

# XP04601 (XP4601)

Silicon NPN epitaxial planer transistor (Tr1)

Silicon PNP epitaxial planer transistor (Tr2)

For general amplification

## Features

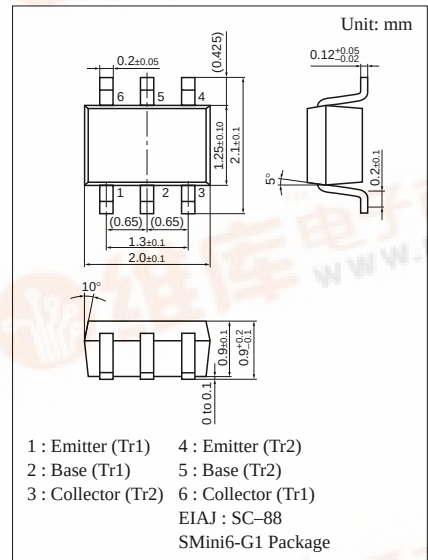
- Two elements incorporated into one package.
- Reduction of the mounting area and assembly cost by one half.

## Basic Part Number of Element

- 2SD0601A(2SD601A) + 2SB0709A(2SB709A)

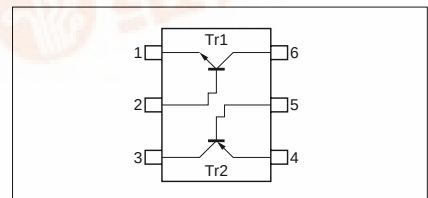
## Absolute Maximum Ratings (Ta=25°C)

|         | Parameter                    | Symbol    | Ratings     | Unit |
|---------|------------------------------|-----------|-------------|------|
| Tr1     | Collector to base voltage    | $V_{CBO}$ | 60          | V    |
|         | Collector to emitter voltage | $V_{CEO}$ | 50          | V    |
|         | Emitter to base voltage      | $V_{EBO}$ | 7           | V    |
|         | Collector current            | $I_C$     | 100         | mA   |
|         | Peak collector current       | $I_{CP}$  | 200         | mA   |
| Tr2     | Collector to base voltage    | $V_{CBO}$ | -60         | V    |
|         | Collector to emitter voltage | $V_{CEO}$ | -50         | V    |
|         | Emitter to base voltage      | $V_{EBO}$ | -7          | V    |
|         | Collector current            | $I_C$     | -100        | mA   |
|         | Peak collector current       | $I_{CP}$  | -200        | mA   |
| Overall | Total power dissipation      | $P_T$     | 150         | mW   |
|         | Junction temperature         | $T_j$     | 150         | °C   |
|         | Storage temperature          | $T_{stg}$ | -55 to +150 | °C   |



Marking Symbol: 5C

Internal Connection



# ■ Electrical Characteristics (Ta=25°C)

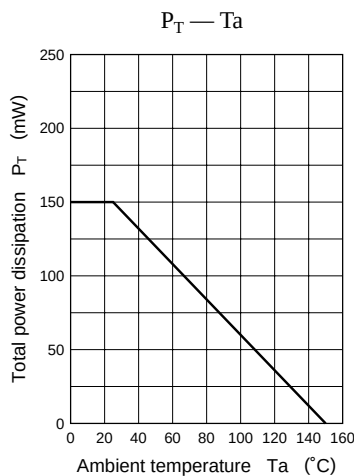
## ● Tr1

| Parameter                               | Symbol        | Conditions                             | min | typ | max | Unit    |
|-----------------------------------------|---------------|----------------------------------------|-----|-----|-----|---------|
| Collector to base voltage               | $V_{CBO}$     | $I_C = 10\mu A, I_E = 0$               | 60  |     |     | V       |
| Collector to emitter voltage            | $V_{CEO}$     | $I_C = 2mA, I_B = 0$                   | 50  |     |     | V       |
| Emitter to base voltage                 | $V_{EBO}$     | $I_E = 10\mu A, I_C = 0$               | 7   |     |     | V       |
| Collector cutoff current                | $I_{CBO}$     | $V_{CB} = 20V, I_E = 0$                |     |     | 0.1 | $\mu A$ |
|                                         | $I_{CEO}$     | $V_{CE} = 10V, I_B = 0$                |     |     | 100 | $\mu A$ |
| Forward current transfer ratio          | $h_{FE}$      | $V_{CE} = 10V, I_C = 2mA$              | 160 |     | 460 |         |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 100mA, I_B = 10mA$              |     | 0.1 | 0.3 | V       |
| Transition frequency                    | $f_T$         | $V_{CB} = 10V, I_E = -2mA, f = 200MHz$ |     | 150 |     | MHz     |
| Collector output capacitance            | $C_{ob}$      | $V_{CB} = 10V, I_E = 0, f = 1MHz$      |     | 3.5 |     | pF      |

