

Silicon NPN Power Transistors

2SD959

DESCRIPTION

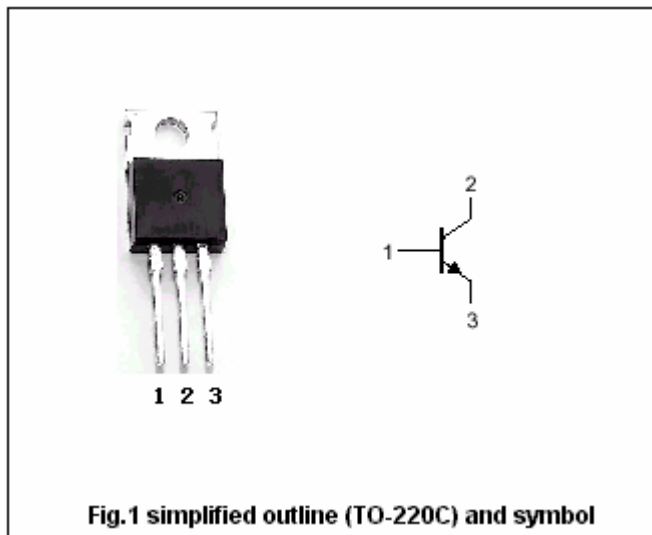
- With TO-220 package
- Low collector saturation voltage
- Complement to type 2SB867
- Excellent linearity of  $h_{FE}$

APPLICATIONS

- For power switching applications

PINNING

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



Absolute maximum ratings (Ta=25 )

| SYMBOL    | PARAMETER                   | CONDITIONS     | VALUE   | UNIT |
|-----------|-----------------------------|----------------|---------|------|
| $V_{CBO}$ | Collector-base voltage      | Open emitter   | 130     | V    |
| $V_{CEO}$ | Collector-emitter voltage   | Open base      | 80      | V    |
| $V_{EBO}$ | Emitter-base voltage        | Open collector | 7       | V    |
| $I_C$     | Collector current (DC)      |                | 3       | A    |
| $I_{CM}$  | Collector current-peak      |                | 6       | A    |
| $P_C$     | Collector power dissipation | $T_C=25$       | 30      | W    |
| $T_j$     | 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>(BR)CEO</sub> | Collector-emitter breakdown voltage  | I <sub>C</sub> =10mA ; I <sub>E</sub> =0    | 80  |      |     | V    |
| V <sub>CEsat</sub>   | Collector-emitter saturation voltage | I <sub>C</sub> =2A; I <sub>B</sub> =0.1A    |     |      | 0.5 | V    |
| V <sub>BEsat</sub>   | Base-emitter saturation voltage      | I <sub>C</sub> =2A; I <sub>B</sub> =0.1A    |     |      | 1.5 | V    |
| I <sub>CBO</sub>     | Collector cut-off current            | V <sub>CB</sub> =100V; 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      |     |      | 50  | μA   |
| h <sub>FE-1</sub>    | DC current gain                      | I <sub>C</sub> =0.1A ; V <sub>CE</sub> =2V  | 45  |      |     |      |
| h <sub>FE-2</sub>    | DC current gain                      | I <sub>C</sub> =0.5A ; V <sub>CE</sub> =2V  | 60  |      | 260 |      |
| f <sub>T</sub>       | Transition frequency                 | I <sub>C</sub> =0.5A ; V <sub>CE</sub> =10V |     | 30   |     | MHz  |

## Switching times

|                 |              |   |  |      |  |    |
|-----------------|--------------|---|--|------|--|----|
| t <sub>on</sub> | Turn-on time | I <sub>C</sub> =0.5A<br>I <sub>B1</sub> =-I <sub>B2</sub> =50mA |  | 0.5  |  | μs |
| t <sub>s</sub>  | Storage time |   |  | 2.5  |  | μs |
| t <sub>f</sub>  | Fall time    |   |  | 0.15 |  | μs |

