

## Silicon NPN Power Transistors

## BUV47A

## DESCRIPTION

- With TO-3PN package
- High breakdown voltage
- Fast switching time

## APPLICATIONS

- Suited for 220V switchmode power supply,DC and AC motor control

## PINNING

| PIN | DESCRIPTION                          |
|-----|--------------------------------------|
| 1   | Base                                 |
| 2   | Collector;connected to mounting base |
| 3   | Emitter                              |

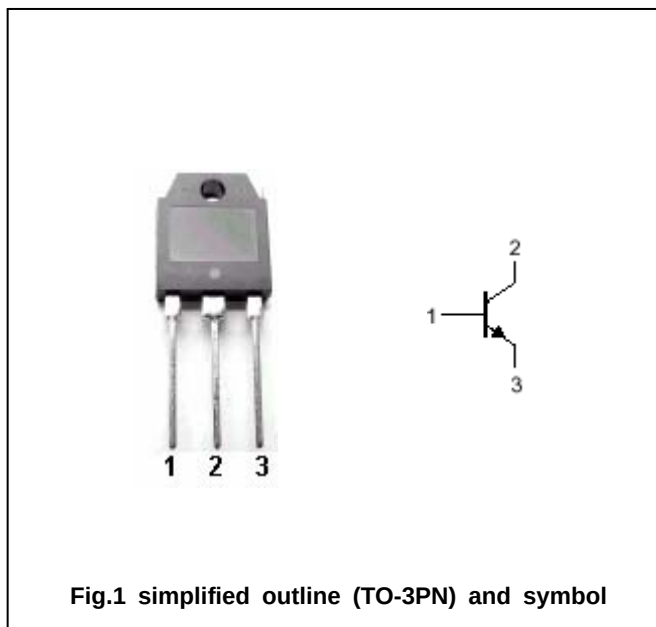


Fig.1 simplified outline (TO-3PN) and symbol

Absolute maximum ratings (T<sub>c</sub>=25°C)

| SYMBOL           | PARAMETER                   | CONDITIONS           | VALUE   | UNIT |
|------------------|-----------------------------|----------------------|---------|------|
| V <sub>CBO</sub> | Collector-base voltage      | Open emitter         | 1000    | V    |
| V <sub>CEO</sub> | Collector-emitter voltage   | Open base            | 450     | V    |
| V <sub>EBO</sub> | Emitter-base voltage        | Open collector       | 7       | V    |
| I <sub>C</sub>   | Collector current           |                      | 9       | A    |
| I <sub>CM</sub>  | Collector current-peak      |                      | 15      | A    |
| I <sub>B</sub>   | Base current                |                      | 3       | A    |
| I <sub>BM</sub>  | Base current -peak          |                      | 6       | A    |
| P <sub>C</sub>   | Collector power dissipation | T <sub>C</sub> =25°C | 120     | W    |
| T <sub>j</sub>   | Junction temperature        |                      | 150     | °C   |
| T <sub>stg</sub> | Storage temperature         |                      | -65~150 | °C   |

## THERMAL CHARACTERISTICS

| SYMBOL              | PARAMETER                           | MAX | UNIT |
|---------------------|-------------------------------------|-----|------|
| R <sub>th j-C</sub> | Thermal resistance junction to case | 1.0 | °C/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 | I <sub>C</sub> =0.2A ; L=25mH                                         | 450 |      |             | V    |
| V <sub>(BR)EBO</sub>  | Emitter-base breakdown voltage       | I <sub>E</sub> =50mA ; I <sub>C</sub> =0                              | 7   |      | 30          | V    |
| V <sub>CEsat-1</sub>  | Collector-emitter saturation voltage | I <sub>C</sub> =5A; I <sub>B</sub> =1.0A                              |     |      | 1.5         | V    |
| V <sub>CEsat-2</sub>  | Collector-emitter saturation voltage | I <sub>C</sub> =8A; I <sub>B</sub> =2.5A                              |     |      | 3.0         | V    |
| V <sub>BEsat</sub>    | Base-emitter saturation voltage      | I <sub>C</sub> =5A; I <sub>B</sub> =1.0A                              |     |      | 1.6         | V    |
| I <sub>CES</sub>      | Collector cut-off current            | V <sub>CE</sub> =1000V; V <sub>BE</sub> =0<br>T <sub>C</sub> =125°C   |     |      | 0.15<br>1.5 | mA   |
| I <sub>CER</sub>      | Collector cut-off current            | V <sub>CB</sub> =1000V; R <sub>BE</sub> =10Ω<br>T <sub>C</sub> =125°C |     |      | 0.4<br>3.0  | mA   |
| I <sub>EBO</sub>      | Emitter cut-off current              | V <sub>EB</sub> =5V; I <sub>C</sub> =0                                |     |      | 1           | mA   |
| h <sub>FE</sub>       | DC current gain                      | I <sub>C</sub> =1A ; V <sub>CE</sub> =5V                              | 15  |      | 50          |      |
| f <sub>T</sub>        | Transition frequency                 | I <sub>C</sub> =0.5A ; V <sub>CE</sub> =10V; f=1MHz                   |     | 8    |             | MHz  |
| C <sub>OB</sub>       | Output capacitance                   | I <sub>C</sub> =0 ; V <sub>CB</sub> =20V; f=0.1MHz                    |     | 105  |             | pF   |

