

Silicon PNP Darlington Power Transistors

TIP125/126/127

DESCRIPTION

- With TO-220C package
- DARLINGTON
- High DC current gain
- Low collector saturation voltage
- Complement to type TIP120/121/122

APPLICATIONS

- Designed for general-purpose amplifier and low-speed switching applications

PINNING

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

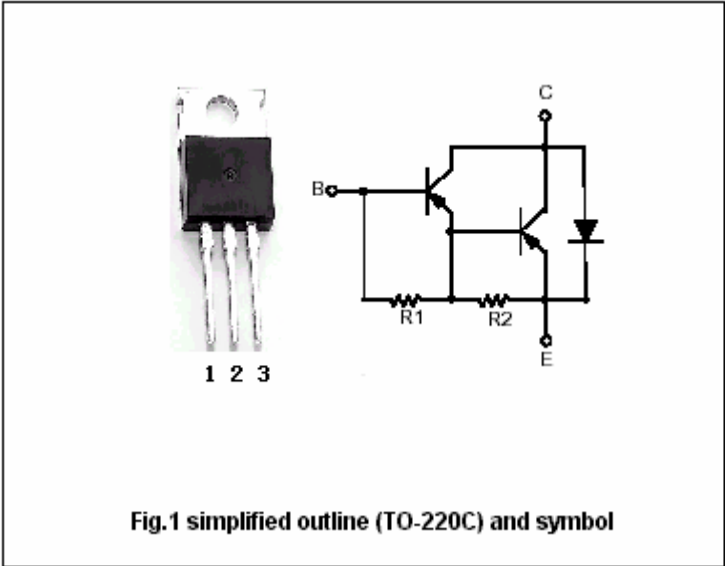


Fig.1 simplified outline (TO-220C) and symbol

Absolute maximum ratings(Tc=25°C)

| SYMBOL           | PARAMETER                   | CONDITIONS           | VALUE   | UNIT |
|------------------|-----------------------------|----------------------|---------|------|
| V <sub>CBO</sub> | Collector-base voltage      | TIP125               | -60     | V    |
|                  |                             | TIP126               | -80     |      |
|                  |                             | TIP127               | -100    |      |
| V <sub>CEO</sub> | Collector-emitter voltage   | TIP125               | -60     | V    |
|                  |                             | TIP126               | -80     |      |
|                  |                             | TIP127               | -100    |      |
| V <sub>EBO</sub> | Emitter-base voltage        | Open collector       | -5      | V    |
| I <sub>C</sub>   | Collector current-DC        |                      | -5      | A    |
| I <sub>CM</sub>  | Collector current-Pulse     |                      | -8      | A    |
| I <sub>B</sub>   | Base current-DC             |                      | -120    | mA   |
| P <sub>C</sub>   | Collector power dissipation | T <sub>C</sub> =25°C | 65      | W    |
|                  |                             | T <sub>a</sub> =25°C | 2       |      |
| T <sub>j</sub>   | Junction temperature        |                      | 150     | °C   |
| T <sub>stg</sub> | Storage temperature         |                      | -65~150 | °C   |

