

## 描述 / Descriptions

SOT-89 塑封封装 PNP 半导体三极管。Silicon PNP transistor in a SOT-89 Plastic Package.

## 特征 / Features

击穿电压高，放大线性好，饱和压降低，与 2SD1898 互补。

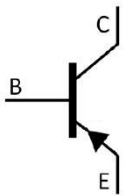
High breakdown voltage, good  $h_{FE}$  linearity, low  $V_{CE(sat)}$ , complements the 2SD1898.

## 用途 / Applications

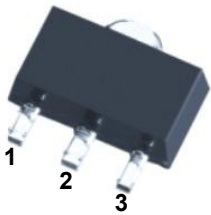
一般功率放大。

General power amplifier applications.

## 内部等效电路 / Equivalent Circuit



## 引脚排列 / Pinning



PIN1 : Base      PIN 2 : Collector      PIN 3 : Emitter

## 印章代码 / Marking

| $h_{FE}$ Classifications<br>Symbol | P      | Q       | R       |
|------------------------------------|--------|---------|---------|
| $h_{FE}$ Range                     | 82~180 | 120~270 | 180~390 |
| Marking                            | HBHP*  | HBHQ*   | HBHR*   |

**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

| 参数<br>Parameter                     | 符号<br>Symbol | 数值<br>Rating | 单位<br>Unit |
|-------------------------------------|--------------|--------------|------------|
| Collector to Base Voltage           | $V_{CBO}$    | -80          | V          |
| Collector to Emitter Voltage        | $V_{CEO}$    | -80          | V          |
| Emitter to Base Voltage             | $V_{EBO}$    | -5.0         | V          |
| Collector Current-Continuous        | $I_C$        | -1.0         | A          |
| Collector Current-Continuous(Pulse) | $*I_{CP}$    | -2.0         | A          |
| Collector Power Dissipation         | $**P_C$      | 0.5          | W          |
|                                     | $*P_C$       | 2.0          | W          |
| Junction Temperature                | $T_j$        | 150          | °C         |
| Storage Temperature Range           | $T_{stg}$    | -55~150      | °C         |

