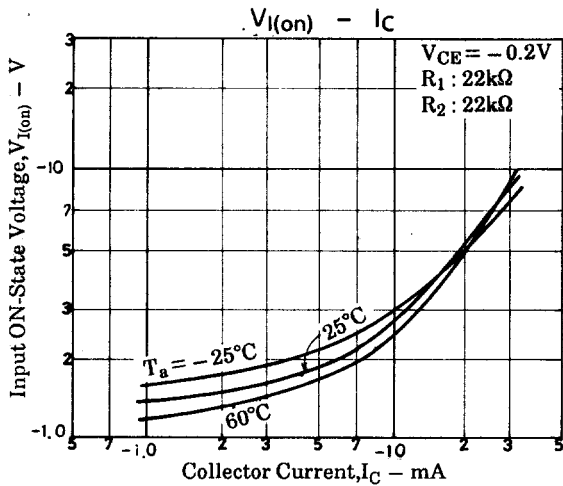
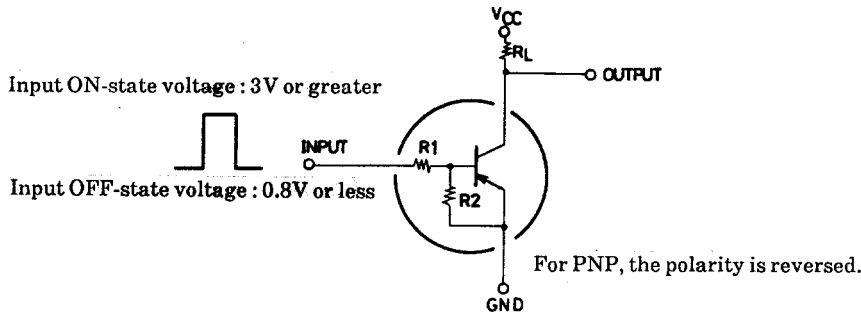
Marking:109

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Sample Application Circuit



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