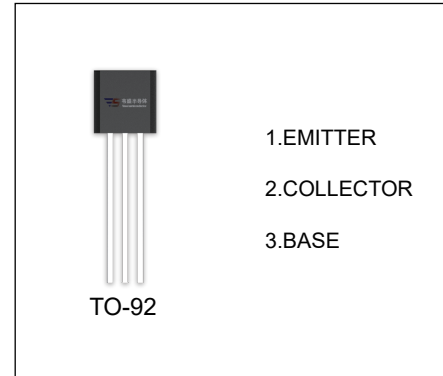


## 2N4402 TRANSISTOR (PNP)

### FEATURES

- General Purpose Amplifier Transistor



### ORDERING INFORMATION

| Part Number | Package | Packing Method | Pack Quantity |
|-------------|---------|----------------|---------------|
| 2N4402      | TO-92   | Bulk           | 1000pcs/Bag   |
| 2N4402-TA   | TO-92   | Tape           | 2000pcs/Box   |

### MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

| Symbol                            | Parameter  | Value    | Unit  |
|-----------------------------------|--|----------|-------|
| V <sub>CB0</sub>                  | Collector-Base Voltage                           | -40      | V     |
| V <sub>CEO</sub>                  | Collector-Emitter Voltage                        | -40      | V     |
| V <sub>EBO</sub>                  | Emitter-Base Voltage                             | -5       | V     |
| I <sub>C</sub>                    | Collector Current -Continuous                    | -0.6     | A     |
| P <sub>D</sub>                    | Collector Power Dissipation                      | 625      | mW    |
| R <sub>θJA</sub>                  | Thermal Resistance from Junction to Ambient      | 200      | °C /W |
| T <sub>J</sub> , T <sub>stg</sub> | Operation Junction and Storage Temperature Range | -55~+150 | °C    |

**$T_a=25\text{ }^\circ\text{C}$  unless otherwise specified**

| Parameter                            | Symbol          | Test conditions   | Min   | Typ | Max   | Unit          |
|--------------------------------------|-----------------|---|-------|-----|-------|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$   | $I_C = -0.1\text{mA}, I_E = 0$                                | -40   |     |       | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$   | $I_C = -1\text{mA}, I_B = 0$                                  | -40   |     |       | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$   | $I_E = -0.1\text{mA}, I_C = 0$                                | -5    |     |       | V             |
| Collector cut-off current            | $I_{CBO}$       | $V_{CB} = -40\text{V}, I_E = 0$                               |       |     | -0.1  | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$       | $V_{EB} = -4\text{V}, I_C = 0$                                |       |     | -0.1  | $\mu\text{A}$ |
| DC current gain                      | $h_{FE}^*$      | $V_{CE} = -1\text{V}, I_C = -1\text{mA}$                      | 30    |     |       |               |
|                                      |                 | $V_{CE} = -1\text{V}, I_C = -10\text{mA}$                     | 50    |     |       |               |
|                                      |                 | $V_{CE} = -2\text{V}, I_C = -150\text{mA}$                    | 50    |     | 150   |               |
|                                      |                 | $V_{CE} = -2\text{V}, I_C = -500\text{mA}$                    | 20    |     |       |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}^*$ | $I_C = -150\text{mA}, I_B = -15\text{mA}$                     |       |     | -0.4  | V             |
|                                      |                 | $I_C = -500\text{mA}, I_B = -50\text{mA}$                     |       |     | -0.75 | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}^*$ | $I_C = -150\text{mA}, I_B = -15\text{mA}$                     | -0.75 |     | -0.95 | V             |
|                                      |                 | $I_C = -500\text{mA}, I_B = -50\text{mA}$                     |       |     | -1.3  | V             |
| Collector output capacitance         | $C_{ob}$        | $V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$              |       |     | 8.5   | pF            |
| Emitter input capacitance            | $C_{ib}$        | $V_{EB} = -0.5\text{V}, I_C = 0, f = 1\text{MHz}$             |       |     | 30    | pF            |
| Transition frequency                 | $f_T$           | $V_{CE} = -10\text{V}, I_C = -20\text{mA}, f = 100\text{MHz}$ | 150   |     |       | MHz           |

 \*Pulse test: pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2.0\%$ .