

## Silicon NPN Power Transistors

## 2SC3061

## DESCRIPTION

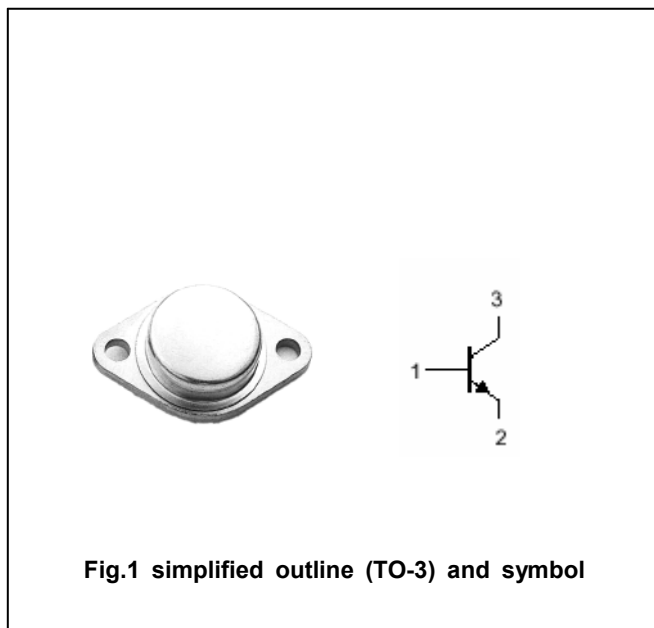
- With TO-3 package
- Ultra-fast switching
- Wide area of safe operation
- High breakdown voltage

## APPLICATIONS

- Switching regulators
- Motor controls
- Ultrasonic oscillators
- Class C and D amplifiers
- Deflection circuits

## PINNING(see Fig.2)

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

ABSOLUTE MAXIMUM RATINGS( $T_C=25^\circ\text{C}$ )

| SYMBOL    | PARAMETER                   | CONDITIONS   | VALUE   | UNIT             |
|-----------|-----------------------------|--|---------|------------------|
| $V_{CBO}$ | Collector-base voltage      | Open emitter   | 1200    | V                |
| $V_{CEO}$ | Collector-emitter voltage   | Open base  | 850     | V                |
| $V_{EBO}$ | Emitter-base voltage        | Open collector                                       | 7       | V                |
| $I_C$     | Collector current           |  | 10      | A                |
| $I_{CP}$  | Collector current-pulse     | $PW \leq 25\mu\text{s}, \text{Duty cycle} \leq 50\%$ | 20      | A                |
| $I_B$     | Base current                |  | 5       | A                |
| $P_C$     | Collector power dissipation | $T_C=25^\circ\text{C}$                               | 200     | W                |
| $T_j$     | Junction temperature        |  | 175     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage temperature         |  | -65~175 | $^\circ\text{C}$ |

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## CHARACTERISTICS

T<sub>j</sub>=25°C unless otherwise specified

| SYMBOL               | PARAMETER                            | CONDITIONS   | MIN  | TYP. | MAX | UNIT |
|----------------------|--------------------------------------|--|------|------|-----|------|
| V <sub>(BR)CEO</sub> | Collector-emitter breakdown voltage  | I <sub>C</sub> =10mA ; R <sub>BE</sub> =∞                        | 850  |      |     | V    |
| V <sub>(BR)CBO</sub> | Collector-base breakdown voltage     | I <sub>C</sub> =1mA; I <sub>E</sub> =0                           | 1200 |      |     | V    |
| V <sub>(BR)EBO</sub> | Emitter-base breakdown voltage       | I <sub>E</sub> =1mA; I <sub>C</sub> =0                           | 7    |      |     | V    |
| V <sub>CE(sat)</sub> | Collector-emitter saturation voltage | I <sub>C</sub> =4A; I <sub>B</sub> =0.8A                         |      |      | 1.5 | V    |
| V <sub>BE(sat)</sub> | Base-emitter saturation voltage      | I <sub>C</sub> =4A; I <sub>B</sub> =0.8A                         |      |      | 2.0 | V    |
| I <sub>CBO</sub>     | Collector cut-off current            | V <sub>CB</sub> =1000V; I <sub>E</sub> =0                        |      |      | 100 | μA   |
|                      |                                      | V <sub>CB</sub> =1000V; I <sub>E</sub> =0, T <sub>C</sub> =100°C |      |      | 1   | mA   |
| I <sub>EBO</sub>     | Emitter cut-off current              | V <sub>EB</sub> =6V; I <sub>C</sub> =0                           |      |      | 100 | μA   |
| h <sub>FE</sub>      | DC current gain                      | I <sub>C</sub> =4A ; V <sub>CE</sub> =5V                         | 10   |      | 30  |      |
| f <sub>T</sub>       | Transition frequency                 | I <sub>C</sub> =1A ; V <sub>CE</sub> =10V                        |      | 15   |     | MHz  |
| C <sub>ob</sub>      | Output capacitance                   | I <sub>E</sub> =0; V <sub>CB</sub> =10V, f=1MHz                  |      | 220  |     | pF   |

