

## Silicon NPN Power Transistors

2SC3171

## DESCRIPTION

- With TO-3PFa package
- High collector current
- High speed switching

## APPLICATIONS

- For high speed switching applications

## PINNING(see Fig.2)

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

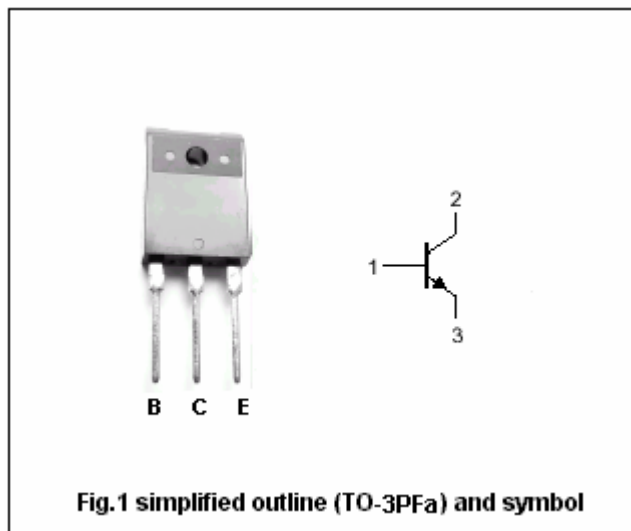


Fig.1 simplified outline (TO-3PFa) and symbol

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

| SYMBOL    | PARAMETER                   | CONDITIONS             | VALUE   | UNIT             |
|-----------|-----------------------------|------------------------|---------|------------------|
| $V_{CBO}$ | Collector-base voltage      | Open emitter           | 500     | V                |
| $V_{CEO}$ | Collector-emitter voltage   | Open base              | 400     | V                |
| $V_{EBO}$ | Emitter-base voltage        | Open collector         | 7       | V                |
| $I_C$     | Collector current           |                        | 10      | A                |
| $I_{CP}$  | Collector current-peak      |                        | 20      | A                |
| $I_B$     | Base current                |                        | 5       | A                |
| $P_C$     | Collector power dissipation | $T_C=25^\circ\text{C}$ | 100     | W                |
|           |                             | $T_a=25^\circ\text{C}$ | 3       |                  |
| $T_j$     | Junction temperature        |                        | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage temperature         |                        | -55~150 | $^\circ\text{C}$ |

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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 | I <sub>C</sub> =0.2A ; L=25mH               | 400 |      |     | V    |
| V <sub>CE(sat)</sub>  | Collector-emitter saturation voltage | I <sub>C</sub> =5A; I <sub>B</sub> =1A      |     |      | 1.0 | V    |
| V <sub>BE(sat)</sub>  | Base-emitter saturation voltage      | I <sub>C</sub> =5A; I <sub>B</sub> =1A      |     |      | 1.5 | V    |
| I <sub>CBO</sub>      | Collector cut-off current            | V <sub>CB</sub> =500V; I <sub>E</sub> =0    |     |      | 0.1 | mA   |
| I <sub>EBO</sub>      | Emitter cut-off current              | V <sub>EB</sub> =5V; I <sub>C</sub> =0      |     |      | 0.1 | mA   |
| h <sub>FE-1</sub>     | DC current gain                      | I <sub>C</sub> =0.1A ; V <sub>CE</sub> =5V  | 15  |      |     |      |
| h <sub>FE-2</sub>     | DC current gain                      | I <sub>C</sub> =5A ; V <sub>CE</sub> =5V    | 8   |      |     |      |
| f <sub>T</sub>        | Transition frequency                 | I <sub>C</sub> =0.5A ; V <sub>CE</sub> =10V |     | 8    |     | MHz  |

## Switching times

|                 |              |  |  |  |     |    |
|-----------------|--------------|--|--|--|-----|----|
| t <sub>on</sub> | Turn-on time | I <sub>C</sub> =5A; I <sub>B1</sub> =-I <sub>B2</sub> =1A<br>V <sub>CC</sub> =100V |  |  | 1.0 | μs |
| t <sub>s</sub>  | Storage time |  |  |  | 3.0 | μs |
| t <sub>f</sub>  | Fall time    |  |  |  | 1.0 | μs |

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PACKAGE OUTLINE

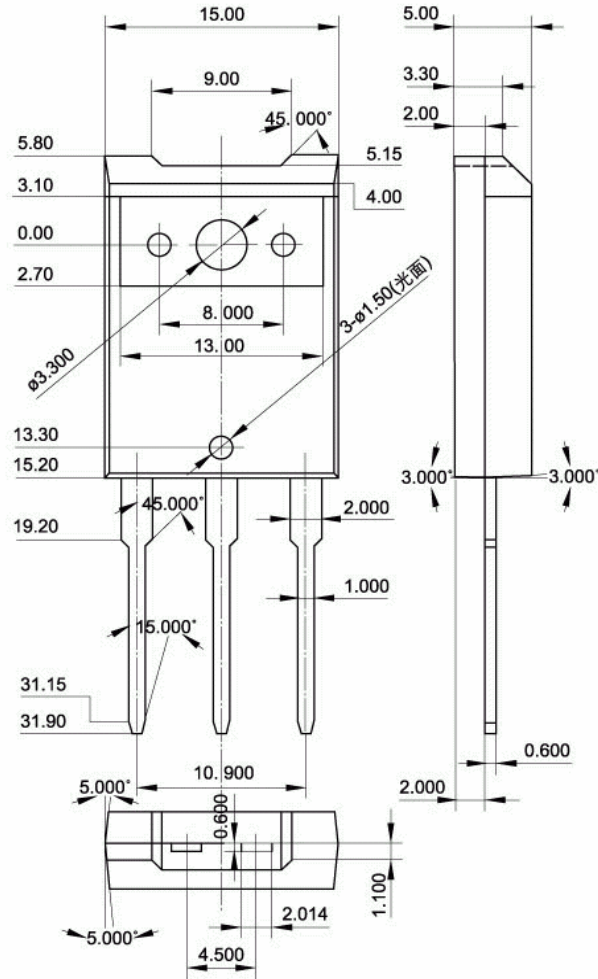


Fig.2 outline dimensions (unindicated tolerance:±0.3mm)