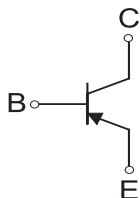
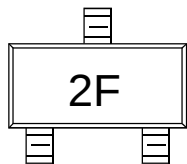


SOT-523 Plastic-Encapsulate Transistors**MMBT2907AT**

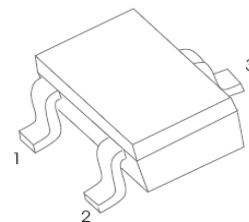
TRANSISTOR (PNP)

**SOT - 523****FEATURES**

- Complementary To MMBT2222AT(NPN)

**MARKING****Equivalent Circuit**

|       |           |           |
|-------|-----------|-----------|
| HFE   | 100-300   |           |
| RANK  | L         | H         |
| RANGE | 100 - 200 | 200 - 300 |

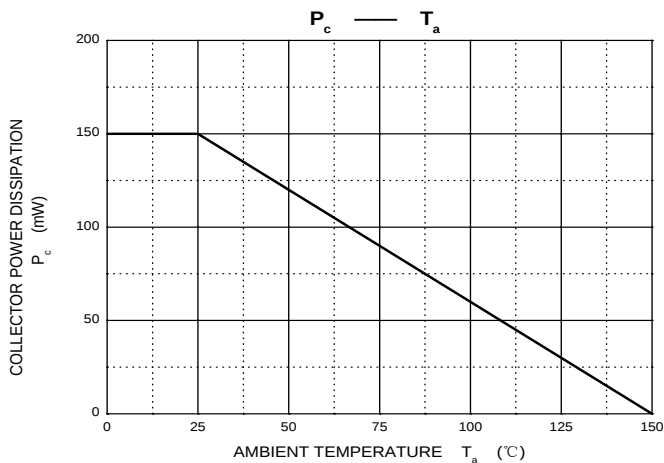
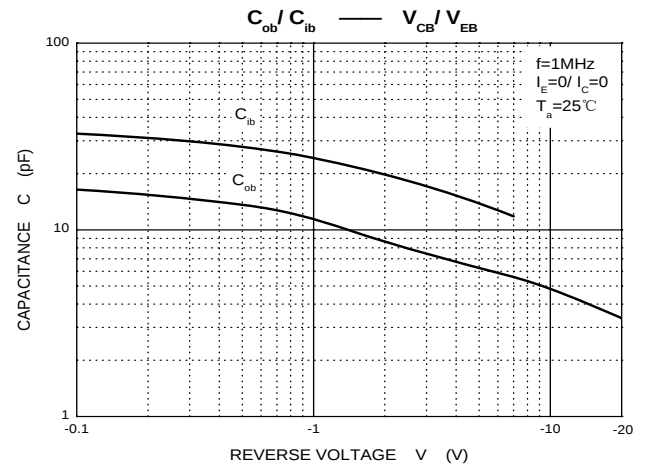
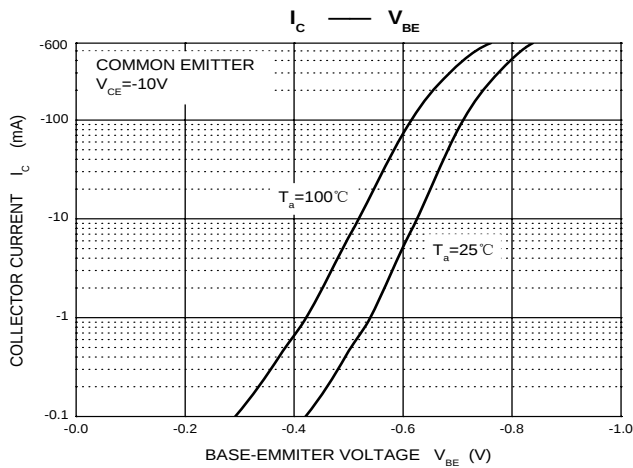
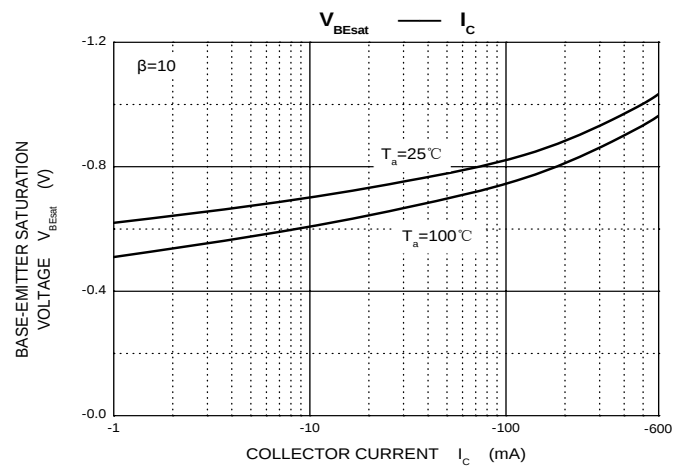
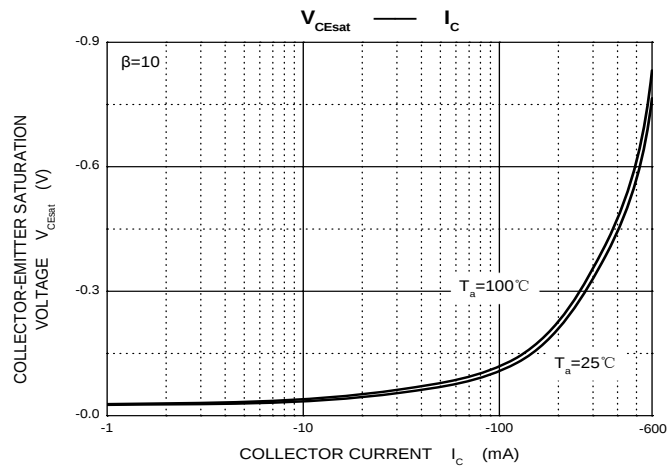
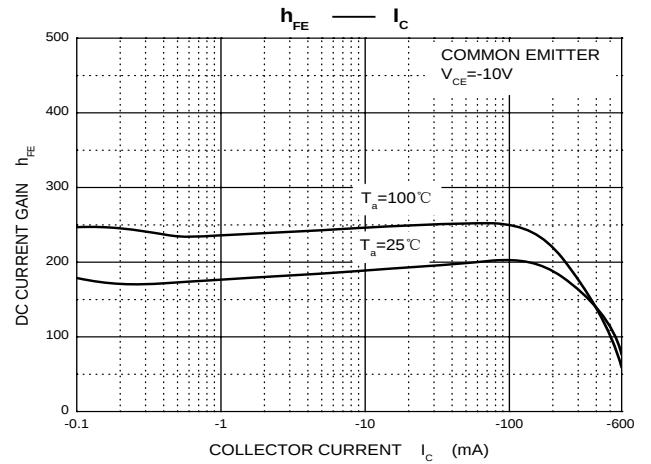
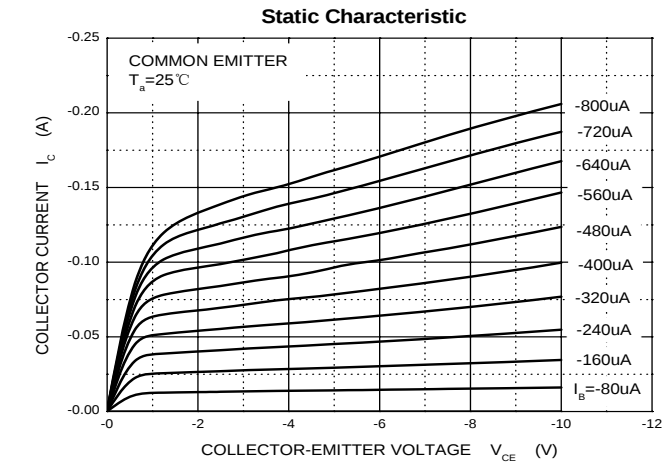
**1. BASE****2. EMITTER****3. COLLECTOR****MAXIMUM RATINGS** ( $T_a=25^{\circ}\text{C}$  unless otherwise noted)

