

Silicon NPN Power Transistors

2SC5416

**DESCRIPTION**

- With TO-220F package
- High breakdown voltage
- High reliability

**APPLICATIONS**

- For inverter lighting applications

**PINNING**

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

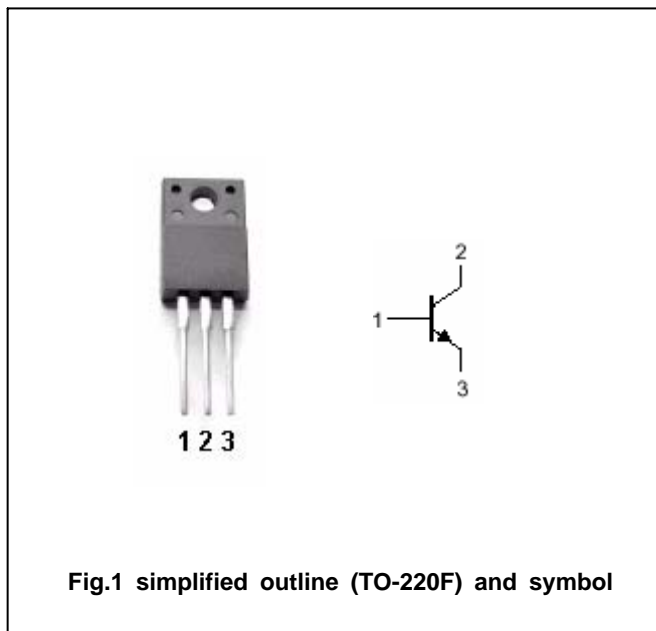


Fig.1 simplified outline (TO-220F) and symbol

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

| SYMBOL    | PARAMETER                   | CONDITIONS     | VALUE   | UNIT |
|-----------|-----------------------------|----------------|---------|------|
| $V_{CBO}$ | Collector-base voltage      | Open emitter   | 1000    | V    |
| $V_{CEO}$ | Collector-emitter voltage   | Open base      | 450     | V    |
| $V_{EBO}$ | Emitter-base voltage        | Open collector | 9       | V    |
| $I_C$     | Collector current           |                | 4       | A    |
| $I_{CM}$  | Collector current-peak      |                | 8       | A    |
| $P_C$     | Collector power dissipation | $T_a=25$       | 2       | W    |
|           |                             | $T_C=25$       | 25      |      |
| $T_j$     | 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>CEO(SUS)</sub> | Collector-emitter sustaining voltage | I <sub>C</sub> =0.1A; I <sub>B</sub> =0                           | 450 |      |      | V    |
| V <sub>CEsat</sub>    | Collector-emitter saturation voltage | I <sub>C</sub> =2A; I <sub>B</sub> =0.4 A                         |     |      | 1.0  | V    |
| V <sub>BEsat</sub>    | Base-emitter saturation voltage      | I <sub>C</sub> =2A; I <sub>B</sub> =0.4 A                         |     |      | 1.5  | V    |
| I <sub>CBO</sub>      | Collector cut-off current            | V <sub>CB</sub> =450V; I <sub>E</sub> =0                          |     |      | 10   | μA   |
| I <sub>CES</sub>      | Collector cut-off current            | V <sub>CE</sub> =1000V; R <sub>BE</sub> =0                        |     |      | 1.0  | mA   |
| I <sub>EBO</sub>      | Emitter cut-off current              | V <sub>EB</sub> =9V; I <sub>C</sub> =0                            |     |      | 1.0  | mA   |
| h <sub>FE-1</sub>     | DC current gain                      | I <sub>C</sub> =0.1A; V <sub>CE</sub> =5V                         | 30  |      | 50   |      |
| h <sub>FE-2</sub>     | DC current gain                      | I <sub>C</sub> =1.5A; V <sub>CE</sub> =5V                         | 10  |      |      |      |
| Switching times       |                                      |                                                                   |     |      |      |      |
| t <sub>s</sub>        | Storage time                         | I <sub>C</sub> =2A; I <sub>B1</sub> =0.4A; I <sub>B2</sub> =-0.8A |     |      | 2.5  | μs   |
| t <sub>f</sub>        | Fall time                            |                                                                   |     |      | 0.15 | μs   |

