

# TRANSISTOR (NPN)

## FEATURES

- High emitter-base voltage
- low on resistance

## MARKING: MAX

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

| Symbol    | Parameter                     | Value   | Units              |
|-----------|-------------------------------|---------|--------------------|
| $V_{CBO}$ | Collector-Base Voltage        | 25      | V                  |
| $V_{CEO}$ | Collector-Emitter Voltage     | 20      | V                  |
| $V_{EBO}$ | Emitter-Base Voltage          | 12      | V                  |
| $I_C$     | Collector Current -Continuous | 0.3     | A                  |
| $P_C$     | Collector Power Dissipation   | 0.2     | W                  |
| $T_j$     | Junction Temperature          | 150     | $^{\circ}\text{C}$ |
| $T_{stg}$ | Storage Temperature           | -55-150 | $^{\circ}\text{C}$ |

## SOT-23



1. BASE
2. EMITTER
- 3.COLLECTOR

## ELECTRICAL CHARACTERISTICS ( $T_{amb}=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter                            | Symbol               | Test conditions                                          | MIN | TYP | MAX  | UNIT          |
|--------------------------------------|----------------------|----------------------------------------------------------|-----|-----|------|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$        | $I_C=100\mu\text{A}, I_E=0$                              | 25  |     |      | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$        | $I_C=1\text{mA}, I_B=0$                                  | 20  |     |      | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$        | $I_E=100\mu\text{A}, I_C=0$                              | 12  |     |      | V             |
| Collector cut-off current            | $I_{CBO}$            | $V_{CB}=25\text{V}, I_E=0$                               |     |     | 0.1  | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$            | $V_{EB}=12\text{V}, I_C=0$                               |     |     | 0.1  | $\mu\text{A}$ |
| DC current gain                      | $h_{FE}(\text{FOR})$ | $V_{CE}=2\text{V}, I_C=4\text{mA}$                       | 200 |     | 1000 |               |
|                                      | $h_{FE}(\text{REV})$ | $V_{CE}=2\text{V}, I_C=4\text{mA}$                       | 20  |     |      |               |
| Collector-emitter saturation voltage | $V_{CE}(\text{sat})$ | $I_C=100\text{mA}, I_B=10\text{mA}$                      |     |     | 0.25 | V             |
| Base-emitter saturation voltage      | $V_{BE}(\text{sat})$ | $I_C=100\text{mA}, I_B=10\text{mA}$                      |     |     | 1    | V             |
| Transition frequency                 | $f_T$                | $V_{CE}=10\text{V}, I_C=1\text{mA}$<br>$f=100\text{MHz}$ |     | 60  |      | MHz           |
| output capacitance                   | $C_{ob}$             | $V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$                |     | 10  |      | pF            |
| On resistance                        | $R_{(on)}$           | $V_{in}=0.3\text{V}, I_B=1\text{mA}, f=1\text{KHz}$      |     | 0.6 |      | $\Omega$      |

## Typical characteristics

