

## SOT-23 Plastic-Encapsulate Transistor (PNP)

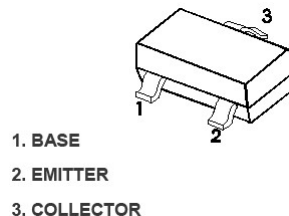
### Feature

- Complementary to MMBT5551Q
- Power Dissipation of 300mW
- AEC-Q101 Qualified
- High Stability and High Reliability

### Mechanical Data

- SOT-23 Small Outline Plastic Package
- Epoxy UL: 94V-0
- Mounting Position: Any

### SOT-23



Marking: 2L

### Maximum Ratings & Thermal Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise noted )

| Parameter                                   | Symbol          | Value    | Unit                 |
|---------------------------------------------|-----------------|----------|----------------------|
| Collector-Base Voltage                      | $V_{CBO}$       | -160     | V                    |
| Collector-Emitter Voltage                   | $V_{CEO}$       | -150     | V                    |
| Emitter -Base Voltage                       | $V_{EBO}$       | -5       | V                    |
| Collector Current-Continuous                | $I_C$           | -600     | mA                   |
| Collector Power Dissipation                 | $P_C$           | 300      | mW                   |
| Junction Temperature                        | $T_j$           | 150      | $^{\circ}\text{C}$   |
| Storage Temperature                         | $T_{stg}$       | -55-+150 | $^{\circ}\text{C}$   |
| Thermal resistance From junction to ambient | $R_{\theta JA}$ | 416      | $^{\circ}\text{C/W}$ |

### Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter                            | Symbol           | Test Condition                                       | Limit |       | Unit |
|--------------------------------------|------------------|------------------------------------------------------|-------|-------|------|
|                                      |                  |                                                      | Min   | Max   |      |
| Collector-base breakdown voltage     | $V_{(BR)CBO}$    | $I_C=-100\mu\text{A}, I_E=0$                         | -160  |       | V    |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}^*$  | $I_C=-1\text{mA}, I_B=0$                             | -150  |       | V    |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$    | $I_E=-10\mu\text{A}, I_C=0$                          | -5    |       | V    |
| Collector cut-off current            | $I_{CBO}$        | $V_{CB}=-120\text{V}, I_E=0$                         |       | -100  | nA   |
| Emitter cut-off current              | $I_{EBO}$        | $V_{EB}=-4\text{V}, I_C=0$                           |       | -100  | nA   |
| DC current gain                      | $h_{FE(1)}^*$    | $V_{CE}=-5\text{V}, I_C=-1\text{mA}$                 | 80    |       |      |
|                                      | $h_{FE(2)}^*$    | $V_{CE}=-5\text{V}, I_C=-10\text{mA}$                | 100   | 300   |      |
|                                      | $h_{FE(3)}^*$    | $V_{CE}=-5\text{V}, I_C=-50\text{mA}$                | 30    |       |      |
| Collector-emitter saturation voltage | $V_{CE(sat)1}^*$ | $I_C=-10\text{mA}, I_B=-1\text{mA}$                  |       | -0.2  | V    |
|                                      | $V_{CE(sat)2}^*$ | $I_C=-50\text{mA}, I_B=-5\text{mA}$                  |       | -0.5  | V    |
| Base -emitter saturation voltage     | $V_{BE(sat)1}^*$ | $I_C=-10\text{mA}, I_B=-1\text{mA}$                  |       | -1.00 | V    |
|                                      | $V_{BE(sat)2}^*$ | $I_C=-50\text{mA}, I_B=-5\text{mA}$                  |       | -1.00 | V    |
| Transition frequency                 | $f_T$            | $V_{CE}=-5\text{V}, I_C=10\text{mA}, f=30\text{MHz}$ | 100   |       | MHz  |

