

## Silicon NPN Power Transistors

2SD553

## DESCRIPTION

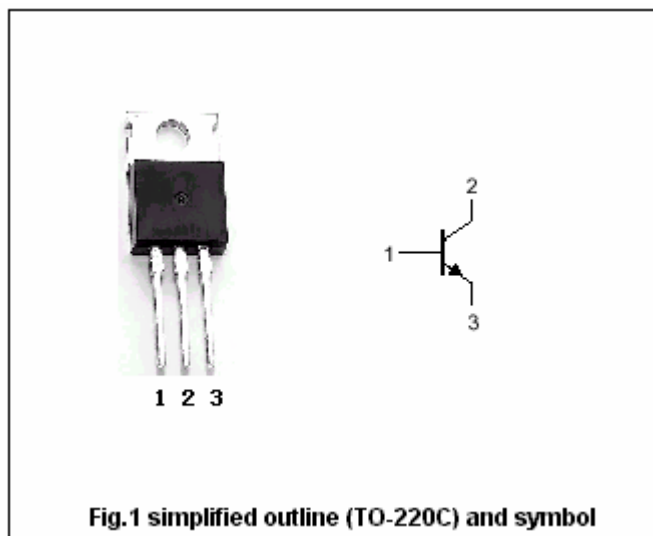
- With TO-220C package
- Complement to type 2SB553
- Low collector saturation voltage

## APPLICATIONS

- High current switching applications
- Power amplifier applications

## PINNING

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

Absolute maximum ratings( $T_a=25^\circ\text{C}$ )

| SYMBOL    | PARAMETER                   | CONDITIONS             | VALUE   | UNIT             |
|-----------|-----------------------------|------------------------|---------|------------------|
| $V_{CBO}$ | Collector-base voltage      | Open emitter           | 70      | V                |
| $V_{CEO}$ | Collector-emitter voltage   | Open base              | 50      | V                |
| $V_{EBO}$ | Emitter-base voltage        | Open collector         | 5       | V                |
| $I_C$     | Collector current           |                        | 7       | A                |
| $I_B$     | Base current                |                        | 1       | A                |
| $P_C$     | Collector power dissipation | $T_C=25^\circ\text{C}$ | 40      | W                |
|           |                             | $T_a=25^\circ\text{C}$ | 1.5     |                  |
| $T_j$     | Junction temperature        |                        | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage temperature         |                        | -50~150 | $^\circ\text{C}$ |

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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> =50mA; I <sub>B</sub> =0         | 50  |      |     | V    |
| V <sub>CEsat</sub>   | Collector-emitter saturation voltage | I <sub>C</sub> =4A; I <sub>B</sub> =0.4A        |     | 0.2  | 0.4 | V    |
| V <sub>BEsat</sub>   | Base-emitter saturation voltage      | I <sub>C</sub> =4A; I <sub>B</sub> =0.4A        |     | 0.9  | 1.2 | V    |
| I <sub>CBO</sub>     | Collector cut-off current            | V <sub>CB</sub> =70V; I <sub>E</sub> =0         |     |      | 30  | 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> =1A; V <sub>CE</sub> =1V         | 70  |      | 240 |      |
| h <sub>FE-2</sub>    | DC current gain                      | I <sub>C</sub> =4A; V <sub>CE</sub> =1V         | 30  |      |     |      |
| C <sub>OB</sub>      | Output capacitance                   | I <sub>E</sub> =0; V <sub>CB</sub> =10V; f=1MHz |     | 250  |     | pF   |
| f <sub>T</sub>       | Transition frequency                 | I <sub>C</sub> =1A; V <sub>CE</sub> =4V         |     | 10   |     | MHz  |

## Switching times

|                 |              |   |  |     |  |    |
|-----------------|--------------|---|--|-----|--|----|
| t <sub>on</sub> | Turn-on time | I <sub>B1</sub> =- I <sub>B2</sub> =0.3A<br>R <sub>L</sub> =10Ω; V <sub>CC</sub> =30V |  | 0.2 |  | μs |
| t <sub>s</sub>  | Storage time |   |  | 2.5 |  | μs |
| t <sub>f</sub>  | Fall time    |   |  | 0.5 |  | 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:±0.10mm)

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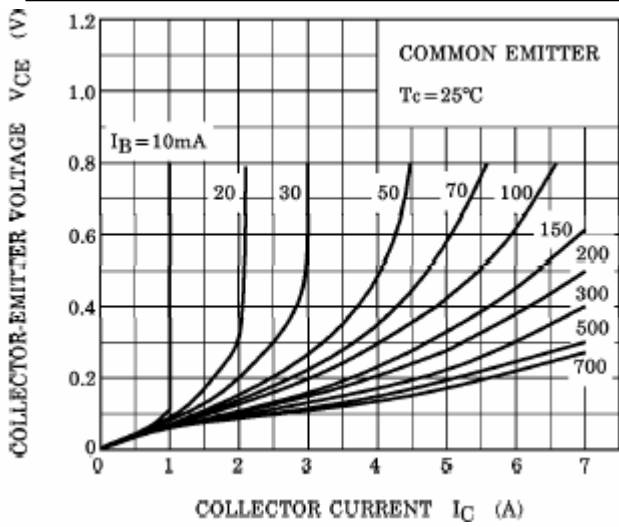


