

Silicon NPN Power Transistors

2SC3947

**DESCRIPTION**

- With TO-3PML package
- High voltage ,high speed

**APPLICATIONS**

- For TV horizontal output and power switching applications

**PINNING**

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

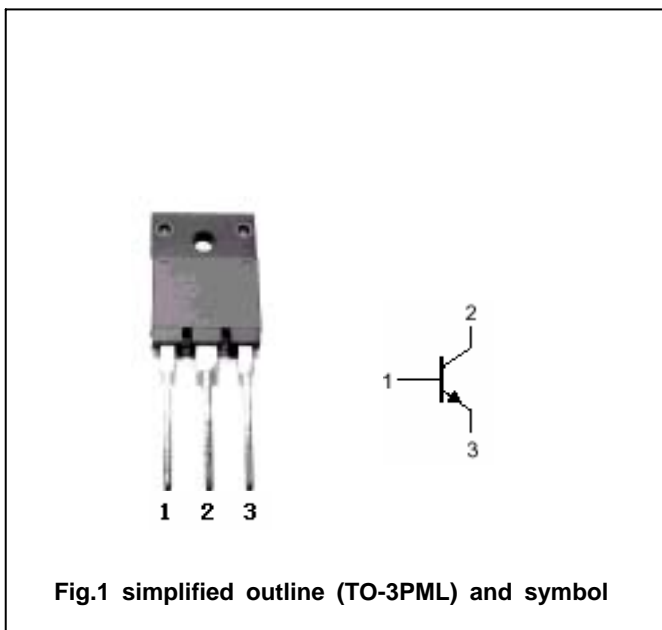


Fig.1 simplified outline (TO-3PML) and symbol

**Absolute maximum ratings (Ta=25 )**

| SYMBOL    | PARAMETER                 | CONDITIONS     | MAX     | UNIT |
|-----------|---------------------------|----------------|---------|------|
| $V_{CBO}$ | Collector-base voltage    | Open emitter   | 850     | V    |
| $V_{CEO}$ | Collector-emitter voltage | Open base      | 500     | V    |
| $V_{EBO}$ | Emitter-base voltage      | Open collector | 7       | V    |
| $I_C$     | Collector current         |                | 5       | A    |
| $I_{CM}$  | Collector current-peak    |                | 8       | A    |
| $I_B$     | Base current              |                | 2       | A    |
| $P_C$     | Collector dissipation     | $T_C=25$       | 70      | W    |
| $T_j$     | Junction temperature      |                | 150     |      |
| $T_{stg}$ | Storage temperature       |                | -55~150 |      |

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## CHARACTERISTICS

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

| SYMBOL               | PARAMETER                            | CONDITIONS   | MIN | TYP. | MAX        | UNIT |
|----------------------|--------------------------------------|--|-----|------|------------|------|
| V <sub>(BR)CEO</sub> | Collector-emitter breakdown voltage  | I <sub>C</sub> =10mA ; R <sub>BE</sub> =                         | 500 |      |            | V    |
| V <sub>(BR)CBO</sub> | Collector-base breakdown voltage     | I <sub>C</sub> =1mA ; I <sub>E</sub> =0                          | 850 |      |            | V    |
| V <sub>(BR)EBO</sub> | Emitter-base breakdown voltage       | I <sub>E</sub> =1mA ; I <sub>C</sub> =0                          | 7   |      |            | V    |
| V <sub>CEsat</sub>   | Collector-emitter saturation voltage | I <sub>C</sub> =2.5A ; I <sub>B</sub> =0.5A                      |     |      | 1.0        | V    |
| V <sub>BEsat</sub>   | Base-emitter saturation voltage      | I <sub>C</sub> =2.5A ; I <sub>B</sub> =0.5A                      |     |      | 1.5        | V    |
| I <sub>CBO</sub>     | Collector cut-off current            | V <sub>CE</sub> =800V ; I <sub>E</sub> =0<br>T <sub>C</sub> =100 |     |      | 0.1<br>1.0 | mA   |
| I <sub>EBO</sub>     | Emitter cut-off current              | V <sub>EB</sub> =6V ; I <sub>C</sub> =0                          |     |      | 0.1        | mA   |
| h <sub>FE</sub>      | DC current gain                      | I <sub>C</sub> =2.5A ; V <sub>CE</sub> =5V                       | 10  |      | 30         |      |
| f <sub>T</sub>       | Transition frequency                 | I <sub>C</sub> =0.5A ; V <sub>CE</sub> =10V                      |     | 20   |            | MHz  |
| C <sub>OB</sub>      | Output capacitance                   | I <sub>E</sub> =0 ; V <sub>CB</sub> =10V ; f=1MHz                |     | 70   |            | pF   |

