

## TRANSISTOR(NPN)

### FEATURES

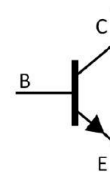
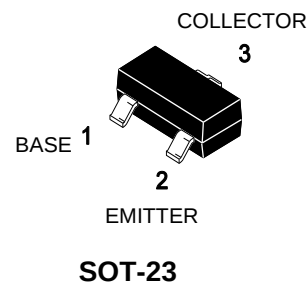
Complementary to MMBT5551

Ideal for medium power amplification and switching

MARKING: G1

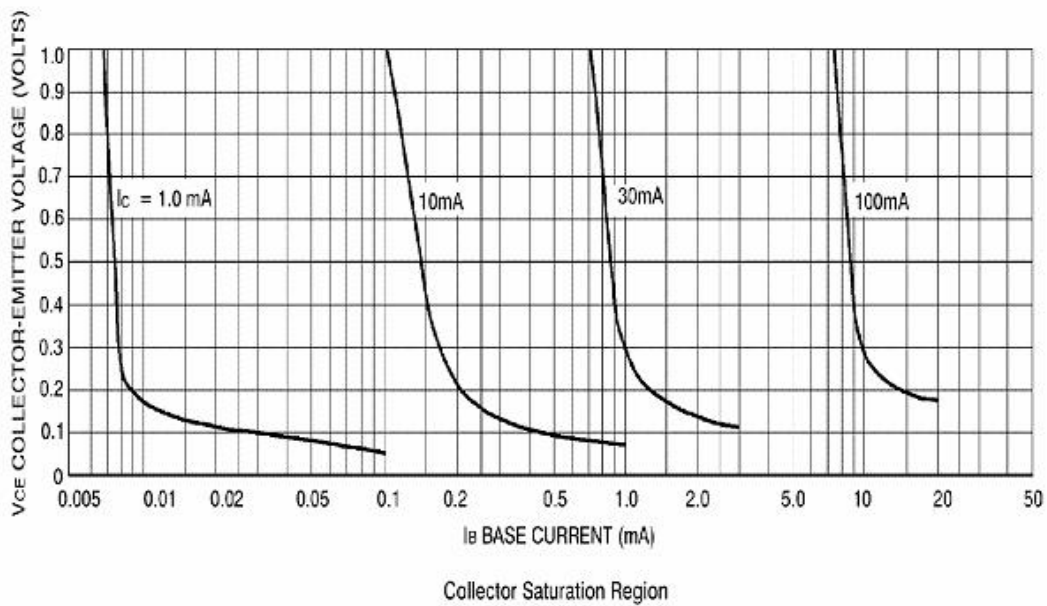
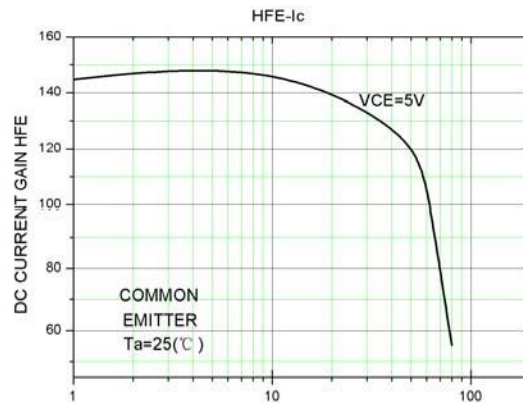
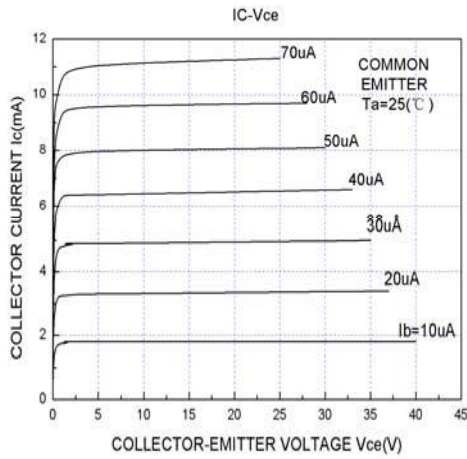
### MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Symbol    | Parameter                     | Value   | Units              |
|-----------|-------------------------------|---------|--------------------|
| $V_{CBO}$ | Collector-Base Voltage        | 180     | V                  |
| $V_{CEO}$ | Collector-Emitter Voltage     | 160     | V                  |
| $V_{EBO}$ | Emitter-Base Voltage          | 6       | V                  |
| $I_C$     | Collector Current -Continuous | 0.6     | A                  |
| $P_C$     | Collector Power Dissipation   | 300     | mW                 |
| $T_j$     | Junction Temperature          | 150     | $^{\circ}\text{C}$ |
| $T_{stg}$ | Storage Temperature           | -55-150 | $^{\circ}\text{C}$ |



