

XN1A312

Silicon NPN epitaxial planer transistor (Tr1)
 Silicon PNP epitaxial planer transistor (Tr2)

For switching/digital circuits

■ Features

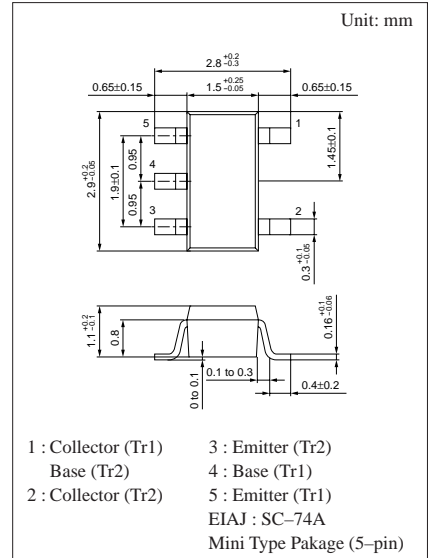
- Two elements incorporated into one package.
 (Transistors with built-in resistor, Tr1 collector is connected to Tr2 base.)
- Reduction of the mounting area and assembly cost by one half.

■ Basic Part Number of Element

- UN1212+UN1112

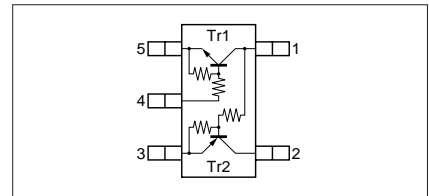
■ Absolute Maximum Ratings (Ta=25°C)

| | Parameter | Symbol | Ratings | Unit |
|---------|------------------------------|-----------|-------------|------|
| Tr1 | Collector to base voltage | V_{CBO} | 50 | V |
| | Collector to emitter voltage | V_{CEO} | 50 | V |
| | Collector current | I_C | 100 | mA |
| Tr2 | 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: 4P

Internal Connection



■ Electrical Characteristics (Ta=25°C)

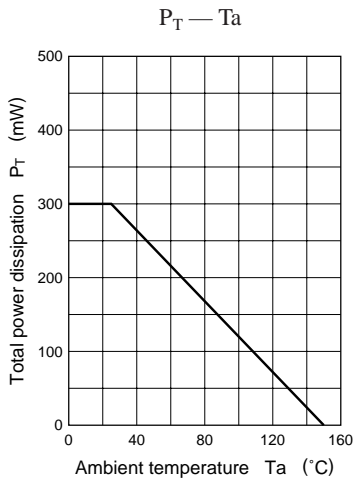
● Tr1

| 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 | μA |
| | I_{CEO} | $V_{CE} = 50V, I_B = 0$ | | | 0.5 | μA |
| Emitter cutoff current | I_{EBO} | $V_{EB} = 6V, I_C = 0$ | | | 0.2 | mA |
| Forward current transfer ratio | h_{FE} | $V_{CE} = 10V, I_C = 5mA$ | 60 | | | |
| 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 | $V_{CB} = 10V, I_E = -1mA, f = 200MHz$ | | 150 | | MHz |
| Input resistance | R_1 | | -30% | 22 | +30% | k Ω |
| Resistance ratio | R_1/R_2 | | 0.8 | 1.0 | 1.2 | |

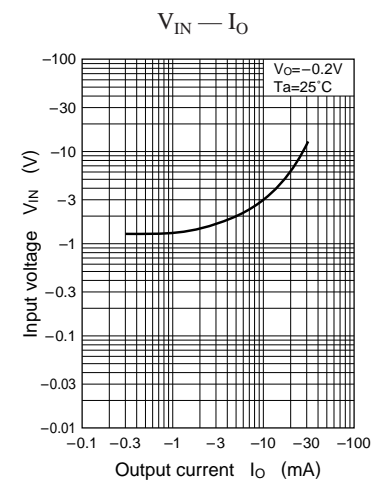
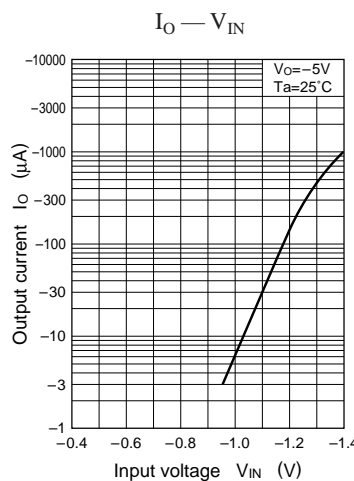
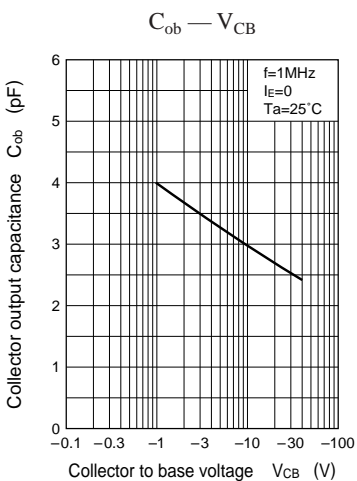
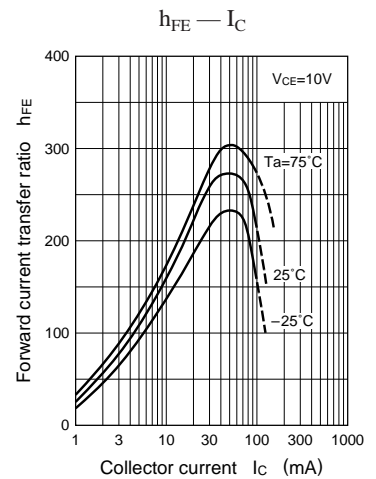
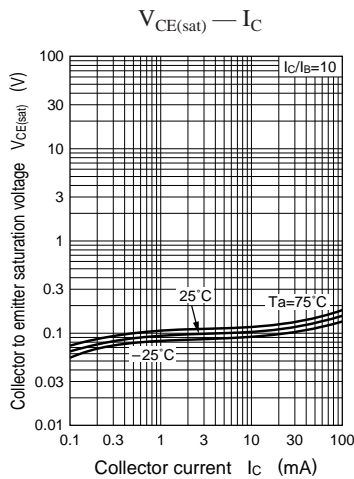
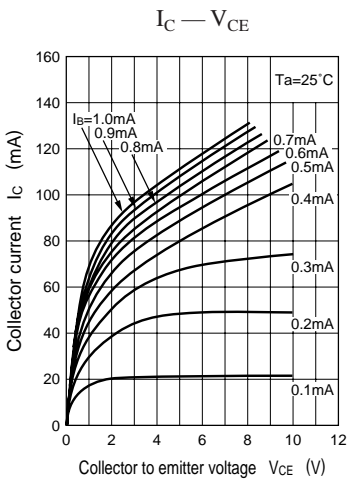
● Tr2

| 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 | μA |
| | I_{CEO} | $V_{CE} = -50V, I_B = 0$ | | | -0.5 | μA |
| Emitter cutoff current | I_{EBO} | $V_{EB} = -6V, I_C = 0$ | | | -0.2 | mA |
| Forward current transfer ratio | h_{FE} | $V_{CE} = -10V, I_C = -5mA$ | 60 | | | |
| 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% | 22 | +30% | k Ω |
| Resistance ratio | R_1/R_2 | | 0.8 | 1.0 | 1.2 | |

Common characteristics chart



Characteristics charts of Tr1



Characteristics charts of Tr2