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## CHARACTERISTICS

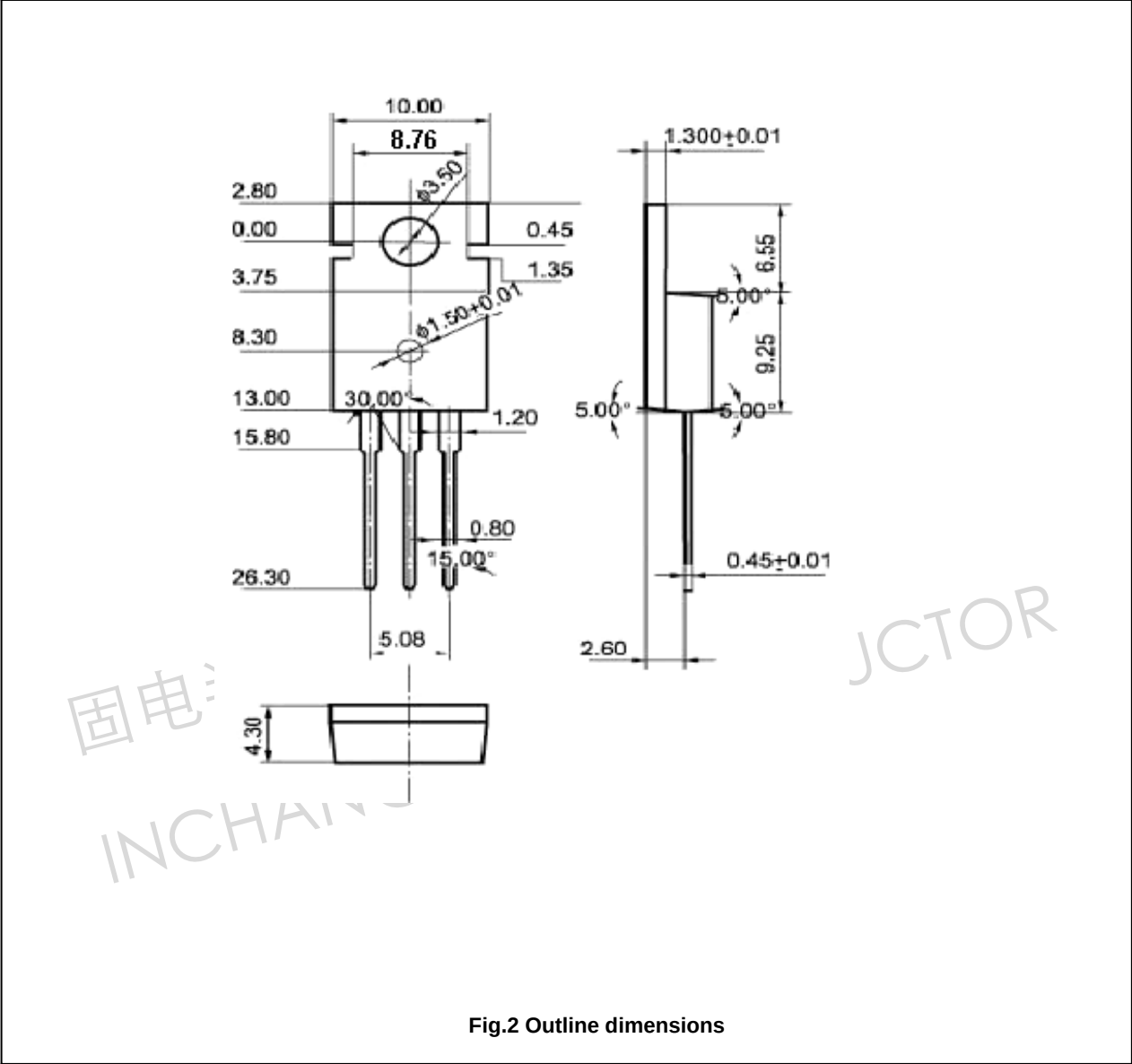
T<sub>j</sub>=25°C unless otherwise specified

| SYMBOL                | PARAMETER                            |        | CONDITIONS                                         | MIN  | TYP. | MAX  | UNIT |
|-----------------------|--------------------------------------|--------|----------------------------------------------------|------|------|------|------|
| V <sub>CE0(SUS)</sub> | Collector-emitter sustaining voltage | TIP125 | I <sub>C</sub> =-0.1A, I <sub>B</sub> =0           | -60  |      |      | V    |
|                       |                                      | TIP126 |                                                    | -80  |      |      |      |
|                       |                                      | TIP127 |                                                    | -100 |      |      |      |
| V <sub>CEsat-1</sub>  | Collector-emitter saturation voltage |        | I <sub>C</sub> =-3A, I <sub>B</sub> =-12mA         |      |      | -2.0 | V    |
| V <sub>CEsat-2</sub>  | Collector-emitter saturation voltage |        | I <sub>C</sub> =-5A, I <sub>B</sub> =-20mA         |      |      | -4.0 | V    |
| V <sub>BE</sub>       | Base-emitter on voltage              |        | I <sub>C</sub> =-3.0A; V <sub>CE</sub> =-3V        |      |      | -2.5 | V    |
| I <sub>CBO</sub>      | Collector cut-off current            | TIP125 | V <sub>CB</sub> =-60V, I <sub>E</sub> =0           |      |      | -0.2 | mA   |
|                       |                                      | TIP126 | V <sub>CB</sub> =-80V, I <sub>E</sub> =0           |      |      |      |      |
|                       |                                      | TIP127 | V <sub>CB</sub> =-100V, I <sub>E</sub> =0          |      |      |      |      |
| I <sub>CEO</sub>      | Collector cut-off current            | TIP125 | V <sub>CE</sub> =-30V, I <sub>B</sub> =0           |      |      | -0.5 | mA   |
|                       |                                      | TIP126 | V <sub>CE</sub> =-40V, I <sub>B</sub> =0           |      |      |      |      |
|                       |                                      | TIP127 | V <sub>CE</sub> =-50V, I <sub>B</sub> =0           |      |      |      |      |
| I <sub>EBO</sub>      | Emitter cut-off current              |        | V <sub>EB</sub> =-5V; I <sub>C</sub> =0            |      |      | -2   | mA   |
| h <sub>FE-1</sub>     | DC current gain                      |        | I <sub>C</sub> =-0.5A; V <sub>CE</sub> =-3V        | 1000 |      |      |      |
| h <sub>FE-2</sub>     | DC current gain                      |        | I <sub>C</sub> =-3.0A; V <sub>CE</sub> =-3V        | 1000 |      |      |      |
| C <sub>ob</sub>       | Output capacitance                   |        | I <sub>E</sub> =0; V <sub>CB</sub> =-10V, f=0.1MHz |      |      | 300  | pF   |

