Ordering number:EN5063

# FC155

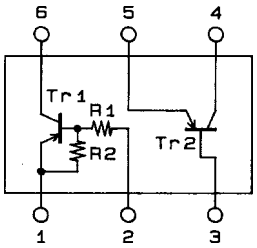
PNP Epitaxial Planar Silicon Transistor (With bias resistances)
PNP Epitaxail Planar Silicon Transistor

## Constant-Current Circuit Applications

## Features

· Complex type of 2 devices (transistor with resistances and low saturation transistor) contained in one package, facilitating high-density mounting.

### Electrical Connection

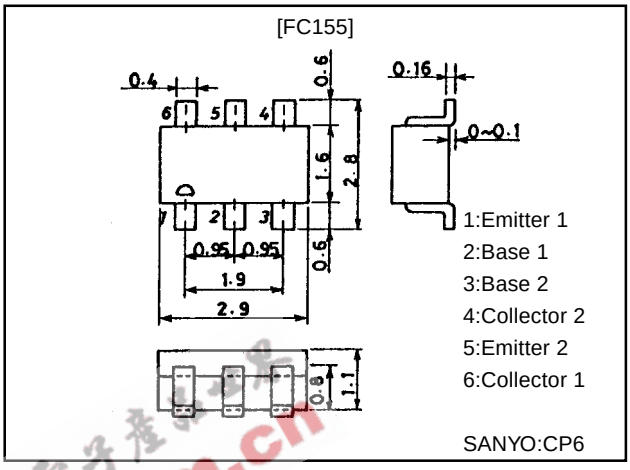



1:Emitter 1
2:Base 1
3:Base 2
4:Collector 2
5:Emitter 2
6:Collector 1

## Package Dimensions

unit:mm

2104A



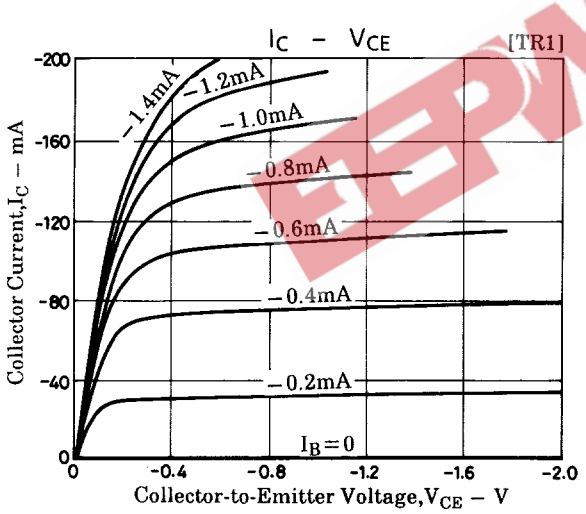

## Specifications

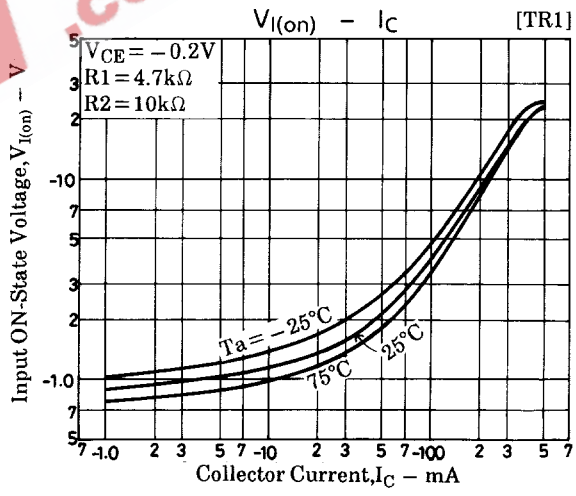
### Absolute Maximum Ratings at Ta = 25˚C

