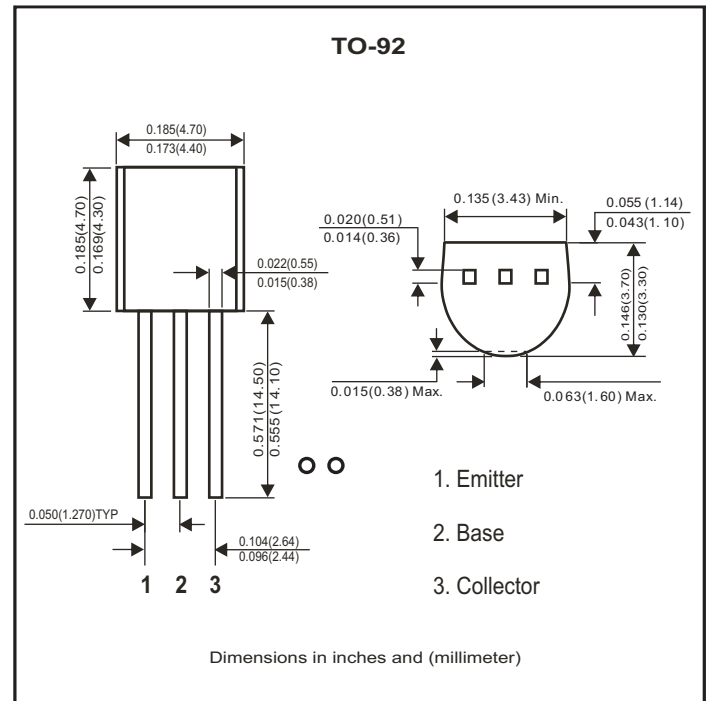
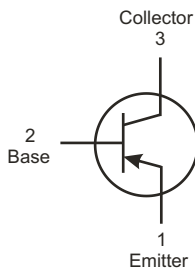


## 2N3906-G (PNP)

### RoHS Device

#### Features

- PNP silicon epitaxial planar transistor for switching and amplifier application.
- As complementary type, the NPN transistor 2N3904-G is recommended.
- This transistor is available in the SOT-23 case with the type designation MMBT3906-G.



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

| Parameter                                    | Symbol         | Min | Max   | Unit               |
|----------------------------------------------|----------------|-----|-------|--------------------|
| Collector-Base voltage                       | $V_{CBO}$      |     | -40   | V                  |
| Collector-Emitter voltage                    | $V_{CEO}$      |     | -40   | V                  |
| Emitter-Base voltage                         | $V_{EBO}$      |     | -5    | V                  |
| Collector Current-Continuous                 | $I_C$          |     | -0.2  | A                  |
| Collector Dissipation                        | $P_C$          |     | 0.625 | W                  |
| Storage Temperature and Junction Temperature | $T_{STG}, T_J$ | -55 | +150  | $^{\circ}\text{C}$ |

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

| Parameter                            | Conditions                                                                                       | Symbol        | Min | Max   | Unit          |
|--------------------------------------|--------------------------------------------------------------------------------------------------|---------------|-----|-------|---------------|
| Collector-Base breakdown voltage     | $I_C = -10\mu\text{A}$ , $I_E = 0$                                                               | $V_{(BR)CBO}$ | -40 |       | V             |
| Collector-Emitter breakdown voltage  | $I_C = -1\text{mA}$ , $I_B = 0$                                                                  | $V_{(BR)CEO}$ | -40 |       | V             |
| Emitter-Base breakdown voltage       | $I_E = -10\mu\text{A}$ , $I_C = 0$                                                               | $V_{(BR)EBO}$ | -5  |       | V             |
| Collector cut-off current            | $V_{CB} = -40\text{V}$ , $I_E = 0$                                                               | $I_{CBO}$     |     | -0.1  | $\mu\text{A}$ |
| Collector cut-off current            | $V_{CE} = -30\text{V}$ , $V_{BE(off)} = -3\text{V}$                                              | $I_{CEX}$     |     | -50   | $\mu\text{A}$ |
| Emitter cut-off current              | $V_{EB} = -5\text{V}$ , $I_C = 0$                                                                | $I_{EBO}$     |     | -0.1  | $\mu\text{A}$ |
| DC current gain                      | $V_{CE} = -1\text{V}$ , $I_C = -10\text{mA}$                                                     | $h_{FE(1)}$   | 100 | 400   |               |
|                                      | $V_{CE} = -1\text{V}$ , $I_C = -50\text{mA}$                                                     | $h_{FE(2)}$   | 60  |       |               |
|                                      | $V_{CE} = -1\text{V}$ , $I_C = -100\text{mA}$                                                    | $h_{FE(3)}$   | 30  |       |               |
| Collector-Emitter saturation voltage | $I_C = -50\text{mA}$ , $I_B = -5\text{mA}$                                                       | $V_{CE(sat)}$ |     | -0.4  | V             |
| Base-emitter saturation voltage      | $I_C = -50\text{mA}$ , $I_B = -5\text{mA}$                                                       | $V_{BE(sat)}$ |     | -0.95 | V             |
| Transition frequency                 | $V_{CE} = -20\text{V}$ , $I_C = -10\text{mA}$<br>$f = 100\text{MHz}$                             | $f_T$         | 250 |       | MHz           |
| Delay time                           | $V_{CC} = -3\text{V}$ , $V_{BE} = -0.5\text{V}$<br>$I_C = -10\text{mA}$ , $I_{B1} = -1\text{mA}$ | $t_d$         |     | 35    | nS            |
| Rise time                            |                                                                                                  | $t_r$         |     | 35    | nS            |
| Storage time                         | $V_{CC} = -3\text{V}$ , $I_C = -10\text{mA}$<br>$I_{B1} = I_{B2} = -1\text{mA}$                  | $t_s$         |     | 225   | nS            |
| Fall time                            |                                                                                                  | $t_f$         |     | 75    | nS            |

