

# XN05531 (XN5531)

## Silicon NPN epitaxial planer transistor

For high frequency oscillation and mixing

### Features

- Two elements incorporated into one package.
- Reduction of the mounting area and assembly cost by one half.

### Basic Part Number of Element

- 2SC3130 × 2 elements

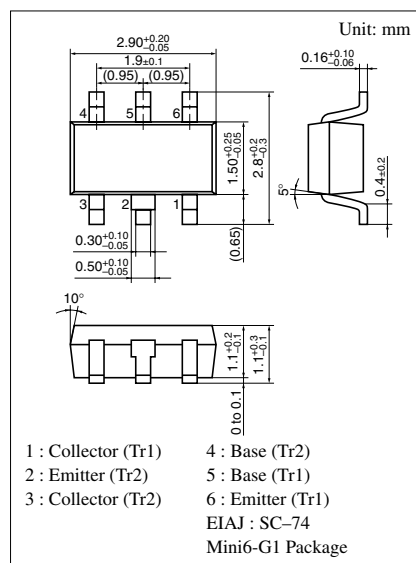
### Absolute Maximum Ratings (Ta=25°C)

|                   | Parameter                    | Symbol    | Ratings     | Unit |
|-------------------|------------------------------|-----------|-------------|------|
| Rating of element | Collector to base voltage    | $V_{CBO}$ | 15          | V    |
|                   | Collector to emitter voltage | $V_{CEO}$ | 10          | V    |
|                   | Emitter to base voltage      | $V_{EBO}$ | 3           | V    |
|                   | Collector current            | $I_C$     | 50          | mA   |
| Overall           | Total power dissipation      | $P_T$     | 200         | mW   |
|                   | Junction temperature         | $T_j$     | 150         | °C   |
|                   | Storage temperature          | $T_{stg}$ | -55 to +150 | °C   |

### Electrical Characteristics (Ta=25°C)

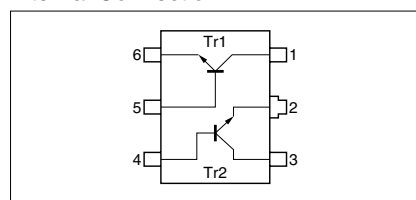
| Parameter                                | Symbol                                    | Conditions                                                                                 | min  | typ  | max  | Unit          |
|------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------------------|------|------|------|---------------|
| Collector to emitter voltage             | $V_{CEO}$                                 | $I_C = 2\text{mA}$ , $I_B = 0$                                                             | 10   |      |      | V             |
| Emitter to base voltage                  | $V_{EBO}$                                 | $I_E = 10\mu\text{A}$ , $I_C = 0$                                                          | 3    |      |      | V             |
| Collector cutoff current                 | $I_{CBO}$                                 | $V_{CB} = 10\text{V}$ , $I_E = 0$                                                          |      |      | 1    | $\mu\text{A}$ |
|                                          | $I_{CEO}$                                 | $V_{CE} = 10\text{V}$ , $I_B = 0$                                                          |      |      | 10   | $\mu\text{A}$ |
| Forward current transfer ratio           | $h_{FE1}$                                 | $V_{CE} = 4\text{V}$ , $I_C = 5\text{mA}$                                                  | 75   | 200  | 400  |               |
| Forward current transfer $h_{FE}$ ratio  | $h_{FE} (\text{small}/\text{large})^{*1}$ | $V_{CE} = 4\text{V}$ , $I_C = 5\text{mA}$                                                  | 0.5  | 0.99 |      |               |
| $h_{FE2}/h_{FE1}$ ratio                  | $h_{FE2}/h_{FE1}$                         | $V_{CE} = 4\text{V}$ , $I_C = 100\mu\text{A}$<br>$V_{CE} = 4\text{V}$ , $I_C = 5\text{mA}$ | 0.75 |      | 1.6  |               |
| Collector to emitter saturation voltage  | $V_{CE(sat)}$                             | $I_C = 20\text{mA}$ , $I_B = 4\text{mA}$                                                   |      |      | 0.5  | V             |
| Collector output capacitance             | $C_{ob}$                                  | $V_{CB} = 4\text{V}$ , $I_E = 0$ , $f = 1\text{MHz}$                                       |      | 0.9  | 1.1  | pF            |
| Transition frequency                     | $f_T$                                     | $V_{CB} = 4\text{V}$ , $I_E = -5\text{mA}$ , $f = 200\text{MHz}$                           | 1.4  | 1.9  | 2.5  | GHz           |
| Collector to base parameter              | $r_{bb} \cdot C_C$                        | $V_{CB} = 4\text{V}$ , $I_E = -5\text{mA}$ , $f = 30\text{MHz}$                            |      | 11.8 | 13.5 | ps            |
| Common base reverse transfer capacitance | $C_{rb}$                                  | $V_{CB} = 4\text{V}$ , $I_E = 0$ , $f = 1\text{MHz}$                                       |      | 0.25 | 0.35 | pF            |

