

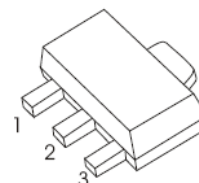
# TRANSISTOR (NPN)

## FEATURES

- Low Collector-Emitter Saturation Voltage
- Mini Power Type Package
- Excellent DC Current Gain Linearity

### SOT-89-3L

1. BASE
2. COLLECTOR
3. EMITTER



## MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

| Symbol           | Parameter                                   | Value    | Unit |
|------------------|---------------------------------------------|----------|------|
| V <sub>CBO</sub> | Collector-Base Voltage                      | 30       | V    |
| V <sub>CEO</sub> | Collector-Emitter Voltage                   | 25       | V    |
| V <sub>EBO</sub> | Emitter-Base Voltage                        | 5        | V    |
| I <sub>C</sub>   | Collector Current                           | 1        | A    |
| P <sub>C</sub>   | Collector Power Dissipation                 | 500      | mW   |
| R <sub>θJA</sub> | Thermal Resistance From Junction To Ambient | 250      | °C/W |
| T <sub>j</sub>   | Junction Temperature                        | 150      | °C   |
| T <sub>stg</sub> | Storage Temperature                         | -55~+150 | °C   |

## ELECTRICAL CHARACTERISTICS (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       | 30  |     |     | V    |
| Collector-emitter breakdown voltage  | V <sub>(BR)CEO</sub>   | I <sub>C</sub> =1mA, I <sub>B</sub> =0         | 25  |     |     | V    |
| Emitter-base breakdown voltage       | V <sub>(BR)EBO</sub>   | I <sub>E</sub> =100μA, I <sub>C</sub> =0       | 5   |     |     | V    |
| Collector cut-off current            | I <sub>CBO</sub>       | V <sub>CB</sub> =30V, I <sub>E</sub> =0        |     |     | 0.1 | μA   |
| Emitter cut-off current              | I <sub>EBO</sub>       | V <sub>EB</sub> =5V, I <sub>C</sub> =0         |     |     | 0.1 | μA   |
| DC current gain                      | h <sub>FE(1)</sub> *   | V <sub>CE</sub> =1V, I <sub>C</sub> =100mA     | 90  |     | 400 |      |
|                                      | h <sub>FE(2)</sub> *   | V <sub>CE</sub> =1V, I <sub>C</sub> =1A        | 50  |     |     |      |
| Collector-emitter saturation voltage | V <sub>CE(sat)</sub> * | I <sub>C</sub> =1A, I <sub>B</sub> =0.1A       |     |     | 0.4 | V    |
| Base-emitter saturation voltage      | V <sub>BE(sat)</sub> * | I <sub>C</sub> =1A, I <sub>B</sub> =0.1A       |     |     | 1.2 | V    |
| Base-emitter voltage                 | V <sub>BE</sub> *      | V <sub>CE</sub> =6V, I <sub>C</sub> =10mA      | 0.6 |     | 0.7 | V    |
| Transition frequency                 | f <sub>T</sub>         | V <sub>CE</sub> =6V, I <sub>C</sub> =10mA      |     | 130 |     | MHz  |
| Collector output capacitance         | C <sub>ob</sub>        | V <sub>CB</sub> =6V, I <sub>E</sub> =0, f=1MHz |     | 22  |     | pF   |

\*Pulse test: pulse width ≤350μs, duty cycles ≤ 2.0%.

## CLASSIFICATION OF h<sub>FE</sub> (1)

| RANK    | CM       | CL        | CK        |
|---------|----------|-----------|-----------|
| RANGE   | 90 - 180 | 135 - 270 | 200 - 400 |
| MARKING | CM       | CL        | CK        |