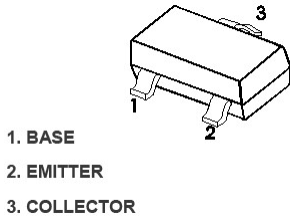


**SOT-23**

**SOT-23 贴片塑封三极管**  
**SOT-23 Plastic-Encapsulate Transistors**



**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

极限值和温度特性(TA = 25°C 除非另有规定)

**Maximum Ratings & Thermal Characteristics** (Ratings at 25°C ambient temperature unless otherwise specified.)

| 参数 Parameters                               | 符号 Symbol        | 数值 Value | 单位 Unit |
|---|------------------|----------|---------|
| Collector-Base Voltage                      | V <sub>CBO</sub> | -60      | V       |
| Collector-Emitter Voltage                   | V <sub>CEO</sub> | -60      | V       |
| Emitter -Base Voltage                       | V <sub>EBO</sub> | -5       | V       |
| Collector Current-Continuous                | I <sub>C</sub>   | -600     | mA      |
| Collector Power Dissipation                 | P <sub>C</sub>   | 250      | mW      |
| Junction Temperature                        | T <sub>j</sub>   | 150      | °C      |
| Storage Temperature                         | T <sub>stg</sub> | -55-+150 | °C      |
| Thermal resistance From junction to ambient | R <sub>θJA</sub> | 500      | °C/W    |

电特性 (TA = 25°C 除非另有规定)