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PACKAGE OUTLINE



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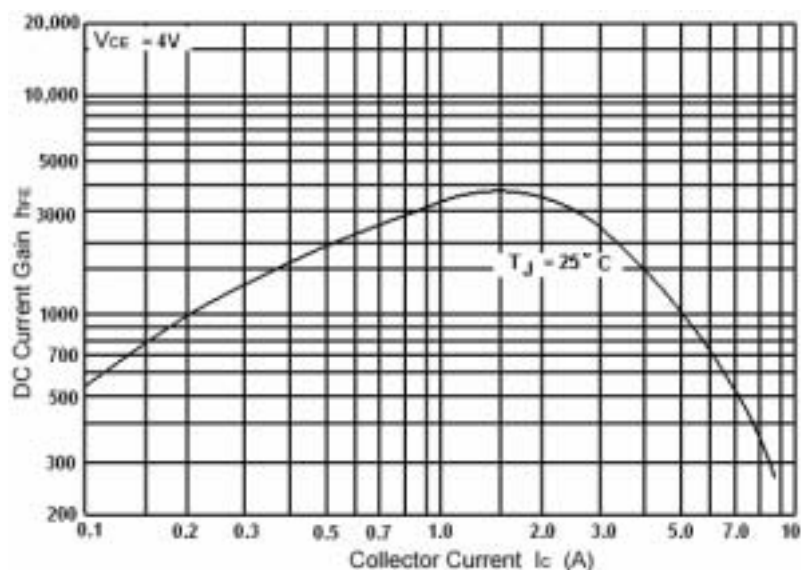


Fig.3 DC current Gain

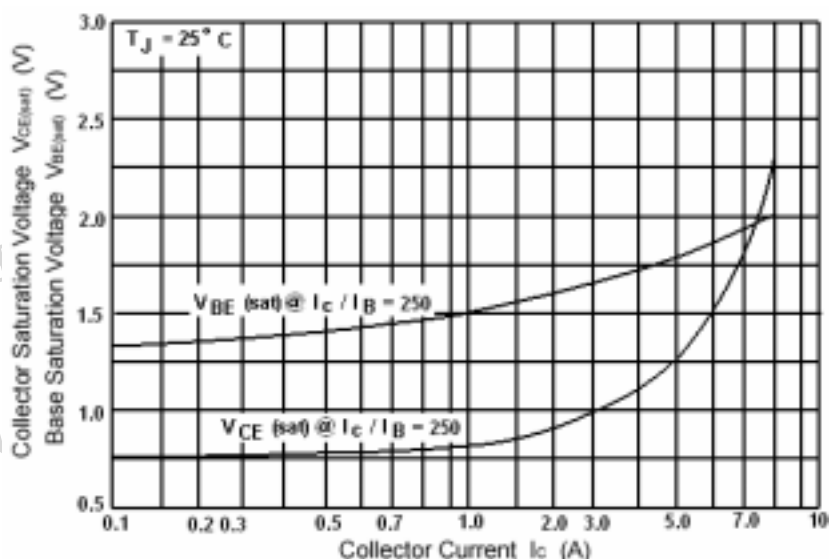
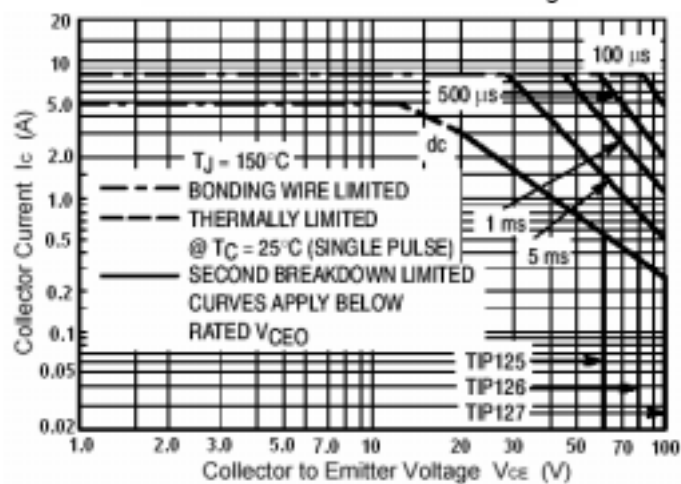
Fig.4 Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

Fig.5 Safe Operating Area