## Switching times

|                  |              |  |  |  |     |    |
|------------------|--------------|--|--|--|-----|----|
| t <sub>r</sub>   | Rise time    | I <sub>C</sub> =2.5A ; V <sub>CC</sub> =250V<br>I <sub>B1</sub> =0.5A ; I <sub>B2</sub> =-1A |  |  | 0.5 | μs |
| t <sub>stg</sub> | Storage time |  |  |  | 3.0 | μs |
| t <sub>f</sub>   | Fall time    |  |  |  | 0.3 | μs |

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PACKAGE OUTLINE

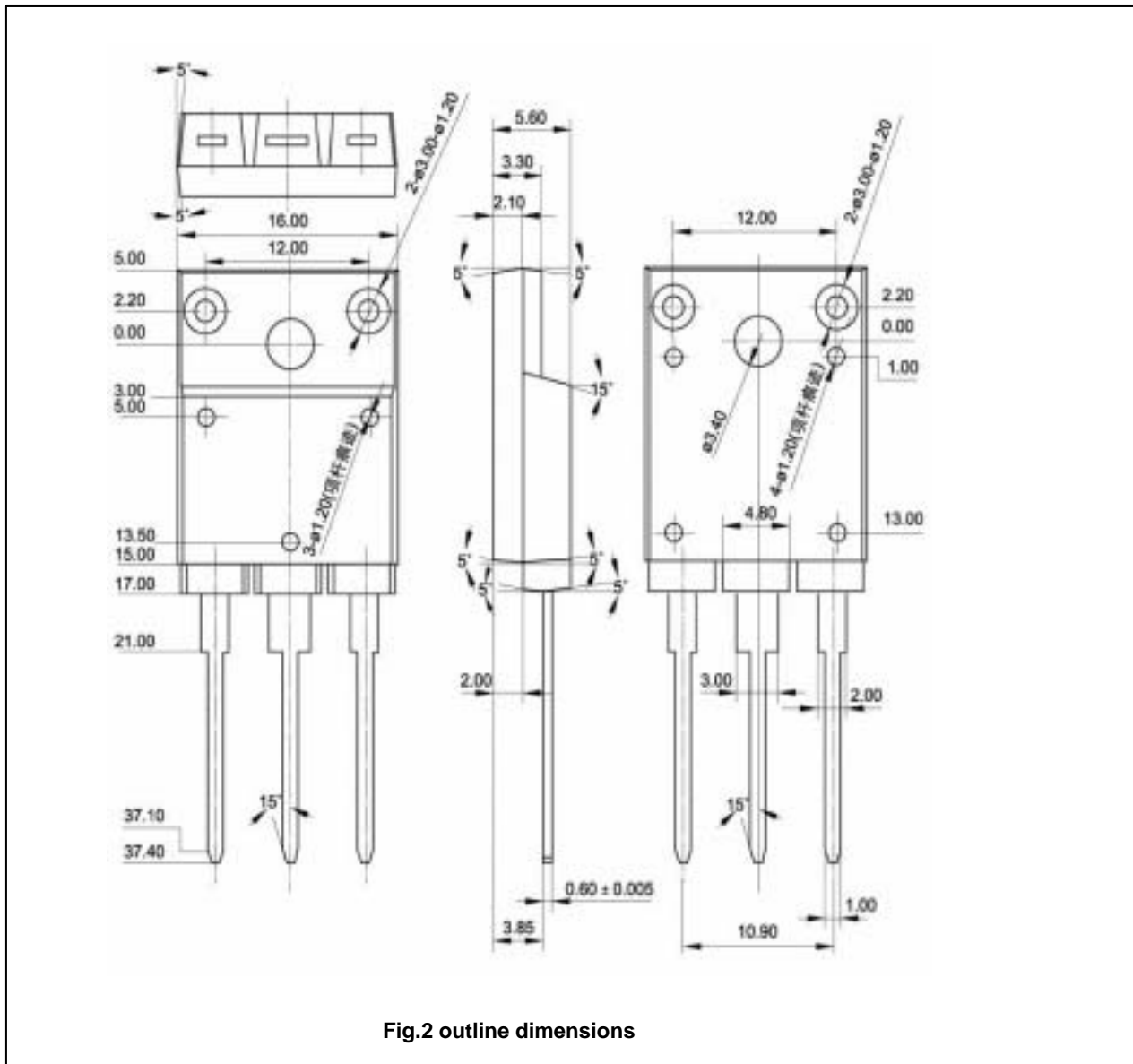


Fig.2 outline dimensions