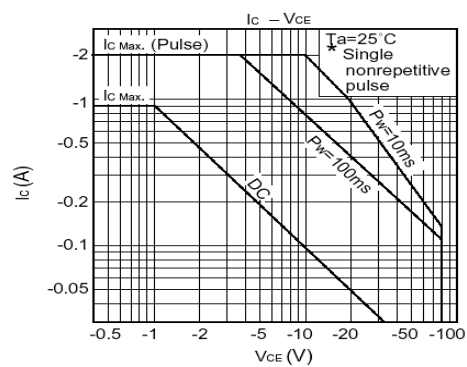
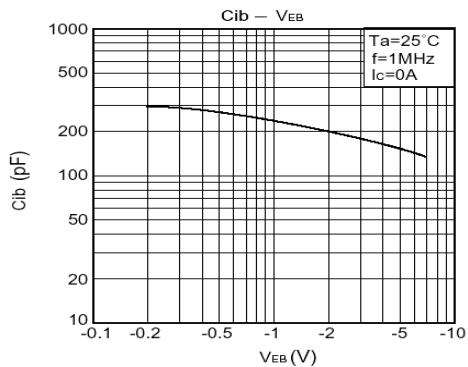
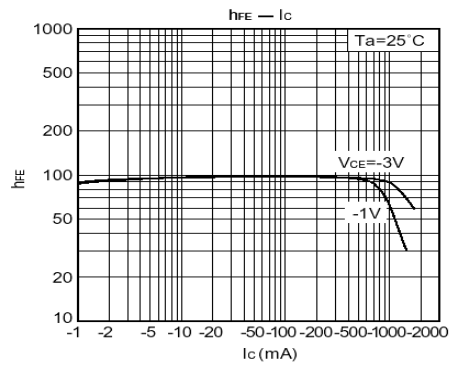
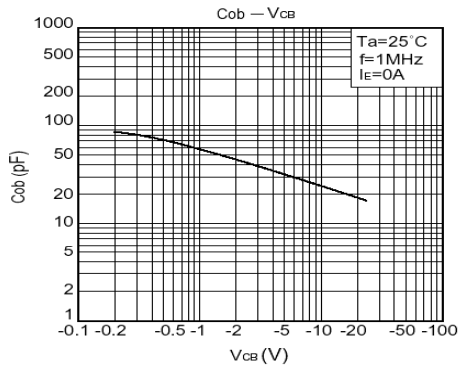
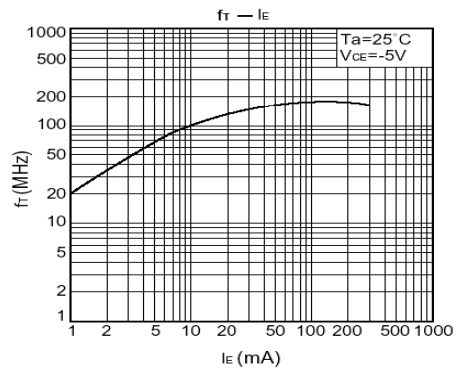
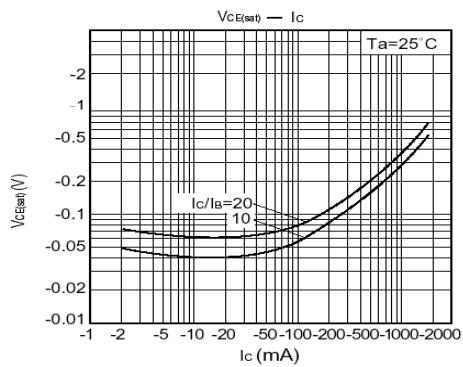
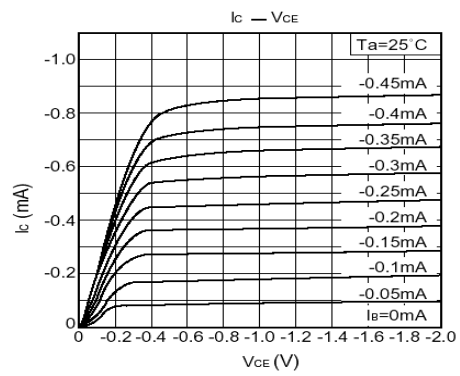
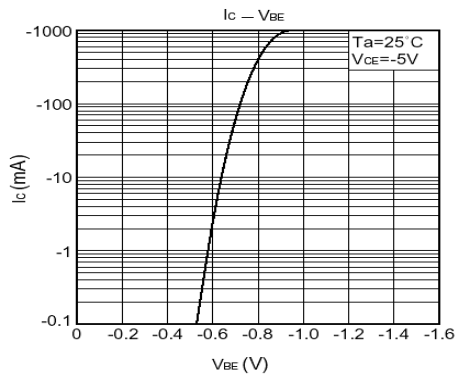
\*Single pulse Pw=100ms: 脉冲测试, 脉宽 100ms。

\*\*mounted on 40×40×0.7mm ceramic board: 装于 40×40×0.7m 的陶瓷上。

**电性能参数 / Electrical Characteristics(Ta=25°C)**

| 参数<br>Parameter                         | 符号<br>Symbol  | 测试条件<br>Test Conditions              | 最小值<br>Min | 典型值<br>Typ | 最大值<br>Max | 单位<br>Unit |
|-----------------------------------------|---------------|--------------------------------------|------------|------------|------------|------------|
| Collector to Base Breakdown Voltage     | $V_{CBO}$     | $I_C=-50\mu A$ $I_E=0$               | -80        |            |            | V          |
| Collector to Emitter Breakdown Voltage  | $V_{CEO}$     | $I_C=-1.0mA$ $I_B=0$                 | -80        |            |            | V          |
| Emitter to Base Breakdown Voltage       | $V_{EBO}$     | $I_E=-50\mu A$ $I_C=0$               | -5.0       |            |            | V          |
| Collector Cut-Off Current               | $I_{CBO}$     | $V_{CB}=-60V$ $I_E=0$                |            |            | -1.0       | μA         |
| Emitter Base Cut-Off Current            | $I_{EBO}$     | $V_{EB}=-4.0V$ $I_C=0$               |            |            | -1.0       | μA         |
| DC Current Gain                         | $h_{FE}$      | $V_{CE}=-3.0V$ $I_C=-0.1A$           | 82         |            | 390        |            |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=-500mA$ $I_B=-50mA$             |            |            | -0.4       | V          |
| Transition Frequency                    | $f_T$         | $V_{CE}=-5.0V$ $f=30MHz$ $I_C=-50mA$ |            | 100        |            | MHz        |
| Collector Output Capacitance            | $C_{ob}$      | $V_{CE}=-10V$ $f=1.0MHz$ $I_E=0$     |            | 25         |            | pF         |

