

**描述 / Descriptions**

TO-3P 塑封封装 NPN 半导体三极管。Silicon NPN Transistor in a TO-3P Plastic Package.

**特征 / Features**

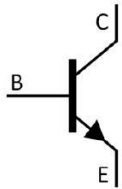
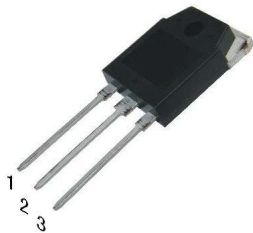
快速转换。

High Speed Switching

**用途 / Applications**

节能灯电路。

High frequency electronic lighting ballast 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**

见印章说明。See Marking Instructions.

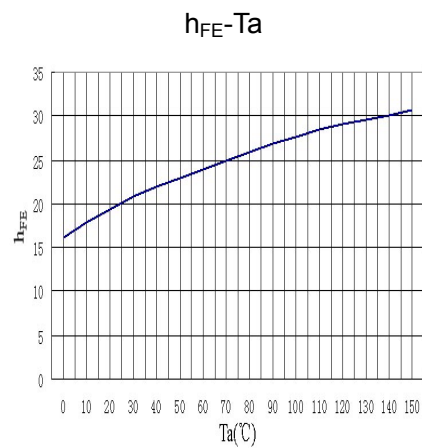
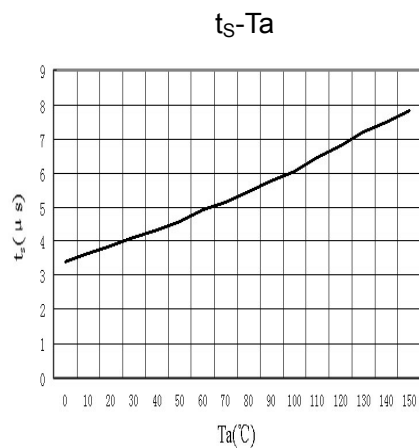
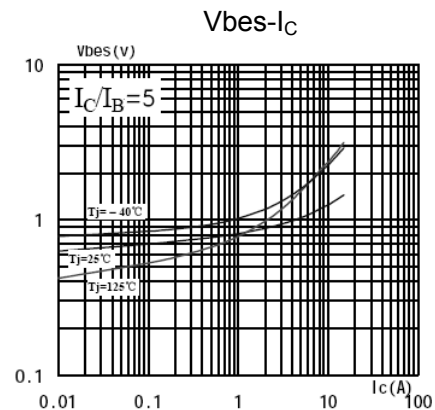
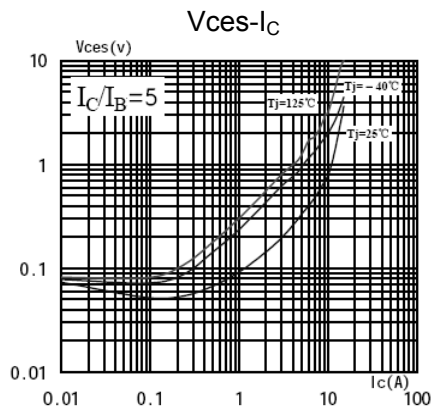
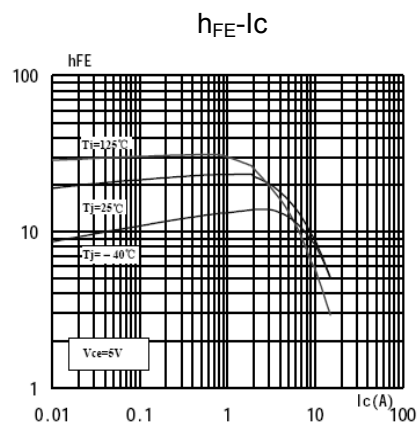
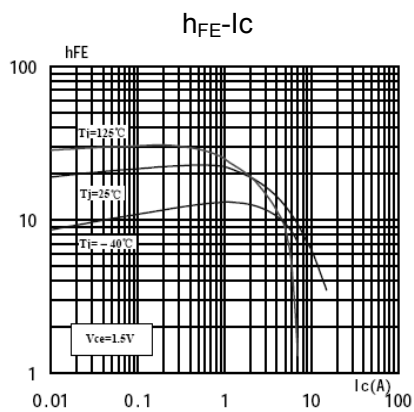
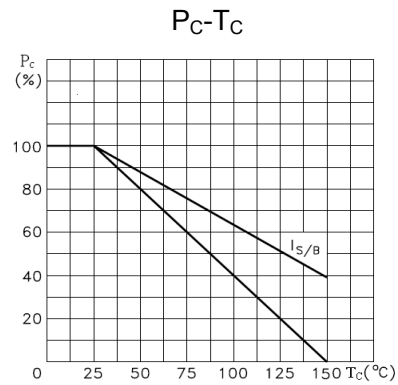
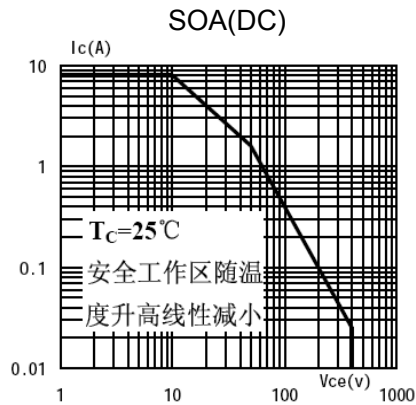
**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

