

# XN0111F (XN111F)

## Silicon PNP epitaxial planer transistor

For switching/digital circuits

### ■ Features

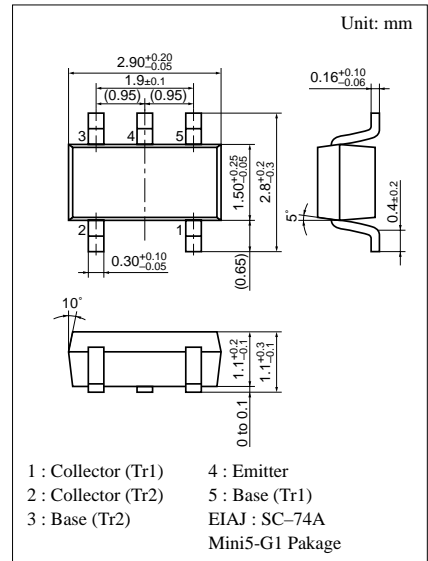
- Two elements incorporated into one package.  
(Emitter-coupled transistors with built-in resistor)
- Reduction of the mounting area and assembly cost by one half.

### ■ Basic Part Number of Element

- UNR111F(UN111F) × 2 elements

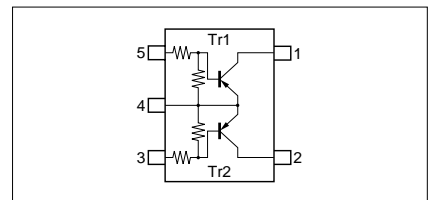
### ■ Absolute Maximum Ratings (Ta=25°C)

|                   | Parameter                    | Symbol    | Ratings     | Unit |
|-------------------|------------------------------|-----------|-------------|------|
| Rating of element | Collector to base voltage    | $V_{CBO}$ | -50         | V    |
|                   | Collector to emitter voltage | $V_{CEO}$ | -50         | V    |
|                   | Collector current            | $I_C$     | -100        | mA   |
| Overall           | Total power dissipation      | $P_T$     | 300         | mW   |
|                   | Junction temperature         | $T_j$     | 150         | °C   |
|                   | Storage temperature          | $T_{stg}$ | -55 to +150 | °C   |



Marking Symbol: 70

Internal Connection



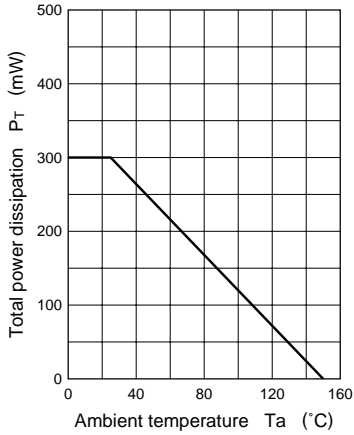
### ■ Electrical Characteristics (Ta=25°C)

| Parameter                               | Symbol                            | Conditions                                  | min  | typ  | max   | Unit       |
|---|-----------------------------------|---|------|------|-------|------------|
| Collector to base voltage               | $V_{CBO}$                         | $I_C = -10\mu A, I_E = 0$                   | -50  |      |       | V          |
| Collector to emitter voltage            | $V_{CEO}$                         | $I_C = -2mA, I_B = 0$                       | -50  |      |       | V          |
| Collector cutoff current                | $I_{CBO}$                         | $V_{CB} = -50V, I_E = 0$                    |      |      | -0.1  | $\mu A$    |
|   | $I_{CEO}$                         | $V_{CE} = -50V, I_B = 0$                    |      |      | -0.5  | $\mu A$    |
| Emitter cutoff current                  | $I_{EBO}$                         | $V_{EB} = -6V, I_C = 0$                     |      |      | -1.0  | mA         |
| Forward current transfer ratio          | $h_{FE}$                          | $V_{CE} = -10V, I_C = -5mA$                 | 30   |      |       |            |
| Forward current transfer $h_{FE}$ ratio | $h_{FE}(\text{small/large})^{*1}$ | $V_{CE} = -10V, I_C = -5mA$                 | 0.5  | 0.99 |       |            |
| Collector to emitter saturation voltage | $V_{CE(sat)}$                     | $I_C = -10mA, I_B = -0.3mA$                 |      |      | -0.25 | V          |
| Output voltage high level               | $V_{OH}$                          | $V_{CC} = -5V, V_B = -0.5V, R_L = 1k\Omega$ | -4.9 |      |       | V          |
| Output voltage low level                | $V_{OL}$                          | $V_{CC} = -5V, V_B = -2.5V, R_L = 1k\Omega$ |      |      | -0.2  | V          |
| Transition frequency                    | $f_T$                             | $V_{CB} = -10V, I_E = 1mA, f = 200MHz$      |      | 80   |       | MHz        |
| Input resistance                        | $R_1$                             |   | -30% | 4.7  | +30%  | k $\Omega$ |
| Resistance ratio                        | $R_1/R_2$                         |   |      | 0.47 |       |            |