\*1 Ratio between 2 elements



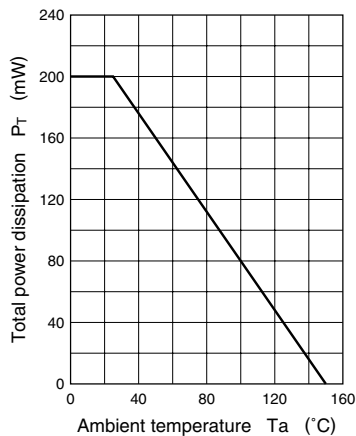
Marking Symbol: 5M

Internal Connection

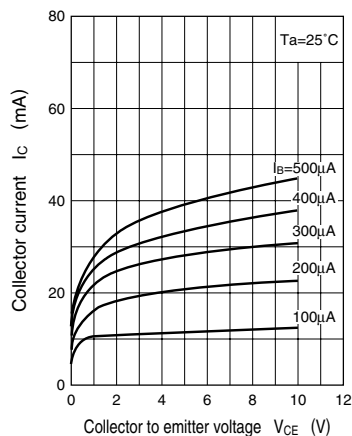


Note) The Part number in the Parenthesis shows conventional part number.

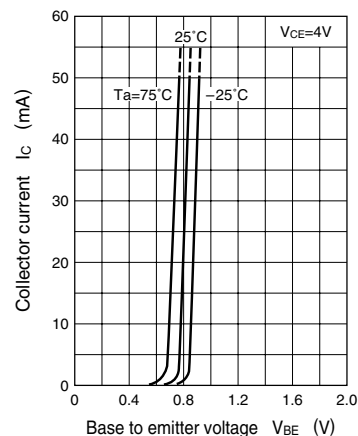
$P_T - T_a$



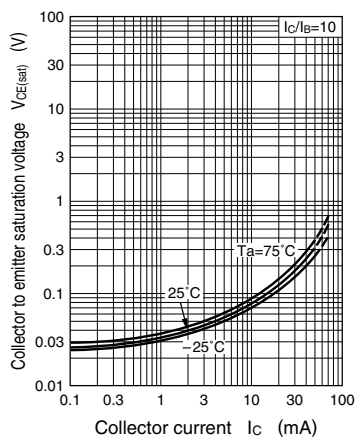
$I_C - V_{CE}$



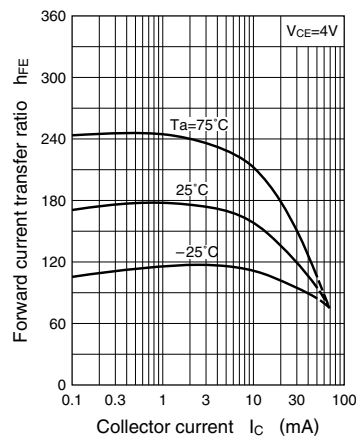
$I_C - V_{BE}$



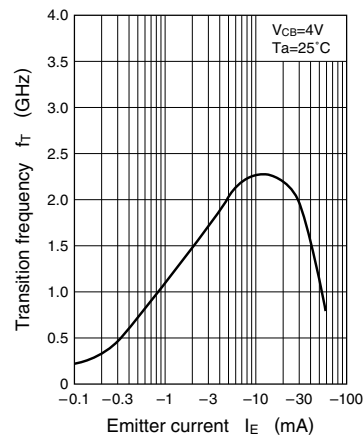
$V_{CE(sat)} - I_C$



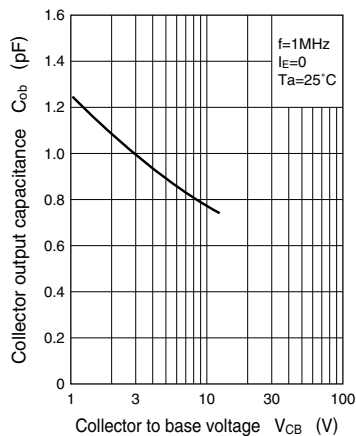
$h_{FE} - I_C$



$f_T - I_E$



$C_{ob} - V_{CB}$



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