

## Silicon PNP Power Transistors

## 2N5883 2N5884

## DESCRIPTION

- With TO-3 package
- Complement to type 2N5885 2N5886
- High power dissipations

## APPLICATIONS

- They are intended for use in power linear and switching applications

## PINNING

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

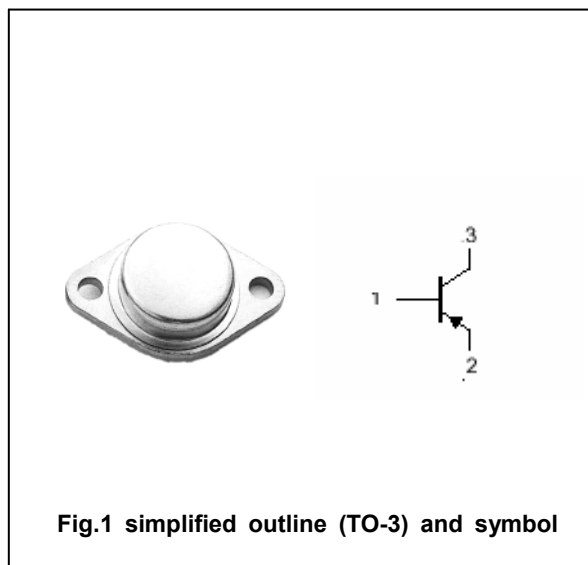


Fig.1 simplified outline (TO-3) and symbol

Absolute maximum ratings( $T_a = \square$ )

| SYMBOL    | PARAMETER                 |        | CONDITIONS        | VALUE   | UNIT      |
|-----------|---------------------------|--------|-------------------|---------|-----------|
| $V_{CBO}$ | Collector-base voltage    | 2N5883 | Open emitter      | -60     | V         |
|           |                           | 2N5884 |                   | -80     |           |
| $V_{CEO}$ | Collector-emitter voltage | 2N5883 | Open base         | -60     | V         |
|           |                           | 2N5884 |                   | -80     |           |
| $V_{EBO}$ | Emitter-base voltage      |        | Open collector    | -5      | V         |
| $I_C$     | Collector current         |        |                   | -25     | A         |
| $I_{CM}$  | Collector current-peak    |        |                   | -50     | A         |
| $I_B$     | Base current              |        |                   | -7.5    | A         |
| $P_D$     | Total Power Dissipation   |        | $T_C = 25\square$ | 200     | W         |
| $T_j$     | Junction temperature      |        |                   | 200     | $\square$ |
| $T_{stg}$ | Storage temperature       |        |                   | -65~200 | $\square$ |

## THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                           | VALUE | UNIT        |
|---------------|-------------------------------------|-------|-------------|
| $R_{th\ j-c}$ | Thermal resistance junction to case | 0.875 | $\square/W$ |

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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                   | 2N5883 | I <sub>C</sub> =-0.2A ; I <sub>B</sub> =0                      | -60 |      |      | V    |
|                       |                                                        | 2N5884 |                                                                | -80 |      |      |      |
| V <sub>CEsat-1</sub>  | Collector-emitter saturation voltage                   |        | I <sub>C</sub> =-15A ; I <sub>B</sub> =-1.5A                   |     |      | -1   | V    |
| V <sub>CEsat-2</sub>  | Collector-emitter saturation voltage                   |        | I <sub>C</sub> =-25A ; I <sub>B</sub> =-6.25A                  |     |      | -4   | V    |
| V <sub>BEsat</sub>    | Base-emitter saturation voltage                        |        | I <sub>C</sub> =-25A ; I <sub>B</sub> =-6.25A                  |     |      | -2.5 | V    |
| V <sub>BE</sub>       | Base-emitter on voltage                                |        | I <sub>C</sub> =-10A ; V <sub>CE</sub> =-4V                    |     |      | -1.5 | V    |
| I <sub>CBO</sub>      | Collector cut-off current                              |        | V <sub>CB</sub> =ratedV <sub>CBO</sub> ; I <sub>B</sub> =0     |     |      | -1   | mA   |
| I <sub>CEO</sub>      | Collector cut-off current                              | 2N5883 | V <sub>CE</sub> =-30V ; I <sub>B</sub> =0                      |     |      | -2   | mA   |
|                       |                                                        | 2N5884 | V <sub>CE</sub> =-40V ; I <sub>B</sub> =0                      |     |      |      |      |
| I <sub>CEV</sub>      | Collector cut-off current (V <sub>BE(off)</sub> =1.5V) |        | V <sub>CE</sub> =ratedV <sub>CEO</sub> ;                       |     |      | -1   | mA   |
|                       |                                                        |        | V <sub>CE</sub> =ratedV <sub>CEO</sub> ; T <sub>C</sub> =150°C |     |      | -10  |      |
| I <sub>EBO</sub>      | Emitter cut-off current                                |        | V <sub>EB</sub> =-5V ; I <sub>C</sub> =0                       |     |      | -1   | mA   |
| h <sub>FE-1</sub>     | DC current gain                                        |        | I <sub>C</sub> =-3A ; V <sub>CE</sub> =-V                      | 35  |      |      |      |
| h <sub>FE-2</sub>     | DC current gain                                        |        | I <sub>C</sub> =-10A ; V <sub>CE</sub> =-4V                    | 20  |      | 100  |      |
| h <sub>FE-3</sub>     | DC current gain                                        |        | I <sub>C</sub> =-25A ; V <sub>CE</sub> =-4V                    | 4   |      |      |      |
| f <sub>T</sub>        | Transisition frequency                                 |        | I <sub>C</sub> =-1A ; V <sub>CE</sub> =-10V ; f=1MHz           | 4   |      |      | MHz  |
| C <sub>cb</sub>       | Collector base capacitance                             |        | I <sub>E</sub> =0 ; V <sub>CB</sub> =-10V ; f=1MHz             |     |      | 500  | pF   |

