

## Silicon NPN Power Transistors

2SC4130

## DESCRIPTION

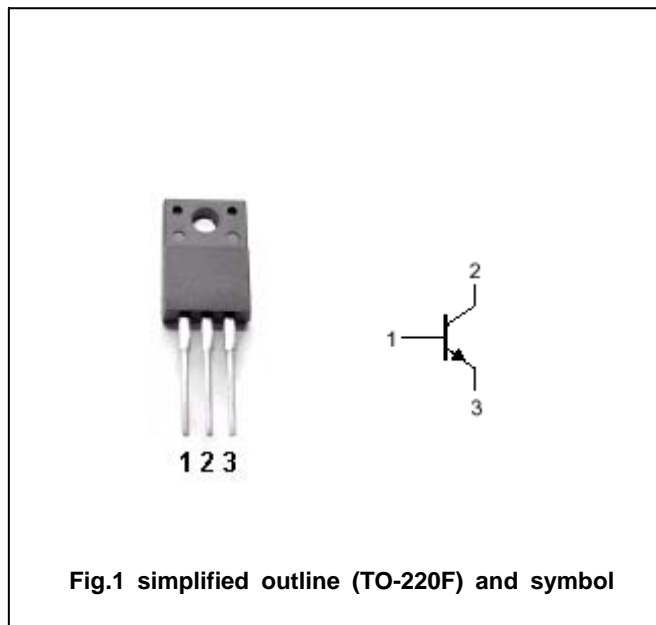
- With TO-220F package
- High voltage.
- High speed switching

## APPLICATIONS

- For switching regulator and general purpose applications

## PINNING

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



## Absolute maximum ratings (Ta=25°C)

| SYMBOL    | PARAMETER                 | CONDITIONS             | VALUE   | UNIT             |
|-----------|---------------------------|------------------------|---------|------------------|
| $V_{CBO}$ | Collector-base voltage    | Open emitter           | 500     | V                |
| $V_{CEO}$ | Collector-emitter voltage | Open base              | 400     | V                |
| $V_{EBO}$ | Emitter-base voltage      | Open collector         | 10      | V                |
| $I_C$     | Collector current         |                        | 7       | A                |
| $I_{CM}$  | Collector current-peak    |                        | 14      | A                |
| $P_C$     | Collector dissipation     | $T_C=25^\circ\text{C}$ | 30      | W                |
| $T_j$     | Junction temperature      |                        | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage temperature       |                        | -55~150 | $^\circ\text{C}$ |

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## CHARACTERISTICS

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

| SYMBOL               | PARAMETER                            | CONDITIONS                                      | MIN | TYP. | MAX | UNIT |
|----------------------|--------------------------------------|---|-----|------|-----|------|
| V <sub>(BR)CEO</sub> | Collector-emitter breakdown voltage  | I <sub>C</sub> =25mA ; I <sub>B</sub> =0        | 400 |      |     | V    |
| V <sub>CEsat</sub>   | Collector-emitter saturation voltage | I <sub>C</sub> =3A ; I <sub>B</sub> =0.6A       |     |      | 0.5 | V    |
| V <sub>BEsat</sub>   | Base-emitter saturation voltage      | I <sub>C</sub> =3A ; I <sub>B</sub> =0.6A       |     |      | 1.3 | V    |
| I <sub>CBO</sub>     | Collector cut-off current            | V <sub>CB</sub> =500V; I <sub>E</sub> =0        |     |      | 100 | μ A  |
| I <sub>EBO</sub>     | Emitter cut-off current              | V <sub>EB</sub> =10V; I <sub>C</sub> =0         |     |      | 100 | μ A  |
| h <sub>FE</sub>      | DC current gain                      | I <sub>C</sub> =3A ; V <sub>CE</sub> =4V        | 10  |      | 30  |      |
| C <sub>OB</sub>      | Output capacitance                   | I <sub>E</sub> =0; V <sub>CB</sub> =10V; f=1MHz |     | 50   |     | pF   |
| f <sub>T</sub>       | Transition frequency                 | I <sub>E</sub> =-0.5A ; V <sub>CE</sub> =12V    |     | 15   |     | MHz  |

## Switching times

|                 |              |   |  |  |     |     |
|-----------------|--------------|---|--|--|-----|-----|
| t <sub>on</sub> | Turn-on time | I <sub>C</sub> =3A; I <sub>B1</sub> =0.3A<br>I <sub>B2</sub> =-0.6A<br>V <sub>CC</sub> =200V , R <sub>L</sub> =67 Ω |  |  | 1.0 | μ s |
| t <sub>s</sub>  | Storage time |   |  |  | 2.2 | μ s |
| t <sub>f</sub>  | Fall time    |   |  |  | 0.5 | μ s |

