

**Silicon NPN Power Transistors**

**2SC4299**

**DESCRIPTION**

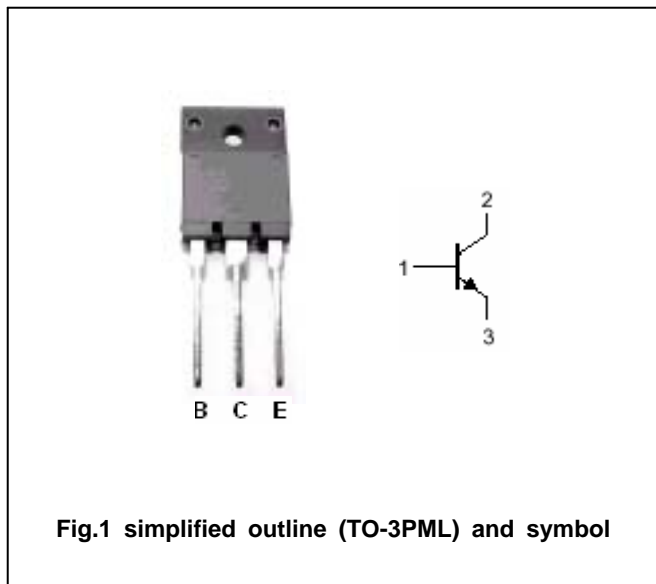
- With TO-3PML package
- High voltage ,high switching speed
- Wide area of safe operation

**APPLICATIONS**

- For switching regulator and general purpose applications

**PINNING**

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



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

| SYMBOL           | PARAMETER                   | CONDITIONS         | VALUE   | UNIT |
|------------------|-----------------------------|--------------------|---------|------|
| V <sub>CBO</sub> | Collector-base voltage      | Open emitter       | 900     | 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      |                    | 6       | A    |
| I <sub>B</sub>   | Base current                |                    | 1.5     | A    |
| P <sub>C</sub>   | Collector power dissipation | T <sub>C</sub> =25 | 70      | 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 unless otherwise specified

| SYMBOL               | PARAMETER                            | CONDITIONS                                  | MIN | TYP. | MAX | UNIT |
|----------------------|--------------------------------------|---|-----|------|-----|------|
| V <sub>(BR)CEO</sub> | Collector-emitter breakdown voltage  | I <sub>C</sub> =10mA; I <sub>B</sub> =0     | 800 |      |     | V    |
| V <sub>CEsat</sub>   | Collector-emitter saturation voltage | I <sub>C</sub> =1A; I <sub>B</sub> =0.2A    |     |      | 0.5 | V    |
| V <sub>BEsat</sub>   | Base-emitter saturation voltage      | I <sub>C</sub> =1A; I <sub>B</sub> =0.2A    |     |      | 1.2 | V    |
| I <sub>CBO</sub>     | Collector cut-off current            | V <sub>CB</sub> =800V; I <sub>E</sub> =0    |     |      | 100 | μA   |
| I <sub>EBO</sub>     | Emitter cut-off current              | V <sub>EB</sub> =7V; I <sub>C</sub> =0      |     |      | 100 | μA   |
| h <sub>FE</sub>      | DC current gain                      | I <sub>C</sub> =1A; V <sub>CE</sub> =4V     | 10  |      | 30  |      |
| f <sub>T</sub>       | Transition frequency                 | I <sub>E</sub> =-0.3A; V <sub>CE</sub> =12V |     | 6    |     | MHz  |
| C <sub>OB</sub>      | Output capacitance                   | V <sub>CB</sub> =10V; f=1MHz                |     | 50   |     | pF   |

## Switching times

|                  |              |  |  |  |     |    |
|------------------|--------------|--|--|--|-----|----|
| t <sub>on</sub>  | Turn-on time | I <sub>C</sub> =1A; I <sub>B1</sub> =0.15A;<br>I <sub>B2</sub> =-0.5A; R <sub>L</sub> =250Ω<br>V <sub>CC</sub> =250V |  |  | 1.0 | μs |
| t <sub>stg</sub> | Storage time |  |  |  | 5.0 | μs |
| t <sub>f</sub>   | Fall time    |  |  |  | 1.0 | μs |

