

Silicon NPN Power Transistors

2SC3458

**DESCRIPTION**

- With TO-3PN package
- High breakdown voltage and high reliability.
- Fast switching speed
- Wide ASO(Safe Operating Area)

**APPLICATIONS**

·800V/3A Switching Regulator Applications

**PINNING**

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

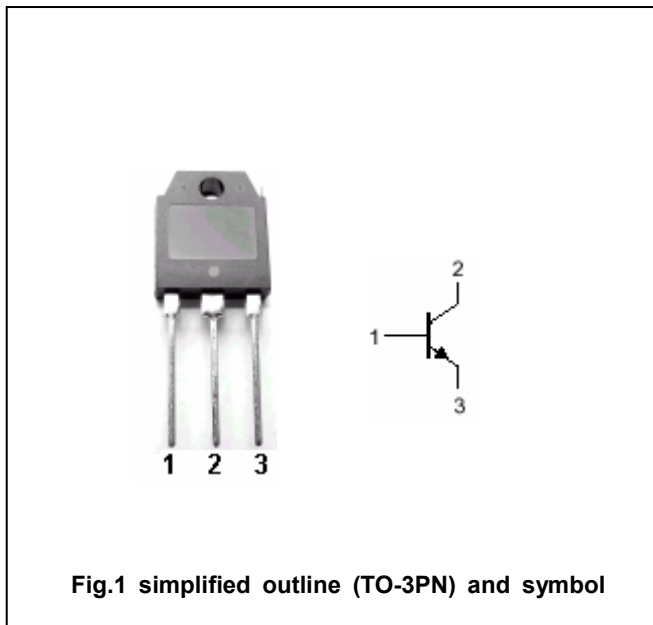


Fig.1 simplified outline (TO-3PN) and symbol

**Absolute maximum ratings(Ta=□)**

| SYMBOL           | PARAMETER                   | CONDITIONS          | VALUE   | UNIT |
|------------------|-----------------------------|---------------------|---------|------|
| V <sub>CBO</sub> | Collector-base voltage      | Open emitter        | 1100    | V    |
| V <sub>CEO</sub> | Collector-emitter voltage   | Open base           | 800     | V    |
| V <sub>EBO</sub> | Emitter-base voltage        | Open collector      | 7       | V    |
| I <sub>C</sub>   | Collector current           |                     | 3       | A    |
| I <sub>CM</sub>  | Collector current-peak      |                     | 10      | A    |
| I <sub>B</sub>   | Base current                |                     | 1.5     | A    |
| P <sub>C</sub>   | Collector power dissipation | T <sub>C</sub> =25□ | 50      | W    |
| T <sub>j</sub>   | Junction temperature        |                     | 150     | □    |
| T <sub>stg</sub> | Storage temperature         |                     | -55~150 | □    |

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## CHARACTERISTICS

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

| SYMBOL               | PARAMETER                            | CONDITIONS  | MIN  | TYP. | MAX | UNIT |
|----------------------|--------------------------------------|---|------|------|-----|------|
| V <sub>(BR)CEO</sub> | Collector-emitter breakdown voltage  | I <sub>C</sub> =5mA ; R <sub>BE</sub> =∞          | 800  |      |     | V    |
| V <sub>(BR)CBO</sub> | Collector-base breakdown voltage     | I <sub>C</sub> =1mA ; I <sub>E</sub> =0           | 1100 |      |     | 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> =1.5A ; I <sub>B</sub> =0.3A       |      |      | 2.0 | V    |
| V <sub>BEsat</sub>   | Base-emitter saturation voltage      | I <sub>C</sub> =1.5A ; I <sub>B</sub> =0.3A       |      |      | 1.5 | V    |
| I <sub>CBO</sub>     | Collector cut-off current            | V <sub>CB</sub> =800V ; I <sub>E</sub> =0         |      |      | 10  | μA   |
| I <sub>EBO</sub>     | Emitter cut-off current              | V <sub>EB</sub> =5V ; I <sub>C</sub> =0           |      |      | 10  | μA   |
| h <sub>FE-1</sub>    | DC current gain                      | I <sub>C</sub> =0.2A ; V <sub>CE</sub> =5V        | 10   |      | 40  |      |
| h <sub>FE-2</sub>    | DC current gain                      | I <sub>C</sub> =1A ; V <sub>CE</sub> =5V          | 8    |      |     |      |
| C <sub>ob</sub>      | Output capacitance                   | I <sub>E</sub> =0 ; V <sub>CB</sub> =10V ; f=1MHz |      | 60   |     | pF   |
| f <sub>T</sub>       | Transition frequency                 | I <sub>C</sub> =0.2A ; V <sub>CE</sub> =10V       |      | 15   |     | MHz  |

