

## 描述 / Descriptions

TO-92LM 塑封封装 PNP 半导体三极管。Silicon PNP transistor in a TO-92LM Plastic Package.

## 特征 / Features

饱和压降低。

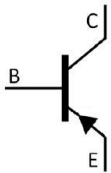
Low  $V_{CE(sat)}$ .

## 用途 / Applications

用于低频功率放大，电子调节器。

Low frequency amplifier, electronic governor 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 | R       | S       | T       |
|------------------------------------|---------|---------|---------|
| $h_{FE}$ Range                     | 100~200 | 140~280 | 200~400 |

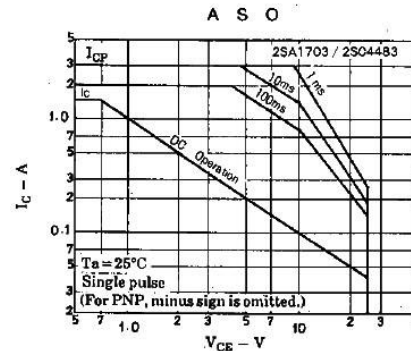
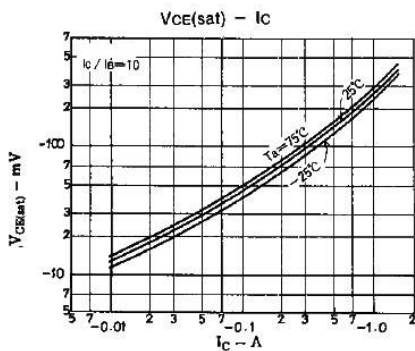
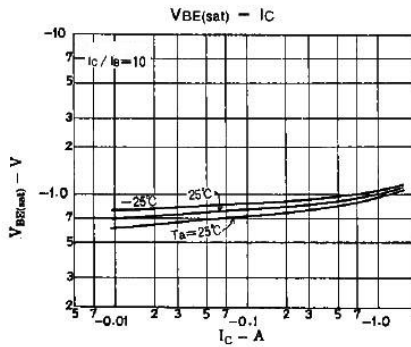
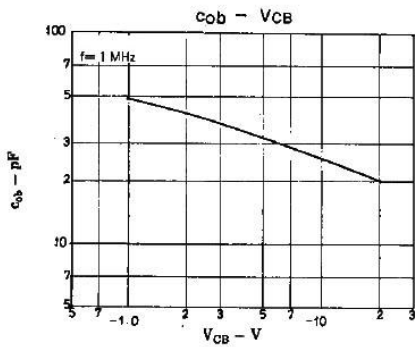
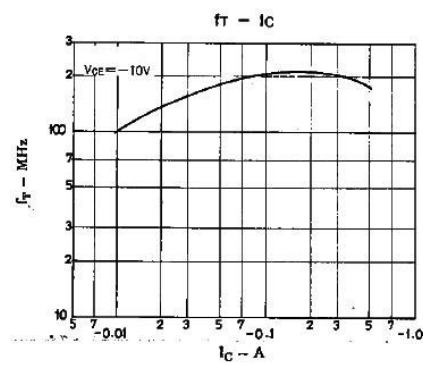
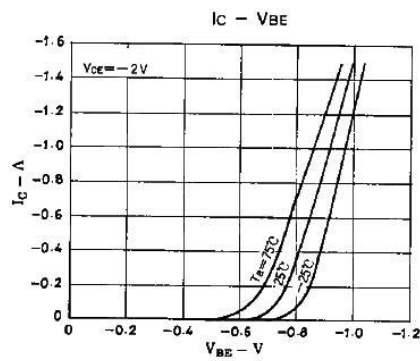
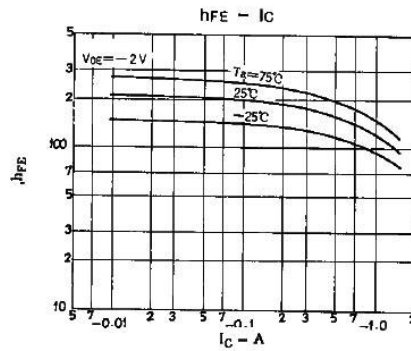
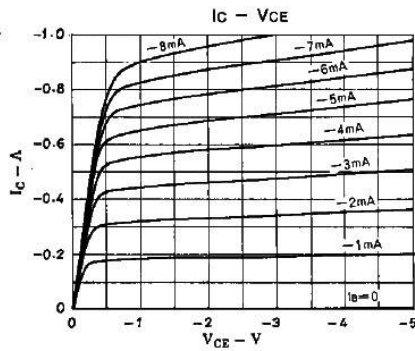
**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