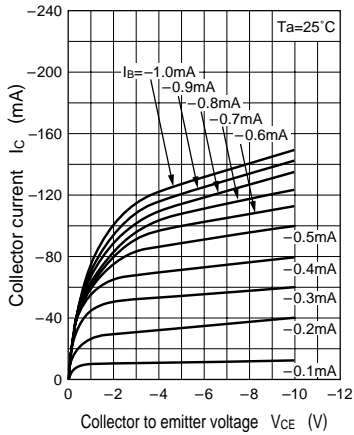
\*1 Ratio between 2 elements

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

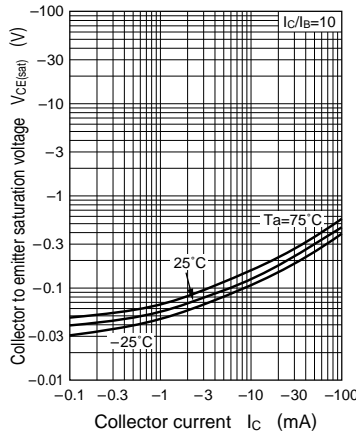
$P_T - T_a$



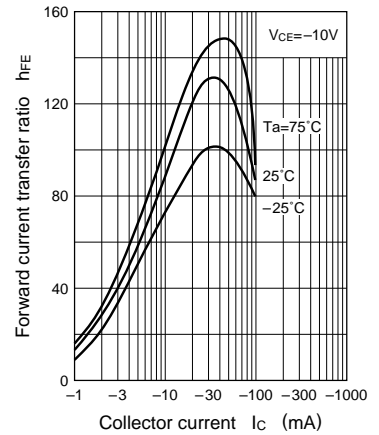
$I_C - V_{CE}$



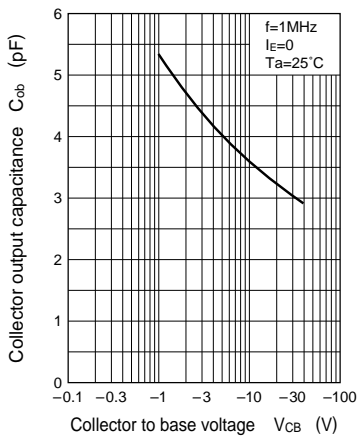
$V_{CE(sat)} - I_C$



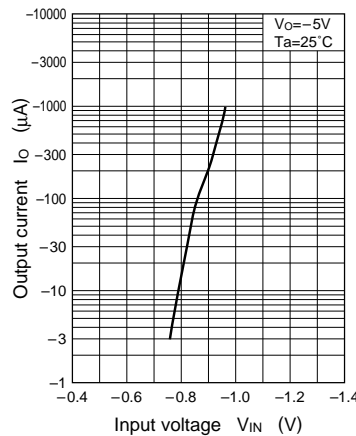
$h_{FE} - I_C$



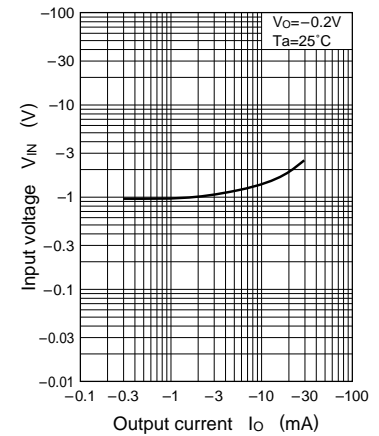
$C_{ob} - V_{CB}$



$I_O - V_{IN}$



$V_{IN} - I_O$



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