## Classification of $h_{FE(1)}$

| Rank  | O       | Y       | G       |
|-------|---------|---------|---------|
| Range | 100-200 | 200-300 | 300-400 |

## Typical Characteristics (2N3906-G)

Fig.1-  $I_c$ - $V_{ce}$

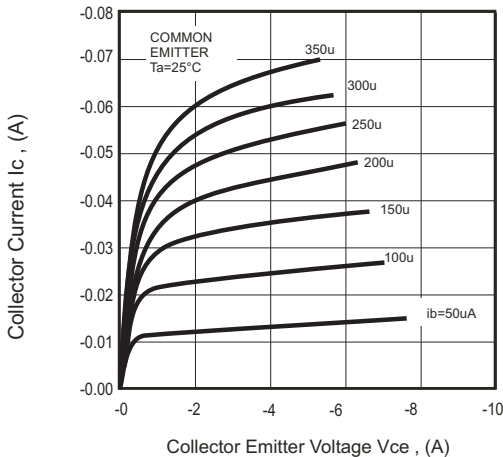


Fig.2-  $V_{ce}$ - $I_c$

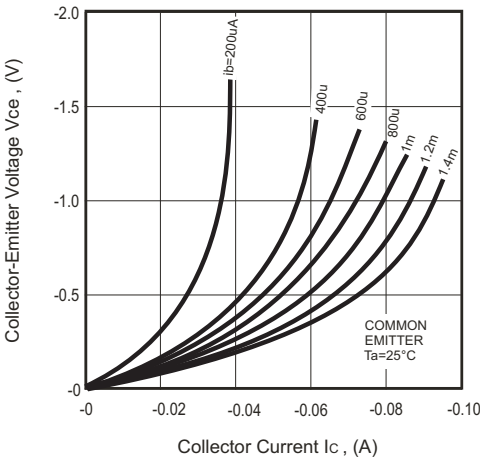


Fig.3-  $V_{ce(sat)}$ - $I_c$   
 $V_{be(sat)}$ - $I_c$

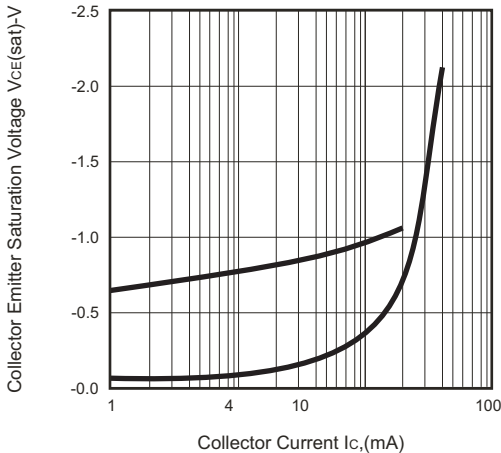


Fig.4-  $h_{FE}$ - $I_c$

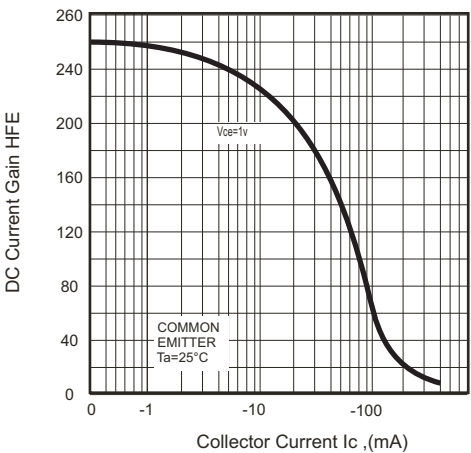
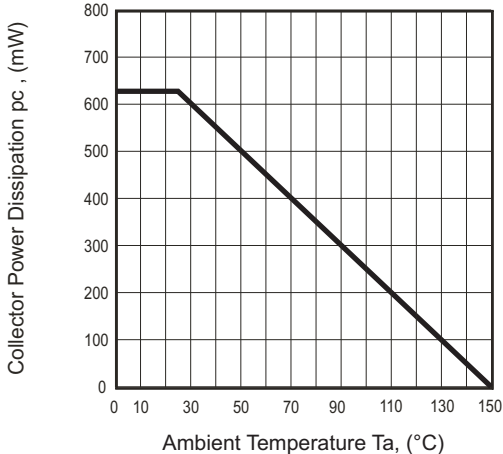


Fig.5-  $P_C$ - $T_a$



## Standard Package

| Case Type | Bag  | BOX   | CARTON |
|-----------|------|-------|--------|
|           | (EA) | (EA)  | (EA)   |
| TO-92     | 1000 | 10000 | 100000 |