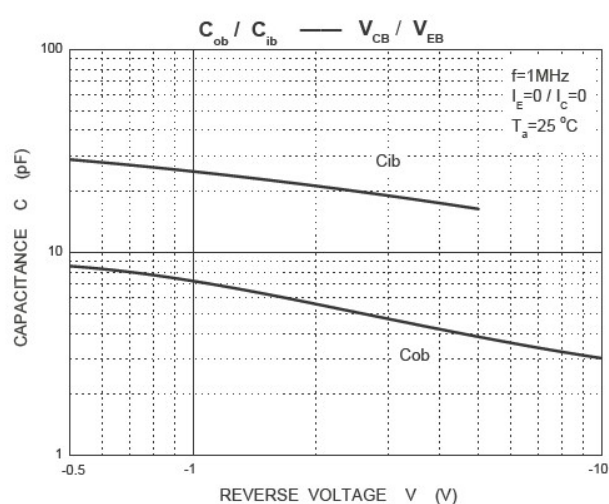
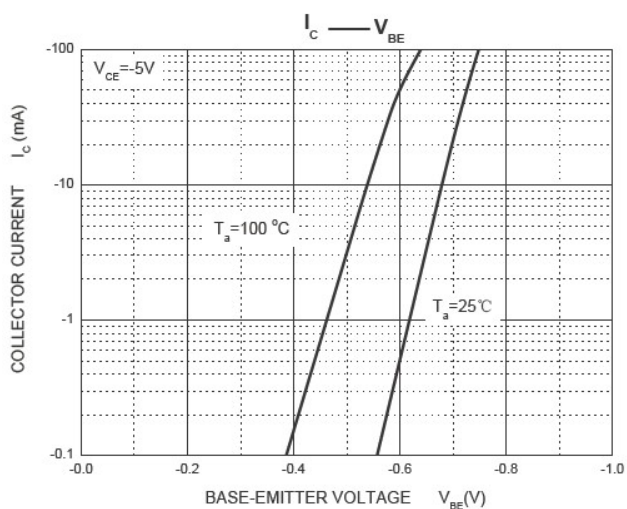
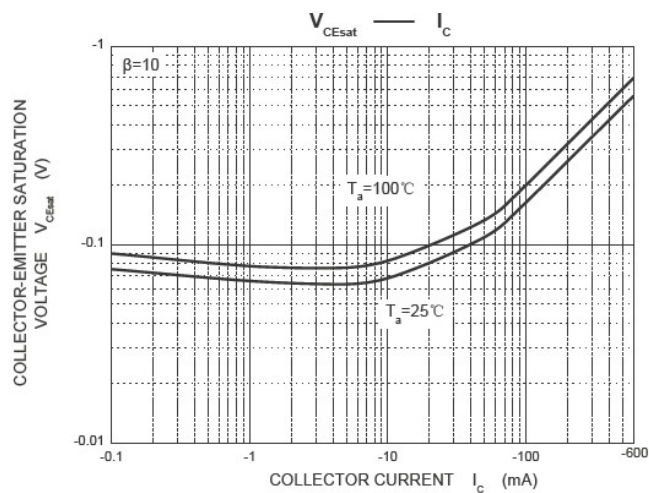
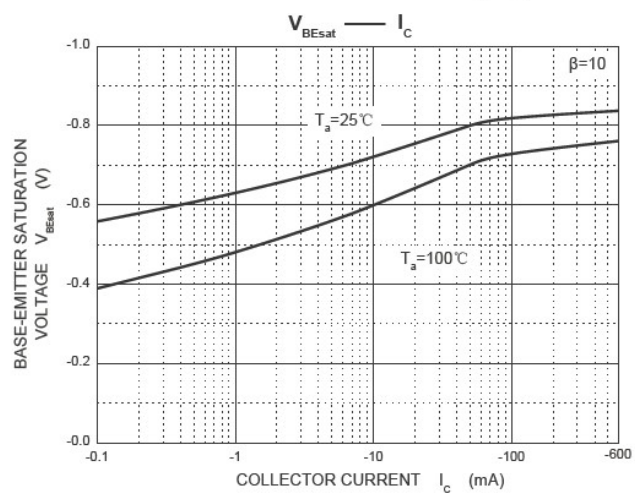
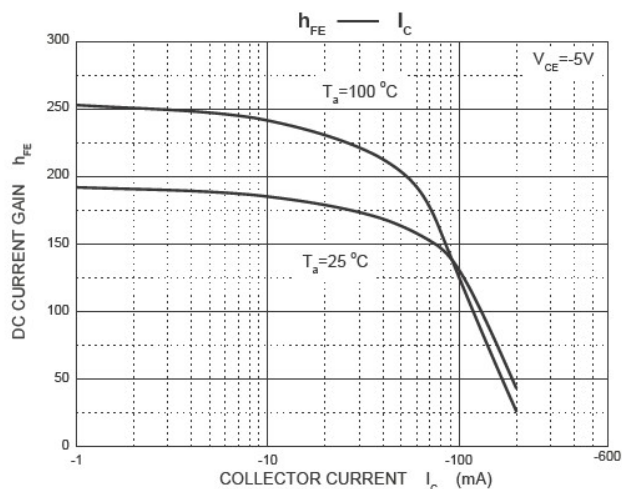
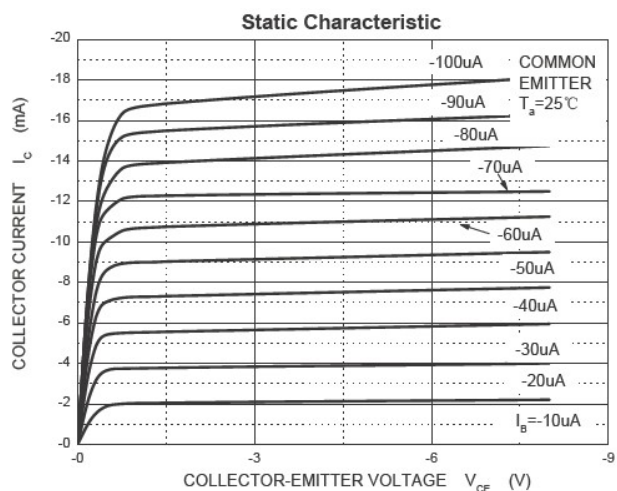
\*Pulse test: pulse widths $\leq 300\mu\text{s}$ , duty cycles $\leq 2.0\%$

