

## TRASISTOR(NPN)

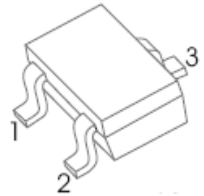
### FEATURES

- Small Surface Mount Package

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

| Symbol          | Parameter                                   | Value    | Unit                        |
|-----------------|---------------------------------------------|----------|-----------------------------|
| $V_{CBO}$       | Collector-Base Voltage                      | 30       | V                           |
| $V_{CEO}$       | Collector-Emitter Voltage                   | 15       | V                           |
| $V_{EBO}$       | Emitter-Base Voltage                        | 5        | V                           |
| $I_C$           | Collector Current                           | 50       | mA                          |
| $P_C$           | Collector Power Dissipation                 | 200      | mW                          |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient | 625      | $^{\circ}\text{C}/\text{W}$ |
| $T_J$           | Junction Temperature                        | 150      | $^{\circ}\text{C}$          |
| $T_{stg}$       | Storage Temperature                         | -55~+150 | $^{\circ}\text{C}$          |

### SOT - 323



1. BASE
2. EMITTER
3. COLLECTOR

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

| Parameter                            | Symbol        | Test conditions                                           | Min | Typ | Max | Unit |
|--------------------------------------|---------------|-----------------------------------------------------------|-----|-----|-----|------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=100\mu\text{A}$ , $I_E=0$                            | 30  |     |     | V    |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=1\text{mA}$ , $I_B=0$                                | 15  |     |     | V    |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=100\mu\text{A}$ , $I_C=0$                            | 5   |     |     | V    |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=12\text{V}$ , $I_E=0$                             |     |     | 50  | nA   |
| Collector cut-off current            | $I_{CEO}$     | $V_{CE}=12\text{V}$ , $I_B=0$                             |     |     | 100 | nA   |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=3\text{V}$ , $I_C=0$                              |     |     | 100 | nA   |
| DC current gain                      | $h_{FE}$      | $V_{CE}=5\text{V}$ , $I_C=1\text{mA}$                     | 70  |     | 190 |      |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=10\text{mA}$ , $I_B=1\text{mA}$                      |     |     | 0.5 | V    |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C=10\text{mA}$ , $I_B=1\text{mA}$                      |     |     | 1.4 | V    |
| Transition frequency                 | $f_T$         | $V_{CE}=5\text{V}$ , $I_C=5\text{mA}$ , $f=400\text{MHz}$ | 600 |     |     | MHz  |
| Collector output capacitance         | $C_{ob}$      | $V_{CB}=10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$           |     |     | 2   | pF   |

### CLASSIFICATION OF $h_{FE}$

| RANK    | L        | H         |
|---------|----------|-----------|
| RANGE   | 70 - 105 | 105 - 190 |
| MARKING | J8       |           |