

Silicon NPN Power Transistors

BUV21

DESCRIPTION

- With TO-3 package
- High DC current gain@ $I_C=12A$
- Fast switching times
- Low collector saturation voltage

APPLICATIONS

- Designed for high current,high speed and high power applications.

PINNING(see fig.2)

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

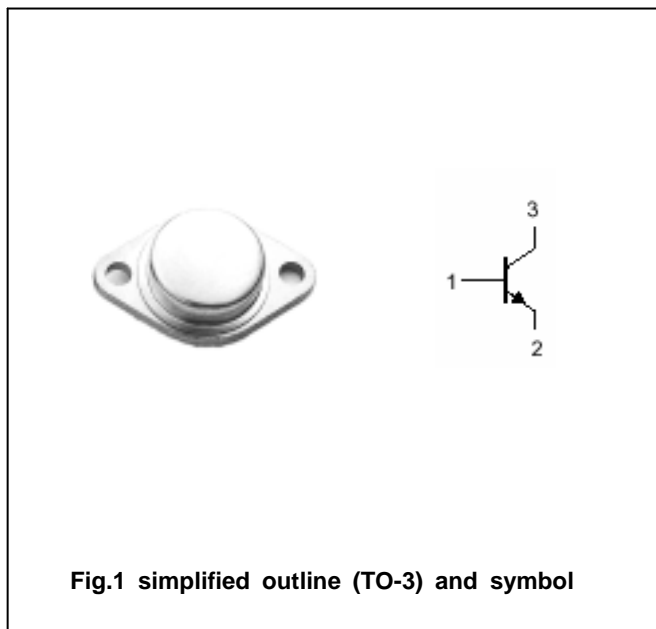


Fig.1 simplified outline (TO-3) and symbol

Absolute maximum ratings ( $T_c=25^\circ C$ )

| SYMBOL    | PARAMETER                 | CONDITIONS     | VALUE   | UNIT |
|-----------|---------------------------|----------------|---------|------|
| $V_{CBO}$ | Collector-base voltage    | Open emitter   | 250     | V    |
| $V_{CEO}$ | Collector-emitter voltage | Open base      | 200     | V    |
| $V_{EBO}$ | Emitter-base voltage      | Open collector | 7       | V    |
| $I_C$     | Collector current         |                | 40      | A    |
| $I_{CM}$  | Collector current-peak    |                | 50      | A    |
| $I_B$     | Base current              |                | 8       | A    |
| $P_T$     | Total power dissipation   | $T_c=25$       | 150     | W    |
| $T_j$     | Junction temperature      |                | -65~200 |      |
| $T_{stg}$ | Storage temperature       |                | -65~200 |      |

THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                           | MAX | UNIT |
|---------------|-------------------------------------|-----|------|
| $R_{th\ j-c}$ | Thermal resistance junction to case | 0.7 | /W   |

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## CHARACTERISTICS

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

| SYMBOL                | PARAMETER                            | CONDITIONS   | MIN | TYP. | MAX       | UNIT |
|-----------------------|--------------------------------------|--|-----|------|-----------|------|
| V <sub>CEQ(SUS)</sub> | Collector-emitter sustaining voltage | I <sub>C</sub> =0.2A; I <sub>B</sub> =0; L=25mH                      | 200 |      |           | V    |
| V <sub>(BR)EBO</sub>  | Emitter-base breakdown voltage       | I <sub>E</sub> =50mA; I <sub>C</sub> =0                              | 7   |      |           | V    |
| V <sub>CEsat-1</sub>  | Collector-emitter saturation voltage | I <sub>C</sub> =12 A; I <sub>B</sub> =1.2A                           |     |      | 0.6       | V    |
| V <sub>CEsat-2</sub>  | Collector-emitter saturation voltage | I <sub>C</sub> =25 A; I <sub>B</sub> =3A                             |     |      | 1.5       | V    |
| V <sub>BEsat</sub>    | Base-emitter saturation voltage      | I <sub>C</sub> =25A; I <sub>B</sub> =3A                              |     |      | 1.5       | V    |
| I <sub>CEx</sub>      | Collector cut-off current            | V <sub>CE</sub> =250V; V <sub>BE</sub> =-1.5V<br>T <sub>C</sub> =125 |     |      | 3.0<br>12 | mA   |
| I <sub>CEO</sub>      | Collector cut-off current            | V <sub>CE</sub> =160V; I <sub>B</sub> =0                             |     |      | 3.0       | 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> =12A ; V <sub>CE</sub> =2V                            |     | 20   | 60        |      |
| h <sub>FE-2</sub>     | DC current gain                      | I <sub>C</sub> =25A ; V <sub>CE</sub> =4V                            |     | 10   |           |      |
| f <sub>T</sub>        | Transition frequency                 | I <sub>C</sub> =2A ; V <sub>CE</sub> =15V; f=4MHz                    | 8.0 |      |           | MHz  |

