

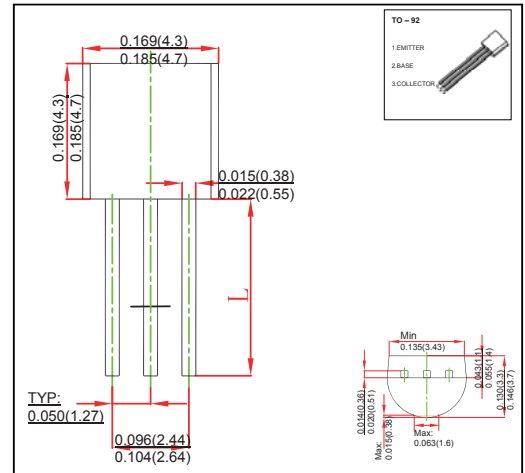
## TO-92 Plastic-Encapsulate Transistors

### FEATURES

- Switching and amplification in high voltage
- Applications such as telephony
- Low current
- High voltage
- NPN Transistors

### MECHANICAL DATA

- Case style: TO-92 molded plastic
- Mounting position: any



### MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

| Parameter                      | Symbol           | Rating      | Unit |
|--------------------------------|------------------|-------------|------|
| Collector - Base Voltage       | V <sub>CB0</sub> | 60          | V    |
| Collector - Emitter Voltage    | V <sub>CEO</sub> | 40          | V    |
| Emitter - Base Voltage         | V <sub>EB0</sub> | 6           | V    |
| Collector Current - Continuous | I <sub>c</sub>   | 0.2         | A    |
| Collector Power Dissipation    | P <sub>c</sub>   | 0.625       | W    |
| Junction Temperature           | T <sub>J</sub>   | 150         | °C   |
| Storage Temperature            | T <sub>stg</sub> | - 55 to 150 | °C   |

| Parameter                            | Symbol               | Testconditions                                                 | Min | Typ | Max  | Unit |
|--------------------------------------|----------------------|----------------------------------------------------------------|-----|-----|------|------|
| Collector- base breakdown voltage    | V <sub>CB0</sub>     | I <sub>c</sub> = 100μA, I <sub>E</sub> =0                      | 60  |     |      | V    |
| Collector- emitter breakdown voltage | V <sub>CEO</sub>     | I <sub>c</sub> = 1 mA, I <sub>B</sub> =0                       | 40  |     |      | V    |
| Emitter - base breakdown voltage     | V <sub>EB0</sub>     | I <sub>E</sub> =10μA, I <sub>C</sub> =0                        | 6   |     |      | V    |
| Collector cut-off current            | I <sub>cBO</sub>     | V <sub>CB</sub> = 60 V, I <sub>E</sub> =0                      |     |     | 0.1  | μA   |
| Collector cut-off current            | I <sub>cEO</sub>     | V <sub>CE</sub> = 40 V, I <sub>B</sub> =0                      |     |     | 0.1  | μA   |
| Emitter cut-off current              | I <sub>EBO</sub>     | V <sub>EB</sub> = 5 V, I <sub>C</sub> =0                       |     |     | 0.1  | μA   |
| DC current gain                      | H <sub>FE</sub>      | V <sub>CE</sub> = 1 V, I <sub>C</sub> = 10mA                   | 100 |     | 300  |      |
|                                      |                      | V <sub>CE</sub> = 1 V, I <sub>C</sub> = 50mA                   | 60  |     |      |      |
|                                      |                      | V <sub>CE</sub> = 1 V, I <sub>C</sub> = 100mA                  | 30  |     |      |      |
| Collector-emitter saturation voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =50 mA, I <sub>B</sub> = 5 mA                   |     |     | 0.3  | V    |
| Base - emitter saturation voltage    | V <sub>BE(sat)</sub> | I <sub>C</sub> = 50 mA, I <sub>B</sub> = 5mA                   |     |     | 0.95 | V    |
| Delay time                           | t <sub>d</sub>       | V <sub>CC</sub> =3.0V, V <sub>BE</sub> =-0.5V                  |     |     | 35   | ns   |
| Rise time                            | t <sub>r</sub>       | I <sub>C</sub> =10mA, I <sub>B1</sub> =-I <sub>B2</sub> =1.0mA |     |     | 35   |      |
| Storage time                         | t <sub>s</sub>       | V <sub>CC</sub> =3.0V, I <sub>C</sub> =10mA                    |     |     | 200  | ns   |
| Fall time                            | t <sub>f</sub>       | I <sub>B1</sub> =-I <sub>B2</sub> =1.0mA                       |     |     | 50   |      |
| Transition frequency                 | f <sub>T</sub>       | V <sub>CE</sub> = 20V, I <sub>C</sub> = 10mA, f=100MHz         | 300 |     |      | MHz  |