

## 描述 / Descriptions

TO-220F 塑封封装 PNP 半导体三极管。Silicon PNP transistor in a TO-220F Plastic Package.

## 特征 / Features

与 2SD1585 互补。

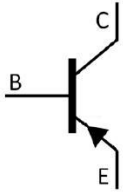
Complementary to the 2SD1585.

## 用途 / Applications

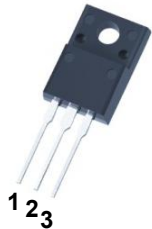
用于音频功率放大。

Audio frequency power amplifier applications.

## 内部等效电路 / Equivalent Circuit



## 引脚排列 / Pinning



PIN1 : Base      PIN 2 : Collector      PIN 3 : Emitter

## 放大及印章代码 / $h_{FE}$ Classifications & Marking

| $h_{FE}$ Classifications<br>Symbol | M     | L      | K       |
|------------------------------------|-------|--------|---------|
| $h_{FE}$ Range                     | 40~80 | 60~120 | 100~200 |

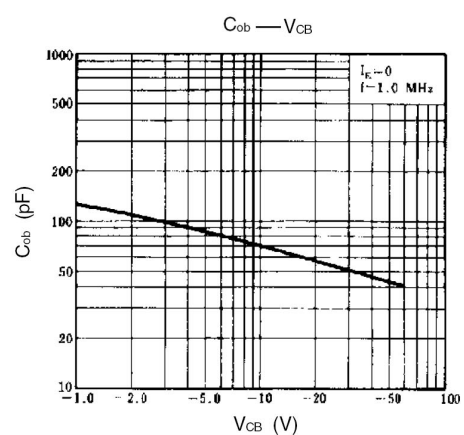
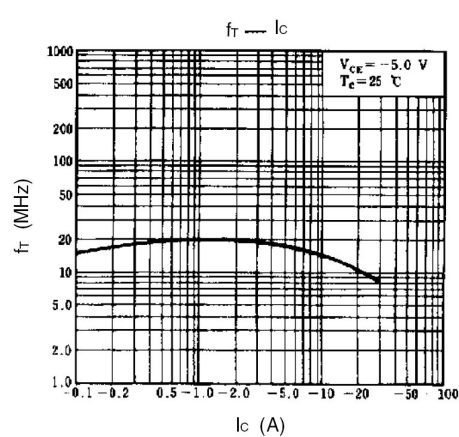
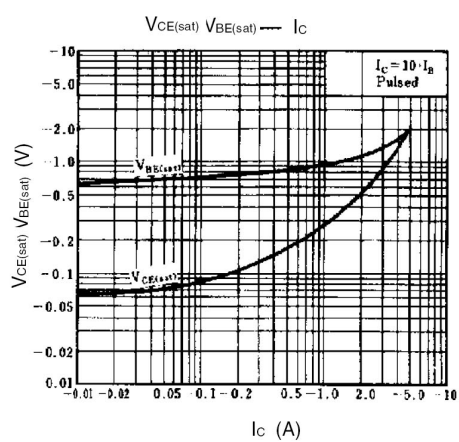
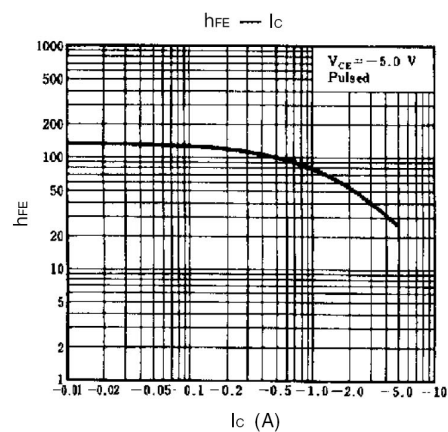
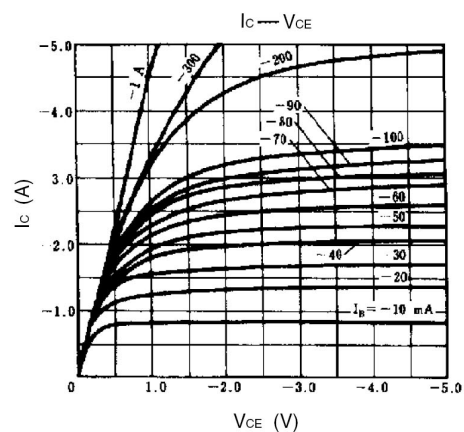
**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