Fig.3 Static Characteristic

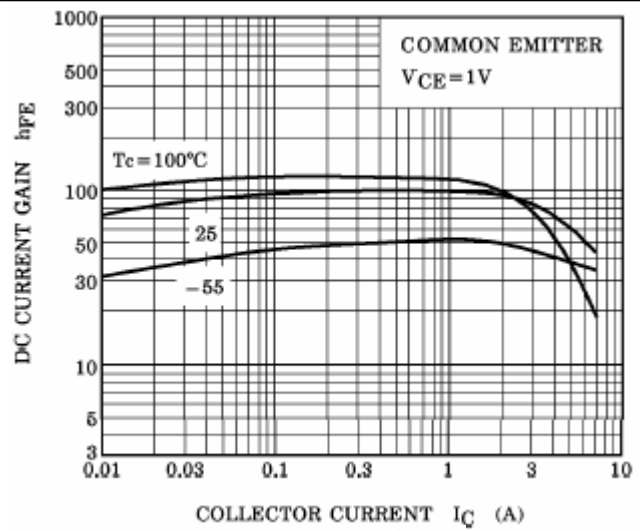


Fig.4 DC current Gain

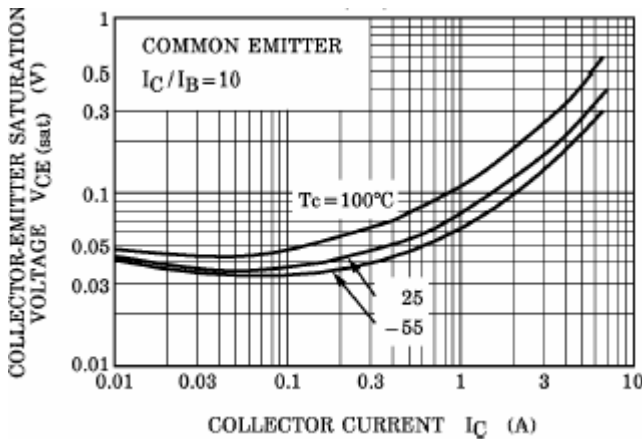


Fig.5 Collector-Emitter Saturation Voltage

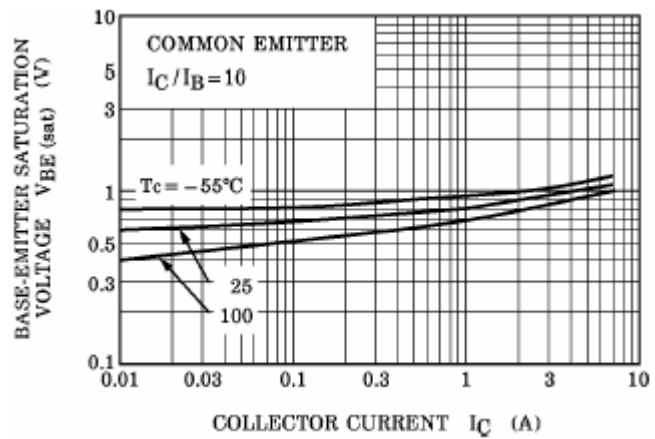


Fig.6 Base-Emitter Saturation Voltage

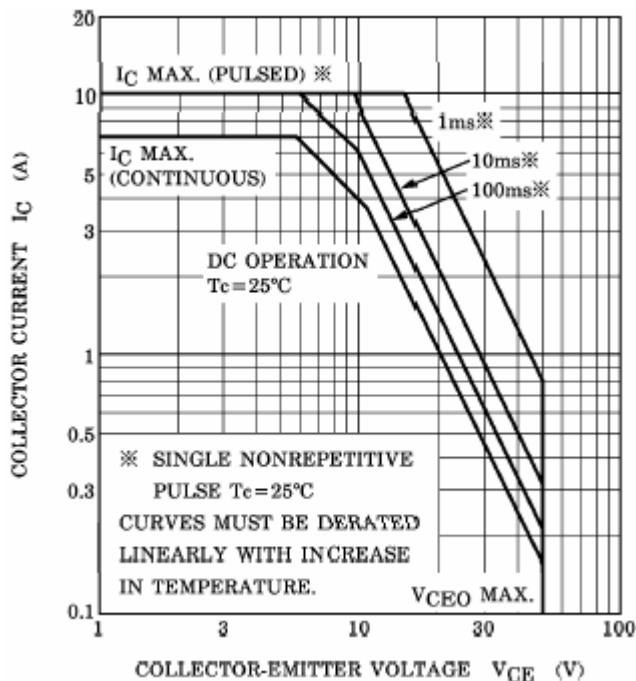


Fig.7 Safe Operating Area