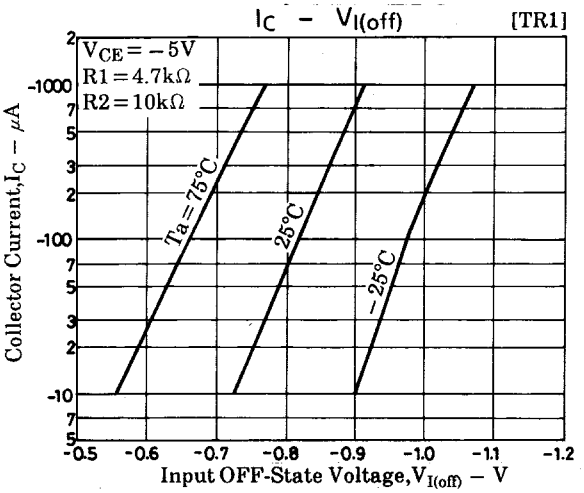
| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| [TR1] | | | | |
| Collector-to-Base Voltage | $V_{CBO}$ | | –20 | V |
| Collector-to-Emitter Voltage | $V_{CEO}$ | | –15 | V |
| Emitter-to-Base Voltage | $V_{EBO}$ | | –5 | V |
| Collector Current | $I_C$ | | –500 | mA |
| Collector Current (Pulse) | $I_{CP}$ | | –1 | A |
| Base Current | $I_B$ | | –5 | mA |
| Collector Dissipation | $P_C$ | 1 unit | 200 | mW |
| Total Dissipation | $P_T$ | | 300 | mW |
| Junction Temperature | Tj | | 150 | ˚C |
| Storage Temperature | Tstg | | –55 to +150 | ˚C |
| [TR2] | | | | |
| Collector-to-Base Voltage | $V_{CBO}$ | | –20 | V |
| Collector-to-Emitter Voltage | $V_{CEO}$ | | –15 | V |
| Emitter-to-Base Voltage | $V_{EBO}$ | | –5 | V |
| Collector Current | $I_C$ | | –500 | mA |
| Collector Current (Pulse) | $I_{CP}$ | | –1 | A |
| Base Current | $I_B$ | | –100 | mA |
| Collector Dissipation | $P_C$ | 1 unit | 200 | mW |
| Total Dissipation | $P_T$ | | 300 | mW |
| Junction Temperature | Tj | | 150 | ˚C |
| Storage Temperature | Tstg | | –55 to +150 | ˚C |

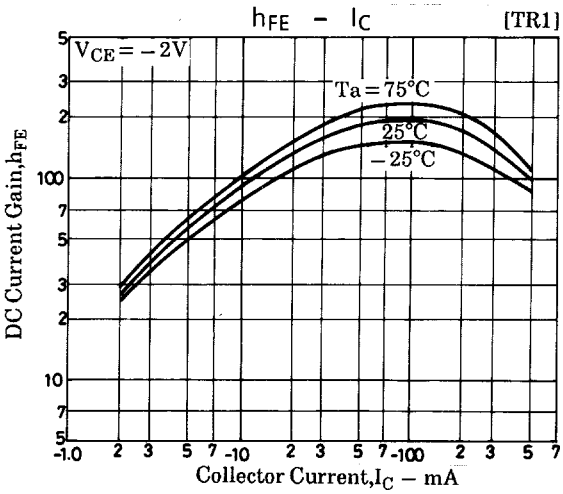
## Electrical Characteristics at Ta = 25˚C

| Parameter | Symbol | Conditons | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| [TR1] | | | | | | |
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB}$=–15V, $I_E$=0 | | | –0.1 | μA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{EB}$=–4V, $I_C$=0 | –210 | –270 | –390 | μA |
| DC Current Gain | $h_{FE}$ | $V_{CE}$=–2V, $I_C$=–100mA | 100 | | | |
| Gain-Bandwidth Product | $f_T$ | $V_{CE}$=–2V, $I_C$=–50mA | | 150 | | MHz |
| Output Capacitance | Cob | $V_{CE}$=–10V, f=1MHz | | 5 | | pF |
| C-E Saturation Voltage | $V_{CE(sat)}$ | $I_C$=–100mA, $I_B$=–5mA | | –100 | –250 | mV |
| C-B Breakdown Voltage | $V_{(BR)CBO}$ | $I_C$=–10μA, $I_E$=0 | –20 | | | V |
| C-E Breakdown Voltage | $V_{(BR)CEO}$ | $I_C$=–1mA, $R_{BE}$=∞ | –15 | | | V |
| Input-OFF-State Voltage | $V_{I(off)}$ | $V_{CE}$=–5V, $I_C$=–100μA | –0.7 | –0.80 | –0.95 | V |
| Input-ON-State Voltage | $V_{I(on)}$ | $V_{CE}$=–0.2V, $I_C$=–10mA | –0.85 | –1.2 | –1.8 | V |
| Input Resistance | R1 | | 3.3 | 4.7 | 6.1 | V |
| Resistance Ratio | R1/R2 | | | 0.47 | | kΩ |
| [TR2] | | | | | | |
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB}$=–15V, $I_E$=0 | | | –0.1 | μA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{EB}$=–4V, $I_C$=0 | | | –0.1 | μA |
| DC Current Gain | $h_{FE}(1)$ | $V_{CE}$=–2V, $I_C$=–10mA | 160 | | 560 | |
| | $h_{FE}(2)$ | $V_{CE}$=–2V, $I_C$=–400mA | 70 | | | MHz |
| Gain-Bandwidth Product | $f_T$ | $V_{CE}$=–2V, $I_C$=–50mA | | 400 | | pF |
| Output Capacitance | Cob | $V_{CE}$=–10V, f=1MHz | | 6.5 | | mV |
| C-E Saturation Voltage | $V_{CE(sat)}$ | $I_C$=–200mA, $I_B$=–10mA | | –200 | –360 | V |
| B-E Saturation Voltage | $V_{BE(sat)}$ | $I_C$=–200mA, $I_B$=–10mA | | –0.95 | –1.2 | V |
| C-B Breakdown Voltage | $V_{(BR)CBO}$ | $I_C$=–10μA, $I_E$=0 | –20 | | | V |
| C-E Breakdown Voltage | $V_{(BR)CEO}$ | $I_C$=–1mA, $R_{BE}$=∞ | –15 | | | V |
| E-B Breakdown Voltage | $V_{(BR)EBO}$ | $I_C$=–10μA, $I_C$=0 | –5 | | | V |

