

### 描述 / Descriptions

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

### 特征 / Features

饱和压降低，开关速度快，与 2SC2334 互补。

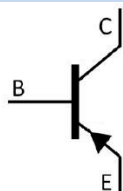
Low  $V_{CE(sat)}$ , fast switching speed, complementary pair with 2SC2334.

### 用途 / Applications

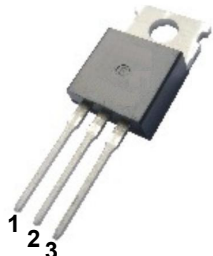
用于高电压高速开关，开关电源、DC/DC 转换器及高频功率放大的驱动。

Use for high voltage high speed switching, for a drive in devices such as switching regulators, DC/DC converters, high frequency power amplifiers.

### 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 <sub>CBO</sub>                      | -100         | V          |
| Collector to Emitter Voltage   | V <sub>CEO</sub>                      | -100         | V          |
| Emitter to Base Voltage        | V <sub>EBO</sub>                      | -7.0         | V          |
| Collector Current - Continuous | I <sub>C</sub>                        | -7.0         | A          |
| Peak Collector Current*        | *I <sub>CM</sub>                      | -15          | A          |
| Base Current – Continuous      | I <sub>B</sub>                        | -3.5         | A          |
| Collector Power Dissipation    | P <sub>C</sub>                        | 1.5          | W          |
|                                | P <sub>C</sub> (T <sub>C</sub> =25°C) | 40           | W          |
| Junction Temperature           | T <sub>J</sub>                        | 150          | °C         |
| Storage Temperature Range      | T <sub>stg</sub>                      | -55~150      | °C         |

