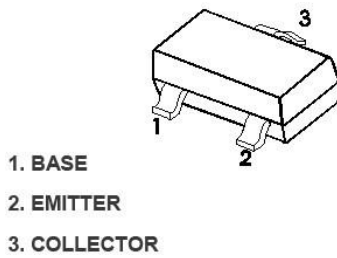


## SOT-23



MARKING:2F

## 特征 Features

- 与MMBT2222A配对;Complementary to MMBT2222A
- 最大功率耗散 250mW; Power Dissipation of 250mW
- 高稳定性和可靠性。High Stability and High Reliability

## 机械数据 Mechanical Data

- 封装: SOT-23 封装 SOT-23 Small Outline Plastic Package
- 环氧树脂UL 易燃等级Epoxy UL: 94V-0
- 安装位置: 任意 Mounting Position: Any
- Device meets MSL 1 requirements

极限值和温度特性( $T_A = 25^\circ\text{C}$  除非另有规定)Maximum Ratings & Thermal Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise specified)

| 参数 Parameters                               | 符号 Symbol       | 数值 Value | 单位 Unit            |
|---------------------------------------------|-----------------|----------|--------------------|
| Collector-Base Voltage                      | $V_{CB0}$       | -60      | V                  |
| Collector-Emitter Voltage                   | $V_{CEO}$       | -60      | V                  |
| Emitter -Base Voltage                       | $V_{EBO}$       | -5       | V                  |
| Collector Current-Continuous                | $I_C$           | -600     | mA                 |
| Collector Power Dissipation                 | $P_C$           | 250      | mW                 |
| Junction Temperature                        | $T_j$           | 150      | $^\circ\text{C}$   |
| Storage Temperature                         | $T_{STG}$       | -55-+150 | $^\circ\text{C}$   |
| Thermal resistance from junction to ambient | $R_{\theta JA}$ | 500      | $^\circ\text{C/W}$ |

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

| 参数 Parameter                        | 符号 Symbols      | 测试条件 Test Condition                            | 界限 Limits |     | 单位 Unit |
|-------------------------------------|-----------------|------------------------------------------------|-----------|-----|---------|
|                                     |                 |                                                | Min       | Max |         |
| Collector-base breakdown voltage    | $V_{(BR)CBO}$   | $I_C=-10\mu\text{A}, I_E=0$                    | -60       |     | V       |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}^*$ | $I_C=-1\text{mA}, I_B=0$                       | -60       |     | V       |
| Emitter-base breakdown voltage      | $V_{(BR)EBO}$   | $I_E=-10\mu\text{A}, I_C=0$                    | -5        |     | V       |
| Collector cut-off current           | $I_{CBO}$       | $V_{CB}=-50\text{V}, I_E=0$                    |           | -20 | nA      |
| Emitter cut-off current             | $I_{EBO}$       | $V_{EB}=-3\text{V}, I_C=0$                     |           | -10 | nA      |
| Collector cut-off current           | $I_{CEX}$       | $V_{CE}=-30\text{V}, V_{BE(off)}=-0.5\text{V}$ |           | -50 | nA      |