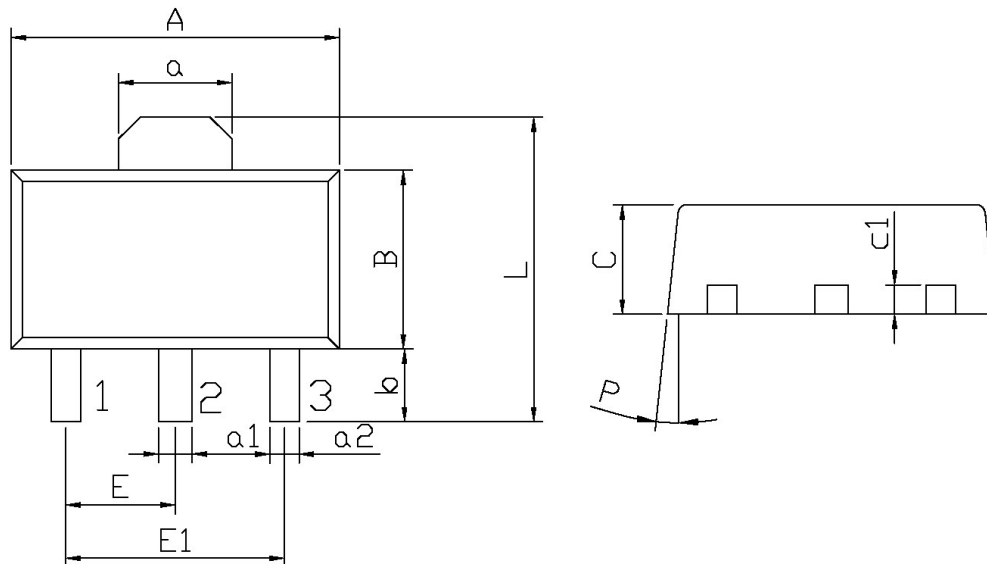
**电参数曲线图 / Electrical Characteristic Curve**



**外形尺寸图 / Package Dimensions**

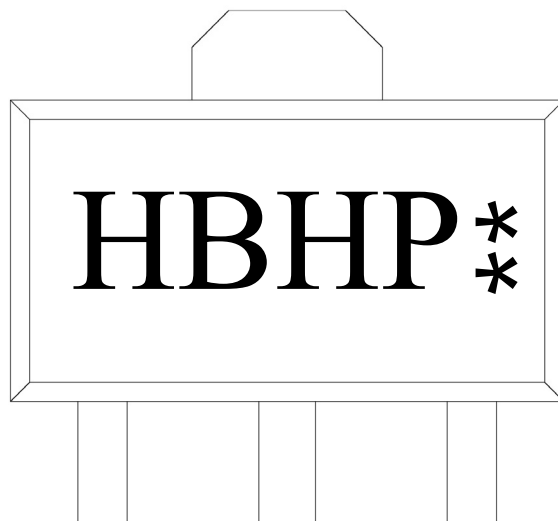
SOT-89

单位: mm



| Symbol | Dimensions In Millimeters |       | Symbol | Dimensions In Millimeters |      |
|--------|---------------------------|-------|--------|---------------------------|------|
|        | Min                       | Max   |        | Min                       | Max  |
| A      | 4.4                       | 4.7   | a1     | 0.36                      | 0.56 |
| B      | 2.35                      | 2.65  | a2     | 0.30                      | 0.50 |
| L      | 3.878                     | 4.478 | C      | 1.40                      | 1.70 |
| a      | 1.45                      | 1.65  | c1     | 0.35                      | 0.50 |
| E      | 1.40                      | 1.60  | P      | 6°                        |      |
| E1     | 2.80                      | 3.20  |        |                           |      |
| b      | 0.80                      | 1.20  |        |                           |      |

