

# PUB4120 (PU4120), PUB4420 (PU4420)

Silicon NPN triple diffusion planar type darlington

For power amplification

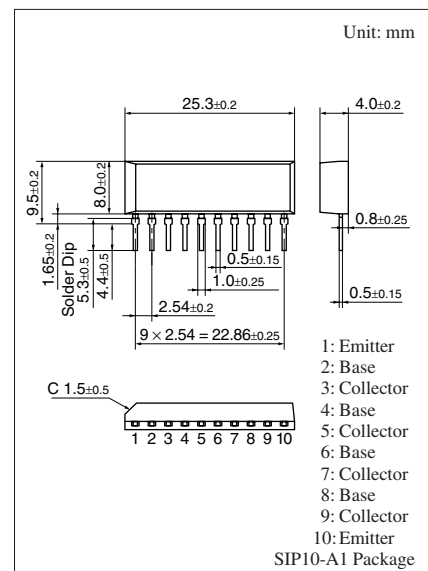
Complementary to PUB4220 (PU4220), PUB4520 (PU4520)

## ■ Features

- High forward current transfer ratio  $h_{FE}$
- High-speed switching
- PUB4120 (PU4120): NPN 4 elements
- PUB4420 (PU4420): NPN 2 elements  $\times 2$

## ■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

| Parameter                             | Symbol                   | Rating      | Unit             |
|---------------------------------------|--------------------------|-------------|------------------|
| Collector-base voltage (Emitter open) | $V_{CBO}$                | 60          | V                |
| Collector-emitter voltage (Base open) | $V_{CEO}$                | 60          | V                |
| Emitter-base voltage (Collector open) | $V_{EBO}$                | 5           | V                |
| Collector current                     | $I_C$                    | 4           | A                |
| Peak collector current                | $I_{CP}$                 | 8           | A                |
| Collector power dissipation           | $P_C$                    | 15          | W                |
|                                       | $T_a = 25^\circ\text{C}$ | 3.5         |                  |
| Junction temperature                  | $T_j$                    | 150         | $^\circ\text{C}$ |
| Storage temperature                   | $T_{stg}$                | -55 to +150 | $^\circ\text{C}$ |



## ■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

| Parameter                                    | Symbol        | Conditions                                                   | Min  | Typ | Max   | Unit          |
|----------------------------------------------|---------------|--------------------------------------------------------------|------|-----|-------|---------------|
| Collector-emitter voltage (Base open)        | $V_{CEO}$     | $I_C = 30\text{ mA}, I_B = 0$                                | 60   |     |       | V             |
| Base-emitter voltage                         | $V_{BE}$      | $V_{CE} = 3\text{ V}, I_C = 3\text{ A}$                      |      |     | 2.5   | V             |
| Collector-base cutoff current (Emitter open) | $I_{CBO}$     | $V_{CB} = 60\text{ V}, I_E = 0$                              |      |     | 200   | $\mu\text{A}$ |
| Collector-emitter cutoff current (Base open) | $I_{CEO}$     | $V_{CE} = 30\text{ V}, I_B = 0$                              |      |     | 500   | $\mu\text{A}$ |
| Emitter-base cutoff current (Collector open) | $I_{EBO}$     | $V_{EB} = 5\text{ V}, I_C = 0$                               |      |     | 2     | mA            |
| Forward current transfer ratio               | $h_{FE1}$     | $V_{CE} = 3\text{ V}, I_C = 0.5\text{ A}$                    | 1000 |     |       | —             |
|                                              | $h_{FE2}^*$   | $V_{CE} = 3\text{ V}, I_C = 3\text{ A}$                      | 1000 |     | 10000 |               |
| Collector-emitter saturation voltage         | $V_{CE(sat)}$ | $I_C = 3\text{ A}, I_B = 12\text{ mA}$                       |      |     | 2.0   | V             |
| Transition frequency                         | $f_T$         | $V_{CE} = 10\text{ V}, I_C = 0.5\text{ A}, f = 1\text{ MHz}$ |      | 20  |       | MHz           |
| Turn-on time                                 | $t_{on}$      | $I_C = 3\text{ A}$                                           |      | 0.5 |       | $\mu\text{s}$ |
| Storage time                                 | $t_{stg}$     | $I_{B1} = 12\text{ mA}, I_{B2} = -12\text{ mA}$              |      | 4.0 |       | $\mu\text{s}$ |
| Fall time                                    | $t_f$         | $V_{CC} = 50\text{ V}$                                       |      | 1.0 |       | $\mu\text{s}$ |

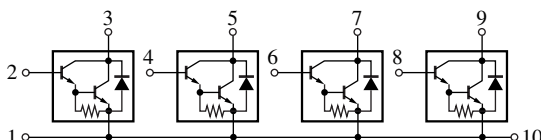
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. \*: Rank classification