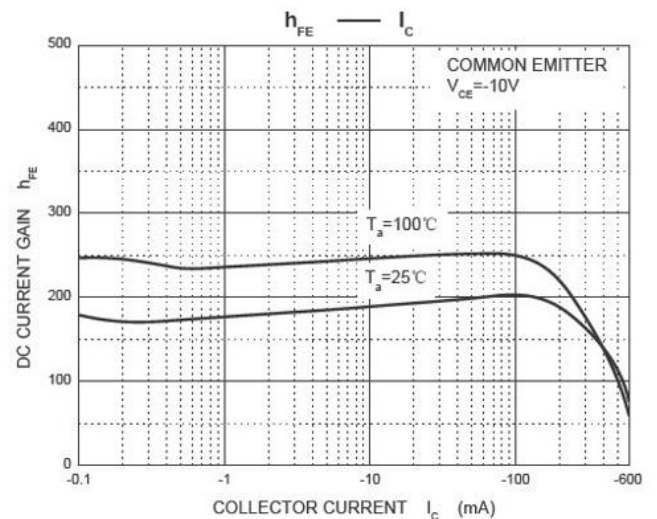
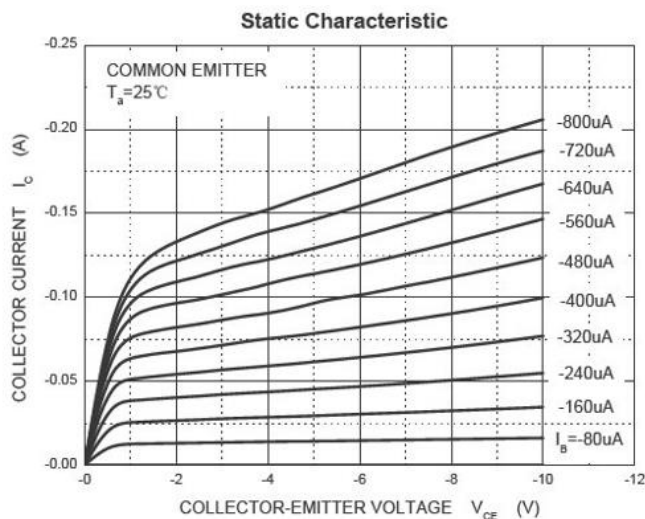
|                                      |                  |                                               |     |       |     |
|--------------------------------------|------------------|-----------------------------------------------|-----|-------|-----|
| DC current gain                      | $h_{FE}(1)^*$    | $V_{CE}=-10V, I_C=-150mA$                     | 100 | 300   |     |
|                                      | $h_{FE}(2)^*$    | $V_{CE}=-10V, I_C=-0.1mA$                     | 75  |       |     |
|                                      | $h_{FE}(3)^*$    | $V_{CE}=-10V, I_C=-1mA$                       | 100 |       |     |
|                                      | $h_{FE}(4)^*$    | $V_{CE}=-10V, I_C=-10mA$                      | 100 |       |     |
|                                      | $h_{FE}(5)^*$    | $V_{CE}=-10V, I_C=-500mA$                     | 50  |       |     |
| Collector-emitter saturation voltage | $V_{CE(sat)1}^*$ | $I_C=-150mA, I_B=-15mA$                       |     | -0.4  | V   |
|                                      | $V_{CE(sat)2}^*$ | $I_C=-500mA, I_B=-50mA$                       |     | -1.6  | V   |
| Base -emitter saturation voltage     | $V_{BE(sat)1}^*$ | $I_C=-150mA, I_B=-15mA$                       |     | -1.30 | V   |
|                                      | $V_{BE(sat)2}^*$ | $I_C=-500mA, I_B=-50mA$                       |     | -2.60 | V   |
| Transition frequency                 | $f_T$            | $V_{CE}=-20V, I_C=-50mA, f=100MHz$            | 200 |       | MHz |
| Delay time                           | $t_d$            | $V_{CE}=-30V, I_C=-150mA, I_{B1}=-15mA$       |     | 10    | nS  |
| Rise time                            | $t_r$            |                                               |     | 25    | nS  |
| Storage time                         | $t_s$            | $V_{CE}=-6V, I_C=-150mA, I_{B1}=I_{B2}=-15mA$ |     | 225   | nS  |
| Fall time                            | $t_f$            |                                               |     | 60    | nS  |