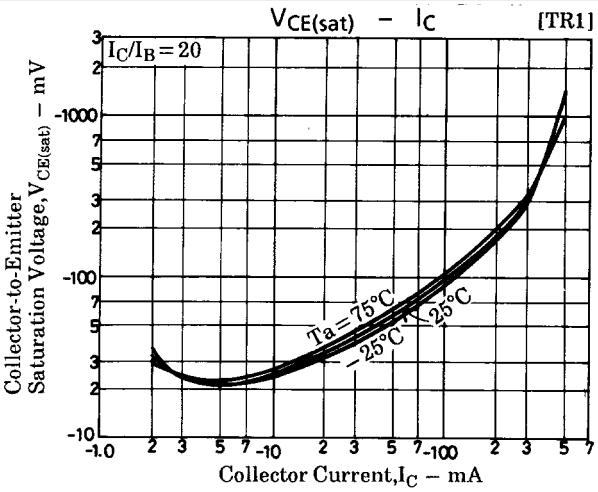


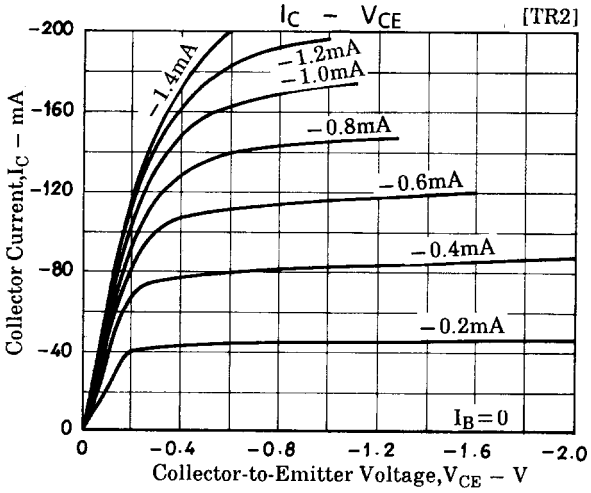



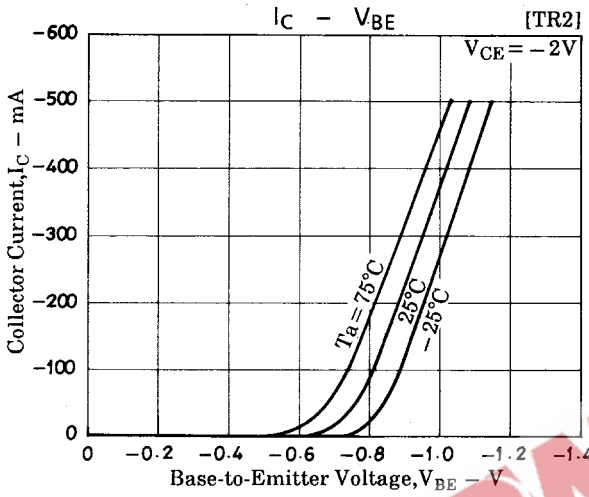
$V_{CE(sat)}$ – $I_C$ [TR1]



