

## Silicon PNP Power Transistors

## 2N4904 2N4905 2N4906

## DESCRIPTION

- With TO-3 package
- Complement to type 2N4913/4914/4915
- Low collector saturation voltage

## APPLICATIONS

- For general-purpose switching and power amplifier applications.

## PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | Base        |
| 2   | Emitter     |
| 3   | Collector   |

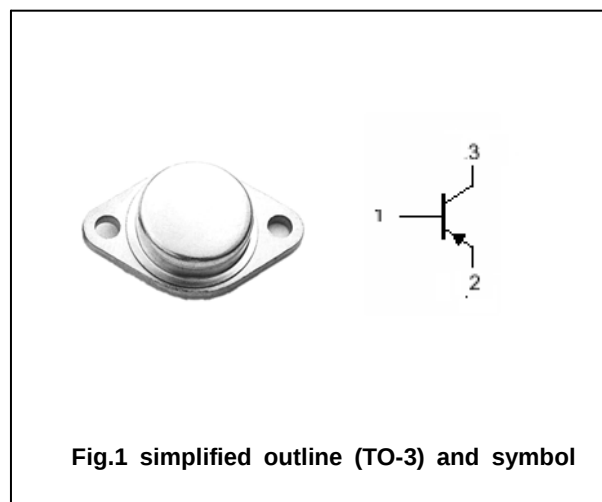


Fig.1 simplified outline (TO-3) and symbol

ABSOLUTE MAXIMUM RATINGS( $T_a=25^{\circ}\text{C}$ )

| SYMBOL    | PARAMETER                 |        | CONDITIONS               | VALUE   | UNIT               |
|-----------|---------------------------|--------|--------------------------|---------|--------------------|
| $V_{CBO}$ | Collector-base voltage    | 2N4904 | Open emitter             | -40     | V                  |
|           |                           | 2N4905 |                          | -60     |                    |
|           |                           | 2N4906 |                          | -80     |                    |
| $V_{CEO}$ | Collector-emitter voltage | 2N4904 | Open base                | -40     | V                  |
|           |                           | 2N4905 |                          | -60     |                    |
|           |                           | 2N4906 |                          | -80     |                    |
| $V_{EBO}$ | Emitter-base voltage      |        | Open collector           | -5      | V                  |
| $I_C$     | Collector current         |        |                          | -5      | A                  |
| $I_B$     | Base current              |        |                          | -1      | A                  |
| $P_D$     | Total power dissipation   |        | $T_C=25^{\circ}\text{C}$ | 87.5    | W                  |
| $T_j$     | Junction temperature      |        |                          | 200     | $^{\circ}\text{C}$ |
| $T_{stg}$ | Storage temperature       |        |                          | -65~200 | $^{\circ}\text{C}$ |

## THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                           | VALUE | UNIT                        |
|---------------|-------------------------------------|-------|-----------------------------|
| $R_{th\ j-c}$ | Thermal resistance junction to case | 2.0   | $^{\circ}\text{C}/\text{W}$ |

