

Silicon PNP Power Transistors

2SA1307

DESCRIPTION

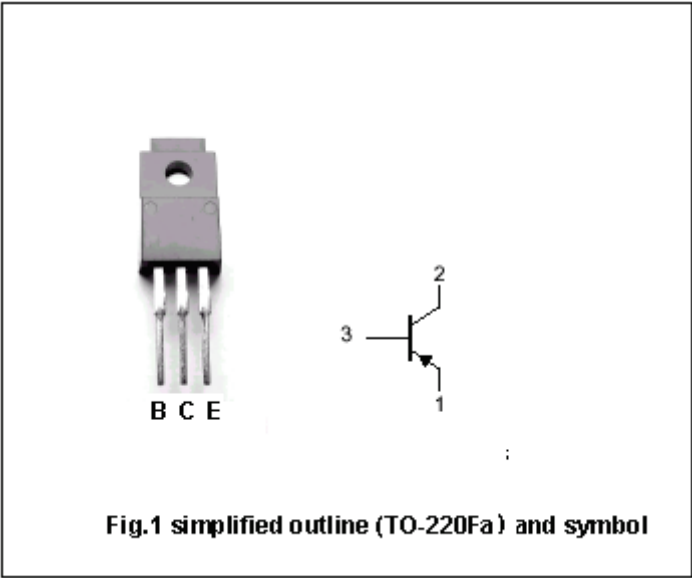
- With TO-220Fa package
- Complement to type 2SC3299
- Low saturation voltage
- High speed switching time

APPLICATIONS

- High current switching applications

PINNING

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



Absolute maximum ratings(Ta=25℃)

| SYMBOL    | PARAMETER                   | CONDITIONS               | VALUE   | UNIT               |
|-----------|-----------------------------|--------------------------|---------|--------------------|
| $V_{CBO}$ | Collector-base voltage      | Open emitter             | -60     | V                  |
| $V_{CEO}$ | Collector-emitter voltage   | Open base                | -50     |                    |
| $V_{EBO}$ | Emitter-base voltage        | Open collector           | -5      | V                  |
| $I_C$     | Collector current           |                          | -5      | A                  |
| $I_B$     | Base current                |                          | -1      | A                  |
| $P_C$     | Collector power dissipation | $T_C=25^{\circ}\text{C}$ | 20      | W                  |
|           |                             | $T_a=25^{\circ}\text{C}$ | 2       |                    |
| $T_j$     | 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> =-10mA, I <sub>B</sub> =0         | -50 |      |      | V    |
| V <sub>CEsat</sub>   | Collector-emitter saturation voltage | I <sub>C</sub> =-3A; I <sub>B</sub> =-0.15A      |     |      | -0.4 | V    |
| V <sub>BEsat</sub>   | Base-emitter saturation voltage      | I <sub>C</sub> =-3A; I <sub>B</sub> =-0.15A      |     |      | -1.2 | V    |
| I <sub>CBO</sub>     | Collector cut-off current            | V <sub>CB</sub> =-50V; I <sub>E</sub> =0         |     |      | -1.0 | μA   |
| I <sub>EBO</sub>     | Emitter cut-off current              | V <sub>EB</sub> =-5V; I <sub>C</sub> =0          |     |      | -1.0 | μA   |
| h <sub>FE-1</sub>    | DC current gain                      | I <sub>C</sub> =-1A; V <sub>CE</sub> =-1V        | 70  |      | 240  |      |
| h <sub>FE-2</sub>    | DC current gain                      | I <sub>C</sub> =-3A; V <sub>CE</sub> =-1V        | 30  |      |      |      |
| C <sub>ob</sub>      | Output capacitance                   | I <sub>E</sub> =0; V <sub>CB</sub> =-10V, f=1MHz |     | 170  |      | pF   |
| f <sub>T</sub>       | Transition frequency                 | I <sub>C</sub> =-1A; V <sub>CE</sub> =-4V        |     | 60   |      | MHz  |

## Switching times

|                 |              |                                                                                         |  |     |  |    |
|-----------------|--------------|-----------------------------------------------------------------------------------------|--|-----|--|----|
| t <sub>on</sub> | Turn-on time | I <sub>B1</sub> =-I <sub>B2</sub> =-0.15A, V <sub>CC</sub> =30V<br>R <sub>L</sub> =10 Ω |  | 0.1 |  | μs |
| t <sub>s</sub>  | Storage time |                                                                                         |  | 1.0 |  | μs |
| t <sub>f</sub>  | Fall time    |                                                                                         |  | 0.1 |  | μs |