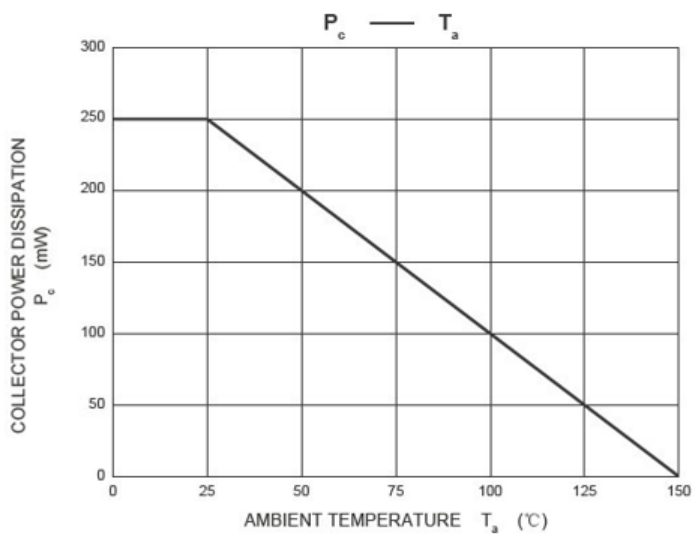
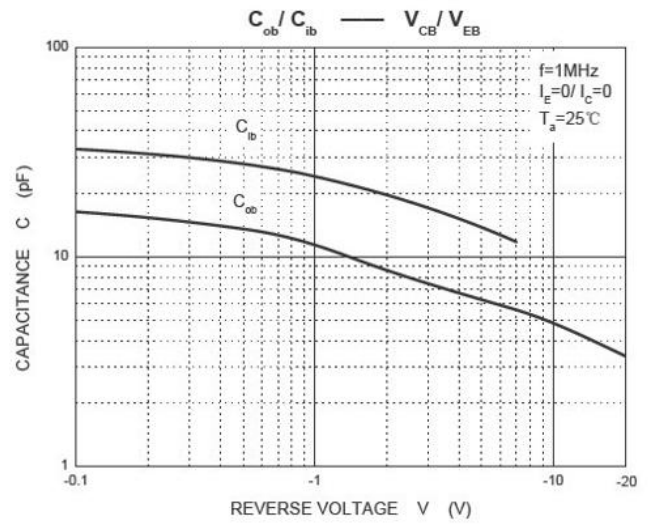
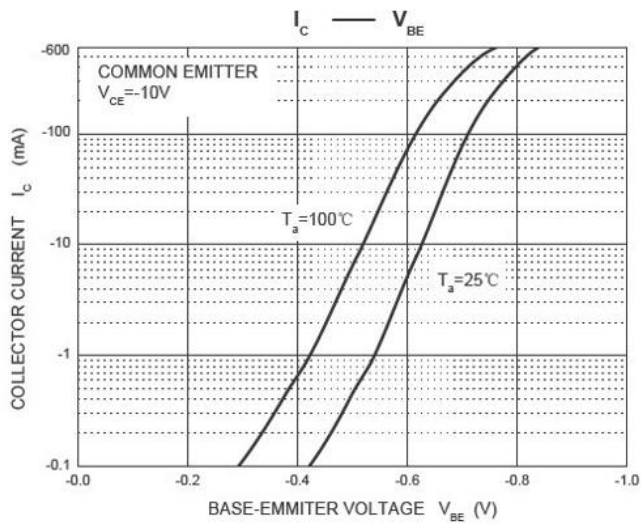
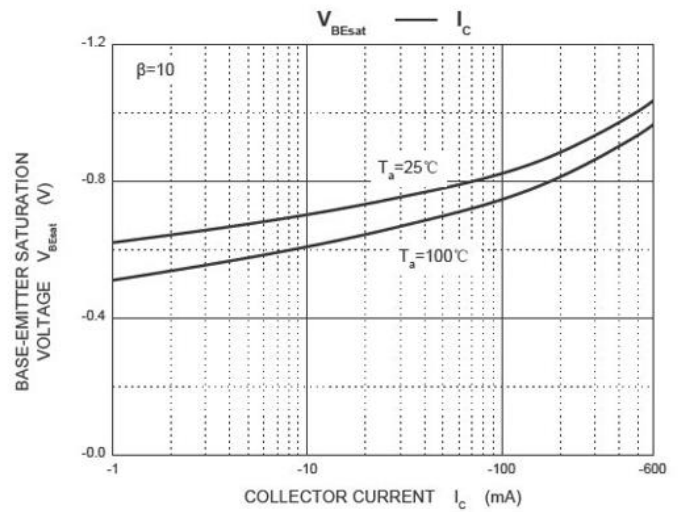
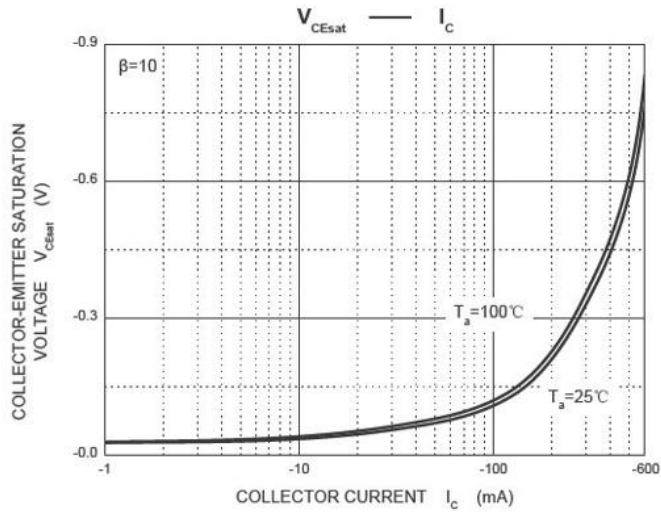
\*Pulse test: pulse width $\leq$ 300us, duty cycle $\leq$ 2.0