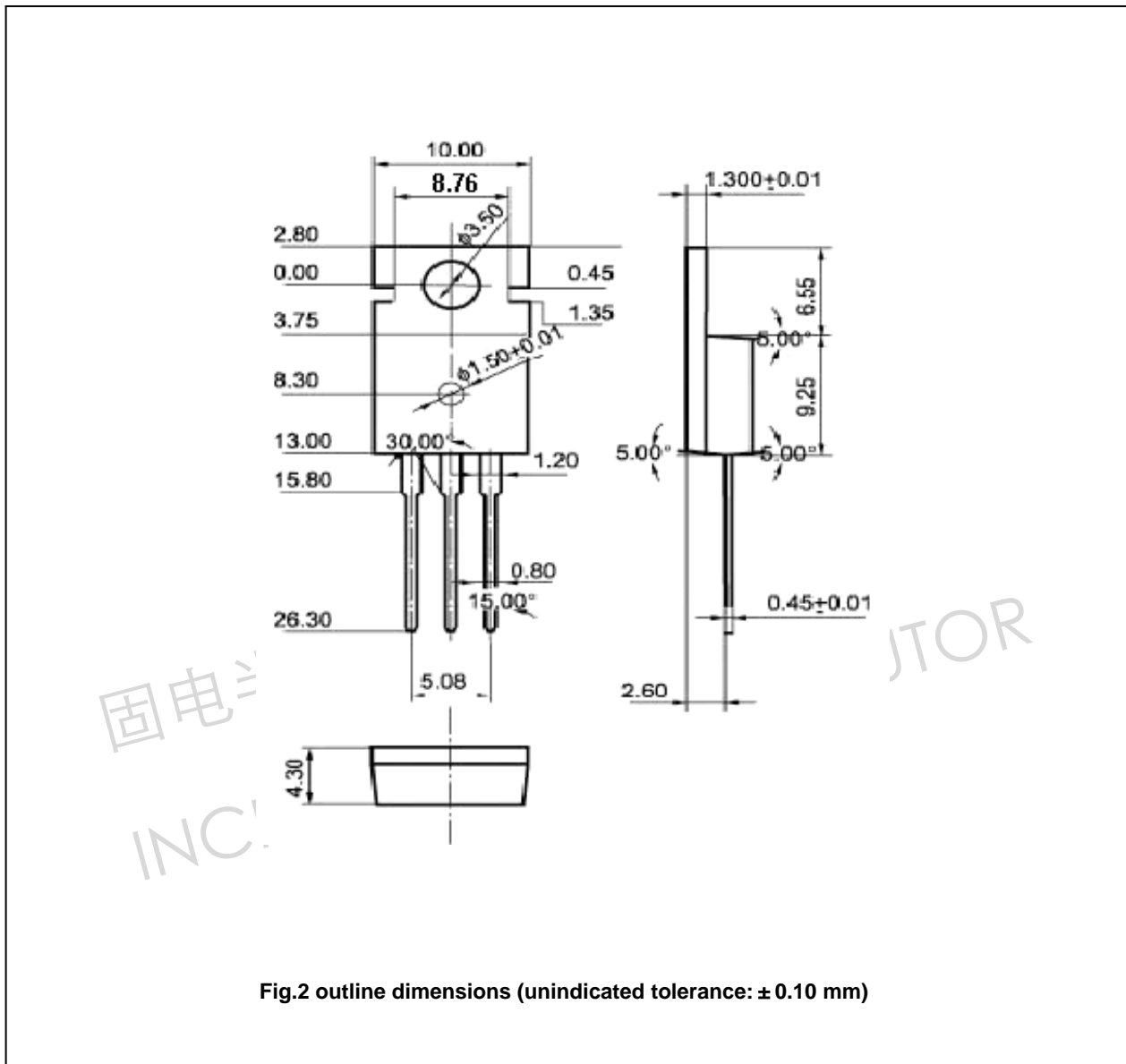
◆ h<sub>FE-2</sub> classifications

| R      | Q      | P       |
|--------|--------|---------|
| 60-120 | 90-180 | 130-260 |

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PACKAGE OUTLINE



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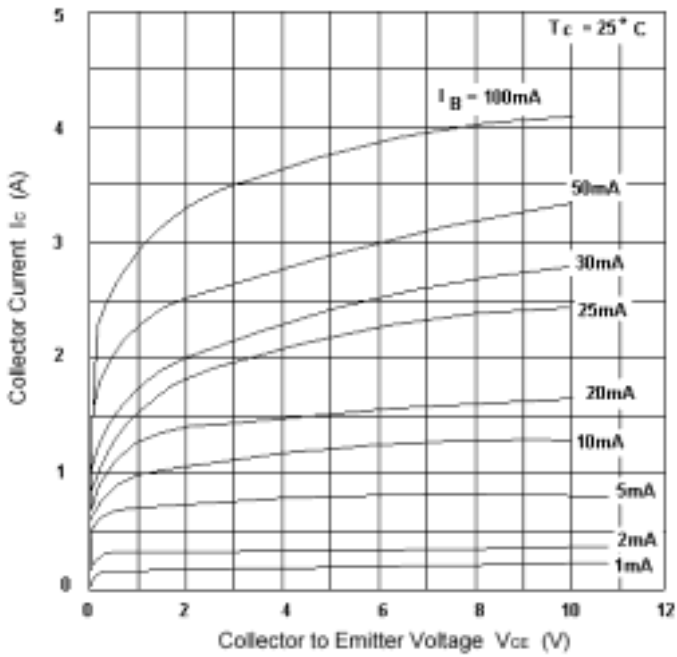