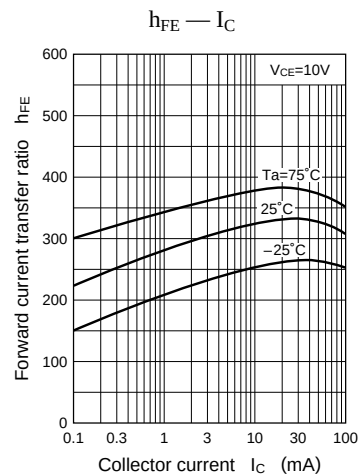
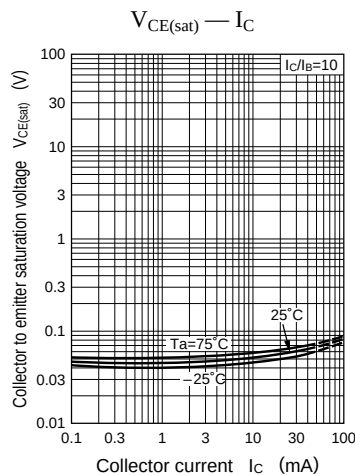
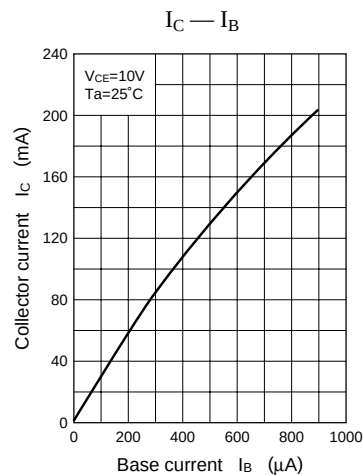
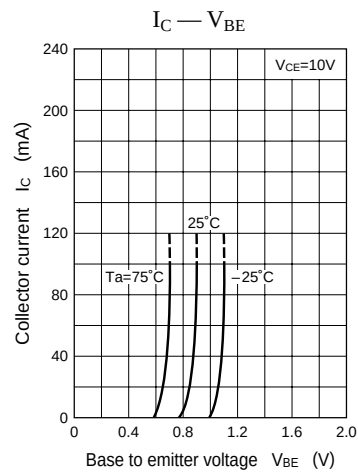
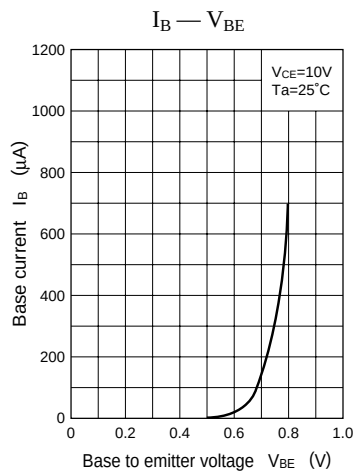
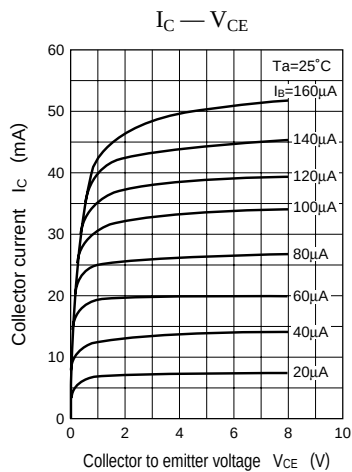
## ● Tr2