### CLASSIFICATION OF $h_{FE}(1)$

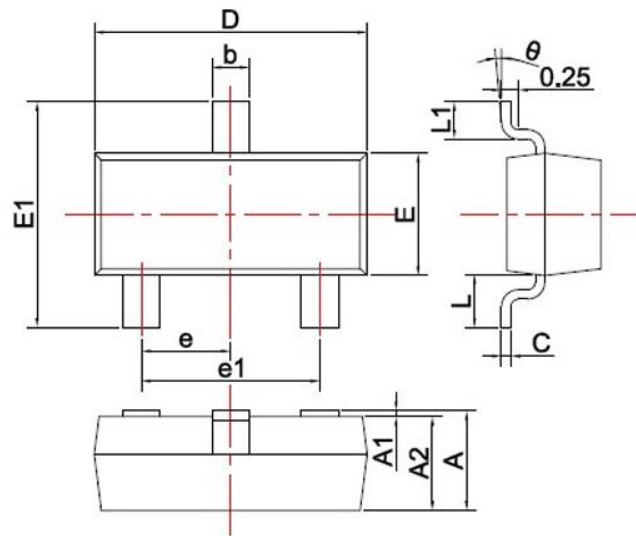
| HFE   | 100-300 |         |
|-------|---------|---------|
| RANK  | L       | H       |
| RANGE | 100-200 | 200-300 |

### Typical Performance Characteristics ( $T_A=25^\circ C$ unless otherwise Specified)





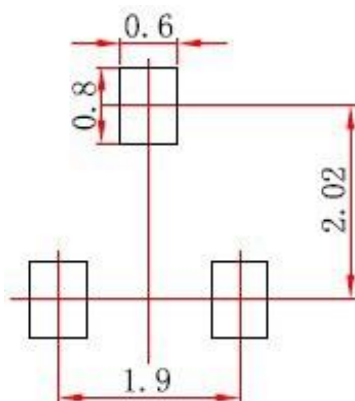
## SOT-23 Package Outline Drawing



| SYMBOL   | DIMENSIONS |       |
|----------|------------|-------|
|          | MIN.       | MAX.  |
| A        | 0.900      | 1.150 |
| A1       | 0.000      | 0.100 |
| A2       | 0.900      | 1.050 |
| b        | 0.300      | 0.500 |
| c        | 0.080      | 0.150 |
| D        | 2.800      | 3.000 |
| E        | 1.200      | 1.400 |
| E1       | 2.250      | 2.550 |
| e        | 0.950TYP   |       |
| e1       | 1.800      | 2.000 |
| L        | 0.550REF   |       |
| L1       | 0.300      | 0.500 |
| $\theta$ | 0°         | 8°    |