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PACKAGE OUTLINE

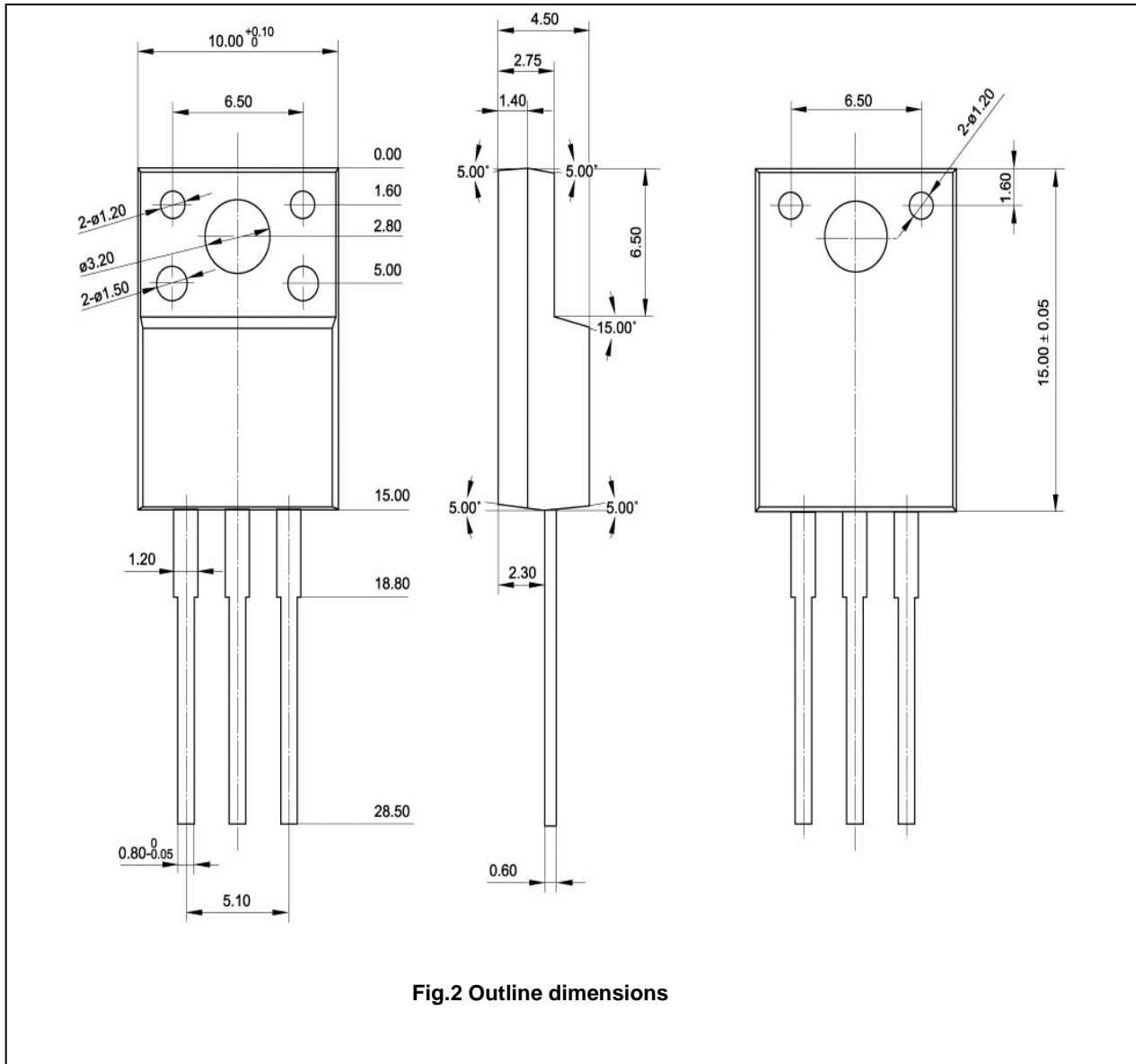


Fig.2 Outline dimensions

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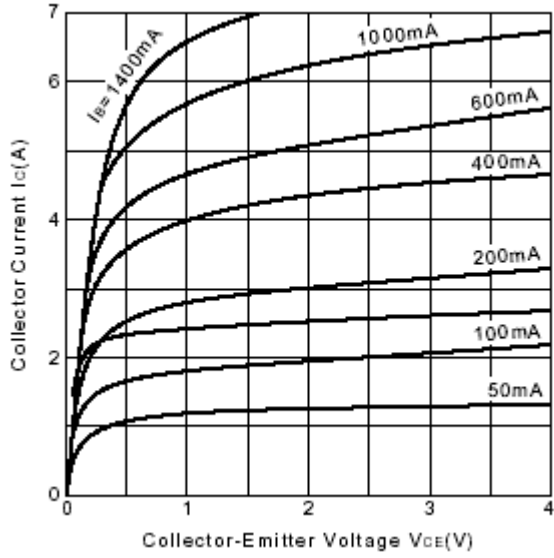