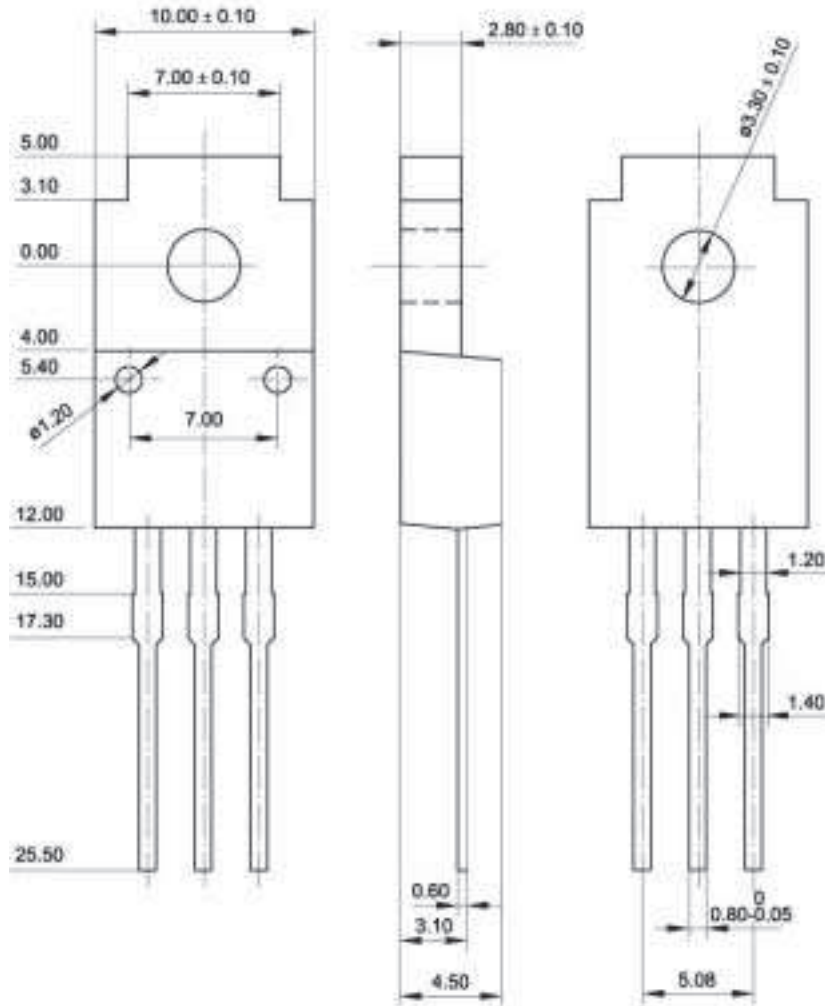
◆ h<sub>FE-1</sub> Classifications

|        |         |
|--------|---------|
| O      | Y       |
| 70-140 | 120-240 |

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## PACKAGE OUTLINE

Fig.2 Outline dimensions (unindicated tolerance:  $\pm 0.15$  mm)

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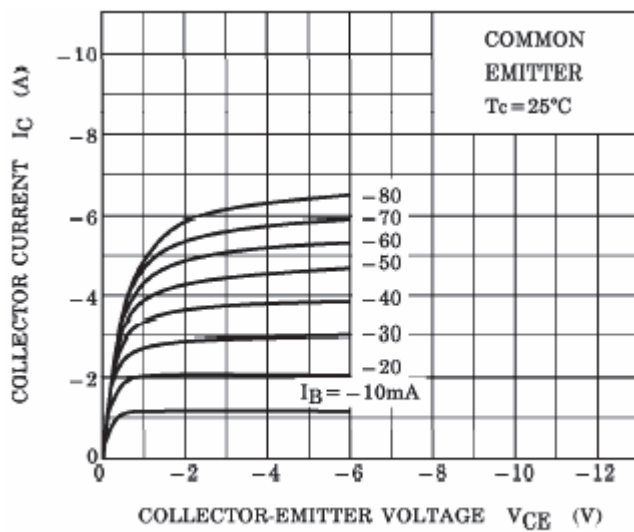