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PACKAGE OUTLINE

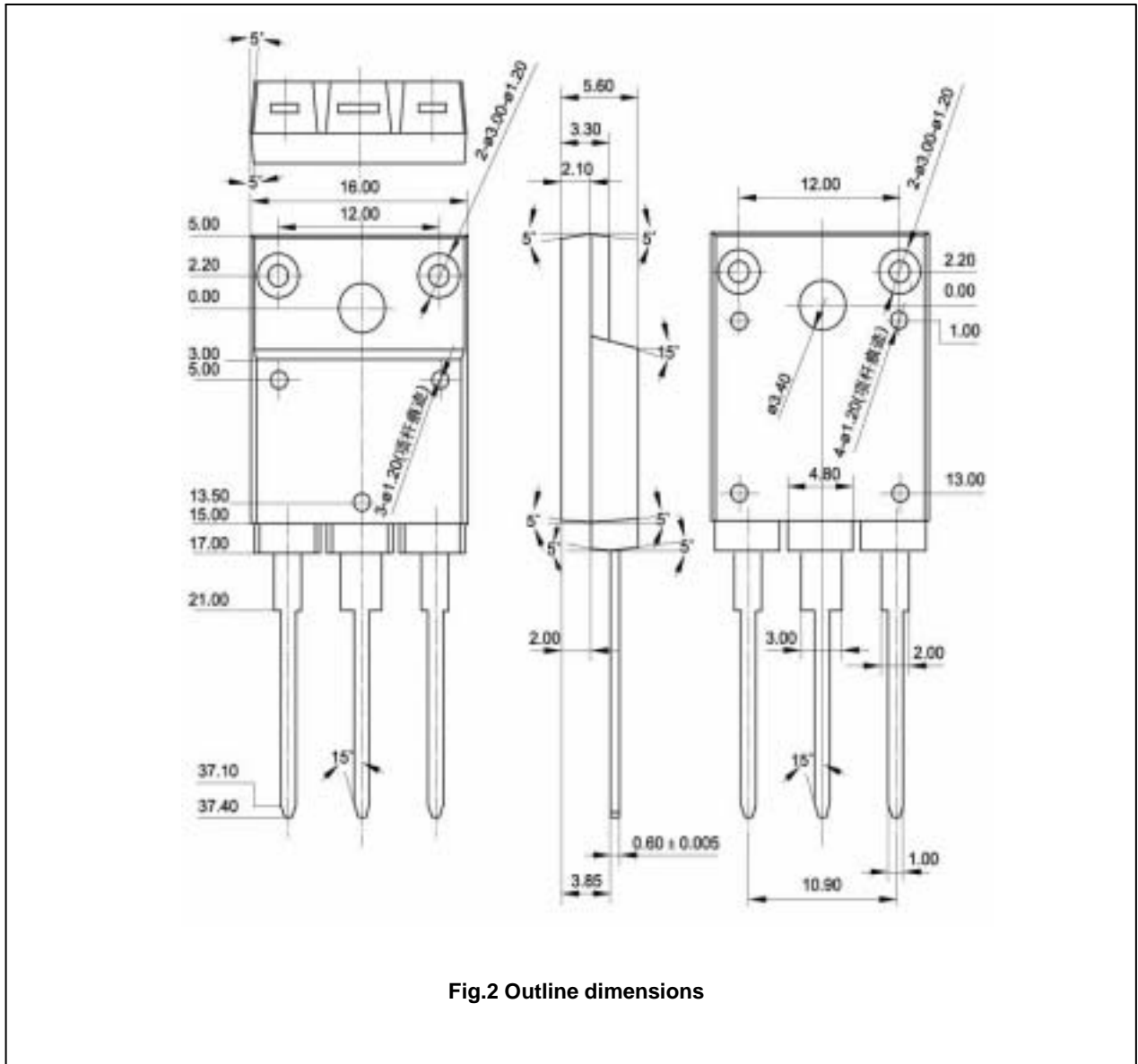


Fig.2 Outline dimensions

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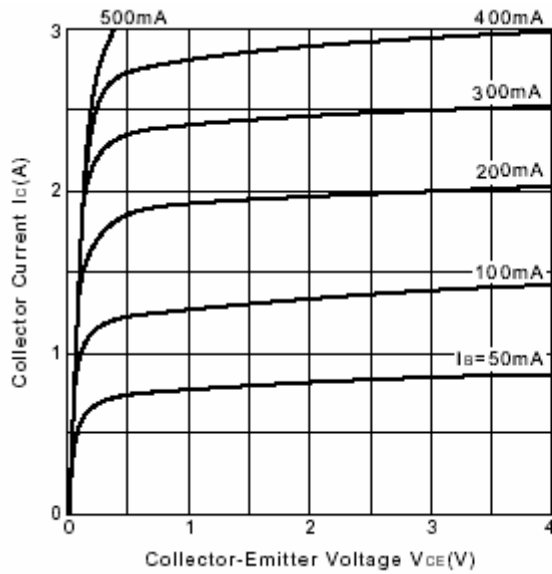