**Electrical Characteristics** (Ratings at 25°C ambient temperature unless otherwise specified.)

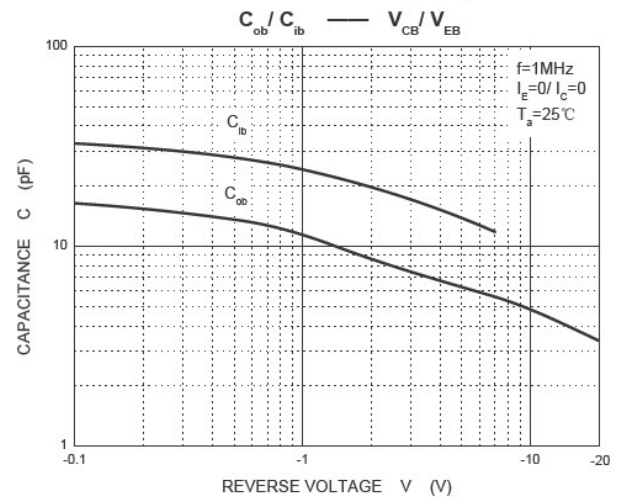
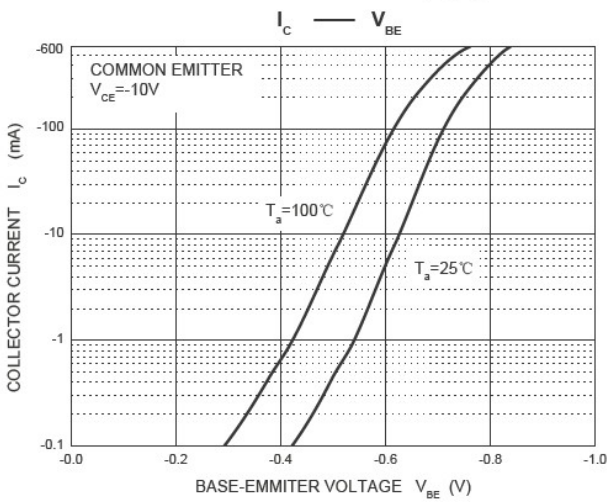
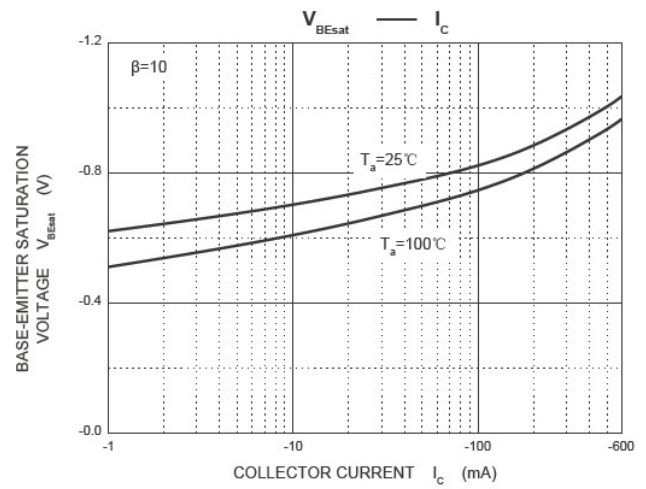
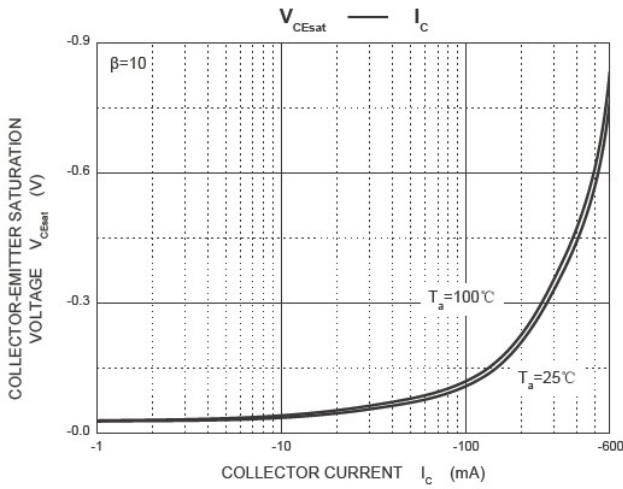
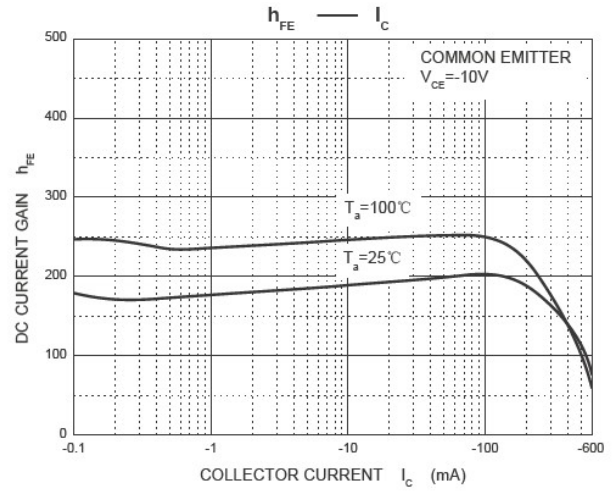
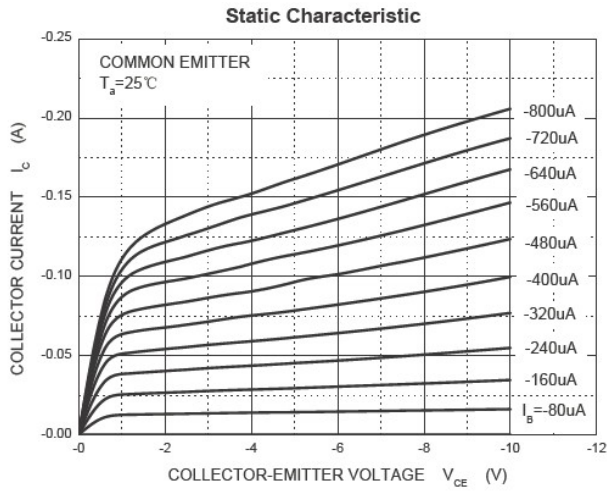
| 参数<br>Parameter                      | 符号<br>Symbols           | 测试条件<br>Test Condition  | 界限 Limits |       | 单位<br>Unit |
|--------------------------------------|-------------------------|---|-----------|-------|------------|
|                                      |                         |   | Min       | Max   |            |
| Collector-base breakdown voltage     | V(BR)CBO                | I <sub>C</sub> =-100μA, I <sub>E</sub> =0   | -60       |       | V          |
| Collector-emitter breakdown voltage  | V(BR)CEO *              | I <sub>C</sub> =-1mA, I <sub>B</sub> =0   | -60       |       | V          |
| Emitter-base breakdown voltage       | V(BR)EBO                | I <sub>E</sub> =-10μA, I <sub>C</sub> =0  | -5        |       | V          |
| Collector cut-off current            | I <sub>CBO</sub>        | V <sub>CB</sub> =-50V, I <sub>E</sub> =0  |           | -20   | nA         |
| Emitter cut-off current              | I <sub>EBO</sub>        | V <sub>EB</sub> =-3V, I <sub>C</sub> =0   |           | -10   | nA         |
| Collector cut-off current            | I <sub>CEX</sub>        | V <sub>CE</sub> =-30V, V <sub>BE(off)</sub> =-0.5V                                    |           | -50   | nA         |
| DC current gain                      | hFE(1) *                | V <sub>CE</sub> =-10V, I <sub>C</sub> =-150mA   | 100       | 300   |            |
|                                      | hFE(2) *                | V <sub>CE</sub> =-10V, I <sub>C</sub> =-0.1mA   | 75        |       |            |
|                                      | hFE(3) *                | V <sub>CE</sub> =-10V, I <sub>C</sub> =-1mA   | 100       |       |            |
|                                      | hFE(4) *                | V <sub>CE</sub> =-10V, I <sub>C</sub> =-10mA  | 100       |       |            |
|                                      | hFE(5) *                | V <sub>CE</sub> =-10V, I <sub>C</sub> =-500mA   | 50        |       |            |
| Collector-emitter saturation voltage | V <sub>CE(sat)1</sub> * | I <sub>C</sub> =-150mA, I <sub>B</sub> =-15mA   |           | -0.4  | V          |
|                                      | V <sub>CE(sat)2</sub> * | I <sub>C</sub> =-500mA, I <sub>B</sub> =-50mA   |           | -1.6  | V          |
| Base -emitter saturation voltage     | V <sub>BE(sat)1</sub> * | I <sub>C</sub> =-150mA, I <sub>B</sub> =-15mA   |           | -1.30 | V          |
|                                      | V <sub>BE(sat)2</sub> * | I <sub>C</sub> =-500mA, I <sub>B</sub> =-50mA   |           | -2.60 | V          |
| Transition frequency                 | f <sub>T</sub>          | V <sub>CE</sub> =-20V, I <sub>C</sub> =-50mA, f=100MHz                                | 200       |       | MHz        |
| Delay time                           | t <sub>d</sub>          | V <sub>CE</sub> =-30V, I <sub>C</sub> =-150mA, I <sub>B1</sub> =-15mA                 |           | 10    | nS         |
| Rise time                            | t <sub>r</sub>          |   |           | 25    | nS         |
| Storage time                         | t <sub>s</sub>          | V <sub>CE</sub> =-6V, I <sub>C</sub> =-150mA, I <sub>B1</sub> =I <sub>B2</sub> =-15mA |           | 225   | nS         |
| Fall time                            | t <sub>f</sub>          |   |           | 60    | nS         |