| Symbol          | Parameter                                        | Value      | Unit                        |
|-----------------|--------------------------------------------------|------------|-----------------------------|
| $V_{CB0}$       | Collector-Base Voltage                           | -60        | V                           |
| $V_{CEO}$       | Collector-Emitter Voltage                        | -60        | V                           |
| $V_{EBO}$       | Emitter-Base Voltage                             | -5         | V                           |
| $I_C$           | Collector Current                                | -600       | mA                          |
| $P_C$           | Collector Power Dissipation                      | 150        | mW                          |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient      | 833        | $^{\circ}\text{C}/\text{W}$ |
| $T_J, T_{stg}$  | Operation Junction and Storage Temperature Range | -55 ~ +150 | $^{\circ}\text{C}$          |

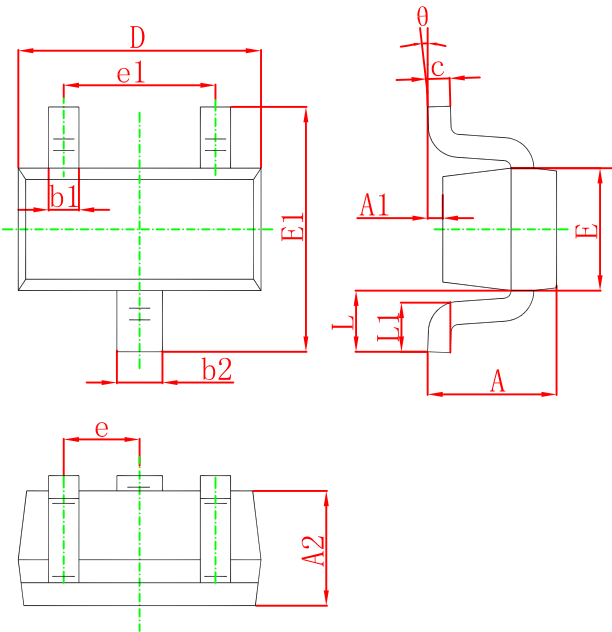
**ELECTRICAL CHARACTERISTICS** ( $T_a=25^{\circ}\text{C}$  unless otherwise specified)