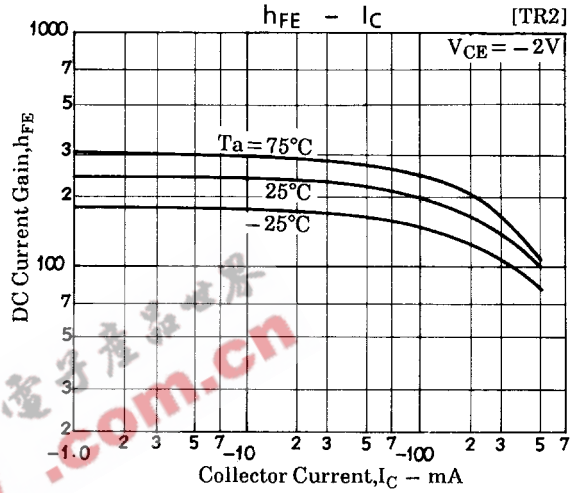

$I_C$ – $V_{CE}$ [TR2]



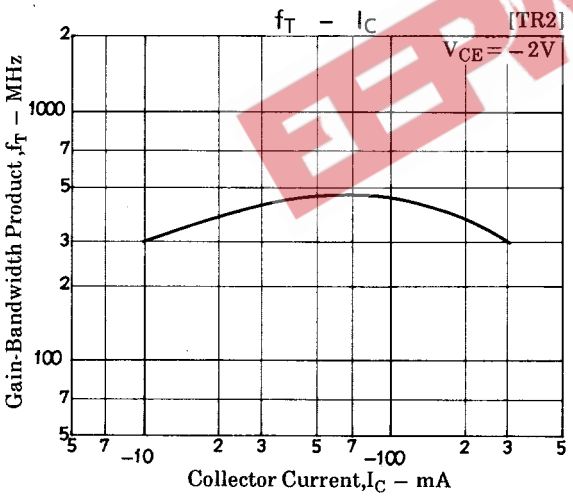

$I_C$ – $V_{BE}$ [TR2]



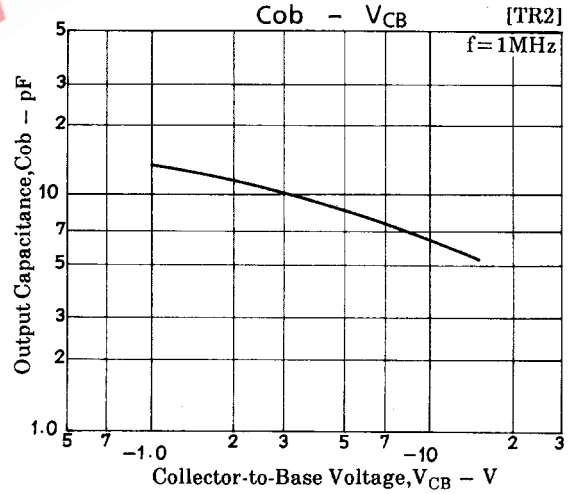

$h_{FE}$ – $I_C$ [TR2]



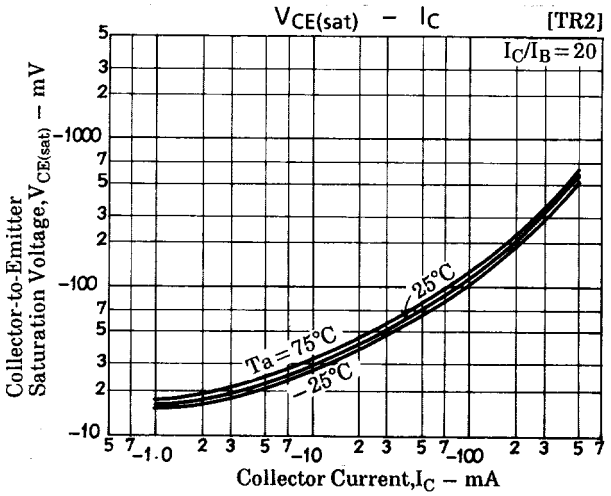

$f_T$ – $I_C$ [TR2]




Cob – $V_{CB}$ [TR2]




$V_{CE(sat)}$ – $I_C$ [TR2]




$V_{BE(sat)}$ – $I_C$ [TR2]