印章说明 / Marking Instructions



说明：

H： 为公司代码

BH： 为型号代码

P： 为  $h_{FE}$  分档代码

\*\*： 为生产批号代码，随生产批号变化。

Note:

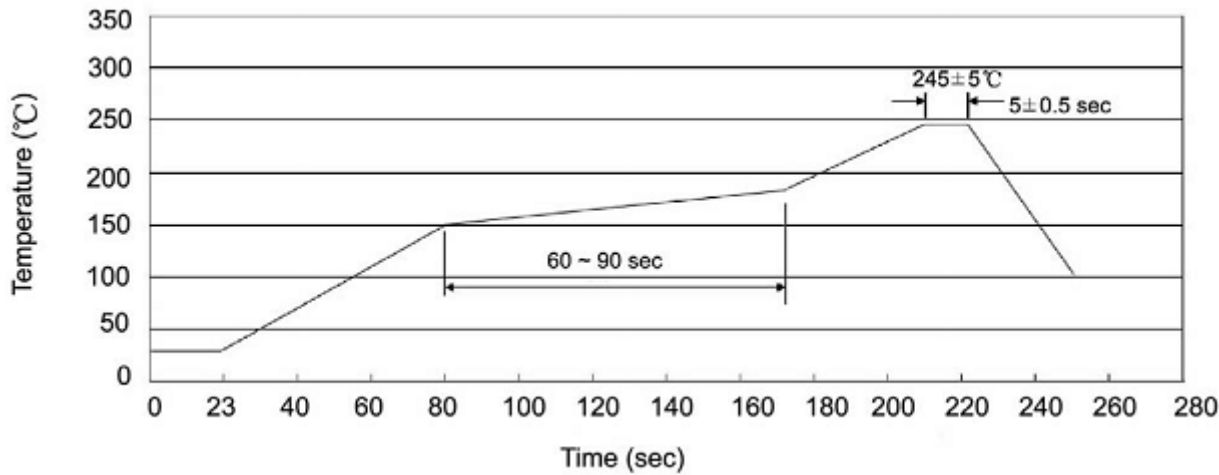
H: Company Code.

BH: Product Type.

P:  $h_{FE}$  Classifications Symbol

\*\* : Lot No. Code, code change with Lot No.

回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)



- 说明：

  - 1、预热温度 25 ~ 150℃，时间 60 ~ 90sec;
  - 2、峰值温度 245±5℃，时间持续为 5±0.5sec;
  - 3、焊接制程冷却速度为 2 ~ 10℃/sec.
- Note:

  - 1.Preheating:25~150℃, Time:60~90sec.
  - 2.Peak Temp.:245±5℃, Duration:5±0.5sec.
  3. Cooling Speed: 2~10℃/sec.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：260±5℃      时间：10±1 sec.      Temp.:260±5℃      Time:10±1 sec

包装规格 / Packaging SPEC.

卷盘包装 / REEL

| Package Type<br>封装形式 | Units 包装数量         |                         |                        |                              |                        | Dimension 包装尺寸 (unit: mm <sup>3</sup> ) |             |             |
|----------------------|--------------------|-------------------------|------------------------|------------------------------|------------------------|-----------------------------------------|-------------|-------------|
|                      | Units/Reel<br>只/卷盘 | Reels/Inner Box<br>卷盘/盒 | Units/Inner Box<br>只/盒 | Inner Boxes/Outer Box<br>盒/箱 | Units/Outer Box<br>只/箱 | Reel                                    | Inner Box 盒 | Outer Box 箱 |
| SOT-89               | 1,000              | 7                       | 7,000                  | 8                            | 56,000                 | 7" ×12                                  | 180×120×180 | 385×257×392 |

使用说明 / Notices