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

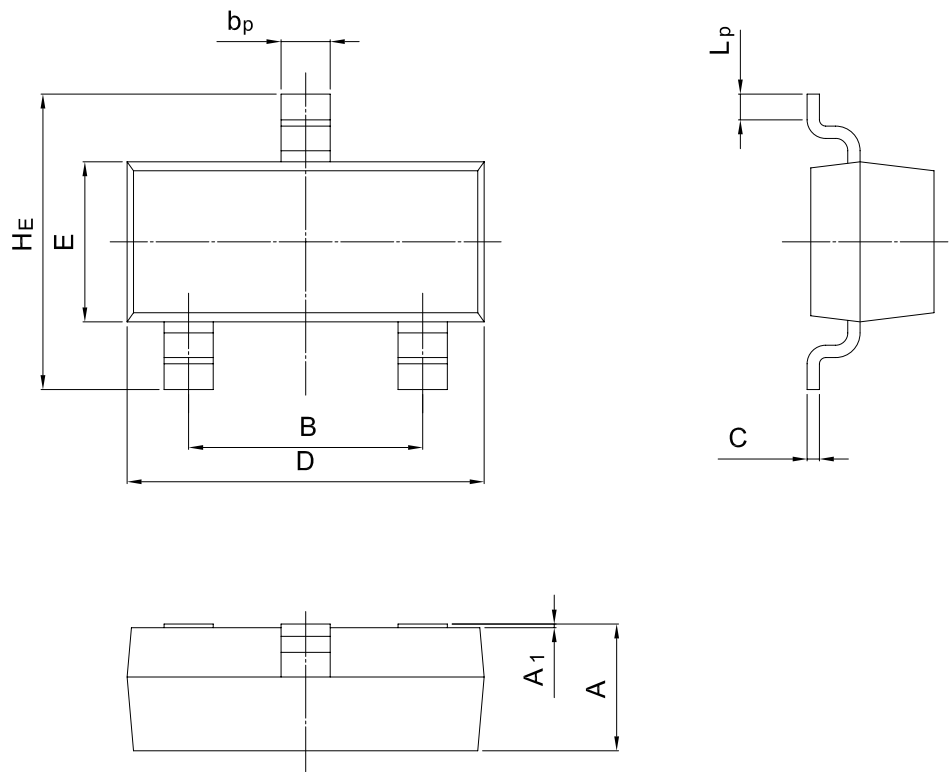
| Parameter                            | Symbol          | Test conditions                                                                                           | MIN | TYP | MAX  | UNIT |
|--------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------|-----|-----|------|------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$   | $I_C=100\mu\text{A}$ , $I_E=0$                                                                            | 180 |     |      | V    |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}^*$ | $I_C=1\text{mA}$ , $I_B=0$                                                                                | 160 |     |      | V    |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$   | $I_E=10\mu\text{A}$ , $I_C=0$                                                                             | 6   |     |      | V    |
| Collector cut-off current            | $I_{CBO}$       | $V_{CB}=120\text{V}$ , $I_E=0$                                                                            |     |     | 50   | nA   |
| Emitter cut-off current              | $I_{EBO}$       | $V_{EB}=4\text{V}$ , $I_C=0$                                                                              |     |     | 50   | nA   |
| DC current gain                      | $h_{FE1}^*$     | $V_{CE}=5\text{V}$ , $I_C=1\text{mA}$                                                                     | 80  |     |      |      |
|                                      | $h_{FE2}^*$     | $V_{CE}=5\text{V}$ , $I_C=10\text{mA}$                                                                    | 100 |     | 300  |      |
|                                      | $h_{FE3}^*$     | $V_{CE}=5\text{V}$ , $I_C=50\text{mA}$                                                                    | 50  |     |      |      |
| Collector-emitter saturation voltage | $V_{CEsat}^*$   | $I_C=10\text{mA}$ , $I_B=1\text{mA}$                                                                      |     |     | 0.15 | V    |
|                                      |                 | $I_C=50\text{mA}$ , $I_B=5\text{mA}$                                                                      |     |     | 0.2  |      |
| Base-emitter saturation voltage      | $V_{BEsat}^*$   | $I_C=10\text{mA}$ , $I_B=1\text{mA}$                                                                      |     |     | 1    | V    |
|                                      |                 | $I_C=50\text{mA}$ , $I_B=5\text{mA}$                                                                      |     |     | 1    |      |
| Transition frequency                 | $f_T$           | $V_{CE}=10\text{V}$ , $I_C=10\text{mA}$ , $f=100\text{MHz}$                                               | 100 |     | 300  | MHz  |
| Collector output capacitance         | $C_{ob}$        | $V_{CB}=10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$                                                           |     |     | 6    | pF   |
| Input capacitance                    | $C_{ib}$        | $V_{BE}=0.5\text{V}$ , $I_C=0$ , $f=1\text{MHz}$                                                          |     |     | 20   | pF   |
| Noise figure                         | NF              | $V_{CE}=5\text{V}$ , $I_C=0.25\text{mA}$ ,<br>$f=10\text{Hz}$ to $15.7\text{KHz}$ , $R_s=1\text{k}\Omega$ |     |     | 8    | dB   |

**TRANSISTOR(NPN)**
**Typical Characteristics**


TRANSISTOR(NPN)

PACKAGE OUTLINE

SOT-23



| UNIT | A            | B            | b <sub>p</sub> | C            | D            | E            | H <sub>E</sub> | A <sub>1</sub> | L <sub>p</sub> |
|------|--------------|--------------|----------------|--------------|--------------|--------------|----------------|----------------|----------------|
| mm   | 1.40<br>0.95 | 2.04<br>1.78 | 0.50<br>0.35   | 0.19<br>0.08 | 3.10<br>2.70 | 1.65<br>1.20 | 3.00<br>2.20   | 0.100<br>0.013 | 0.50<br>0.20   |

Suggested Pad Layout