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PACKAGE OUTLINE

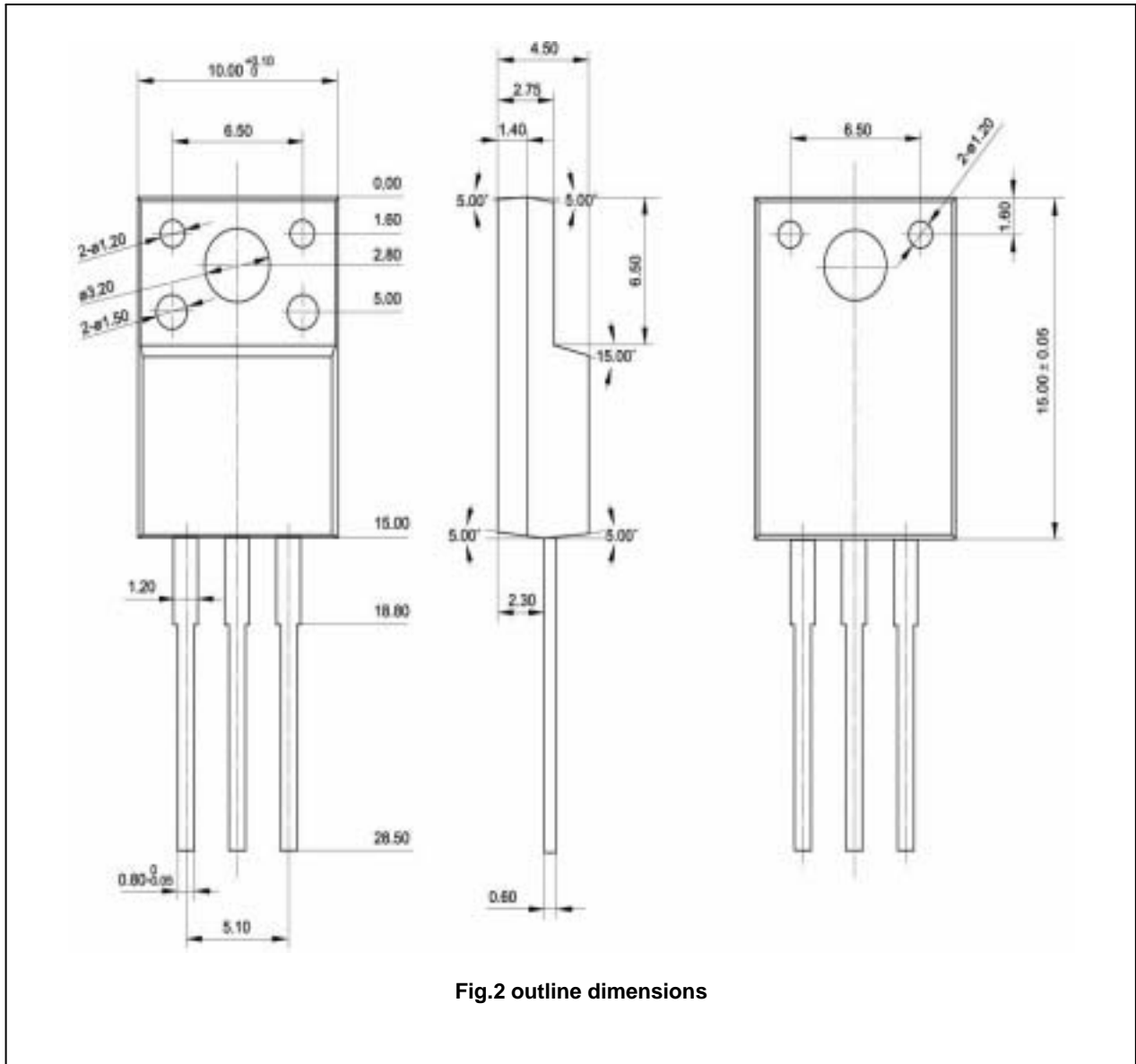


Fig.2 outline dimensions

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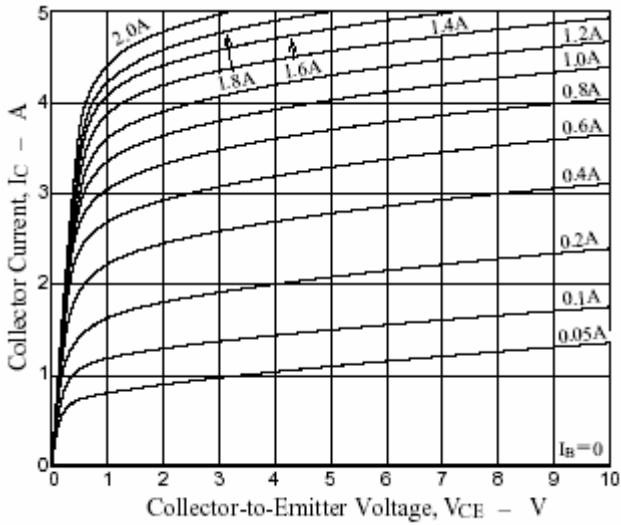


