

### 描述 / Descriptions

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

### 特征 / Features

击穿电压高,饱和压降低,集电极输出电容小。

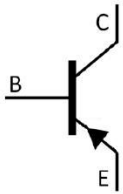
High voltage, low saturation voltage, small collector output capacitance.

### 用途 / Applications

用于高电压控制,等离子显示,阴极射线管激励。

High voltage control, plasma display, nixie tube driver, cathode ray tube brightness control 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 / hFE Classifications & Marking

|   |       |        |
|---|-------|--------|
| h <sub>FE</sub> Classifications<br>Symbol | R     | O      |
| h <sub>FE</sub> Range                     | 30~90 | 50~150 |

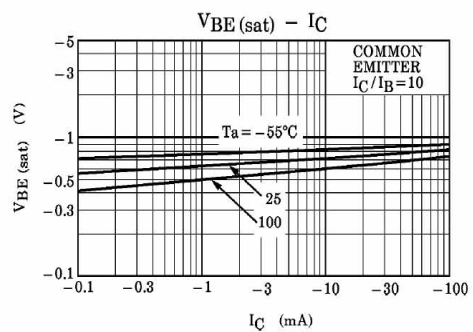
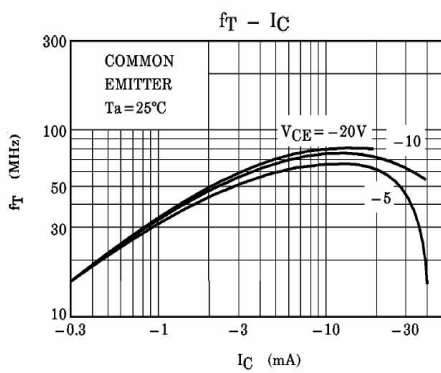
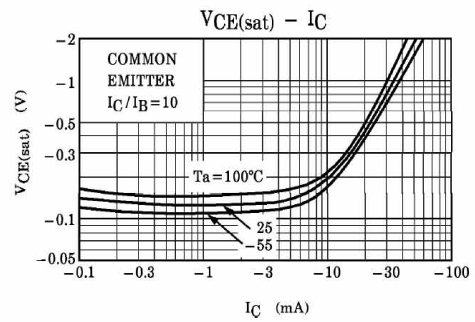
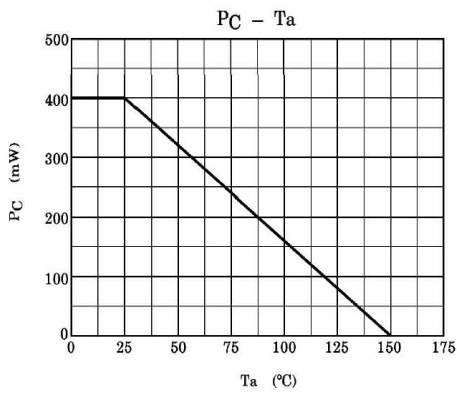
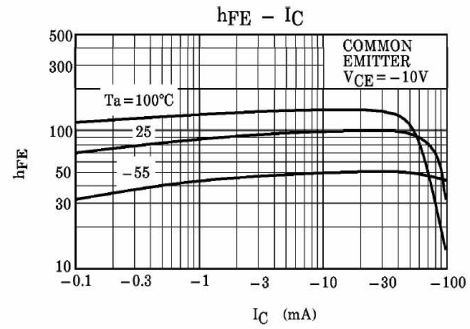
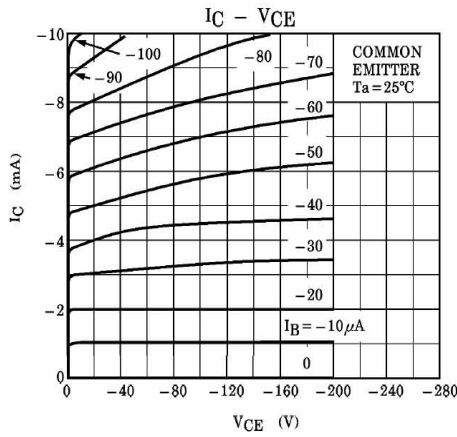
**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

| 参数<br>Parameter                | 符号<br>Symbol | 数值<br>Rating | 单位<br>Unit |
|--------------------------------|--------------|--------------|------------|
| Collector to Base Voltage      | $V_{CBO}$    | -300         | V          |
| Collector to Emitter Voltage   | $V_{CEO}$    | -300         | V          |
| Emitter to Base Voltage        | $V_{EBO}$    | -8.0         | V          |
| Collector Current - Continuous | $I_C$        | -100         | mA         |
| Base Current - Continuous      | $I_B$        | -20          | mA         |
| Collector Power Dissipation    | $P_C$        | 400          | mW         |
| 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     | $V_{CBO}$     | $I_C=-0.1mA$ $I_E=0$                | -300       |            |            | V          |
| Collector to Emitter Breakdown Voltage  | $V_{CEO}$     | $I_C=-1.0mA$ $I_B=0$                | -300       |            |            | V          |
| Collector Cut-Off Current               | $I_{CBO}$     | $V_{CB}=-300V$ $I_E=0$              |            |            | -0.1       | $\mu A$    |
| Emitter Cut-Off Current                 | $I_{EBO}$     | $V_{EB}=-8.0V$ $I_C=0$              |            |            | -0.1       | $\mu A$    |
| DC Current Gain                         | $h_{FE(1)}$   | $V_{CE}=-10V$ $I_C=-20mA$           | 30         |            | 150        |            |
|   | $h_{FE(2)}$   | $V_{CE}=-10V$ $I_C=-1.0mA$          | 20         |            |            |            |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=-20mA$ $I_B=-2.0mA$            |            |            | -0.5       | V          |
| Base to Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C=-20mA$ $I_B=-2.0mA$            |            |            | -1.2       | V          |
| Transition Frequency                    | $f_T$         | $V_{CE}=-10V$ $I_C=-20mA$           | 40         | 60         |            | MHz        |
| Collector Output Capacitance            | $C_{ob}$      | $V_{CB}=-20V$ $I_E=0$<br>$f=1.0MHz$ |            | 6.0        | 8.0        | pF         |