## Switching times

|                  |              |   |  |  |     |    |
|------------------|--------------|---|--|--|-----|----|
| t <sub>r</sub>   | Rise time    | V <sub>CC</sub> =400V; I <sub>C</sub> =4A<br>I <sub>B1</sub> =0.4A; I <sub>B2</sub> =-1.2A; |  |  | 0.5 | μs |
| t <sub>stg</sub> | Storage time |   |  |  | 3.5 | μs |
| t <sub>f</sub>   | Fall time    |   |  |  | 0.3 | μs |

PACKAGE OUTLINE

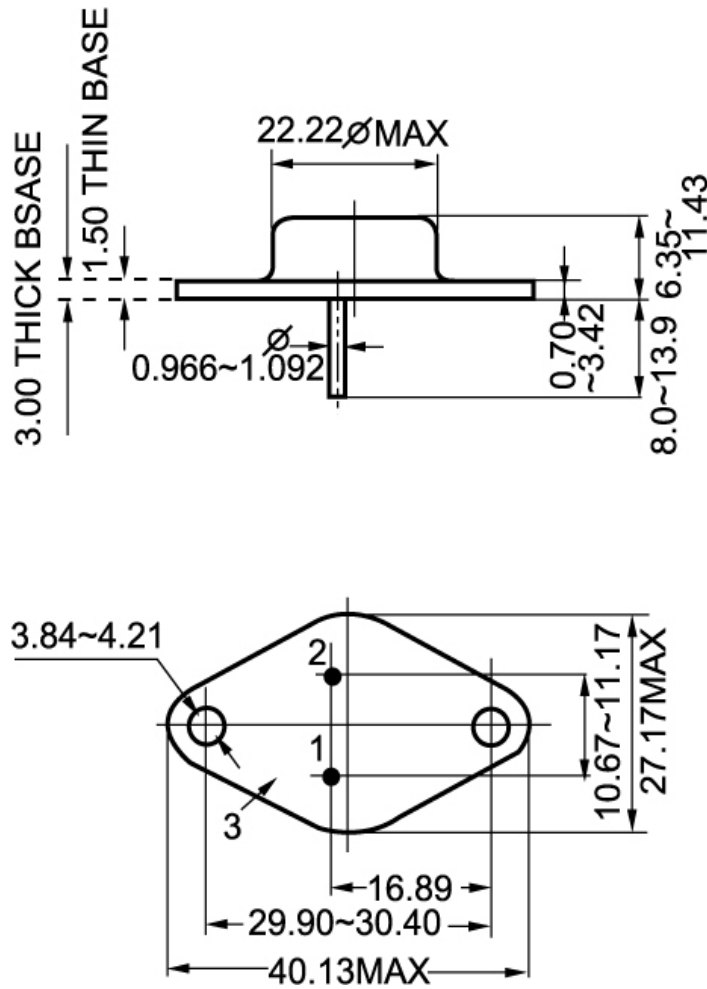


Fig.2 outline dimensions (unindicated tolerance:±0.1mm)