

# SPTECH Product Specification

## SPTECH Silicon NPN Power Transistors

MJ15001

### DESCRIPTION

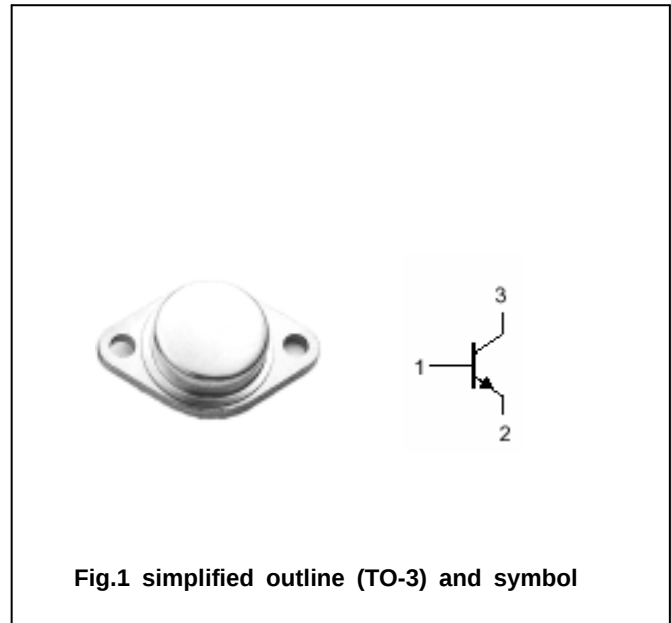
- With TO-3 package
- Complement to type MJ15002
- Wide area of safe operation

### APPLICATIONS

- For high power audio,disk head positioners and other linear applications

### PINNING(see Fig.2)

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



### Absolute maximum ratings( $T_a = 25^\circ\text{C}$ )

| SYMBOL    | PARAMETER                 | CONDITIONS     | VALUE   | UNIT |
|-----------|---------------------------|----------------|---------|------|
| $V_{CBO}$ | Collector-base voltage    | Open emitter   | 140     | V    |
| $V_{CEO}$ | Collector-emitter voltage | Open base      | 140     | V    |
| $V_{EBO}$ | Emitter-base voltage      | Open collector | 5       | V    |
| $I_C$     | Collector current         |                | 15      | A    |
| $I_B$     | Base current              |                | 5       | A    |
| $I_E$     | Emitter current           |                | -20     | A    |
| $P_D$     | Total power dissipation   | $T_C = 25$     | 200     | W    |
| $T_j$     | Junction temperature      |                | 200     |      |
| $T_{stg}$ | Storage temperature       |                | -65~200 |      |

### THERMAL CHARACTERISTICS

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

**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                                 | 140 |      |            | V    |
| V <sub>CEsat</sub>    | Collector-emitter saturation voltage                           | I <sub>C</sub> =4A; I <sub>B</sub> =0.4A                                 |     |      | 1.0        | V    |
| V <sub>BE</sub>       | Base-emitter on voltage                                        | I <sub>C</sub> =4A ; V <sub>CE</sub> =2V                                 |     |      | 2.0        | V    |
| I <sub>CEO</sub>      | Collector cut-off current                                      | V <sub>CE</sub> =140V; I <sub>B</sub> =0                                 |     |      | 0.25       | mA   |
| I <sub>CEX</sub>      | Collector cut-off current                                      | V <sub>CE</sub> =140V; V <sub>BE(off)</sub> =1.5V<br>T <sub>C</sub> =150 |     |      | 0.1<br>2.0 | 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</sub>       | DC current gain                                                | I <sub>C</sub> =4A ; V <sub>CE</sub> =2V                                 | 25  |      | 150        |      |
| I <sub>S/b</sub>      | Second breakdown collector current<br>With base forward biased | V <sub>CE</sub> =40Vdc,t=1s, Nonrepetitive                               | 5   |      |            | A    |
|                       |                                                                | V <sub>CE</sub> =100Vdc,t=1s, Nonrepetitive                              | 0.5 |      |            |      |
| C <sub>OB</sub>       | Output capacitance                                             | I <sub>E</sub> =0 ; V <sub>CB</sub> =10V;f=1.0MHz                        |     |      | 1000       | pF   |
| f <sub>T</sub>        | Transition frequency                                           | I <sub>C</sub> =0.5A ; V <sub>CE</sub> =10V;f=0.5MHz                     | 2   |      |            | MHz  |

PACKAGE OUTLINE

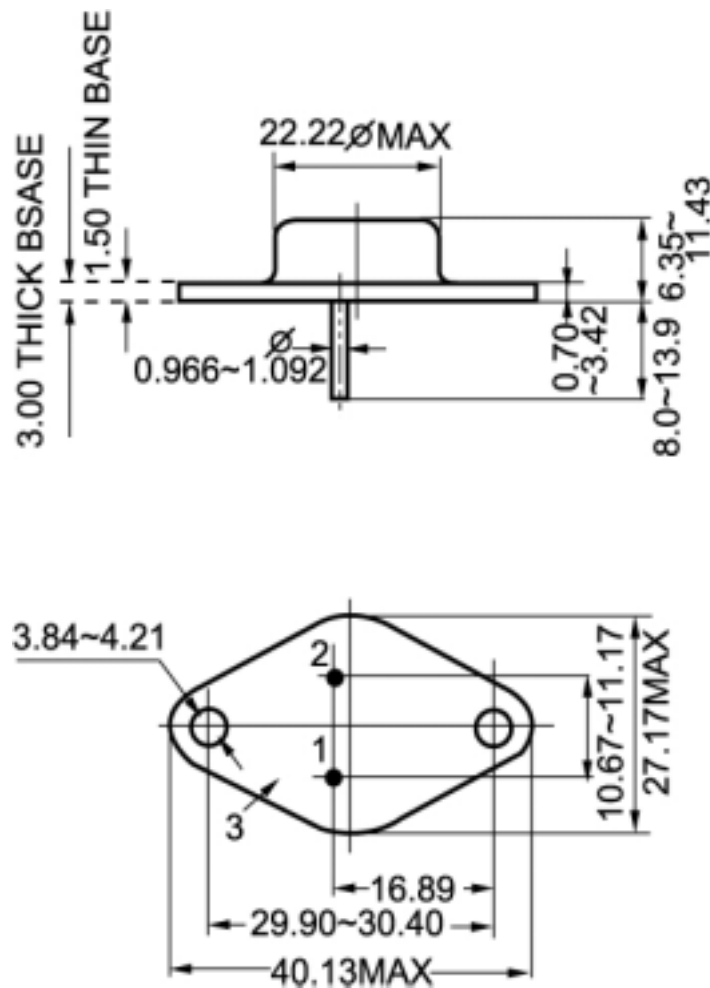


Fig.2 outline dimensions (unindicated tolerance:  $\pm 0.1\text{mm}$ )