

Silicon NPN Power Transistors

2SD2539

**DESCRIPTION**

- With TO-3P(H)IS package
- High voltage ;high speed
- Low saturation voltage
- Bult-in damper diode

**APPLICATIONS**

- Horizontal deflection output for color TV

**PINNING**

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

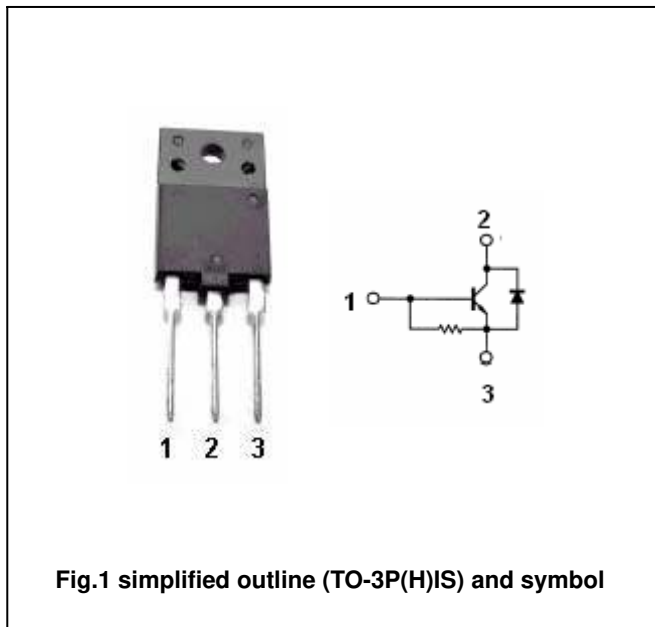


Fig.1 simplified outline (TO-3P(H)IS) and symbol

**Absolute maximum ratings(Ta=25°C)**

| SYMBOL           | PARAMETER                 | CONDITIONS           | VALUE   | UNIT |
|------------------|---------------------------|----------------------|---------|------|
| V <sub>CBO</sub> | Collector-base voltage    | Open emitter         | 1500    | V    |
| V <sub>CEO</sub> | Collector-emitter voltage | Open base            | 600     | V    |
| V <sub>EBO</sub> | Emitter-base voltage      | Open collector       | 5       | V    |
| I <sub>C</sub>   | Collector current         |                      | 7       | A    |
| I <sub>CM</sub>  | Collector current-peak    |                      | 14      | A    |
| I <sub>B</sub>   | Base current              |                      | 3.5     | A    |
| P <sub>C</sub>   | Total power dissipation   | T <sub>C</sub> =25°C | 50      | W    |
| T <sub>j</sub>   | Junction temperature      |                      | 150     | °C   |
| T <sub>stg</sub> | Storage temperature       |                      | -55~150 | °C   |

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## CHARACTERISTICS

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

| SYMBOL               | PARAMETER                            | CONDITIONS                                       | MIN | TYP. | MAX | UNIT |
|----------------------|--------------------------------------|--|-----|------|-----|------|
| V <sub>(BR)EBO</sub> | Emitter-base breakdown voltage       | I <sub>C</sub> =400mA ; I <sub>B</sub> =0        | 5   |      |     | V    |
| V <sub>CEsat</sub>   | Collector-emitter saturation voltage | I <sub>C</sub> =5A; I <sub>B</sub> =1.0A         |     |      | 5   | V    |
| V <sub>BEsat</sub>   | Base-emitter saturation voltage      | I <sub>C</sub> =5A; I <sub>B</sub> =1.0A         |     | 1.0  | 1.3 | V    |
| I <sub>CBO</sub>     | Collector cut-off current            | V <sub>CB</sub> =1500V; I <sub>E</sub> =0        |     |      | 1   | mA   |
| I <sub>EBO</sub>     | Emitter cut-off current              | V <sub>EB</sub> =5V; I <sub>C</sub> =0           | 66  |      | 200 | mA   |
| h <sub>FE-1</sub>    | DC current gain                      | I <sub>C</sub> =1A ; V <sub>CE</sub> =5V         | 8   |      | 28  |      |
| h <sub>FE-2</sub>    | DC current gain                      | I <sub>C</sub> =5A ; V <sub>CE</sub> =5V         | 5   |      | 9   |      |
| V <sub>F</sub>       | Diode forward voltage                | I <sub>F</sub> =5A                               |     | 1.6  | 2.0 | V    |
| C <sub>ob</sub>      | Collector output capacitance         | I <sub>E</sub> =0 ; V <sub>CB</sub> =10V, f=1MHz |     | 115  |     | pF   |
| f <sub>T</sub>       | Transition frequency                 | I <sub>C</sub> =0.1A ; V <sub>CE</sub> =10V      |     | 2    |     | MHz  |