## Switching times

|                  |              |  |  |  |     |    |
|------------------|--------------|--|--|--|-----|----|
| t <sub>on</sub>  | Turn-on time | I <sub>C</sub> =2A ; R <sub>L</sub> =200Ω<br>I <sub>B1</sub> =0.4A ; I <sub>B2</sub> =-0.8A<br>V <sub>CC</sub> =400V |  |  | 0.5 | μs |
| t <sub>stg</sub> | Storage time |  |  |  | 3.0 | μs |
| t <sub>f</sub>   | Fall time    |  |  |  | 0.3 | μs |

◆ h<sub>FE-1</sub> Classifications

| K     | L     | M     |
|-------|-------|-------|
| 10-20 | 15-30 | 20-40 |

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PACKAGE OUTLINE

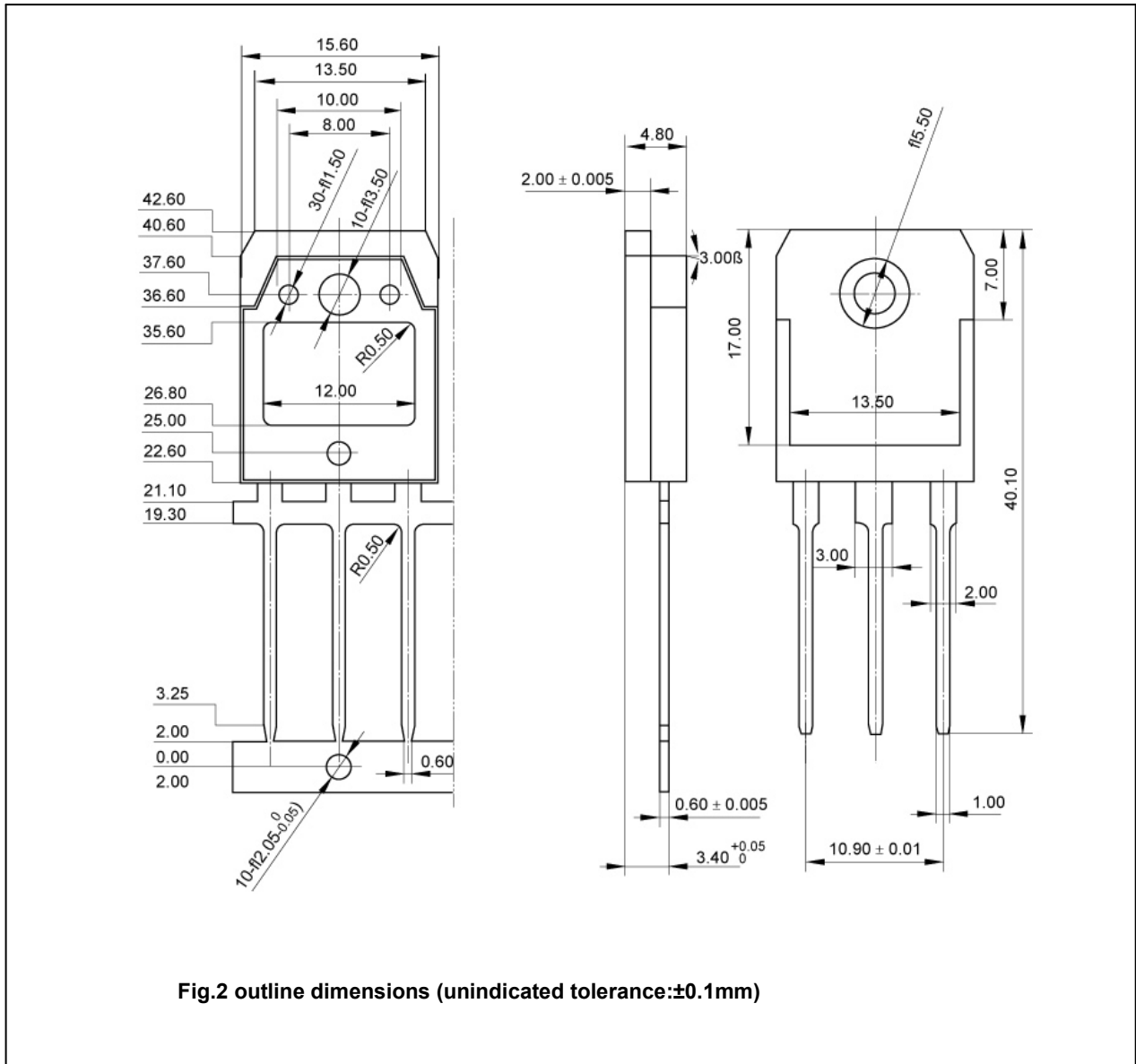


Fig.2 outline dimensions (unindicated tolerance:±0.1mm)

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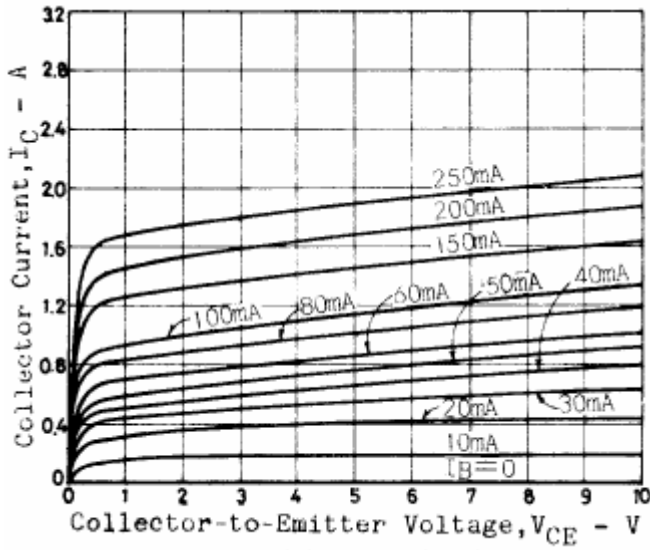


