

Silicon NPN Power Transistors

2SD1444 2SD1444A

DESCRIPTION

- With TO-220Fa package
- Low collector saturation voltage
- High speed switching
- High collector current
- Complement to type 2SB953/953A

APPLICATIONS

- Power amplifiers
- Low voltage switching

PINNING

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

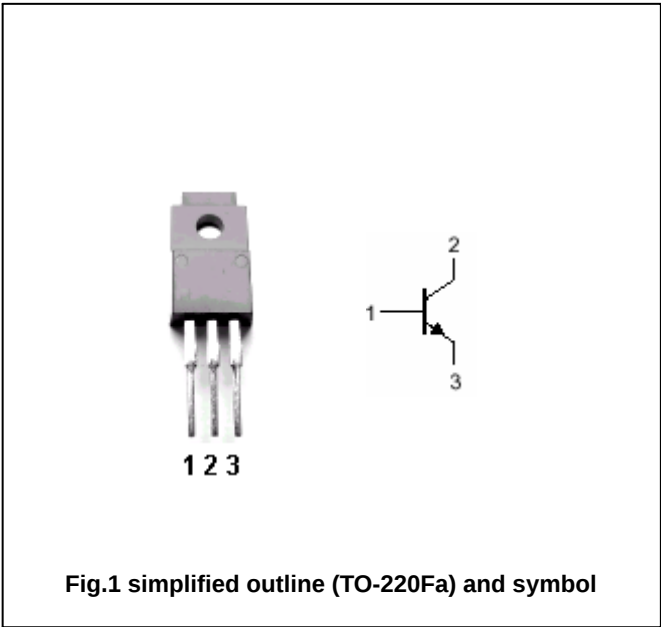


Fig.1 simplified outline (TO-220Fa) and symbol

Absolute maximum ratings(Ta=25 )

| SYMBOL           | PARAMETER                   | CONDITIONS         | VALUE   | UNIT |
|------------------|-----------------------------|--------------------|---------|------|
| V <sub>CBO</sub> | Collector-base voltage      | Open emitter       | 40      | V    |
|                  |                             |                    | 50      |      |
| V <sub>CEO</sub> | Collector-emitter voltage   | Open base          | 20      | V    |
|                  |                             |                    | 40      |      |
| V <sub>EBO</sub> | Emitter-base voltage        | Open collector     | 5       | V    |
| I <sub>C</sub>   | Collector current (DC)      |                    | 7       | A    |
| I <sub>CM</sub>  | Collector current-peak      |                    | 12      | A    |
| P <sub>C</sub>   | Collector power dissipation | T <sub>C</sub> =25 | 30      | W    |
|                  |                             | T <sub>a</sub> =25 | 2       |      |
| T <sub>j</sub>   | Junction temperature        |                    | 150     |      |
| T <sub>stg</sub> | 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>(BR)CEO</sub> | Collector-emitter breakdown voltage  | 2SD1444  | I <sub>C</sub> =10mA, I <sub>B</sub> =0         | 20  |      |     | V    |
|                      |                                      | 2SD1444A |                                                 | 40  |      |     |      |
| V <sub>CEsat</sub>   | Collector-emitter saturation voltage |          | I <sub>C</sub> =5A; I <sub>B</sub> =0.16A       |     |      | 0.6 | V    |
| V <sub>BEsat</sub>   | Base-emitter saturation voltage      |          | I <sub>C</sub> =5A; I <sub>B</sub> =0.16A       |     |      | 1.5 | V    |
| I <sub>CBO</sub>     | Collector cut-off current            | 2SD1444  | V <sub>CB</sub> =40V; I <sub>E</sub> =0         |     |      | 50  | μA   |
|                      |                                      | 2SD1444A | V <sub>CB</sub> =50V; I <sub>E</sub> =0         |     |      |     |      |
| 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> =0.1A; V <sub>CE</sub> =2V       | 45  |      |     |      |
| h <sub>FE-2</sub>    | DC current gain                      |          | I <sub>C</sub> =2A; V <sub>CE</sub> =2V         | 60  |      | 260 |      |
| f <sub>T</sub>       | Transition frequency                 |          | I <sub>C</sub> =0.5A; V <sub>CE</sub> =10V      |     | 150  |     | MHz  |
| C <sub>OB</sub>      | Output capacitance                   |          | I <sub>E</sub> =0; V <sub>CB</sub> =10V; f=1MHz |     | 110  |     | pF   |

## Switching times

|                  |              |                                                             |  |     |  |    |
|------------------|--------------|-------------------------------------------------------------|--|-----|--|----|
| t <sub>on</sub>  | Turn-on time | I <sub>C</sub> =2A; I <sub>B1</sub> =-I <sub>B2</sub> =66mA |  | 0.3 |  | μs |
| t <sub>stg</sub> | Storage time |                                                             |  | 0.3 |  | μs |
| t <sub>f</sub>   | Fall time    |                                                             |  | 0.1 |  | μs |

◆ h<sub>FE-2</sub> Classifications

|        |        |         |
|--------|--------|---------|
| R      | Q      | P       |
| 60-120 | 90-180 | 130-260 |

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PACKAGE OUTLINE