Fig.3 Static Characteristic

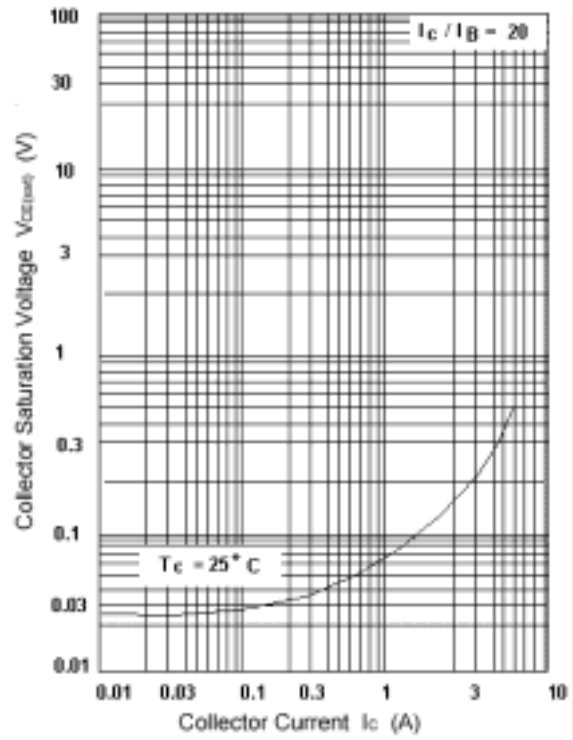


Fig.4 Collector-Emitter Saturation Voltage

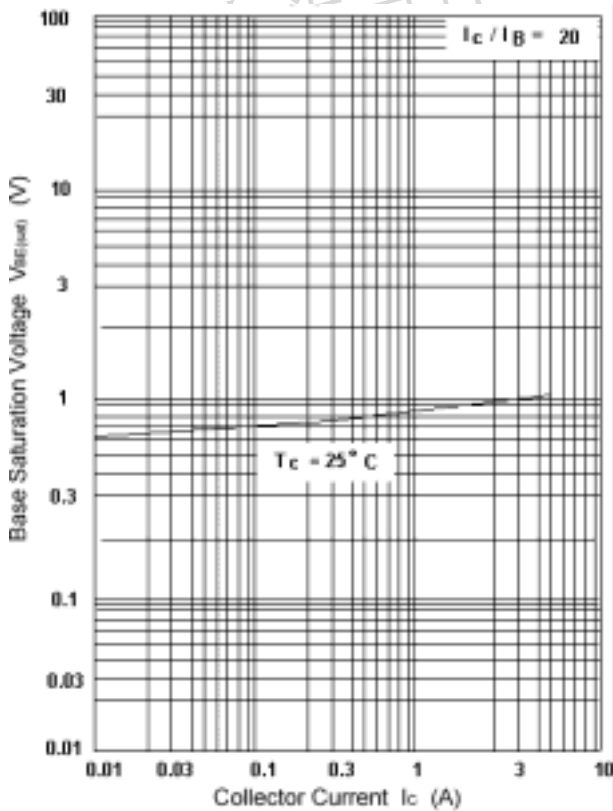


Fig.5 Base-Emitter Saturation Voltage