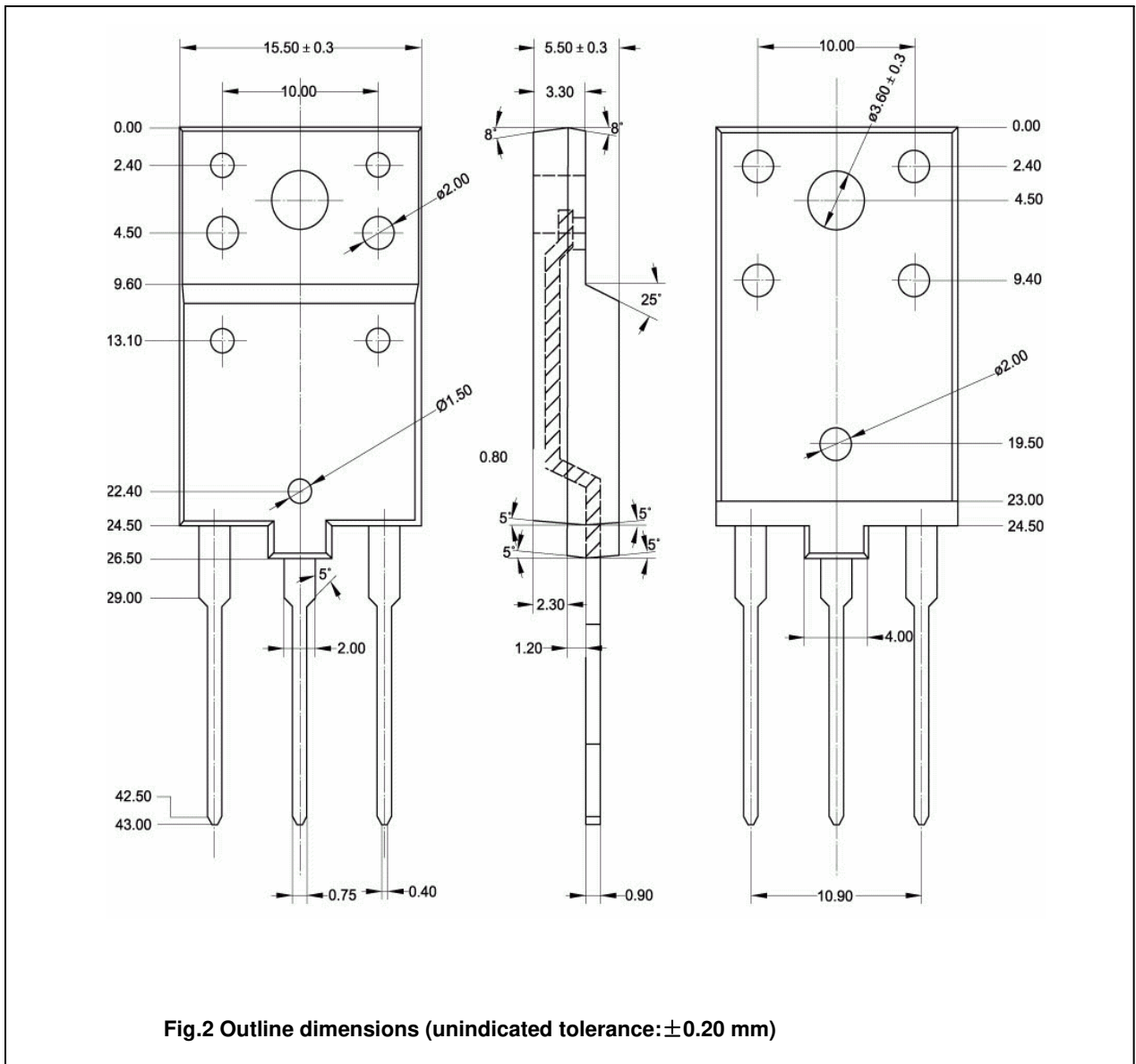
Switching times :

|                |              |  |  |     |     |    |
|----------------|--------------|--|--|-----|-----|----|
| t <sub>s</sub> | Storage time | I <sub>CP</sub> =5A; I <sub>B1</sub> =1.0A<br>f <sub>H</sub> =15.75kHz |  | 6   | 9   | μs |
| t <sub>f</sub> | Fall time    |  |  | 0.3 | 0.6 | μs |