| 参数<br>Parameter                       | 符号<br>Symbol | 数值<br>Rating | 单位<br>Unit |
|---------------------------------------|--------------|--------------|------------|
| Collector to Base Voltage             | $V_{CBO}$    | -30          | V          |
| Collector to Emitter Voltage          | $V_{CEO}$    | -25          | V          |
| Emitter to Base Voltage               | $V_{EBO}$    | -5.0         | V          |
| Collector Current - Continuous        | $I_C$        | -1.5         | A          |
| Collector Current – Continuous(Pulse) | $I_{CP}$     | -3.0         | A          |
| Collector Power Dissipation           | $P_C$        | 1.0          | 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 to Base Breakdown Voltage     | $V_{CBO}$     | $I_C = -10\mu A$ $I_E = 0$     | -30        |            |            | V          |
| Collector to Emitter Breakdown Voltage  | $V_{CEO}$     | $I_C = -1.0mA$ $I_B = 0$       | -25        |            |            | V          |
| Emitter to Base Breakdown Voltage       | $V_{EBO}$     | $I_E = -10\mu A$ $I_C = 0$     | -5.0       |            |            | V          |
| Collector Cut-Off Current               | $I_{CBO}$     | $V_{CB} = -20V$ $I_E = 0$      |            |            | -0.1       | $\mu A$    |
| Emitter Cut-Off Current                 | $I_{EBO}$     | $V_{EB} = -4.0V$ $I_C = 0$     |            |            | -0.1       | $\mu A$    |
| DC Current Gain                         | $h_{FE(1)}$   | $V_{CE} = -2.0V$ $I_C = -50mA$ | 100        |            | 400        |            |
|                                         | $h_{FE(2)}$   | $V_{CE} = -2.0V$ $I_C = -1.0A$ | 40         |            |            |            |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = -500mA$ $I_B = -50mA$   |            | -0.15      | -0.5       | V          |
| Base to Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C = -500mA$ $I_B = -50mA$   |            | -0.9       | -1.2       | V          |
| Transition Frequency                    | $f_T$         | $V_{CE} = -10V$ $I_C = -50mA$  |            | 180        |            | MHz        |
| Collector output capacitance            | $C_{ob}$      | $V_{CB} = -10V$ $f = 1.0MHz$   |            | 25         |            | pF         |

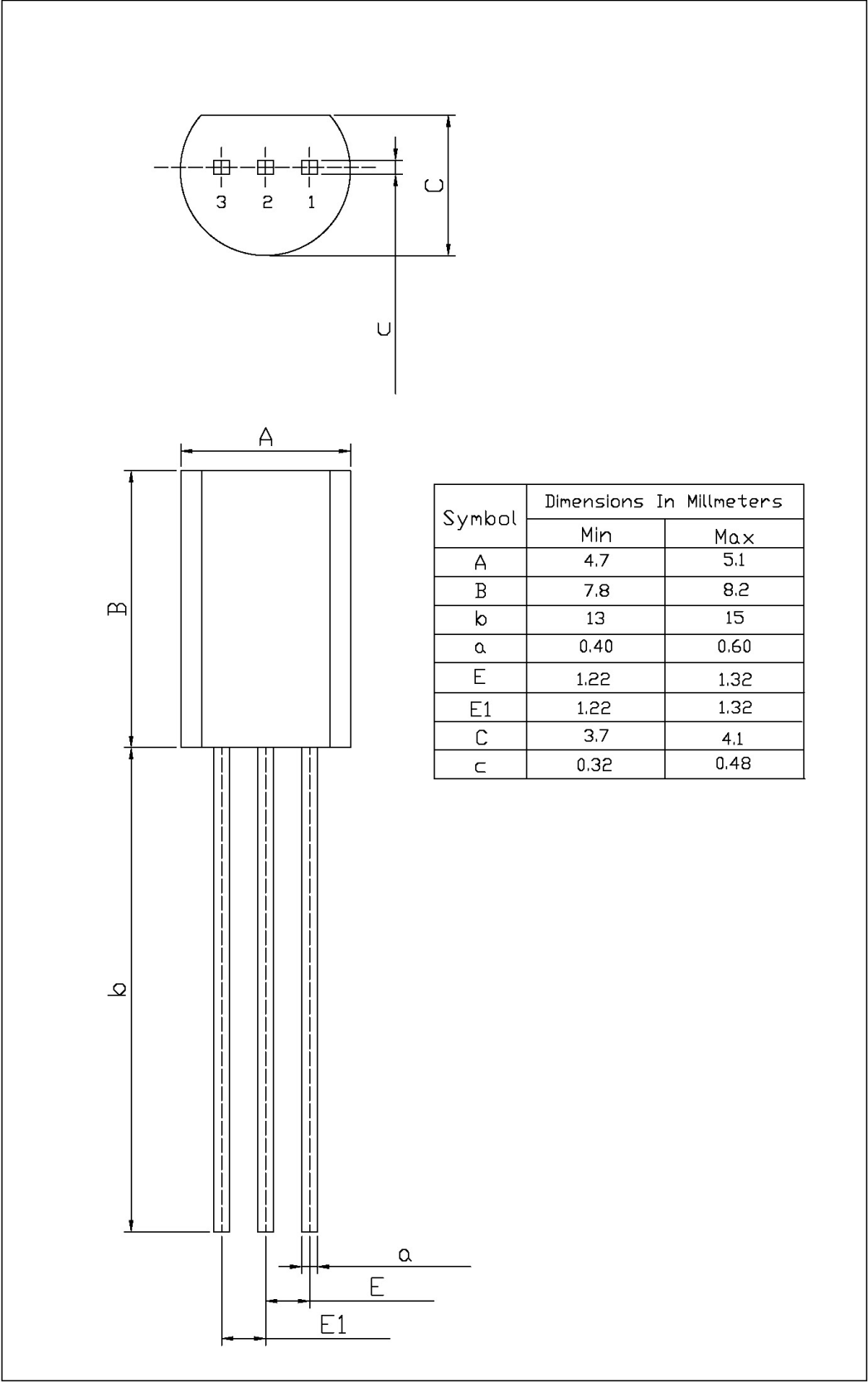
电参数曲线图 / Electrical Characteristic Curve