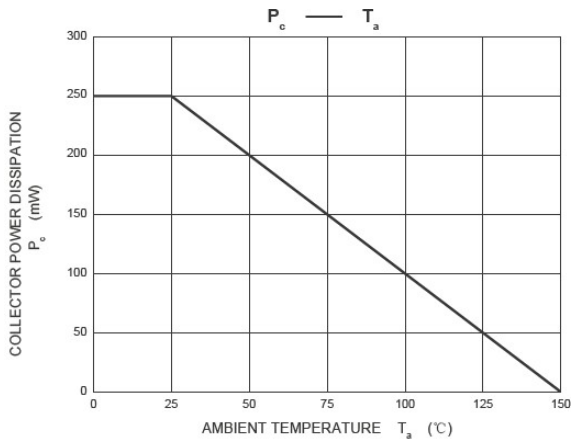
\*Pulse test: pulse width ≤ 300us, duty cycle ≤ 2.0%

**CLASSIFICATION OF hFE(1)**

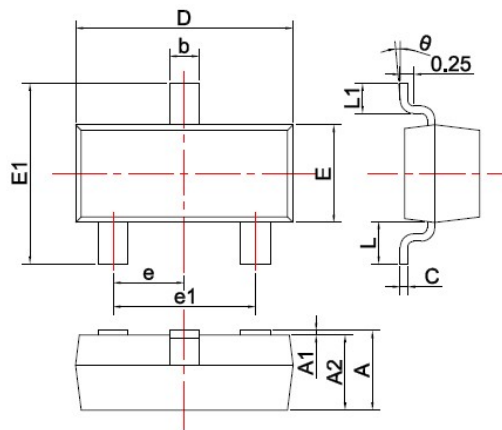
| HFE   | 100-300 |         |
|-------|---------|---------|
| RANK  | L       | H       |
| RANGE | 100-200 | 200-300 |

**Typical characteristics**





**SOT-23 PACKAGE OUTLINE** Plastic surface mounted package

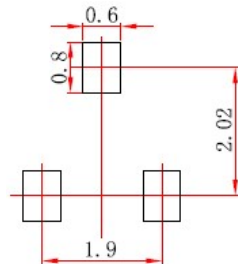


| SYMBOL | DIMENSIONS |       |
|--------|------------|-------|
|        | MIN.       | MAX.  |
| A      | 0.900      | 1.150 |
| A1     | 0.000      | 0.100 |
| A2     | 0.900      | 1.050 |
| b      | 0.300      | 0.500 |
| c      | 0.080      | 0.150 |
| D      | 2.800      | 3.000 |
| E      | 1.200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

Unit: mm

**焊盘设计参考** Precautions: PCB Design

Recommended land dimensions for SOT-23 diode. Electrode patterns for PCBs



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