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PACKAGE OUTLINE



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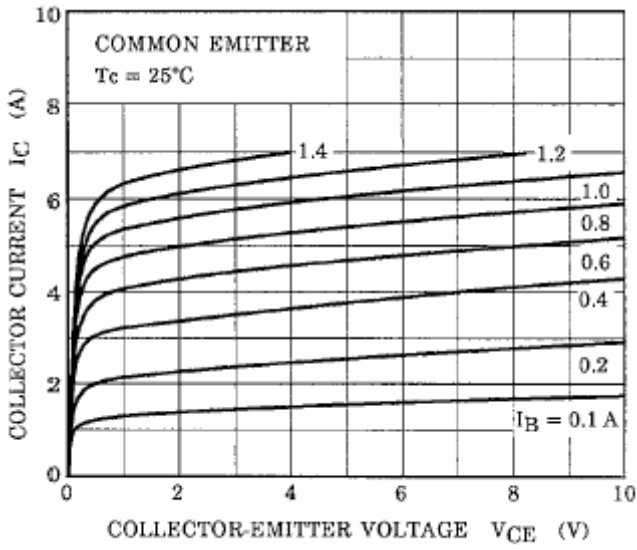


Fig.3 Static Characteristic

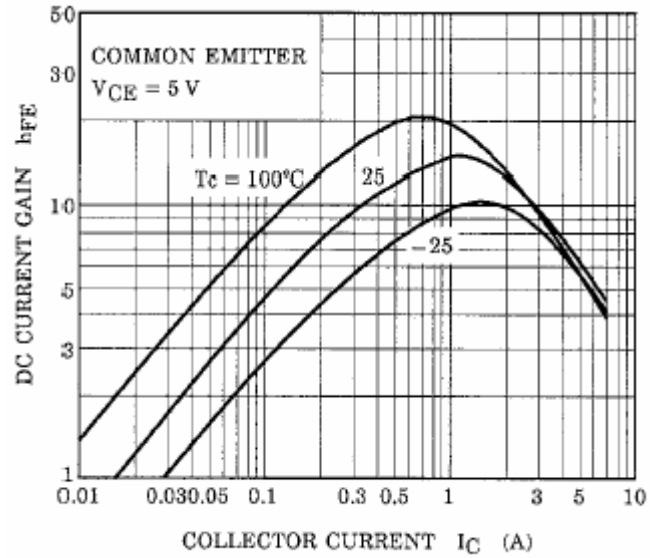


Fig.4 DC current Gain

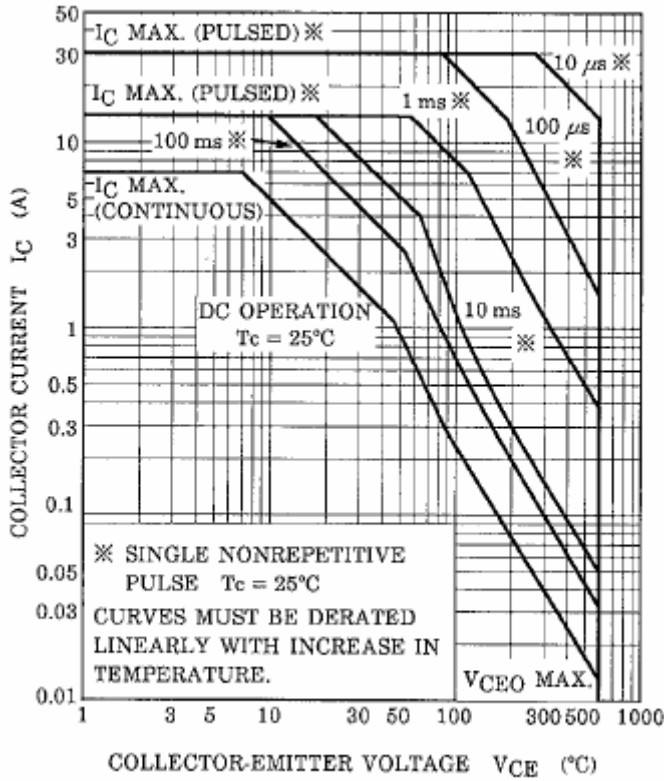


Fig.5 Safe Operating Area