# 2N4402 TRANSISTOR (PNP)

TO-92

1.EMITTER
2.COLLECTOR
3.BASE

## 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 ($T_a$=25℃ unless otherwise noted)

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | -40 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | -40 | V |
| $V_{EBO}$ | Emitter-Base Voltage | -5 | V |
| $I_C$ | Collector Current -Continuous | -0.6 | A |
| $P_D$ | Collector Power Dissipation | 625 | mW |
| $R_{\theta JA}$ | Thermal Resistance from Junction to Ambient | 200 | ℃ /W |
| $T_J$,$T_{stg}$ | Operation Junction and Storage Temperature Range | -55~+150 | ℃ |

**$T_a$=25℃ unless otherwise specified**

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

*Pulse test: pulse width ≤300μs, duty cycle≤ 2.0%.