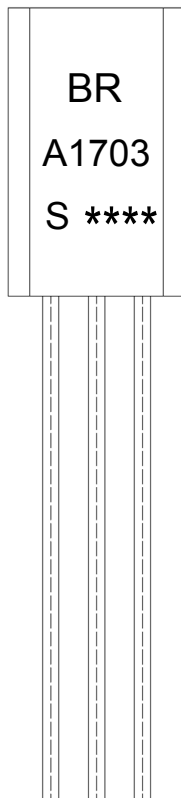
外形尺寸图 / Package Dimensions

T0-92LM

Unit: mm



印章说明 / Marking Instructions



说明：

BR: 为公司代码

A1703 : 为型号代码

S: 为  $h_{FE}$  分档代码

\*\*\*\* : 为生产批号代码，随生产批号变化。

Note:

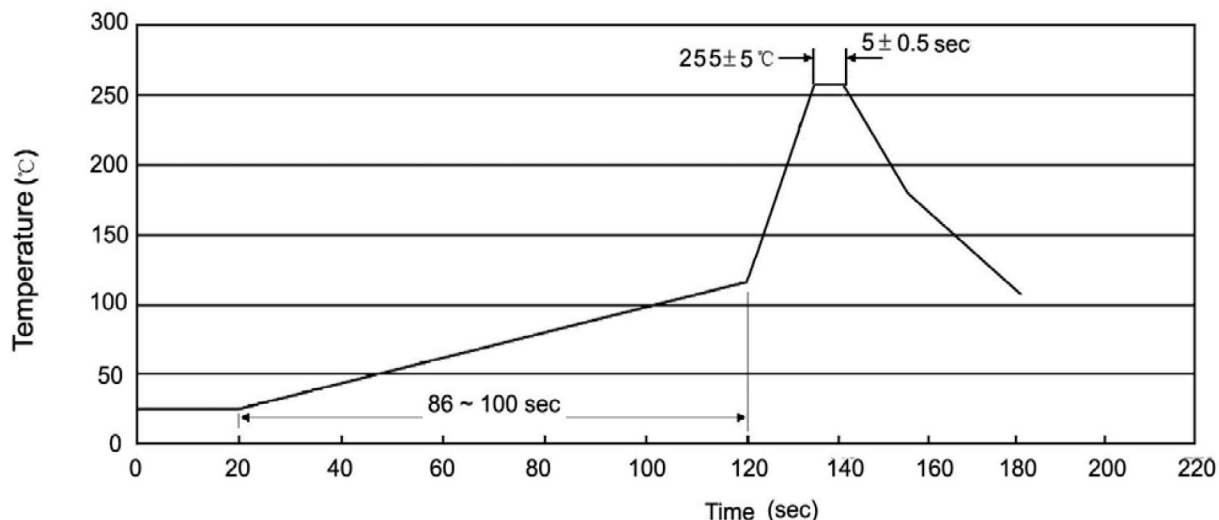
BR: Company Code.

A1703: Product Type.

S:  $h_{FE}$  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: mm3) |             |             |
|----------------------|------------------|-----------------------|------------------------|------------------------------|------------------------|----------------------------|-------------|-------------|
|                      | 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-92LM              | 1,000            | 8                     | 8,000                  | 5                            | 40,000                 | 135×190                    | 237×172×102 | 560×245×195 |

编带包装 / AMMO

| Package Type<br>封装形式 | Units 包装数量         |                        |                         |                              |                        | Dimension 包装尺寸 (unit: mm3) |                                  |
|----------------------|--------------------|------------------------|-------------------------|------------------------------|------------------------|----------------------------|----------------------------------|
|                      | Units/tape<br>只/纸带 | Tape/Inner Box<br>纸带/盒 | Rows/Inner Box<br>纸带层/盒 | Inner Boxes/Outer Box<br>盒/箱 | Units/Outer Box<br>只/箱 | Inner Box 盒                | Outer Box 箱                      |
| TO-92LM              | 2,500              | 1                      | 100                     | 10                           | 25,000                 | 328×230×42                 | 小箱 480×346×235<br>大箱 547×407×268 |

## 使用说明 / Notices