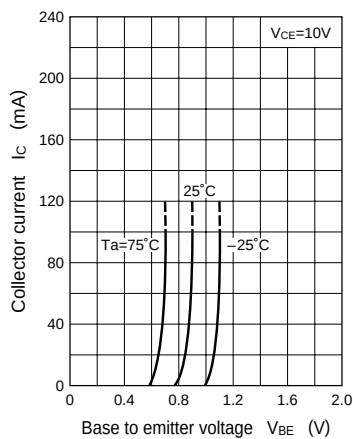
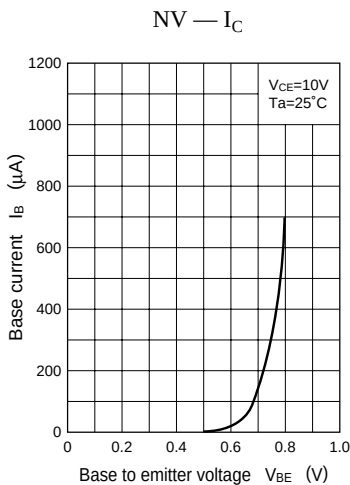
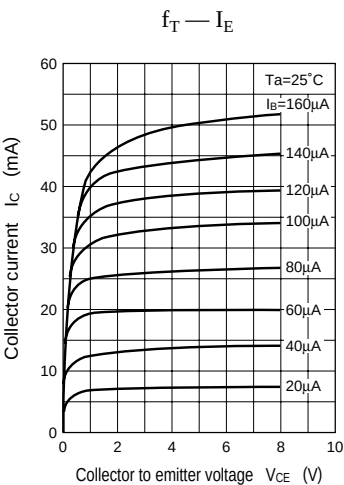
| Parameter                               | Symbol        | Conditions                             | min | typ  | max  | Unit    |
|-----------------------------------------|---------------|----------------------------------------|-----|------|------|---------|
| Collector to base voltage               | $V_{CBO}$     | $I_C = -10\mu A, I_E = 0$              | -60 |      |      | V       |
| Collector to emitter voltage            | $V_{CEO}$     | $I_C = -2mA, I_B = 0$                  | -50 |      |      | V       |
| Emitter to base voltage                 | $V_{EBO}$     | $I_E = -10\mu A, I_C = 0$              | -7  |      |      | V       |
| Collector cutoff current                | $I_{CBO}$     | $V_{CB} = -20V, I_E = 0$               |     |      | -0.1 | $\mu A$ |
|                                         | $I_{CEO}$     | $V_{CE} = -10V, I_B = 0$               |     |      | -100 | $\mu A$ |
| Forward current transfer ratio          | $h_{FE}$      | $V_{CE} = -10V, I_C = -2mA$            | 160 |      | 460  |         |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -100mA, I_B = -10mA$            |     | -0.3 | -0.5 | V       |
| Transition frequency                    | $f_T$         | $V_{CB} = -10V, I_E = 1mA, f = 200MHz$ |     | 80   |      | MHz     |
| Collector output capacitance            | $C_{ob}$      | $V_{CB} = -10V, I_E = 0, f = 1MHz$     |     | 2.7  |      | pF      |

Common characteristics chart

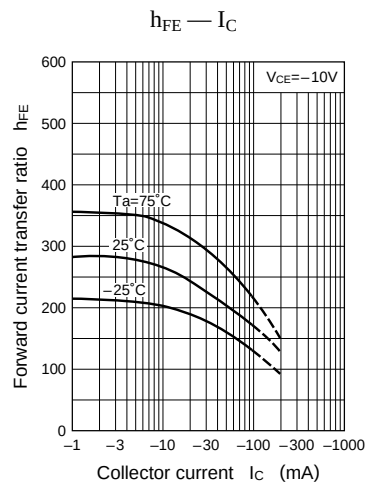
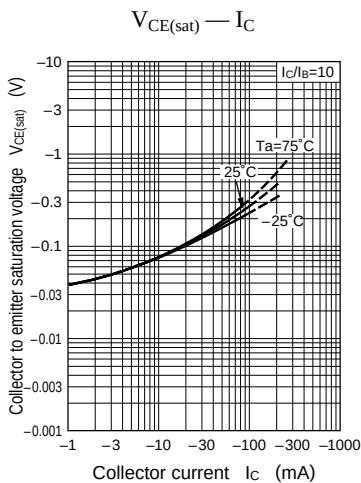
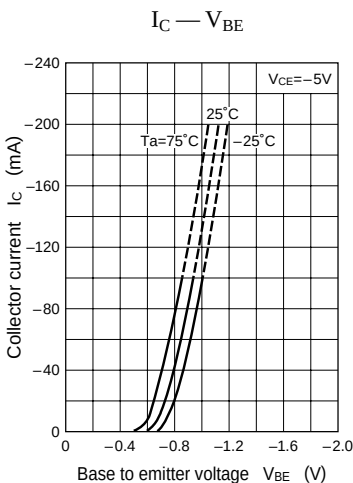
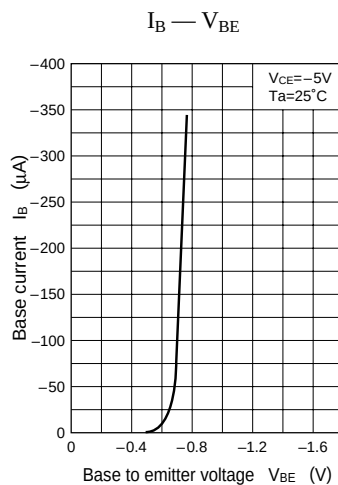
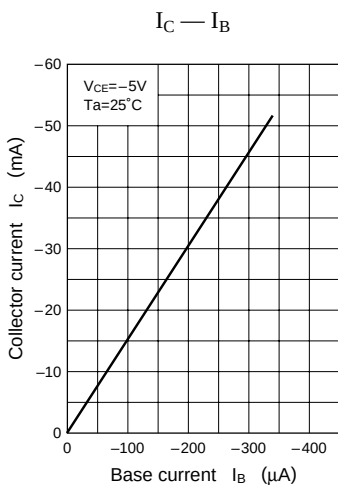
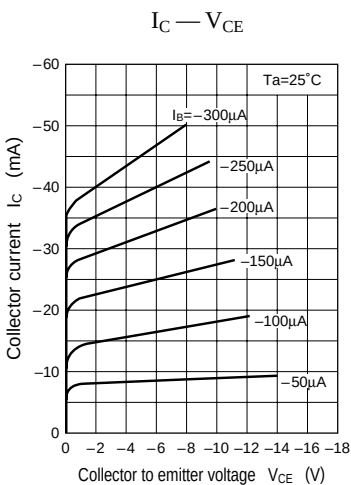