Fig.3 Static Characteristic

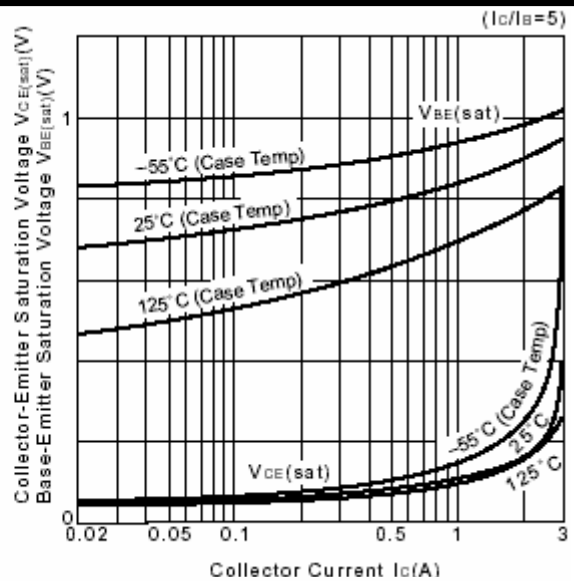


Fig.4 Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

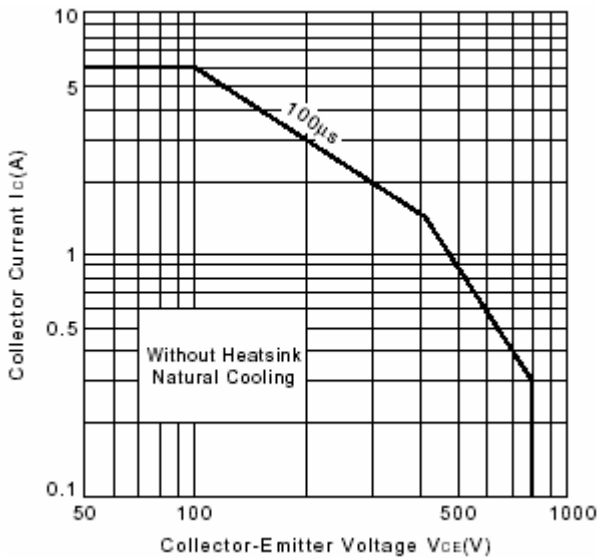


Fig.5 Safe Operating Area

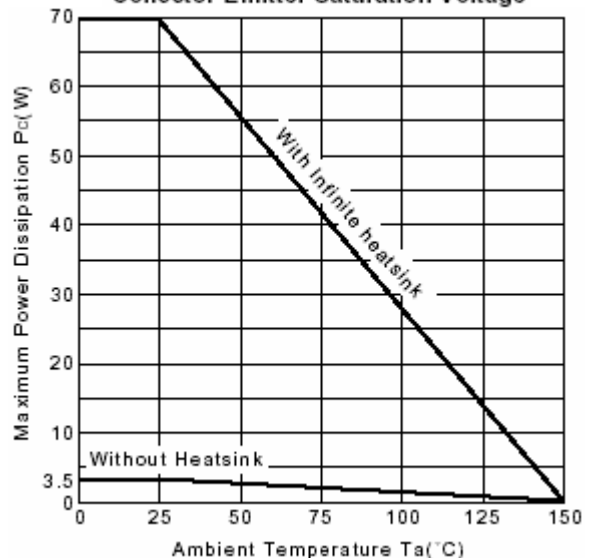


Fig.6 Pc-Ta Derating

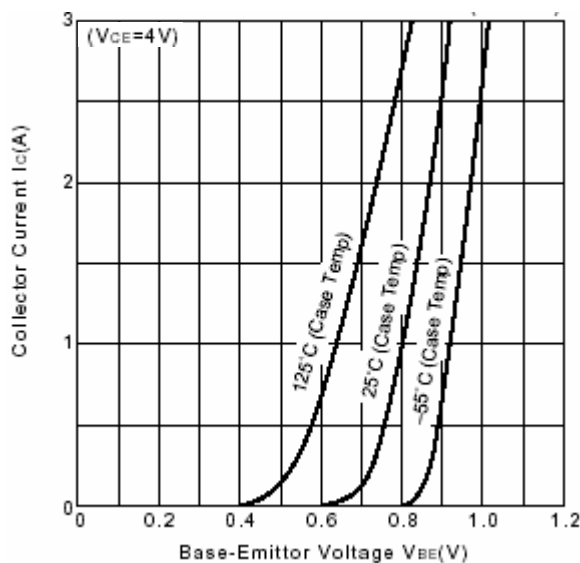


Fig.7  $I_c - V_{BE}$

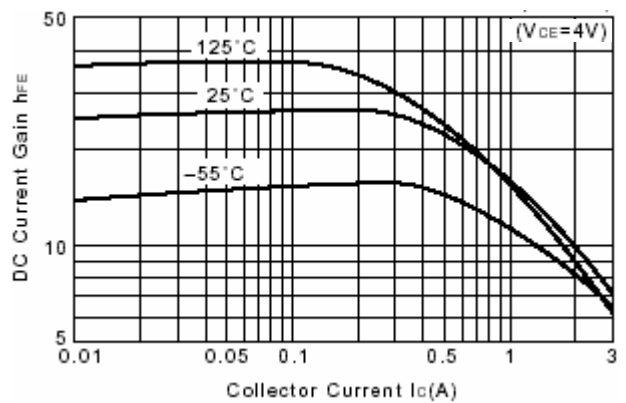


Fig.8 DC current Gain