

Silicon NPN Power Transistors

2SD1633

DESCRIPTION

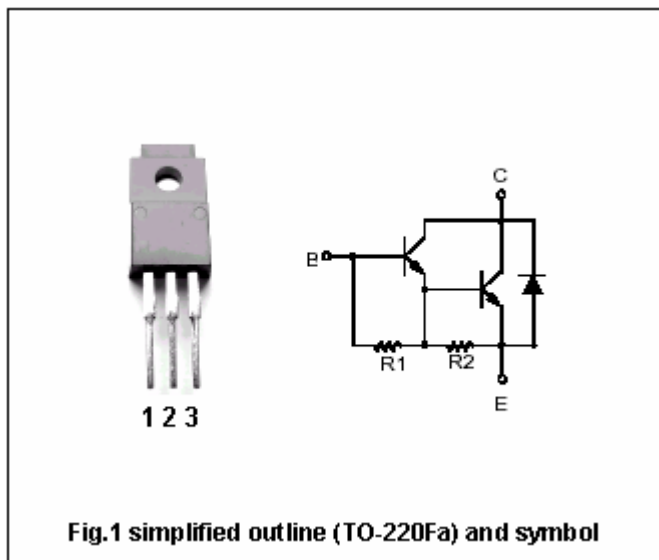
- With TO-220Fa package
- DARLINGTON
- High speed switching
- Good linearity of  $h_{FE}$

APPLICATIONS

- Power switching applications

PINNING

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



Absolute maximum ratings( $T_a=25$  )

| SYMBOL    | PARAMETER                   | CONDITIONS     | VALUE   | UNIT |
|-----------|-----------------------------|----------------|---------|------|
| $V_{CBO}$ | Collector-base voltage      | Open emitter   | 100     | V    |
| $V_{CEO}$ | Collector-emitter voltage   | Open base      | 100     | V    |
| $V_{EBO}$ | Emitter-base voltage        | Open collector | 7       | V    |
| $I_C$     | Collector current (DC)      |                | 5       | A    |
| $I_{CM}$  | Collector current-Peak      |                | 8       | A    |
| $I_B$     | Base current (DC)           |                | 0.5     | A    |
| $P_C$     | Collector power dissipation | $T_a=25$       | 2       | W    |
|           |                             | $T_C=25$       | 30      |      |
| $T_j$     | 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>CEO(SUS)</sub> | Collector-emitter sustaining voltage | I <sub>C</sub> =0.2A, I <sub>B</sub> =0  | 100  |      |       | V    |
| V <sub>CEsat</sub>    | Collector-emitter saturation voltage | I <sub>C</sub> =3A; I <sub>B</sub> =3mA  |      |      | 1.5   | V    |
| V <sub>BEsat</sub>    | Base-emitter saturation voltage      | I <sub>C</sub> =3A; I <sub>B</sub> =3mA  |      |      | 2.0   | V    |
| I <sub>CBO</sub>      | Collector cut-off current            | V <sub>CB</sub> =100V; I <sub>E</sub> =0 |      |      | 100   | μA   |
| I <sub>CEO</sub>      | Collector cut-off current            | V <sub>CE</sub> =100V; I <sub>B</sub> =0 |      |      | 100   | μA   |
| I <sub>EBO</sub>      | Emitter cut-off current              | V <sub>EB</sub> =7V; I <sub>C</sub> =0   |      |      | 5     | mA   |
| h <sub>FE</sub>       | DC current gain                      | I <sub>C</sub> =3A; V <sub>CE</sub> =3V  | 1500 |      | 10000 |      |

## Switching times

|                 |              |   |  |  |     |    |
|-----------------|--------------|---|--|--|-----|----|
| t <sub>on</sub> | Turn-on time | I <sub>C</sub> =3A; I <sub>B1</sub> =3mA<br>I <sub>B2</sub> =-3mA; V <sub>CC</sub> =50V |  |  | 3.0 | μs |
| t <sub>s</sub>  | Storage time |   |  |  | 5.0 | μs |
| t <sub>f</sub>  | Fall time    |   |  |  | 3.0 | μs |

◆ h<sub>FE</sub> Classifications

| Q         | P          |
|-----------|------------|
| 1500-6000 | 5000-10000 |

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PACKAGE OUTLINE

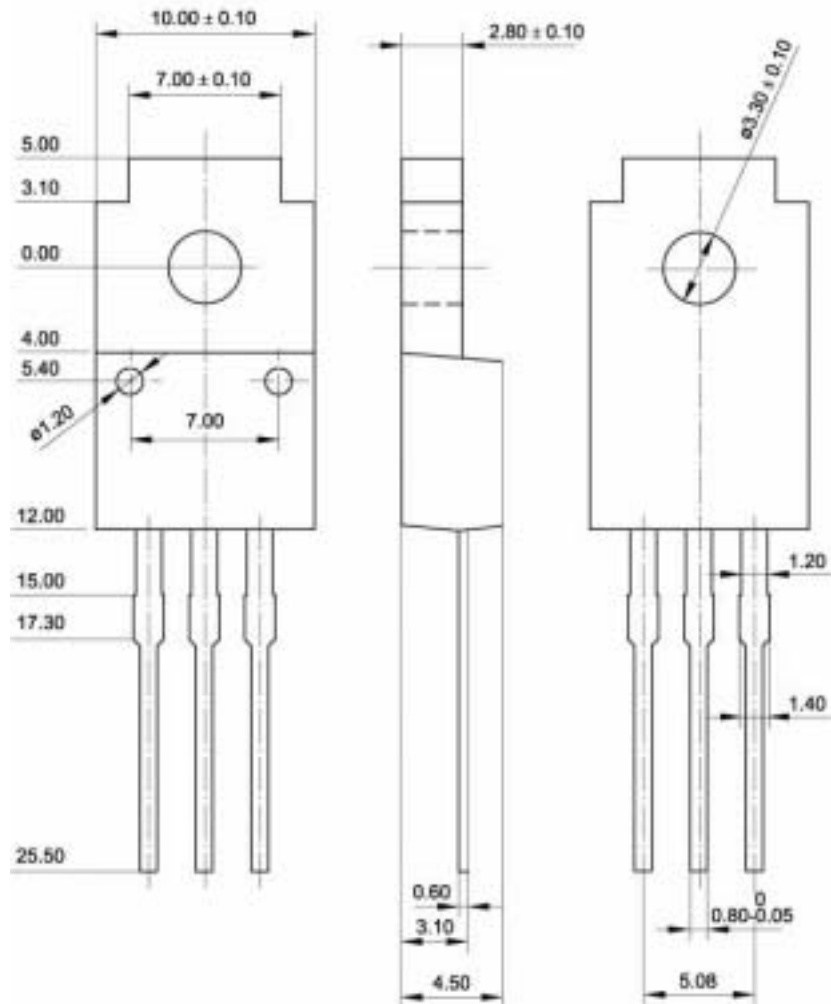


Fig.2 Outline dimensions (unindicated tolerance:  $\pm 0.15$  mm)