## Switching times

|                 |              |  |  |  |     |    |
|-----------------|--------------|--|--|--|-----|----|
| t <sub>on</sub> | Turn-on time | I <sub>C</sub> =25A ; I <sub>B1</sub> =-I <sub>B2</sub> =3A<br>V <sub>CC</sub> =100V ; R <sub>C</sub> =4 |  |  | 1.0 | μs |
| t <sub>s</sub>  | Storage time |  |  |  | 1.8 | μs |
| t <sub>f</sub>  | Fall time    |  |  |  | 0.4 | μs |

PACKAGE OUTLINE

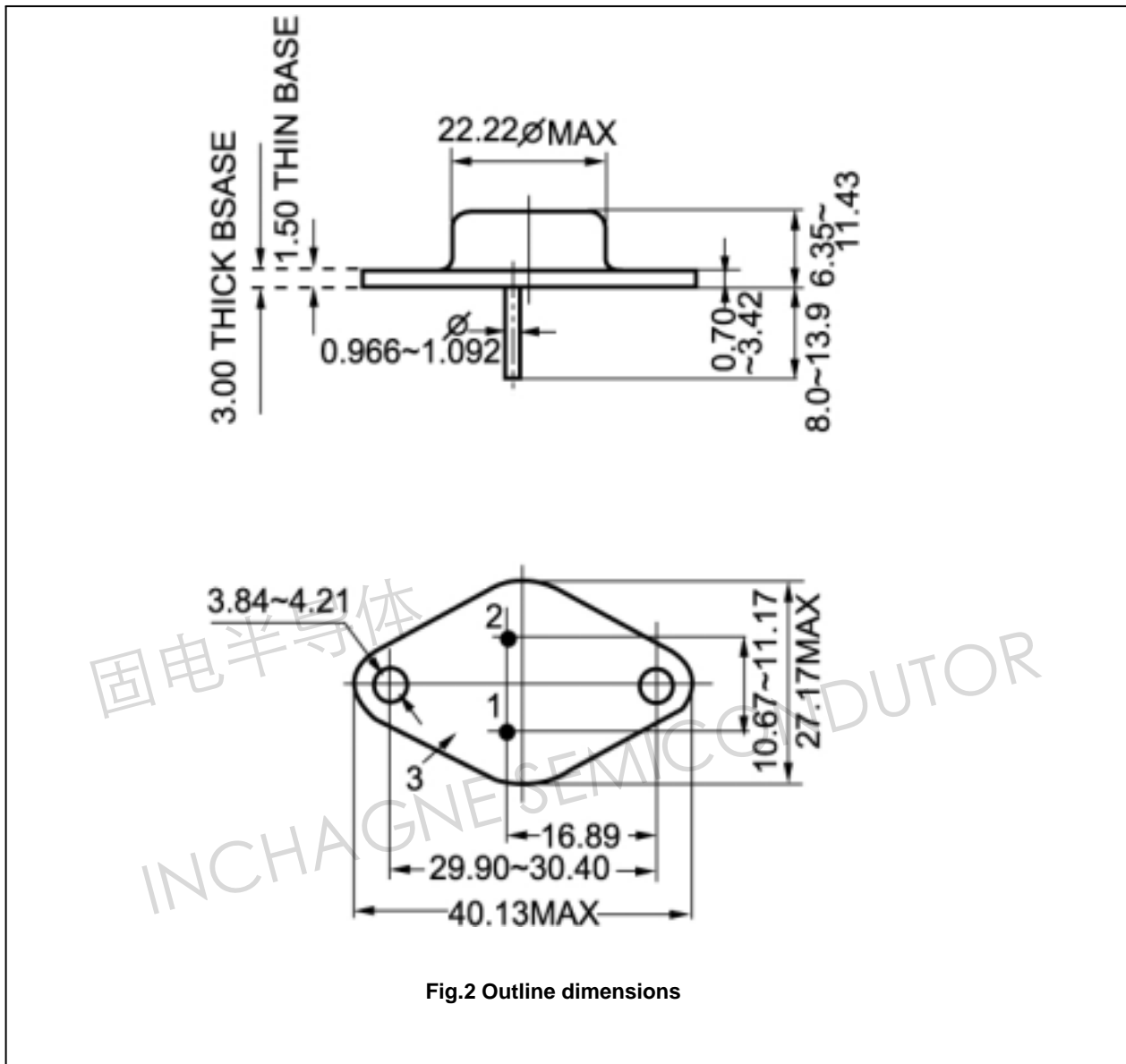


Fig.2 Outline dimensions