Fig.3 Static Characteristic

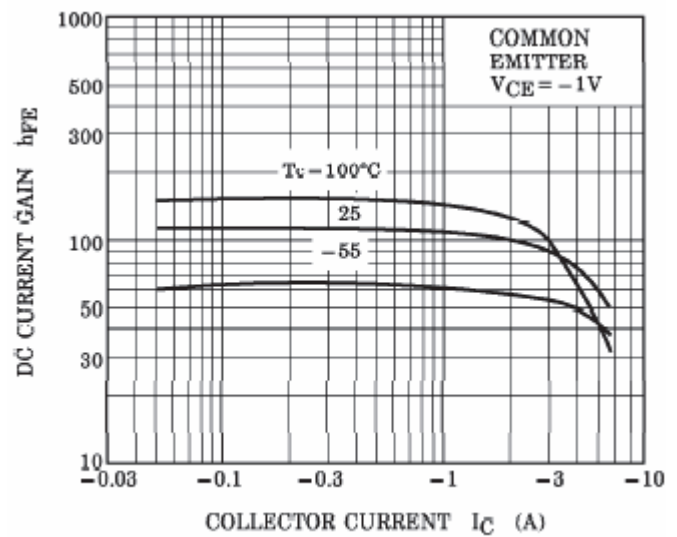


Fig.4 DC current Gain

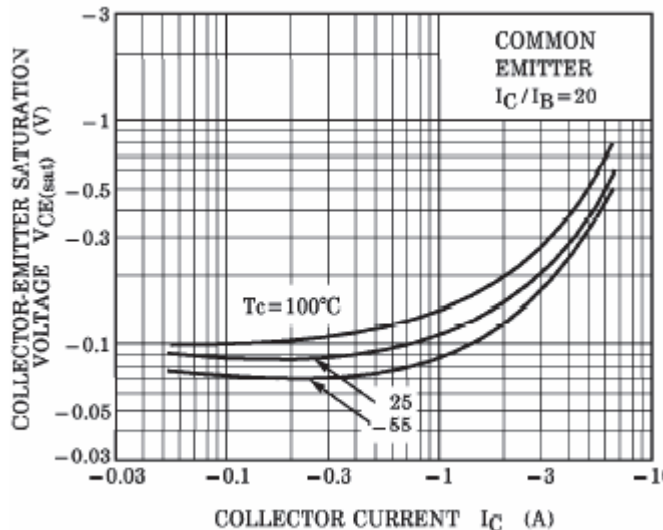


Fig.5 Collector-Emitter Saturation Voltage

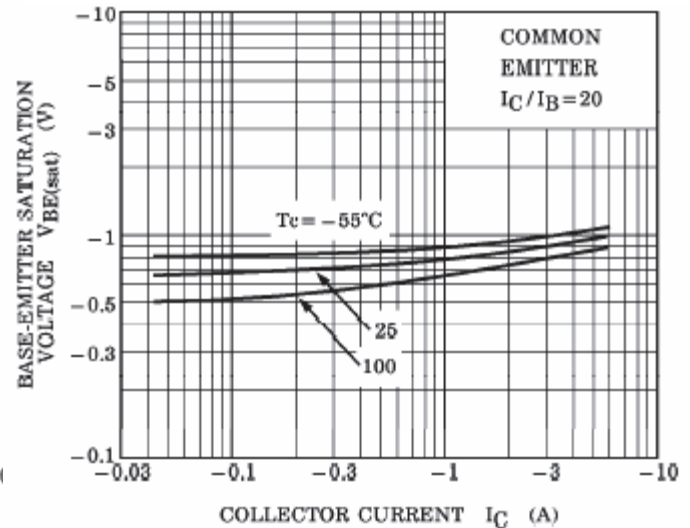


Fig.6 Base-Emitter Saturation Voltage

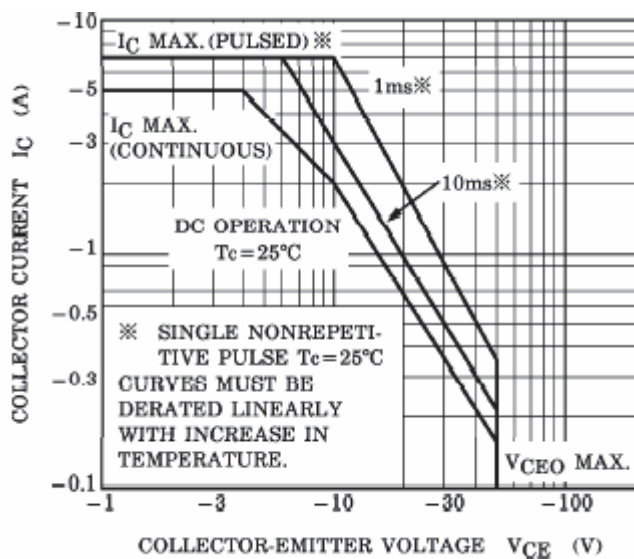


Fig.7 Safe Operating Area