Fig.3 Static Characteristic

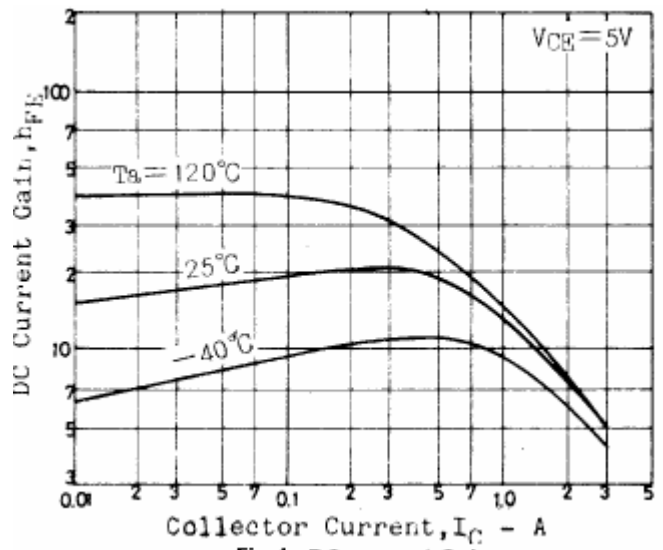


Fig.4 DC current Gain

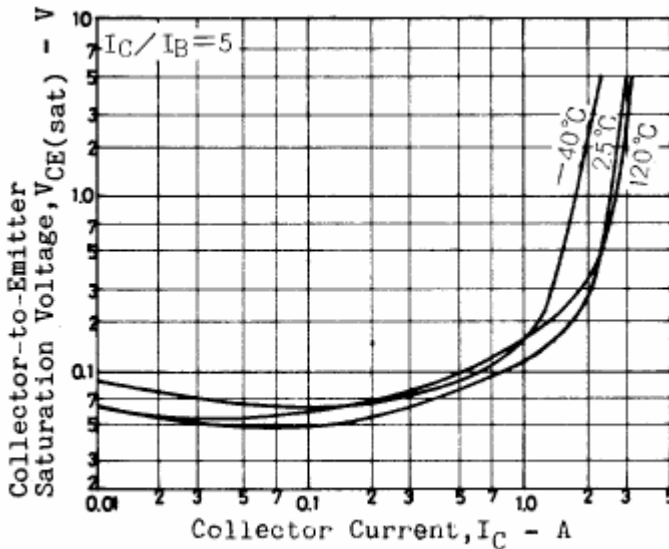


Fig.5 Collector-Emmitter Saturation Voltage

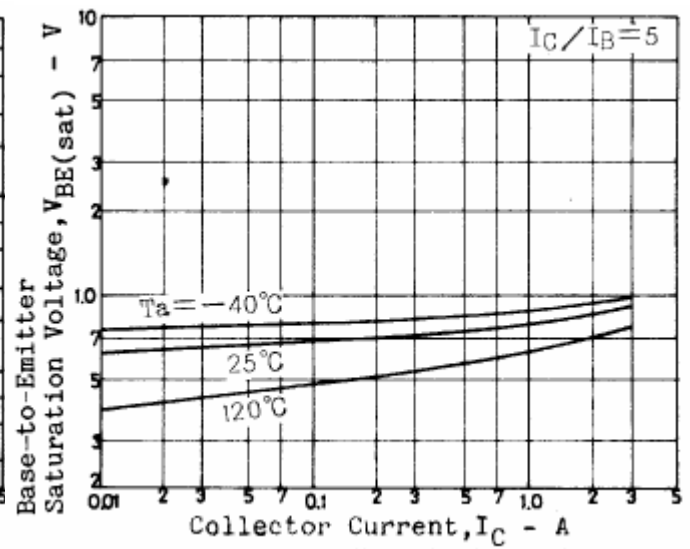


Fig.6 Base-Emmitter Saturation Voltage

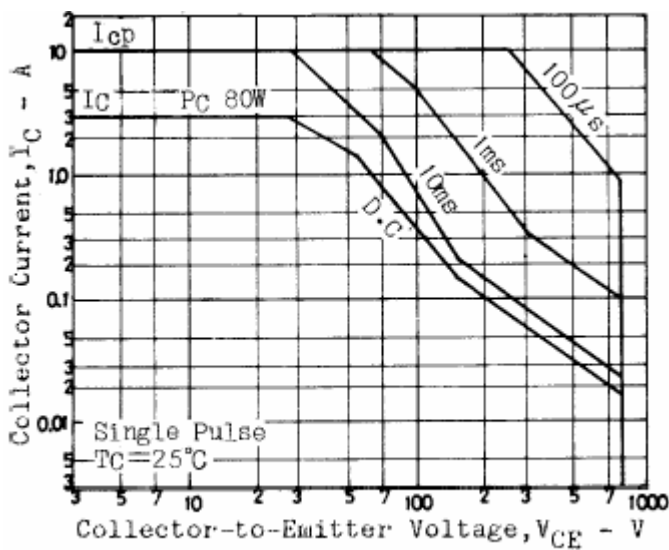


Fig.7 Safe Operating Area