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## CHARACTERISTICS

T<sub>j</sub>=25°C unless otherwise specified

| SYMBOL                  | PARAMETER                            |        | CONDITIONS                                                                                      | MIN | TYP. | MAX          | UNIT |
|-------------------------|--------------------------------------|--------|-------------------------------------------------------------------------------------------------|-----|------|--------------|------|
| V <sub>CEO(SUS)</sub>   | Collector-emitter sustaining voltage | 2N4904 | I <sub>C</sub> =-0.2A ; I <sub>B</sub> =0                                                       | -40 |      |              | V    |
|                         |                                      | 2N4905 |                                                                                                 | -60 |      |              |      |
|                         |                                      | 2N4906 |                                                                                                 | -80 |      |              |      |
| V <sub>CE(sat)</sub> -1 | Collector-emitter saturation voltage |        | I <sub>C</sub> =-2.5A; I <sub>B</sub> =-0.25A                                                   |     |      | -1.0         | V    |
| V <sub>CE(sat)</sub> -2 | Collector-emitter saturation voltage |        | I <sub>C</sub> =-5A ; I <sub>B</sub> =-1A                                                       |     |      | -1.5         | V    |
| V <sub>BE(on)</sub>     | Base-emitter on voltage              |        | I <sub>C</sub> =-2.5A ; V <sub>CE</sub> =-2V                                                    |     |      | -1.4         | V    |
| I <sub>CEO</sub>        | Collector cut-off current            |        | V <sub>CE</sub> =Rated V <sub>CEO</sub> ; I <sub>B</sub> =0                                     |     |      | -1.0         | mA   |
| I <sub>CBO</sub>        | Collector cut-off current            |        | V <sub>CB</sub> =Rated V <sub>CBO</sub> ; I <sub>E</sub> =0                                     |     |      | -0.1         | mA   |
| I <sub>CEV</sub>        | Collector cut-off current            |        | V <sub>CE</sub> = Rated V <sub>CEO</sub> ; V <sub>BE(off)</sub> =-1.5V<br>T <sub>C</sub> =150°C |     |      | -0.1<br>-2.0 | mA   |
| I <sub>EBO</sub>        | Emitter cut-off current              |        | V <sub>EB</sub> =-5V; I <sub>C</sub> =0                                                         |     |      | -1.0         | mA   |
| h <sub>FE-1</sub>       | DC current gain                      |        | I <sub>C</sub> =-2.5A ; V <sub>CE</sub> =-2V                                                    | 25  |      | 100          |      |
| h <sub>FE-2</sub>       | DC current gain                      |        | I <sub>C</sub> =-5A ; V <sub>CE</sub> =-2V                                                      | 7   |      |              |      |
| f <sub>T</sub>          | Transition frequency                 |        | I <sub>C</sub> =-1A ; V <sub>CE</sub> =-10V; f=1.0MHz                                           | 4   |      |              | MHz  |

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PACKAGE OUTLINE

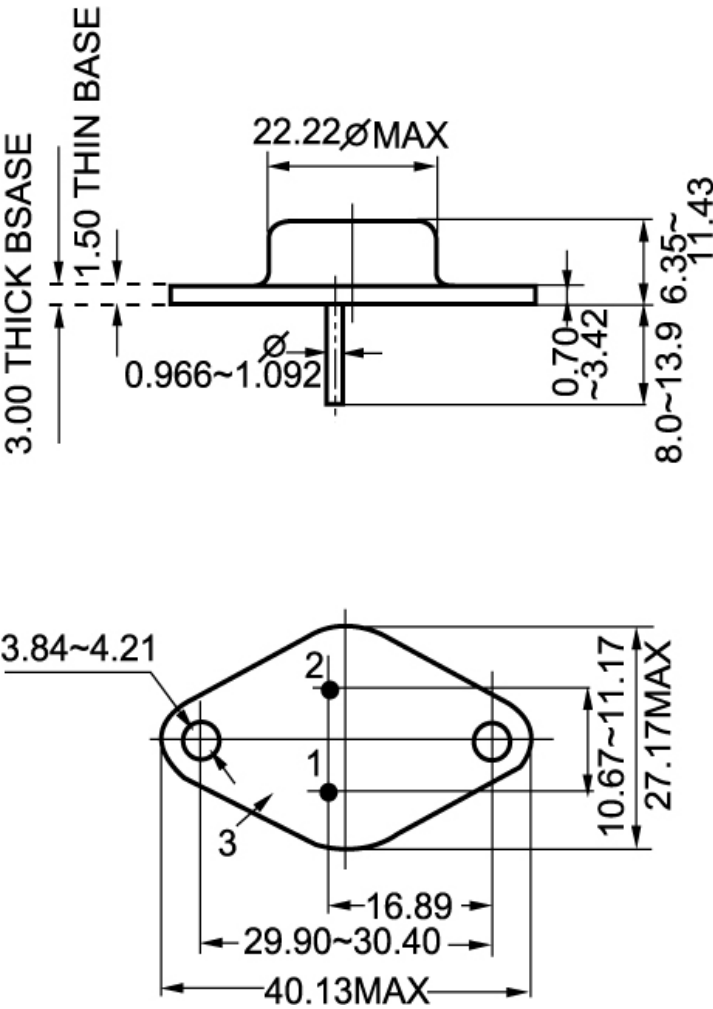


Fig.2 outline dimensions (unindicated tolerance:±0.1mm)