| 参数<br>Parameter                       | 符号<br>Symbol            | 数值<br>Rating | 单位<br>Unit |
|---------------------------------------|-------------------------|--------------|------------|
| Collector to Base Voltage             | $V_{CBO}$               | -60          | V          |
| Collector to Emitter Voltage          | $V_{CEO}$               | -60          | V          |
| Emitter to Base Voltage               | $V_{EBO}$               | -7.0         | V          |
| Collector Current - Continuous        | $I_{C(DC)}$             | -3.0         | A          |
| Collector Current – Continuous(Pulse) | $I_{C(pulse)}$          | -5.0         | A          |
| Collector Power Dissipation           | $P_C$                   | 2.0          | W          |
| Collector Power Dissipation           | $P_C (T_c=25^{\circ}C)$ | 15           | W          |
| Junction Temperature                  | $T_j$                   | 150          | °C         |
| Storage Temperature Range             | $T_{stg}$               | -55~150      | °C         |

**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 Cut-Off Current               | $I_{CBO}$     | $V_{CB}=-60V$ $I_E=0$               |            |            | -10        | μA         |
| Emitter Cut-Off Current                 | $I_{EBO}$     | $V_{EB}=-7.0V$ $I_C=0$              |            |            | -10        | μA         |
| DC Current Gain                         | $h_{FE(1)}$   | $V_{CE}=-5.0V$ $I_C=-500mA$         | 40         |            | 200        |            |
|                                         | $h_{FE(2)}$   | $V_{CE}=-5.0V$ $I_C=-50mA$          | 20         |            |            |            |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=-2.0A$ $I_B=-200mA$            |            |            | -1.5       | V          |
| Base to Emitter Voltage                 | $V_{BE(sat)}$ | $I_C=-2.0A$ $I_B=-200mA$            |            |            | -2.0       | V          |
| Transition Frequency                    | $f_T$         | $V_{CE}=-5.0V$ $I_E=100mA$          |            | 20         |            | MHz        |
| Collector output capacitance            | $C_{ob}$      | $V_{CB}=-10V$ $I_E=0$<br>$f=1.0MHz$ |            | 70         |            | pF         |