## Switching times

|                |              |                                                                                         |  |  |     |    |
|----------------|--------------|-----------------------------------------------------------------------------------------|--|--|-----|----|
| t <sub>r</sub> | Rise time    | I <sub>C</sub> =-10A ; I <sub>B1</sub> =- I <sub>B2</sub> =-1A<br>V <sub>CC</sub> =-30V |  |  | 0.7 | μs |
| t <sub>s</sub> | Storage time |                                                                                         |  |  | 1.0 | μs |
| t <sub>f</sub> | Fall time    |                                                                                         |  |  | 0.8 | μs |

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PACKAGE OUTLINE

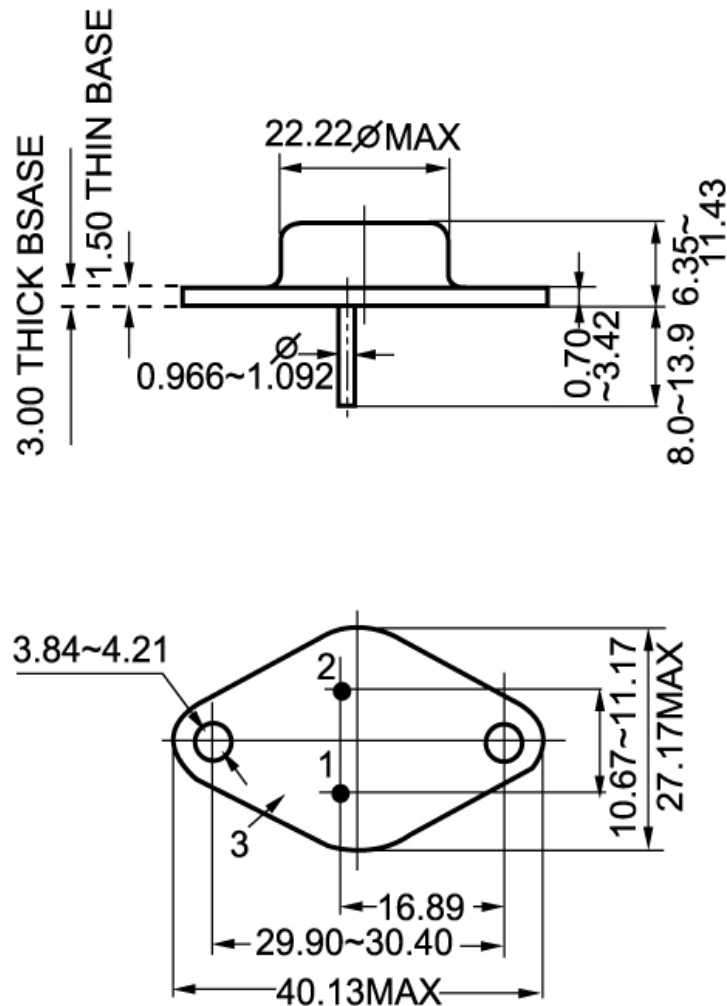


Fig.2 outline dimensions (unindicated tolerance:±0.10mm)