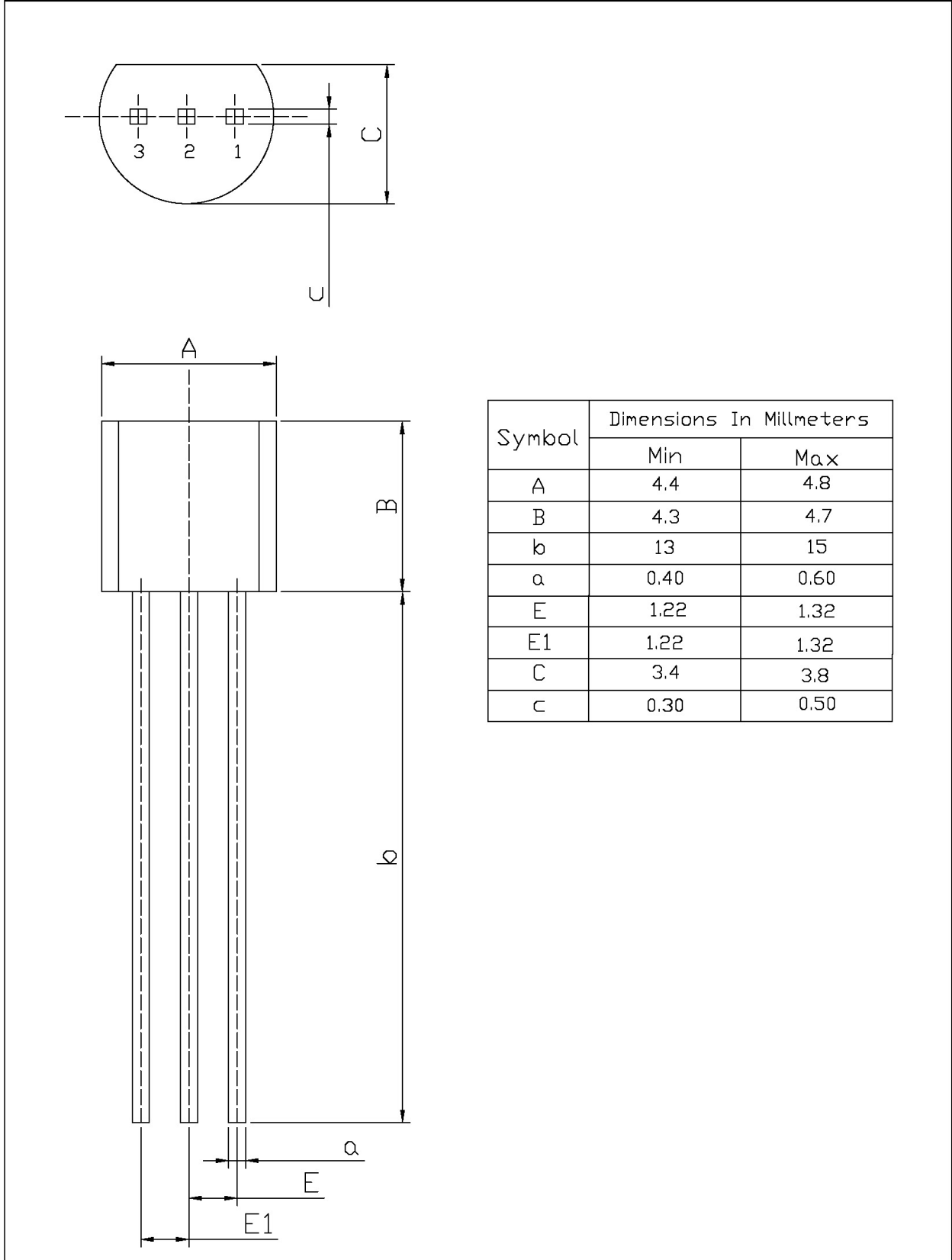
**电参数曲线图 / Electrical Characteristic Curve**



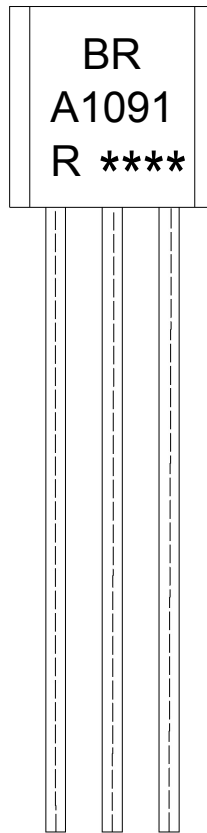
外形尺寸图 / Package Dimensions

TO-92

Unit: mm



印章说明 / Marking Instructions



说明：

- BR: 为公司代码
- A1091 : 为型号代码
- R: 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.
- A1091: Product Type.
- R:  $h_{FE}$  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-92                | 1,000            | 10                    | 10,000                 | 5                            | 50,000                 | 135×190                    | 237×172×102 | 560×245×195 |
|                      | 1,000            | 10                    | 10,000                 | 10                           | 100,000                | 135×190                    | 237×172×102 | 560×245×375 |

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-92                | 3,000              | 1                      | 120                     | 10                           | 30,000                 | 328×230×42                 | 小箱 480×346×235,<br>大箱 547×407×268 |

**使用说明 / Notices**