Fig.3 Static Characteristic

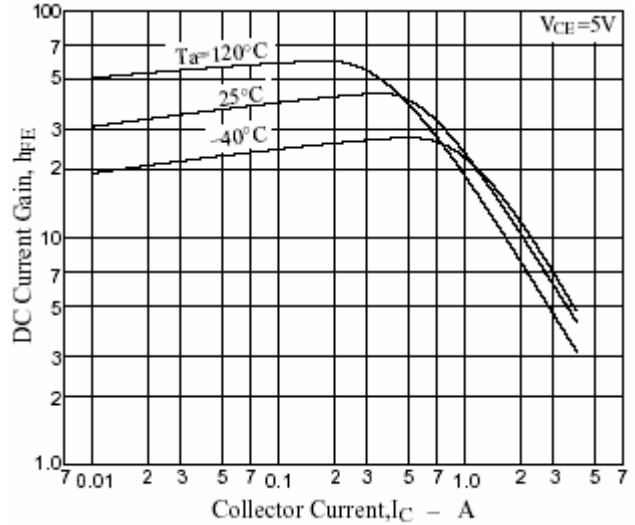


Fig.4 DC current Gain

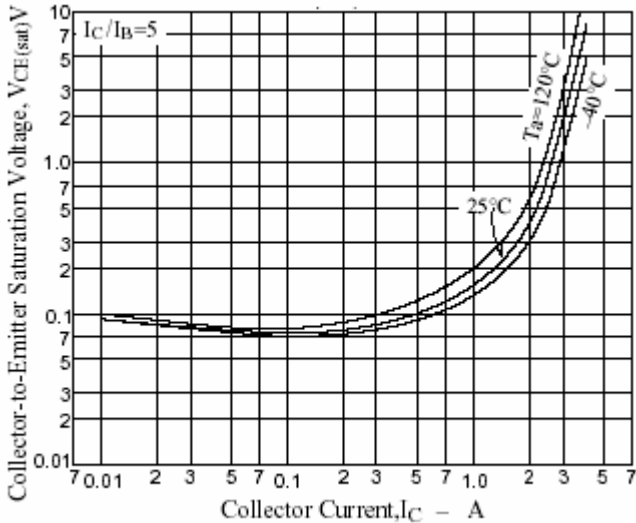


Fig.5 Collector-Emitter Saturation Voltage

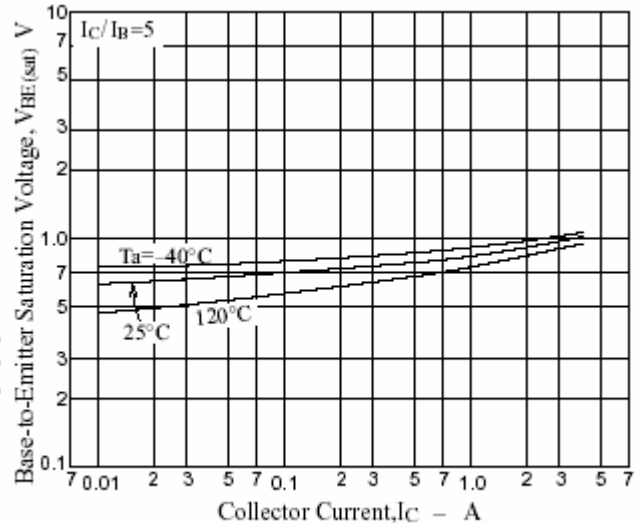


Fig.6 Base-Emitter Saturation Voltage

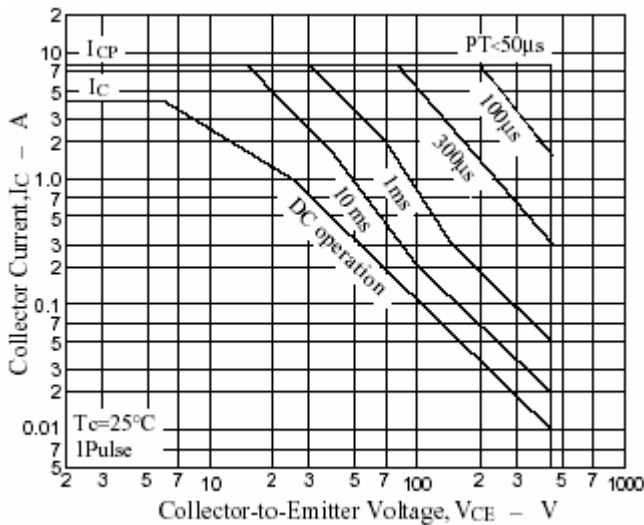


Fig.7 Safe Operating Area