Unit: mm

## Suggested Land Pattern



### Note:

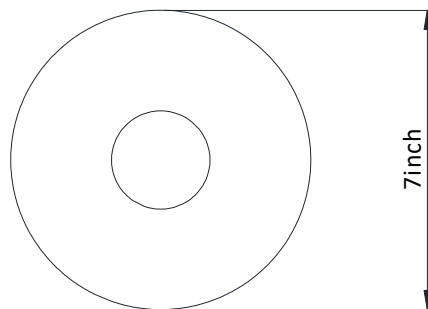
1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

## Ordering Information

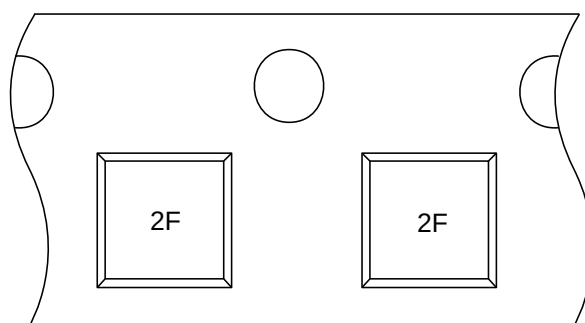
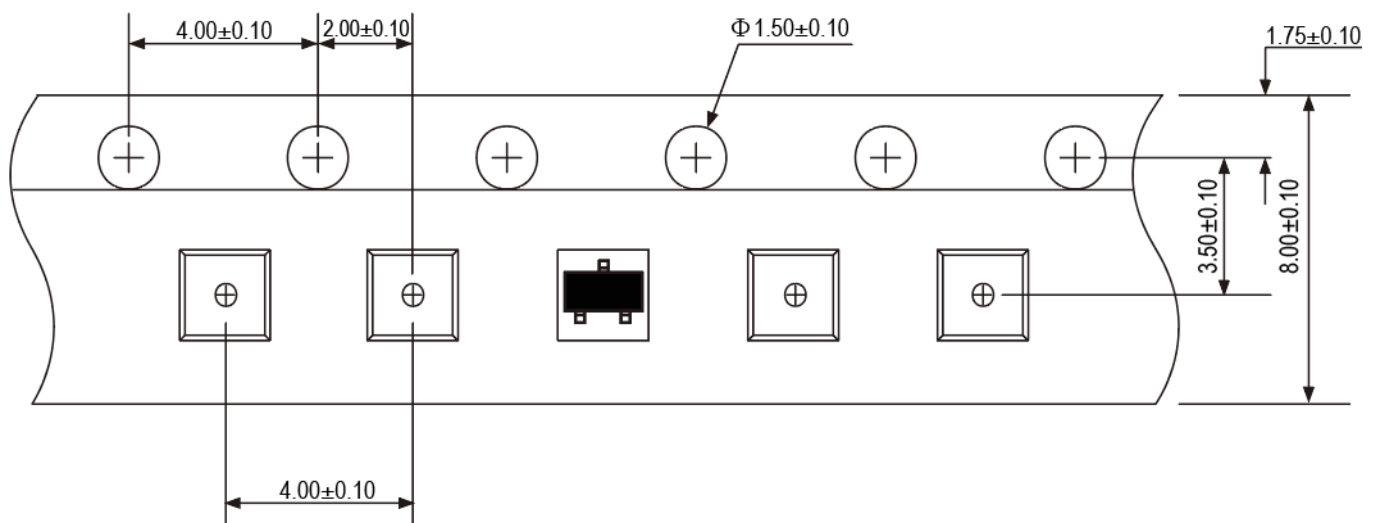
| Part Number | Shipping         | Reel Size |
|-------------|------------------|-----------|
| MMBT2907A   | 3000/Tape & Reel | 7 inch    |

## Tape and Reel Information

Reel Dimensions



Tape Dimensions



User Direction of Feed

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