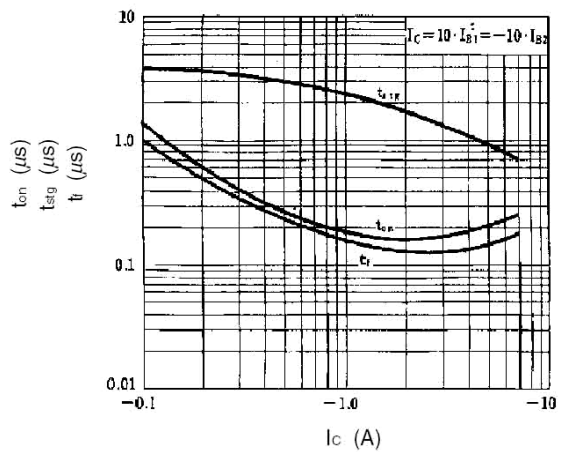
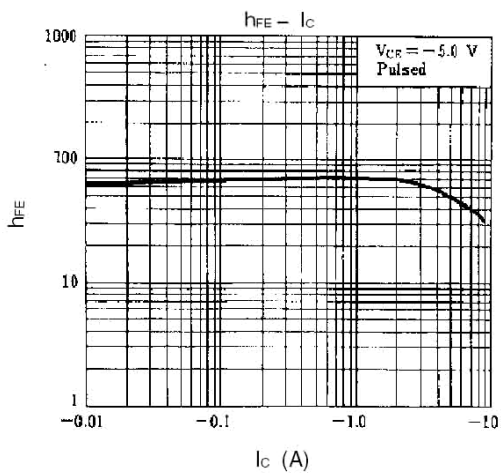
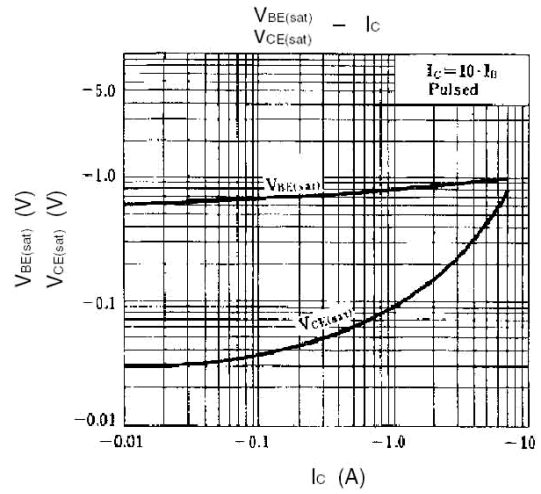
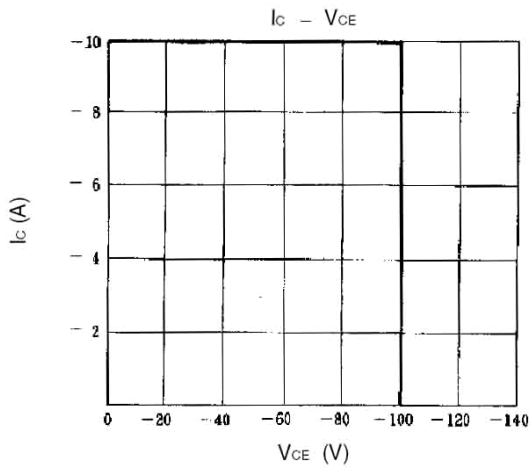
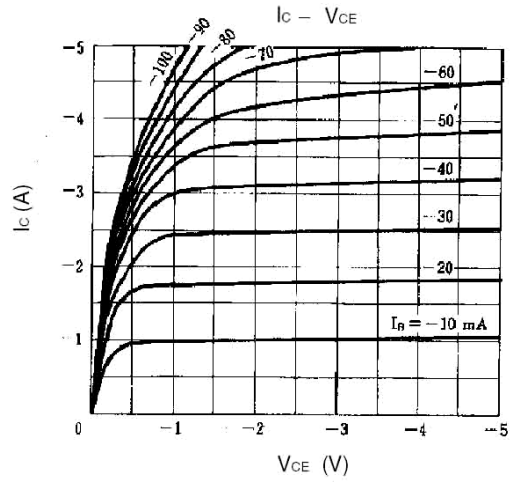
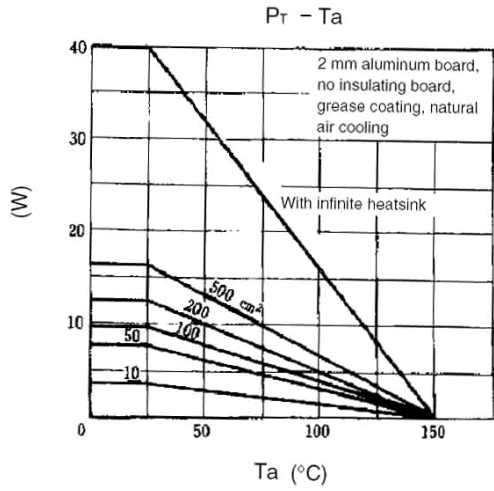
\*:pw(脉宽)≤300μs,duty cycle(占空比)≤10%.

**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 Emitter Breakdown Voltage   | V <sub>CEO</sub>      | I <sub>C</sub> =-10mA I <sub>B</sub> =0   | -100       |            |            | V          |
| Collector Cut-Off Current                | I <sub>CBO</sub>      | V <sub>CB</sub> =-100V I <sub>E</sub> =0  |            |            | -10        | μA         |
| Emitter Cut-Off Current                  | I <sub>EBO</sub>      | V <sub>EB</sub> =-5.0V I <sub>C</sub> =0  |            |            | -10        | μA         |
| DC Current Gain                          | *h <sub>FE(1)</sub>   | V <sub>CE</sub> =-5.0V I <sub>C</sub> =-3.0A  | 40         |            | 200        |            |
|  | *h <sub>FE(2)</sub>   | V <sub>CE</sub> =-5.0V I <sub>C</sub> =-0.5A  | 40         |            | 200        |            |
|  | *h <sub>FE(3)</sub>   | V <sub>CE</sub> =-5.0V I <sub>C</sub> =-5.0A  | 20         |            |            |            |
| Collector to Emitter Saturation Voltage* | *V <sub>CE(sat)</sub> | I <sub>C</sub> =-5.0A I <sub>B</sub> =-0.5A   |            |            | -0.6       | V          |
| Base to Emitter Saturation Voltage*      | *V <sub>BE(sat)</sub> | I <sub>C</sub> =-5.0A I <sub>B</sub> =-0.5A   |            |            | -1.5       | V          |
| Turn-On Time                             | t <sub>on</sub>       | I <sub>C</sub> =-5.0A V <sub>CC</sub> =-50V<br>RL=10Ω<br>I <sub>B1</sub> =-I <sub>B2</sub> =-0.5A |            |            | 0.5        | μs         |
| Storage Time                             | t <sub>stg</sub>      |   |            |            | 1.5        | μs         |
| Turn-Off Time                            | t <sub>f</sub>        |   |            |            | 0.5        | μs         |

