

## Silicon PNP Power Transistors

2SA1443

## DESCRIPTION

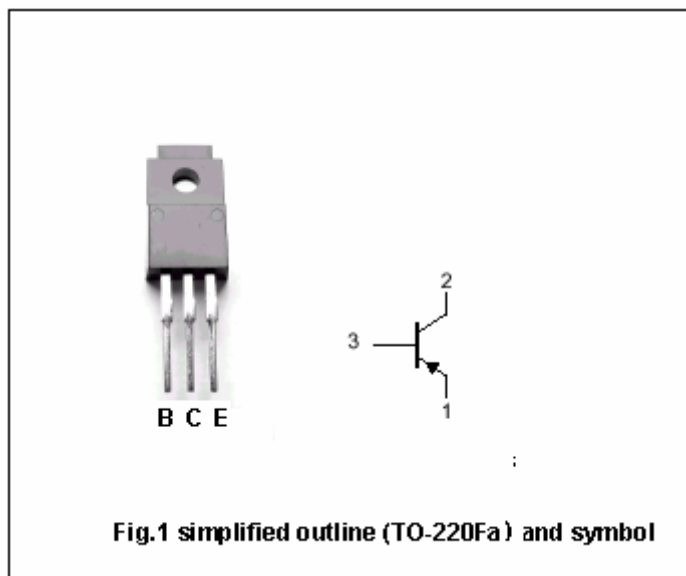
- With TO-220Fa package
- Low collector saturation voltage
- Fast switching speed
- High DC current gain

## APPLICATIONS

- High speed power switching applications

## PINNING

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

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

| SYMBOL    | PARAMETER                   | CONDITIONS             | VALUE   | UNIT             |
|-----------|-----------------------------|------------------------|---------|------------------|
| $V_{CBO}$ | Collector-base voltage      | Open emitter           | -100    | V                |
| $V_{CEO}$ | Collector-emitter voltage   | Open base              | -60     | V                |
| $V_{EBO}$ | Emitter-base voltage        | Open collector         | -7      | V                |
| $I_C$     | Collector current           |                        | -10     | A                |
| $I_{CM}$  | Collector current-peak      |                        | -20     | A                |
| $I_B$     | Base current                |                        | -5      | A                |
| $P_C$     | Collector power dissipation | $T_C=25^\circ\text{C}$ | 30      | 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>CEQ(SUS)</sub> | Collector-emitter sustaining voltage | I <sub>C</sub> =-6A, I <sub>B</sub> =-0.6A; L=1mH                     | -60 |      |             | V         |
| V <sub>CEsat-1</sub>  | Collector-emitter saturation voltage | I <sub>C</sub> =-6A, I <sub>B</sub> =-0.3A                            |     |      | -0.3        | V         |
| V <sub>CEsat-2</sub>  | Collector-emitter saturation voltage | I <sub>C</sub> =-8A, I <sub>B</sub> =-0.4A                            |     |      | -0.5        | V         |
| V <sub>BEsat-1</sub>  | Base-emitter saturation voltage      | I <sub>C</sub> =-6A, I <sub>B</sub> =-0.3A                            |     |      | -1.2        | V         |
| V <sub>BEsat-2</sub>  | Base-emitter saturation voltage      | I <sub>C</sub> =-8A, I <sub>B</sub> =-0.4A                            |     |      | -1.5        | V         |
| I <sub>CBO</sub>      | Collector cut-off current            | V <sub>CB</sub> =-60V, I <sub>E</sub> =0                              |     |      | -10         | μ A       |
| I <sub>CEx</sub>      | Collector cut-off current            | V <sub>CE</sub> =-60V, V <sub>BE</sub> =1.5V<br>T <sub>a</sub> =125°C |     |      | -10<br>-1.0 | μ A<br>mA |
| I <sub>EBO</sub>      | Emitter cut-off current              | V <sub>EB</sub> =-5V; I <sub>C</sub> =0                               |     |      | -10         | μ A       |
| h <sub>FE-1</sub>     | DC current gain                      | I <sub>C</sub> =-1A; V <sub>CE</sub> =-2V                             | 100 |      |             |           |
| h <sub>FE-2</sub>     | DC current gain                      | I <sub>C</sub> =-2A; V <sub>CE</sub> =-2V                             | 100 |      | 400         |           |
| h <sub>FE-3</sub>     | DC current gain                      | I <sub>C</sub> =-6A; V <sub>CE</sub> =-2V                             | 60  |      |             |           |
| C <sub>ob</sub>       | Output capacitance                   | I <sub>E</sub> =0; V <sub>CB</sub> =-10V, f=1MHz                      |     | 230  |             | pF        |
| f <sub>T</sub>        | Transition frequency                 | I <sub>C</sub> =-1A; V <sub>CE</sub> =-10V                            |     | 80   |             | MHz       |

