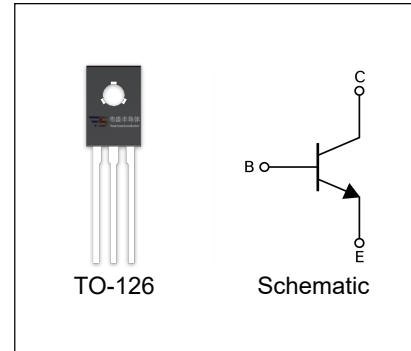


# 13002 TRANSISTOR (NPN)

## FEATURES

- Power switching applications



## MAXIMUM RATINGS ( $T_a=25^{\circ}\text{C}$ unless otherwise noted)

| Symbol         | Parameter                                        | Value   | Unit               |
|----------------|--------------------------------------------------|---------|--------------------|
| $V_{CBO}$      | Collector -Base Voltage                          | 600     | V                  |
| $V_{CEO}$      | Collector-Emitter Voltage                        | 400     | V                  |
| $V_{EBO}$      | Emitter-Base Voltage                             | 6       | V                  |
| $I_C$          | Collector Current -Continuous                    | 1       | A                  |
| $P_C$          | Collector Power Dissipation                      | 1.25    | W                  |
| $T_J, T_{stg}$ | Operation Junction and Storage Temperature Range | -55~150 | $^{\circ}\text{C}$ |

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

| Parameter                            | Symbol               | Test conditions                                                                      | Min | Typ | Max | Unit |
|--------------------------------------|----------------------|--------------------------------------------------------------------------------------|-----|-----|-----|------|
| Collector-base breakdown voltage     | V <sub>(BR)CBO</sub> | I <sub>C</sub> = 100μA, I <sub>E</sub> =0                                            | 600 |     |     | V    |
| Collector-emitter breakdown voltage  | V <sub>(BR)CEO</sub> | I <sub>C</sub> = 1mA, I <sub>B</sub> =0                                              | 400 |     |     | V    |
| Emitter-base breakdown voltage       | V <sub>(BR)EBO</sub> | I <sub>E</sub> = 100μA, I <sub>C</sub> =0                                            | 6   |     |     | V    |
| Collector cut-off current            | I <sub>CBO</sub>     | V <sub>CB</sub> = 600V, I <sub>E</sub> =0                                            |     |     | 100 | μA   |
|                                      | I <sub>CEO</sub>     | V <sub>CB</sub> = 400V, I <sub>E</sub> =0                                            |     |     | 100 | μA   |
| Emitter cut-off current              | I <sub>EBO</sub>     | V <sub>EB</sub> = 7V, I <sub>C</sub> =0                                              |     |     | 100 | μA   |
| Dc current gain                      | h <sub>FE1</sub>     | V <sub>CE</sub> = 10 V, I <sub>C</sub> = 200mA                                       | 9   |     | 40  |      |
|                                      | h <sub>FE2</sub>     | V <sub>CE</sub> = 10 V, I <sub>C</sub> = 0.25mA                                      | 5   |     |     |      |
| Collector-emitter saturation voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =200mA, I <sub>B</sub> = 40mA                                         |     |     | 0.5 | V    |
| Base-emitter saturation voltage      | V <sub>BE(sat)</sub> | I <sub>C</sub> =200mA, I <sub>B</sub> = 40mA                                         |     |     | 1.1 | V    |
| Transition frequency                 | f <sub>T</sub>       | V <sub>CE</sub> =10V, I <sub>C</sub> =100mA<br>f =1MHz                               | 5   |     |     | MHz  |
| Fall time                            | t <sub>f</sub>       | I <sub>C</sub> =1A, I <sub>B1</sub> =-I <sub>B2</sub> =0.2A<br>V <sub>CC</sub> =100V |     |     | 0.5 | μs   |
| Storage time                         | t <sub>s</sub>       |                                                                                      |     |     | 2.5 | μs   |

#### CLASSIFICATION OF h<sub>FE1</sub>

| Range | 9-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 |
|-------|------|-------|-------|-------|-------|-------|
|-------|------|-------|-------|-------|-------|-------|