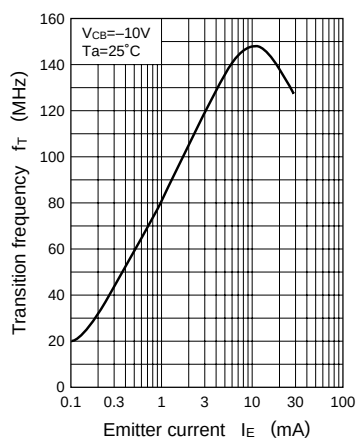
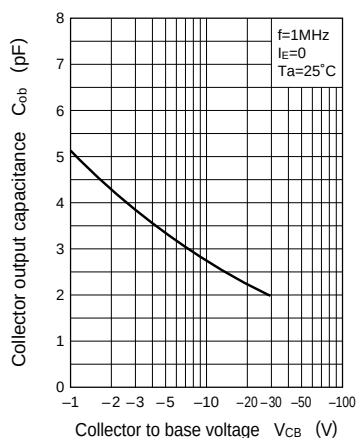
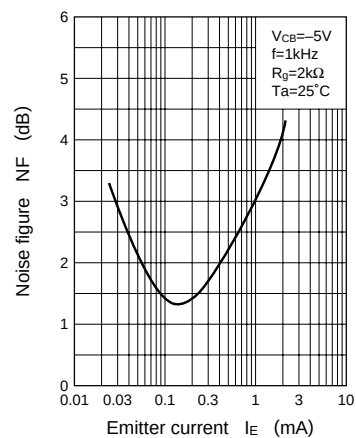
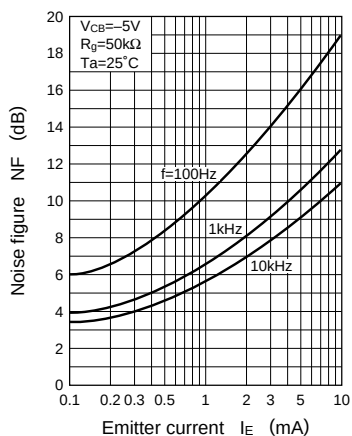
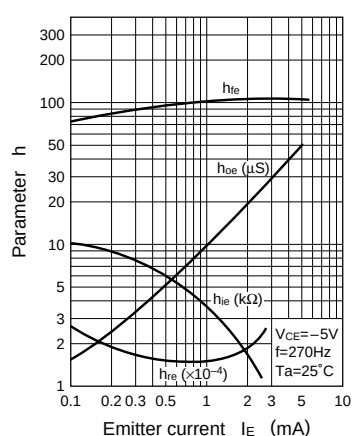
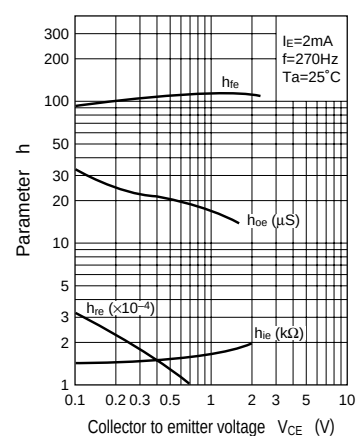
Characteristics charts of Tr1





Characteristics charts of Tr2



$f_T - I_E$  $C_{ob} - V_{CB}$  $NF - I_E$  $NF - I_E$  $h$  Parameter —  $I_E$  $h$  Parameter —  $V_{CE}$ 

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