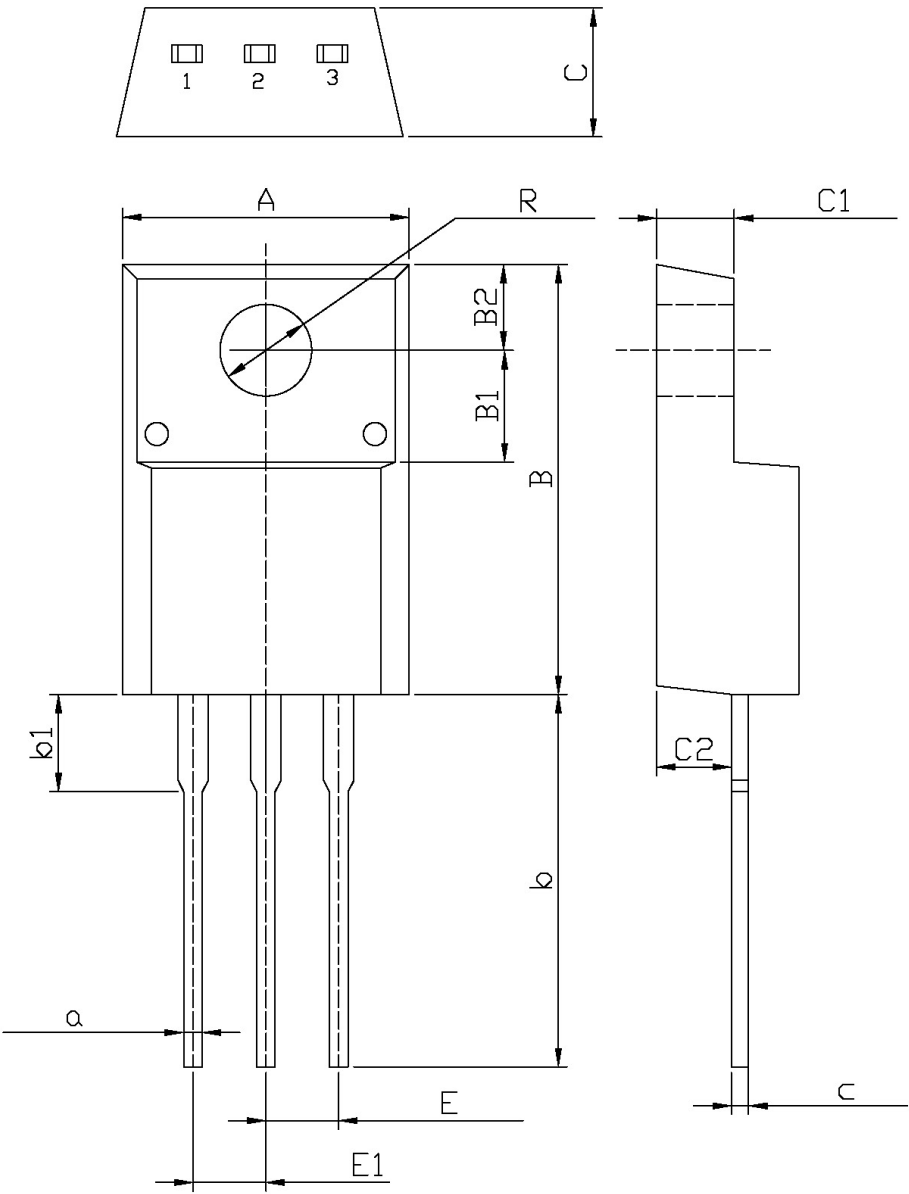
电参数曲线图 / Electrical Characteristic Curve



外形尺寸图 / Package Dimensions

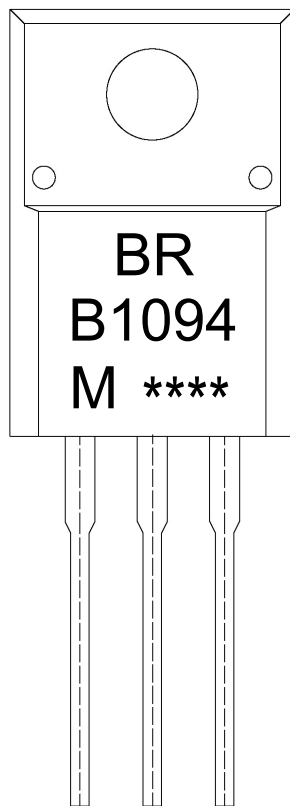
T□-220F

单位：mm



| Symbol | Dimensions In Millimeters |      | Symbol | Dimensions In Millimeters |      |
|--------|---------------------------|------|--------|---------------------------|------|
|        | Min                       | Max  |        | Min                       | Max  |
| C      | 4.3                       | 4.7  | b1     | 2.9                       | 3.9  |
| A      | 9.7                       | 10.3 | a      | 0.55                      | 0.75 |
| B      | 14.7                      | 15.3 | E      | 2.29                      | 2.79 |
| B1     | 3.8                       | 4.0  | E1     | 2.29                      | 2.79 |
| B2     | 2.9                       | 3.1  | C1     | 2.5                       | 2.9  |
| R      | 3.0                       | 3.4  | C2     | 2.5                       | 2.7  |
| b      | 12.5                      | 13.5 | c      | 0.5                       | 0.7  |

**印章说明 / Marking Instructions**



说明：

BR： 为公司代码

B1094： 为型号代码

M： 为  $h_{FE}$  分档代码

\*\*\*\*： 为生产批号代码，随生产批号变化。

Note:

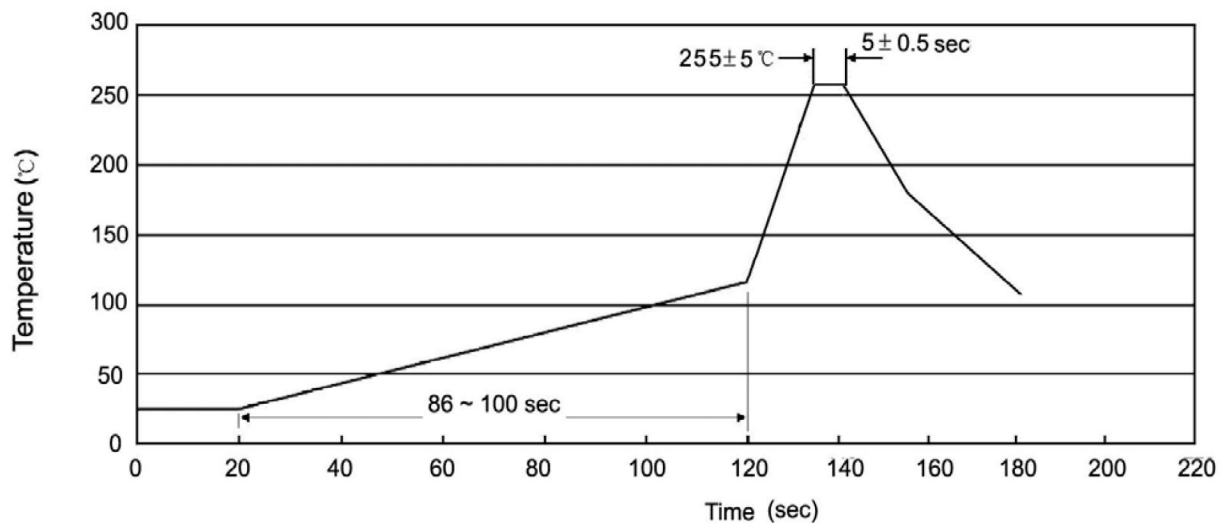
BR: Company Code.

B1094: Product Type.

M:  $h_{FE}$  Classifications Symbol

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

## 波峰焊温度曲线图(无铅) / Temperature Profile for Dip Soldering(Pb-Free)



说明：

1. 预热温度 25 ~ 150°C，时间 60 ~ 90sec;
2. 峰值温度 255±5°C，时间持续为 5±0.5sec;
3. 焊接制程冷却速度为 2 ~ 10°C/sec.

Note:

1. Preheating: 25~150°C, Time: 60~90sec.
2. Peak Temp.: 255±5°C, Duration: 5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

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

温度：270±5°C

时间：10±1 sec.

Temp.: 270±5°C

Time: 10±1 sec

## 包装规格 / Packaging SPEC.

散件包装 / BULK

| Package Type<br>封装形式 | Units 包装数量       |                       |                        |                              |                        | Dimension 包装尺寸 (unit: mm <sup>3</sup> ) |             |             |
|----------------------|------------------|-----------------------|------------------------|------------------------------|------------------------|-----------------------------------------|-------------|-------------|
|                      | Units/Bag<br>只/袋 | Bags/Inner Box<br>袋/盒 | Units/Inner Box<br>只/盒 | Inner Boxes/Outer Box<br>盒/箱 | Units/Outer Box<br>只/箱 | Bag 袋                                   | Inner Box 盒 | Outer Box 箱 |
| TO-220/F             | 200              | 10                    | 2,000                  | 5                            | 10,000                 | 135×190                                 | 237×172×102 | 560×245×195 |

套管包装 / TUBE

| Package Type<br>封装形式 | Units 包装数量         |                         |                        |                              |                        | Dimension 包装尺寸 (unit: mm <sup>3</sup> ) |             |             |
|----------------------|--------------------|-------------------------|------------------------|------------------------------|------------------------|-----------------------------------------|-------------|-------------|
|                      | Units/Tube<br>只/套管 | Tubes/Inner Box<br>套管/盒 | Units/Inner Box<br>只/盒 | Inner Boxes/Outer Box<br>盒/箱 | Units/Outer Box<br>只/箱 | Tube 套管                                 | Inner Box 盒 | Outer Box 箱 |
| TO-220/F             | 50                 | 20                      | 1,000                  | 5                            | 5,000                  | 532×31.4×5.5                            | 555×164×50  | 575×290×180 |

## 使用说明 / Notices