\*:pw(脉宽)≤350μs,duty cycle(占空比)≤2%.

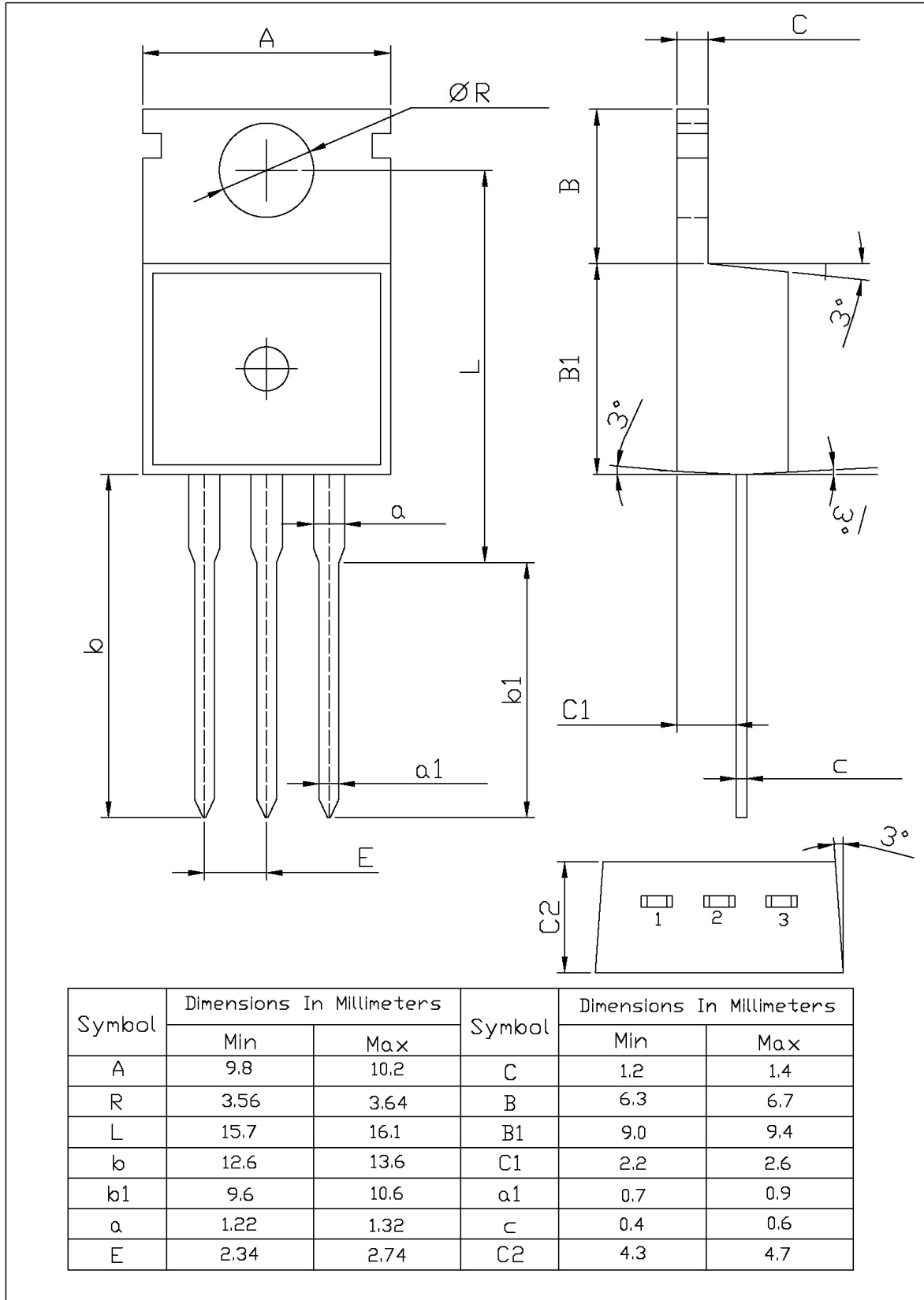
电参数曲线图 / Electrical Characteristic Curve