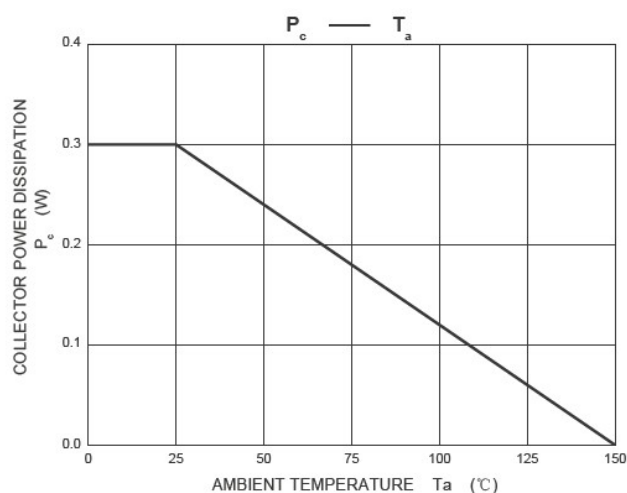
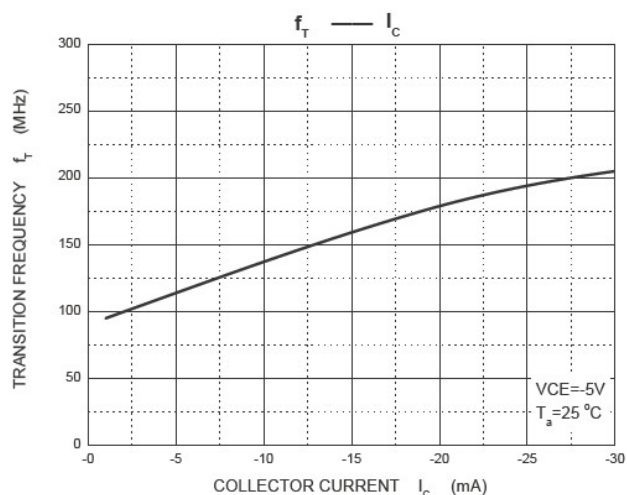
### Classification of $h_{FE}$

|          |         |         |
|----------|---------|---------|
| $H_{FE}$ | 100~300 |         |
| Rank     | L       | H       |
| Range    | 100~200 | 200~300 |

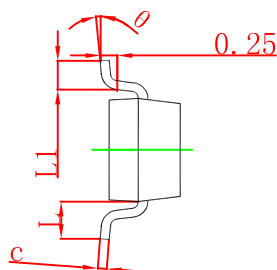
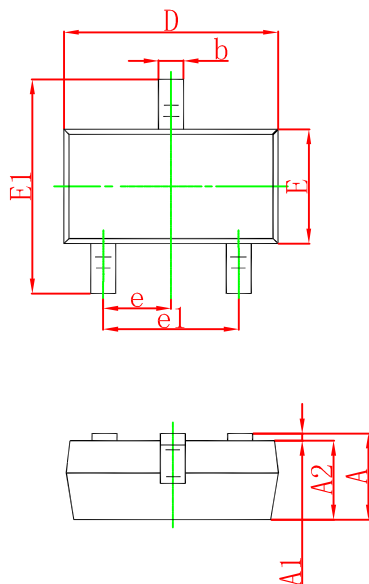


## Typical Characteristics



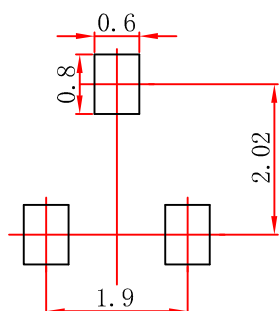


### SOT-23 Package Dimension



| Symbol   | Dimensions In Millimeters |            | Dimensions In Inches |            |
|----------|---------------------------|------------|----------------------|------------|
|          | Min                       | Max        | Min                  | Max        |
| A        | 0.900                     | 1.150      | 0.035                | 0.045      |
| A1       | 0.000                     | 0.100      | 0.000                | 0.004      |
| A2       | 0.900                     | 1.050      | 0.035                | 0.041      |
| b        | 0.300                     | 0.500      | 0.012                | 0.020      |
| c        | 0.080                     | 0.150      | 0.003                | 0.006      |
| D        | 2.800                     | 3.000      | 0.110                | 0.118      |
| E        | 1.200                     | 1.400      | 0.047                | 0.055      |
| E1       | 2.250                     | 2.550      | 0.089                | 0.100      |
| e        | 0.950 TYP                 |            | 0.037 TYP            |            |
| e1       | 1.800                     | 2.000      | 0.071                | 0.079      |
| L        | 0.550 REF                 |            | 0.022 REF            |            |
| L1       | 0.300                     | 0.500      | 0.012                | 0.020      |
| $\theta$ | 0 $^\circ$                | 8 $^\circ$ | 0 $^\circ$           | 8 $^\circ$ |

### SOT-23 Suggested Pad Layout



#### Notes:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05mm$ .
3. The pad layout is for reference purposes only.