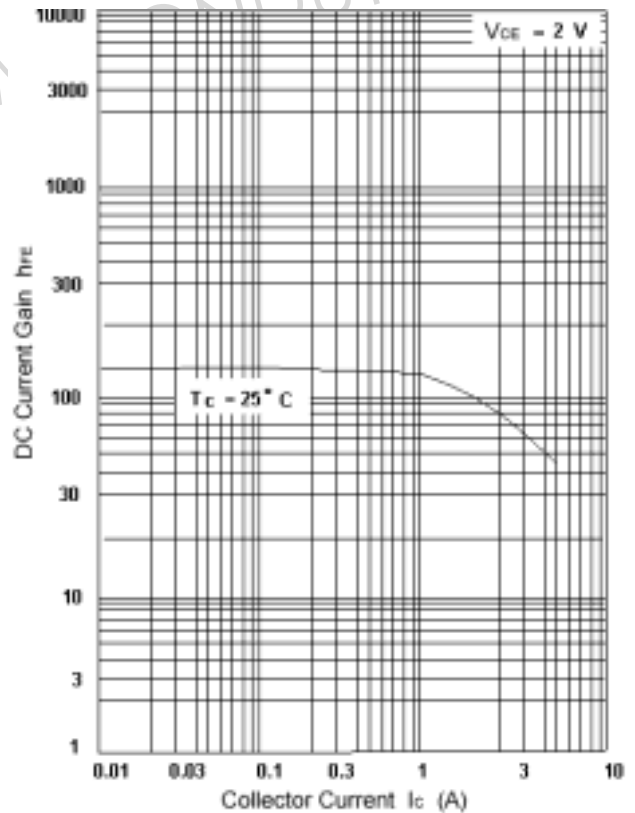


Fig.6 DC current Gain

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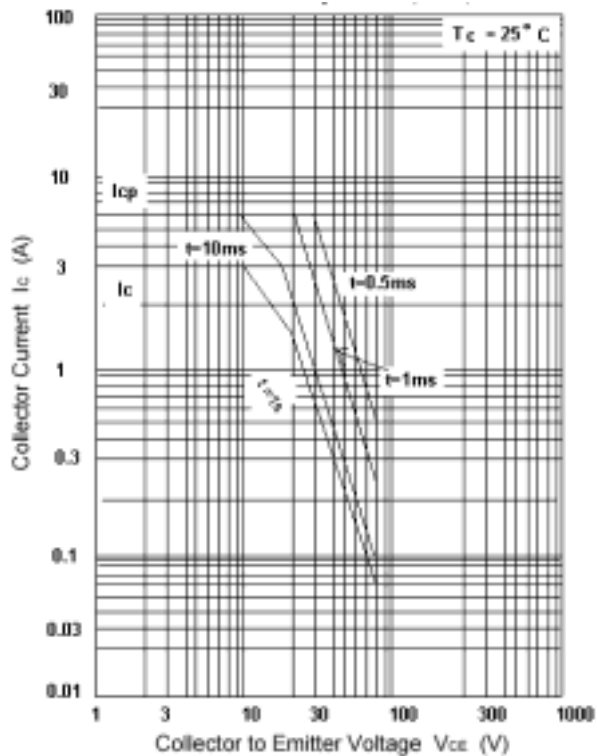


Fig.7 Safe Operating Area

固电半导体  
INCHANGE SEMICONDUCTOR