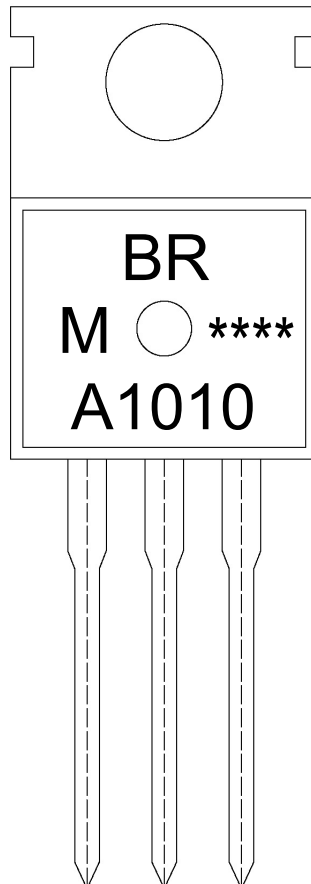
外形尺寸图 / Package Dimensions

T0-220

单位: mm



印章说明 / Marking Instructions



说明：

BR： 为公司代码

A1010： 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:

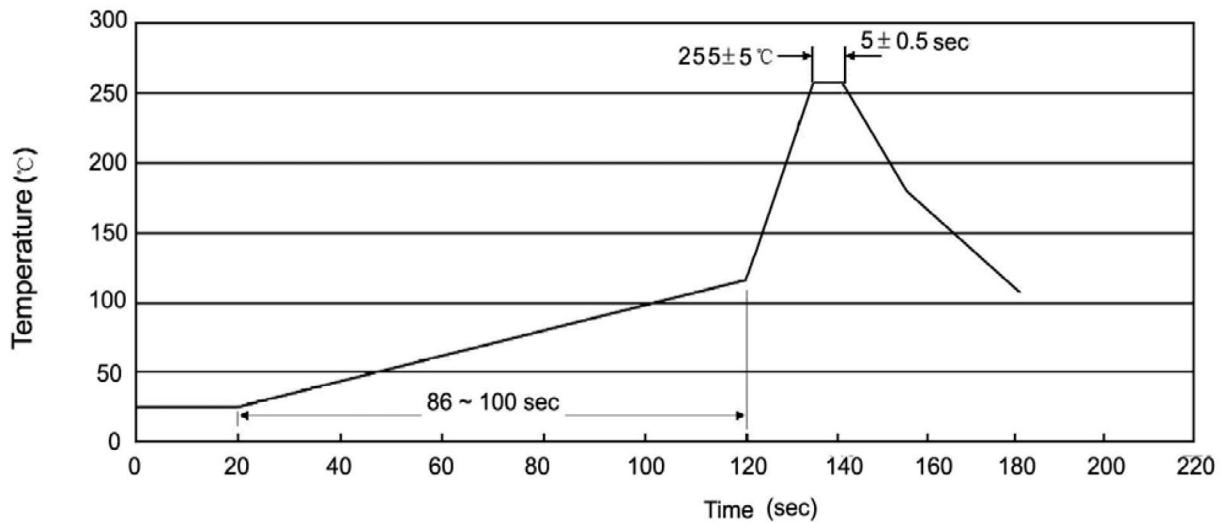
BR: Company Code

A1010: 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**