

## Silicon NPN Power Transistors

## 2SC3169

## DESCRIPTION

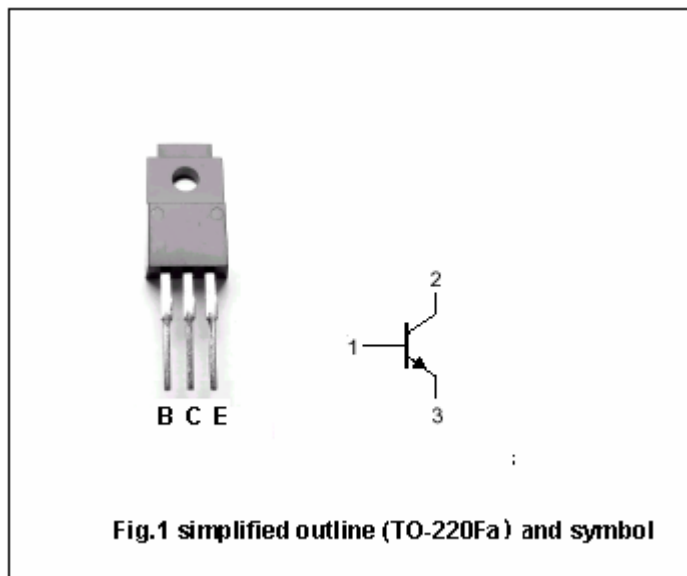
- With TO-220Fa package
- Low collector saturation voltage
- High breakdown voltage

## APPLICATIONS

- For high speed switching applications

## PINNING

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



## Absolute maximum ratings (Ta=25℃)

| SYMBOL    | PARAMETER                   | CONDITIONS             | VALUE   | UNIT |
|-----------|-----------------------------|------------------------|---------|------|
| $V_{CBO}$ | Collector-base voltage      | Open emitter           | 500     | V    |
| $V_{CEO}$ | Collector-emitter voltage   | Open base              | 400     | V    |
| $V_{EBO}$ | Emitter-base voltage        | Open collector         | 7       | V    |
| $I_C$     | Collector current           |                        | 2       | A    |
| $I_{CM}$  | Collector current-peak      |                        | 4       | A    |
| $P_C$     | Collector power dissipation | $T_a=25^\circ\text{C}$ | 2       | W    |
|           |                             | $T_C=25^\circ\text{C}$ | 25      |      |
| $T_j$     | Junction temperature        |                        | 150     | °C   |
| $T_{stg}$ | Storage temperature         |                        | -55~150 | °C   |

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## CHARACTERISTICS

Tj=25°C unless otherwise specified

| SYMBOL         | PARAMETER                            | CONDITIONS                | MIN | TYP. | MAX | UNIT    |
|----------------|--------------------------------------|---------------------------|-----|------|-----|---------|
| $V_{CEO(SUS)}$ | Collector-emitter sustaining voltage | $I_C=0.2A$ , $L=25mH$     | 400 |      |     | V       |
| $V_{CEsat}$    | Collector-emitter saturation voltage | $I_C=1A$ ; $I_B=0.2A$     |     |      | 1.0 | V       |
| $V_{BEsat}$    | Base-emitter saturation voltage      | $I_C=1A$ ; $I_B=0.2A$     |     |      | 1.5 | V       |
| $I_{CBO}$      | Collector cut-off current            | $V_{CB}=500V$ ; $I_E=0$   |     |      | 100 | $\mu A$ |
| $I_{EBO}$      | Emitter cut-off current              | $V_{EB}=5V$ ; $I_C=0$     |     |      | 100 | $\mu A$ |
| $h_{FE-1}$     | DC current gain                      | $I_C=0.1A$ ; $V_{CE}=5V$  | 15  |      |     |         |
| $h_{FE-2}$     | DC current gain                      | $I_C=1A$ ; $V_{CE}=5V$    | 8   |      |     |         |
| $f_T$          | Transition frequency                 | $I_C=0.2A$ ; $V_{CE}=10V$ |     | 8    |     | MHz     |

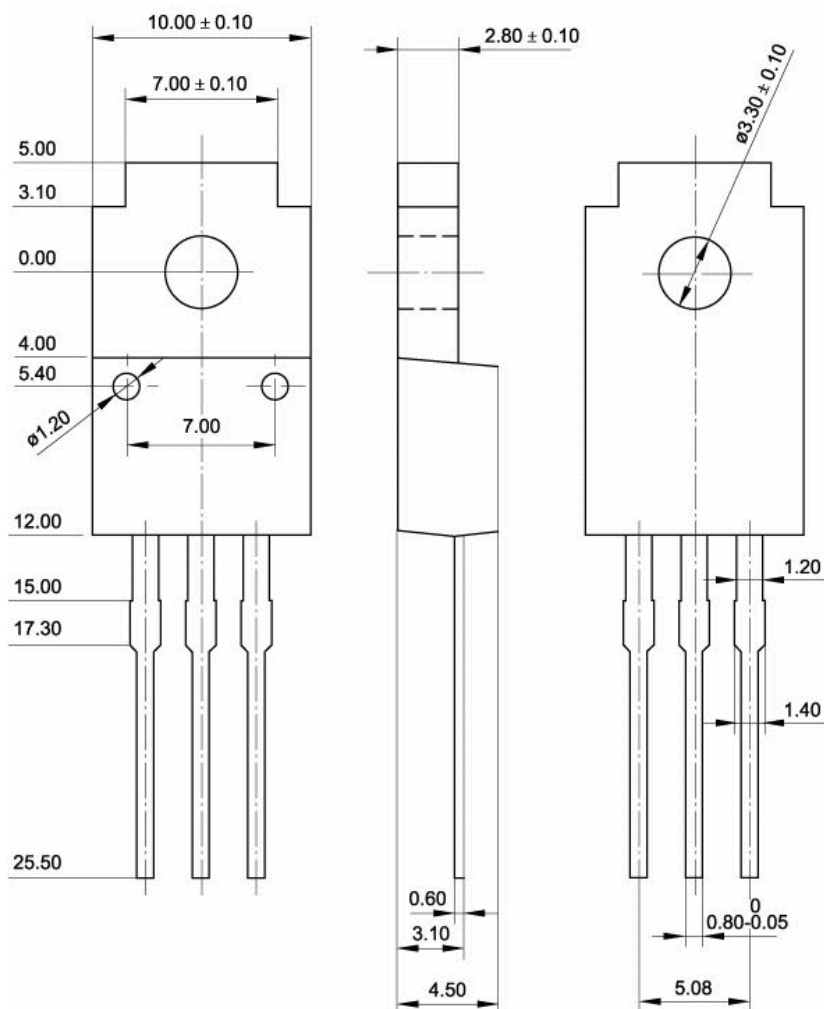
## Switching times

|           |              |                                                   |  |  |     |         |
|-----------|--------------|---------------------------------------------------|--|--|-----|---------|
| $t_{on}$  | Turn-on time | $I_C=1A$ ; $I_{B1}=-I_{B2}=0.2A$<br>$V_{CC}=100V$ |  |  | 1.0 | $\mu s$ |
| $t_{stg}$ | Storage time |                                                   |  |  | 3.0 | $\mu s$ |
| $t_f$     | Fall time    |                                                   |  |  | 1.0 | $\mu s$ |

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## PACKAGE OUTLINE

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