

# TRANSISTOR (NPN)

## FEATURES

- Low collector-emitter saturation voltage  $V_{CE(sat)}$
- Satisfactory operation performances at high efficiency with the low voltage power supply.

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

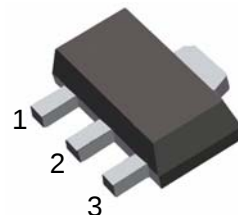
| Symbol    | Parameter                     | Value   | Units              |
|-----------|-------------------------------|---------|--------------------|
| $V_{CBO}$ | Collector- Base Voltage       | 40      | V                  |
| $V_{CEO}$ | Collector-Emitter Voltage     | 25      | V                  |
| $V_{EBO}$ | Emitter-Base Voltage          | 7       | V                  |
| $I_C$     | Collector Current -Continuous | 3       | A                  |
| $P_C$     | Collector Dissipation         | 500     | mW                 |
| $T_J$     | Junction Temperature          | 150     | $^{\circ}\text{C}$ |
| $T_{stg}$ | Storage Temperature           | -55-150 | $^{\circ}\text{C}$ |

## SOT-89

1. BASE

2. COLLECTOR

3. EMITTER



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

| Parameter                            | Symbol        | Test conditions                                            | MIN | TYP | MAX | UNIT          |
|--------------------------------------|---------------|------------------------------------------------------------|-----|-----|-----|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=100\mu\text{A}$ , $I_E=0$                             | 40  |     |     | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=1\text{mA}$ , $I_B=0$                                 | 25  |     |     | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=10\mu\text{A}$ , $I_C=0$                              | 7   |     |     | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=10\text{V}$ , $I_E=0$                              |     |     | 0.1 | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=6\text{V}$ , $I_C=0$                               |     |     | 0.1 | $\mu\text{A}$ |
| DC current gain                      | $h_{FE(1)}$   | $V_{CE}=2\text{V}$ , $I_C=500\text{mA}$                    | 230 |     | 600 |               |
|                                      | $h_{FE(2)}$   | $V_{CE}=2\text{V}$ , $I_C=2\text{A}$                       | 150 |     |     |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=3\text{A}$ , $I_B=0.1\text{A}$                        |     |     | 1   | V             |
| Transition frequency                 | $f_T$         | $V_{CE}=6\text{V}$ , $I_C=50\text{mA}$ , $f=200\text{MHz}$ |     | 150 |     | MHz           |
| Collector output capacitance         | $C_{ob}$      | $V_{CB}=20\text{V}$ , $f=1\text{MHz}$                      |     |     | 50  | pF            |

## CLASSIFICATION OF $h_{FE(1)}$

| Rank    | Q       | R       |
|---------|---------|---------|
| Range   | 230-380 | 340-600 |
| Marking | TQ      | TR      |