Switching times resistive load

|                 |              |                                                                                    |  |  |     |    |
|-----------------|--------------|------------------------------------------------------------------------------------|--|--|-----|----|
| 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> =150V |  |  | 1.0 | μs |
| t <sub>s</sub>  | Storage time |                                                                                    |  |  | 3.0 | μs |
| t <sub>f</sub>  | Fall time    |                                                                                    |  |  | 0.8 | μs |

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PACKAGE OUTLINE

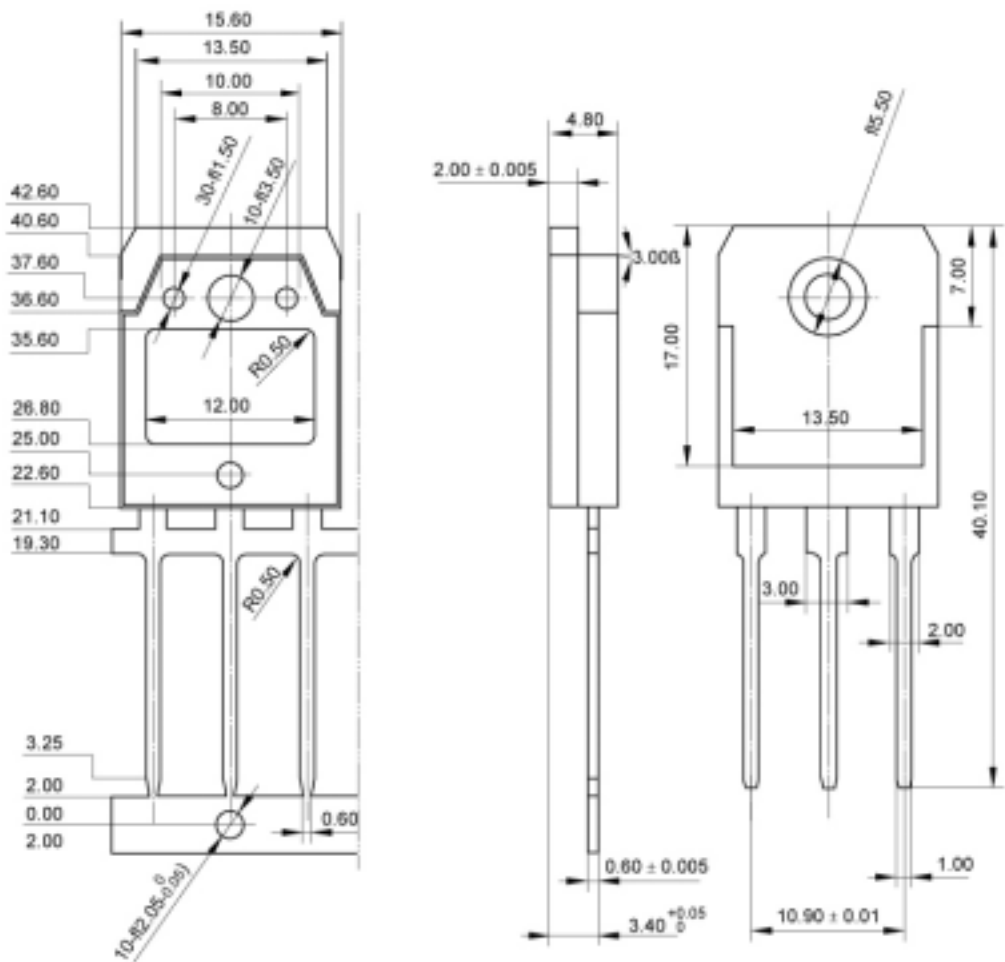


Fig.2 outline dimensions