## Switching times

|                 |              |                                                                                                                  |  |  |     |     |
|-----------------|--------------|------------------------------------------------------------------------------------------------------------------|--|--|-----|-----|
| t <sub>on</sub> | Turn-on time | I <sub>C</sub> =-6A; R <sub>L</sub> =8.3 Ω<br>I <sub>B1</sub> =- I <sub>B2</sub> =-0.3A<br>V <sub>CC</sub> ≈-50V |  |  | 0.3 | μ s |
| t <sub>s</sub>  | Storage time |                                                                                                                  |  |  | 1.5 | μ s |
| t <sub>f</sub>  | Fall time    |                                                                                                                  |  |  | 0.3 | μ s |

◆ h<sub>FE-2</sub> Classifications

| M       | L       | K       |
|---------|---------|---------|
| 100-200 | 150-300 | 200-400 |

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PACKAGE OUTLINE

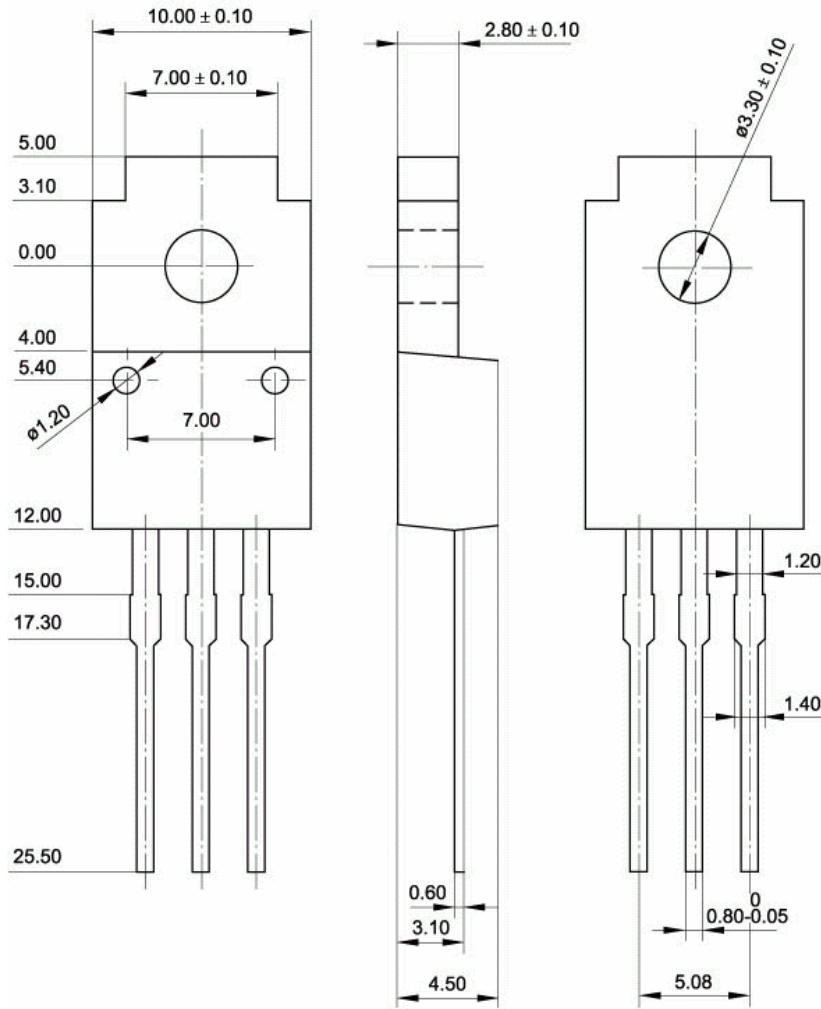


Fig.2 Outline dimensions (unindicated tolerance:  $\pm 0.15$  mm)