Fig.3 Static Characteristic

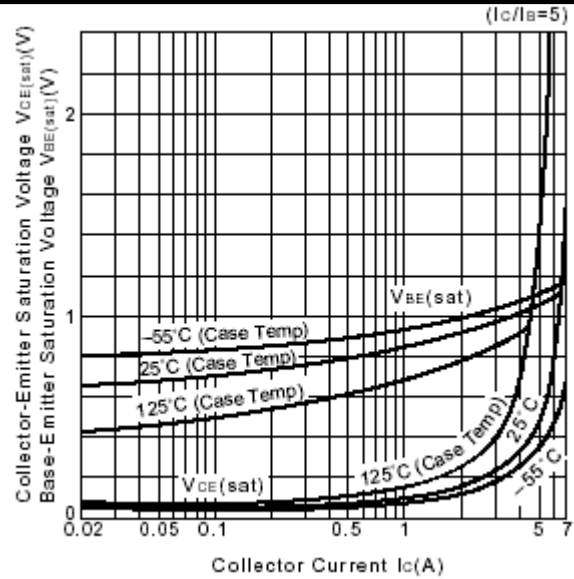


Fig.4 Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

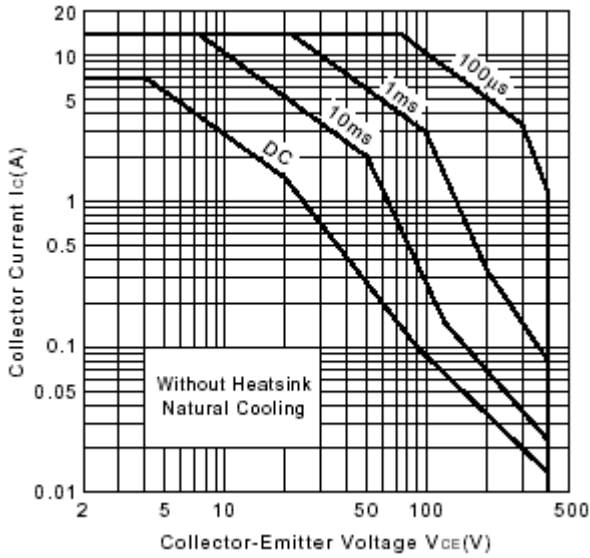


Fig.5 Safe Operating Area

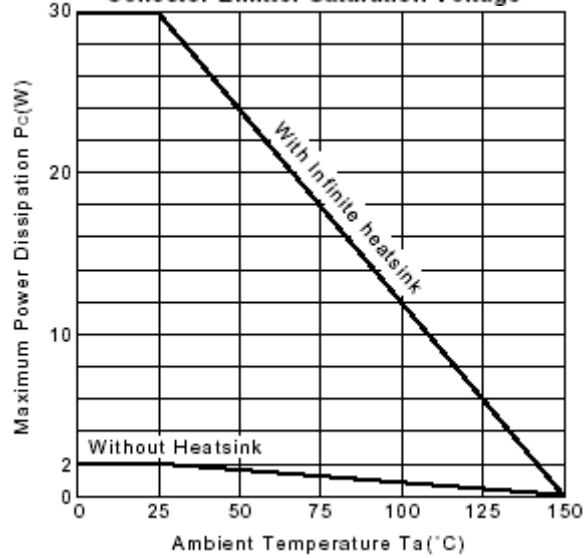


Fig.6 Pc-Ta Derating

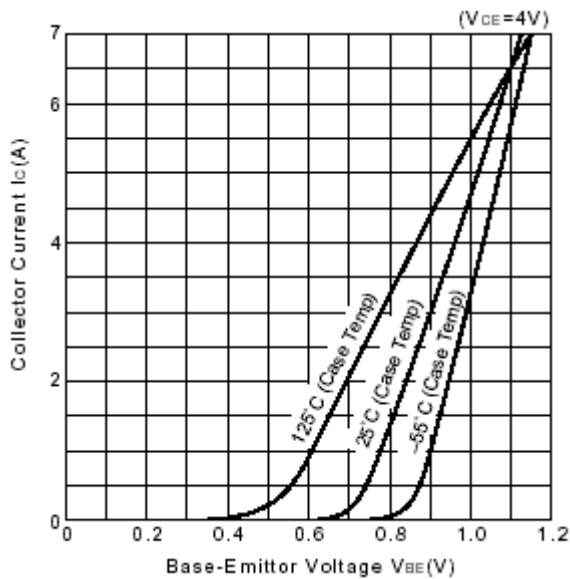


Fig.7  $I_C$ - $V_{BE}$

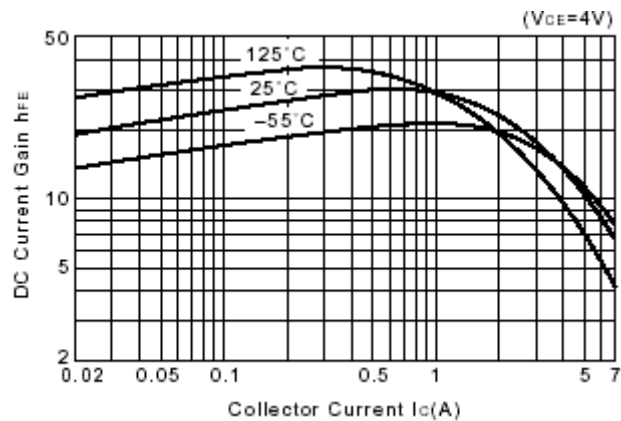


Fig.8 DC current Gain