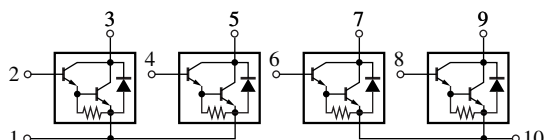
| Rank     | Free          | P             | Q            |
|----------|---------------|---------------|--------------|
| $h_{FE}$ | 1000 to 10000 | 2000 to 10000 | 1000 to 5000 |

## ■ Internal Connection

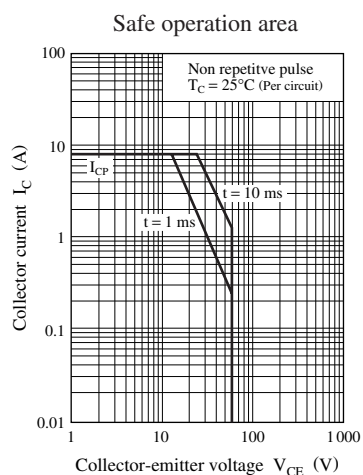
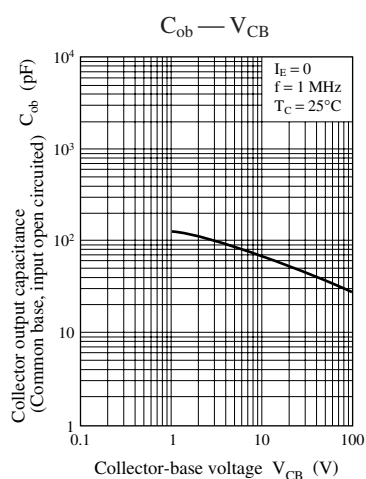
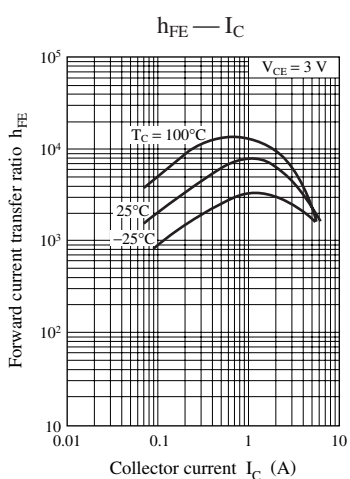
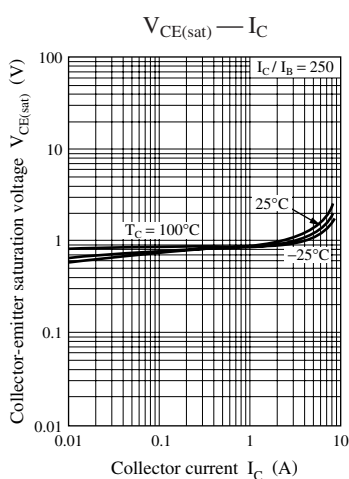
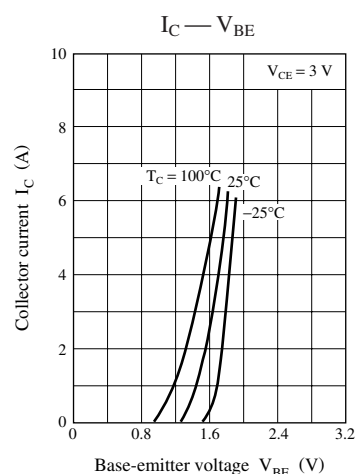
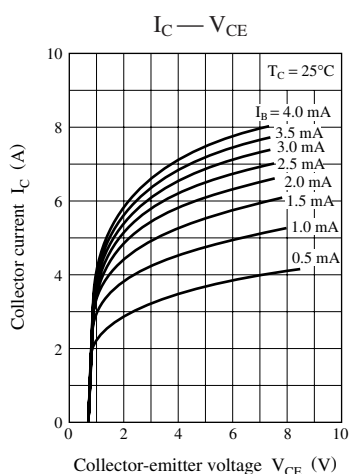
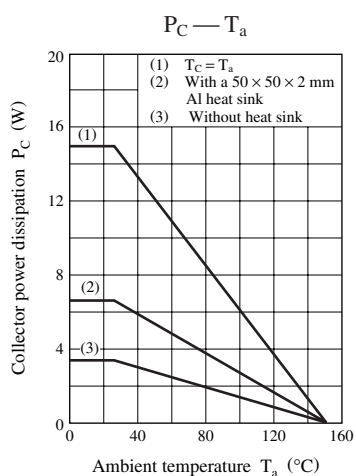
### • PUB4120



### • PUB4420



Note) The part numbers in the parenthesis show conventional part number.



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