| Parameter                            | Symbol        | Test conditions                                                    | Min | Typ | Max  | Unit |
|--------------------------------------|---------------|--------------------------------------------------------------------|-----|-----|------|------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=-10\mu\text{A}, I_E=0$                                        | -60 |     |      | V    |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=-10\text{mA}, I_B=0$                                          | -60 |     |      | V    |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=-10\mu\text{A}, I_C=0$                                        | -5  |     |      | V    |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=-50\text{V}, I_E=0$                                        |     |     | -10  | nA   |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=-5\text{V}, I_C=0$                                         |     |     | -10  | nA   |
| DC current gain                      | $h_{FE(1)}$   | $V_{CE}=-10\text{V}, I_C=-0.1\text{mA}$                            | 75  |     |      |      |
|                                      | $h_{FE(2)}$   | $V_{CE}=-10\text{V}, I_C=-1\text{mA}$                              | 100 |     |      |      |
|                                      | $h_{FE(3)}$   | $V_{CE}=-10\text{V}, I_C=-10\text{mA}$                             | 100 |     |      |      |
|                                      | $h_{FE(4)}$   | $V_{CE}=-10\text{V}, I_C=-150\text{mA}$                            | 100 |     | 300  |      |
|                                      | $h_{FE(5)}$   | $V_{CE}=-10\text{V}, I_C=-500\text{mA}$                            | 50  |     |      |      |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=-150\text{mA}, I_B=-15\text{mA}$                              |     |     | -0.4 | V    |
|                                      |               | $I_C=-500\text{mA}, I_B=-50\text{mA}$                              |     |     | -1.6 | V    |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C=-150\text{mA}, I_B=-15\text{mA}$                              |     |     | -1.3 | V    |
|                                      |               | $I_C=-500\text{mA}, I_B=-50\text{mA}$                              |     |     | -2.6 | V    |
| Transition frequency                 | $f_T$         | $V_{CE}=-20\text{V}, I_C=-50\text{mA}, f=100\text{MHz}$            | 200 |     |      | MHz  |
| Collector output capacitance         | $C_{ob}$      | $V_{CB}=-10\text{V}, I_E=0, f=1\text{MHz}$                         |     |     | 8    | pF   |
| Emitter input capacitance            | $C_{ib}$      | $V_{EB}=-2\text{V}, I_C=0, f=1\text{MHz}$                          |     |     | 30   | pF   |
| Delay time                           | $t_d$         | $V_{CC}=-30\text{V}, I_C=-150\text{mA}, I_{B1}=-15\text{mA}$       |     |     | 10   | ns   |
| Rise time                            | $t_r$         |                                                                    |     |     | 40   | ns   |
| Storage time                         | $t_s$         | $V_{CC}=-6\text{V}, I_C=-150\text{mA}, I_{B1}=I_{B2}=-15\text{mA}$ |     |     | 225  | ns   |
| Fall time                            | $t_f$         |                                                                    |     |     | 30   | ns   |

## Typical Characteristics

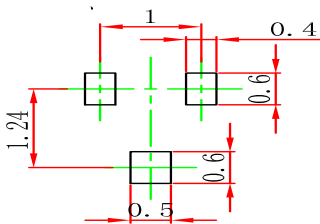


Package Outline Dimensions (SOT-523)



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.700                     | 0.900 | 0.028                | 0.035 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.700                     | 0.800 | 0.028                | 0.031 |
| b1     | 0.150                     | 0.250 | 0.006                | 0.010 |
| b2     | 0.250                     | 0.350 | 0.010                | 0.014 |
| c      | 0.100                     | 0.200 | 0.004                | 0.008 |
| D      | 1.500                     | 1.700 | 0.059                | 0.067 |
| E      | 0.700                     | 0.900 | 0.028                | 0.035 |
| E1     | 1.450                     | 1.750 | 0.057                | 0.069 |
| e      | 0.500 TYP.                |       | 0.020 TYP.           |       |
| e1     | 0.900                     | 1.100 | 0.035                | 0.043 |
| L      | 0.400 REF.                |       | 0.016 REF.           |       |
| L1     | 0.260                     | 0.460 | 0.010                | 0.018 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

Suggested Pad Layout (SOT-523)



- Note:
- 1.Controlling dimension:in millimeters.
  - 2.General tolerance:± 0.05mm.
  - 3.The pad layout is for reference purposes only.