

# Silicon NPN Power Transistors

2N6653

## DESCRIPTION

- With TO-3 package
- High voltage capability
- Fast switching speeds
- Low saturation voltage

## APPLICATIONS

- Switching regulators
- Inverters
- Solenoid and relay drivers
- Deflection circuits

## PINNING (See Fig.2)

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

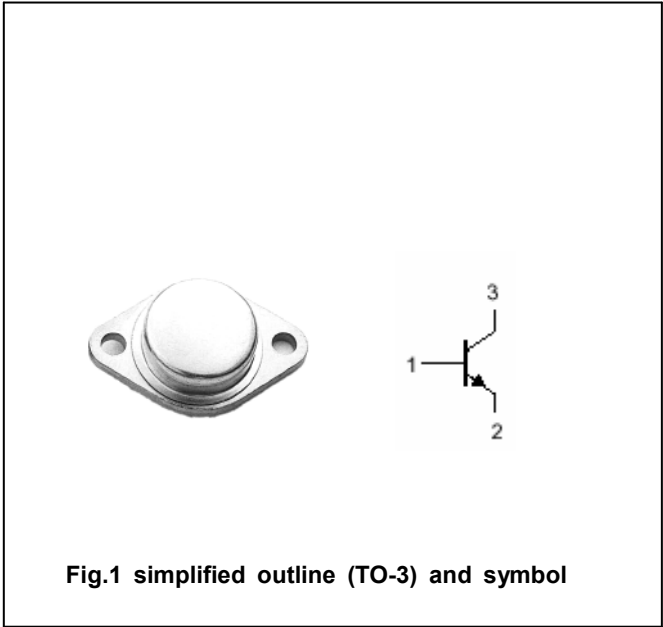


Fig.1 simplified outline (TO-3) and symbol

## MAXIMUM RATINGS(Ta=25℃)

| SYMBOL           | PARAMETER                 | CONDITIONS          | VALUE   | UNIT |
|------------------|---------------------------|---------------------|---------|------|
| V <sub>CBO</sub> | Collector-base voltage    | Open emitter        | 350     | V    |
| V <sub>CEO</sub> | Collector-emitter voltage | Open base           | 300     | V    |
| V <sub>EBO</sub> | Emitter-base voltage      | Open collector      | 6       | V    |
| I <sub>C</sub>   | Collector current         |                     | 20      | A    |
| I <sub>CM</sub>  | Collector current-peak    |                     | 30      | A    |
| P <sub>T</sub>   | Total power dissipation   | T <sub>c</sub> =25℃ | 150     | W    |
| T <sub>j</sub>   | Junction temperature      |                     | 200     | ℃    |
| T <sub>stg</sub> | Storage temperature       |                     | -65~200 | ℃    |

## THERMAL CHARACTERISTICS

| SYMBOL              | PARAMETER                                | MAX | UNIT |
|---------------------|------------------------------------------|-----|------|
| R <sub>th j-c</sub> | Thermal resistance from junction to case | 1.0 | ℃/W  |

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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 | I <sub>C</sub> =0.1A ; I <sub>B</sub> =0                                    | 300 |      |            | V    |
| V <sub>(BR)CBO</sub>  | Collector-emitter breakdown voltage  | I <sub>C</sub> =1mA ; I <sub>E</sub> =0                                     | 350 |      |            | V    |
| V <sub>CEsat-1</sub>  | Collector-emitter saturation voltage | I <sub>C</sub> =10A; I <sub>B</sub> =2A                                     |     |      | 1.5        | V    |
| V <sub>CEsat-2</sub>  | Collector-emitter saturation voltage | I <sub>C</sub> =15A; I <sub>B</sub> =3A                                     |     |      | 1.8        | V    |
| V <sub>BEsat</sub>    | Base-emitter saturation voltage      | I <sub>C</sub> =15A; I <sub>B</sub> =3A                                     |     |      | 1.8        | V    |
| I <sub>CEV</sub>      | Collector cut-off current            | V <sub>CE</sub> =350V; V <sub>BE(off)</sub> =-1.5V<br>T <sub>C</sub> =150°C |     |      | 0.1<br>2.0 | mA   |
| I <sub>EBO</sub>      | Emitter cut-off current              | V <sub>EB</sub> =6V; I <sub>C</sub> =0                                      |     |      | 0.1        | mA   |
| h <sub>FE-1</sub>     | DC current gain                      | I <sub>C</sub> =1A ; V <sub>CE</sub> =5V                                    | 15  |      | 50         |      |
| h <sub>FE-2</sub>     | DC current gain                      | I <sub>C</sub> =15A ; V <sub>CE</sub> =5V                                   | 10  |      |            |      |
| f <sub>T</sub>        | Transition frequency                 | I <sub>C</sub> =0.5A ; V <sub>CE</sub> =10V                                 |     | 15   |            | MHz  |

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PACKAGE OUTLINE

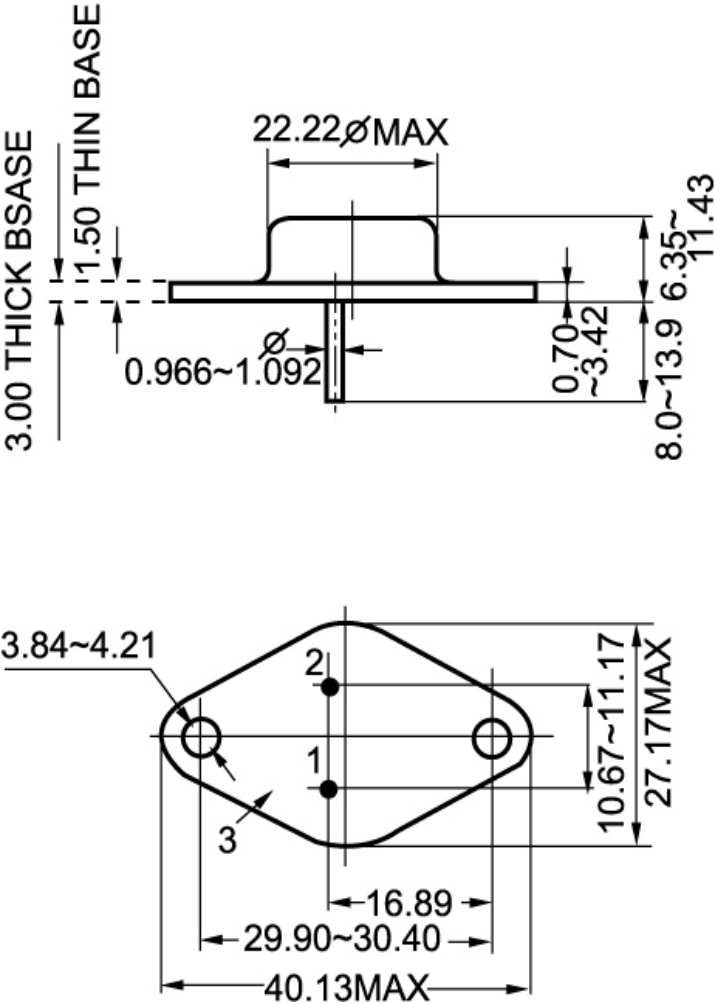


Fig.2 Outline dimensions