| 参数<br>Parameter                | 符号<br>Symbol           | 数值<br>Rating | 单位<br>Unit |
|--------------------------------|------------------------|--------------|------------|
| Collector to Base Voltage      | $V_{CBO}$              | 700          | V          |
| Collector to Emitter Voltage   | $V_{CEO}$              | 400          | V          |
| Emitter to Base Voltage        | $V_{EBO}$              | 9.0          | V          |
| Collector Current - Continuous | $I_C$                  | 8.0          | A          |
| Collector Power Dissipation    | $P_C$                  | 2.0          | W          |
| Collector Power Dissipation    | $P_C(T_C=25^{\circ}C)$ | 90           | 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 Voltage               | $V_{CBO}$     | $I_C=1mA$ $I_E=0$                     | 700        |            |            | V          |
| Collector to Emitter Voltage            | $V_{CEO}$     | $I_C=10mA$ $I_B=0$                    | 400        |            |            | V          |
| Emitter to Base Voltage                 | $V_{EBO}$     | $I_E=1mA$ $I_C=0$                     | 9          |            |            | V          |
| Collector Cut-Off Current               | $I_{CBO}$     | $V_{CB}=700V$ $I_E=0$                 |            |            | 0.1        | mA         |
| Collector cut-off current               | $I_{CEO}$     | $V_{CE}=400V$ $I_B=0$                 |            |            | 0.1        | mA         |
| Emitter Base Cut-Off Current            | $I_{EBO}$     | $V_{EB}=9.0V$ $I_C=0$                 |            |            | 0.1        | mA         |
| DC Current Gain                         | $h_{FE}$      | $V_{CE}=5.0V$ $I_C=2.0A$              | 10         |            | 40         |            |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=8.0A$ $I_B=2.0A$                 |            |            | 1.5        | V          |
| Base to Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C=8.0A$ $I_B=2.0A$                 |            |            | 1.5        | V          |
| Transition Frequency                    | $f_T$         | $V_{CE}=10V$ $I_C=0.5A$<br>$f=1.0MHz$ | 5.0        |            |            | MHz        |
| Fall time                               | $t_f$         | $V_{CE}=5V$ $I_C=0.5A$<br>(UI9600)    |            |            | 0.8        | μs         |
| Storage time                            | $t_S$         |                                       | 4.0        |            | 9.0        | μs         |

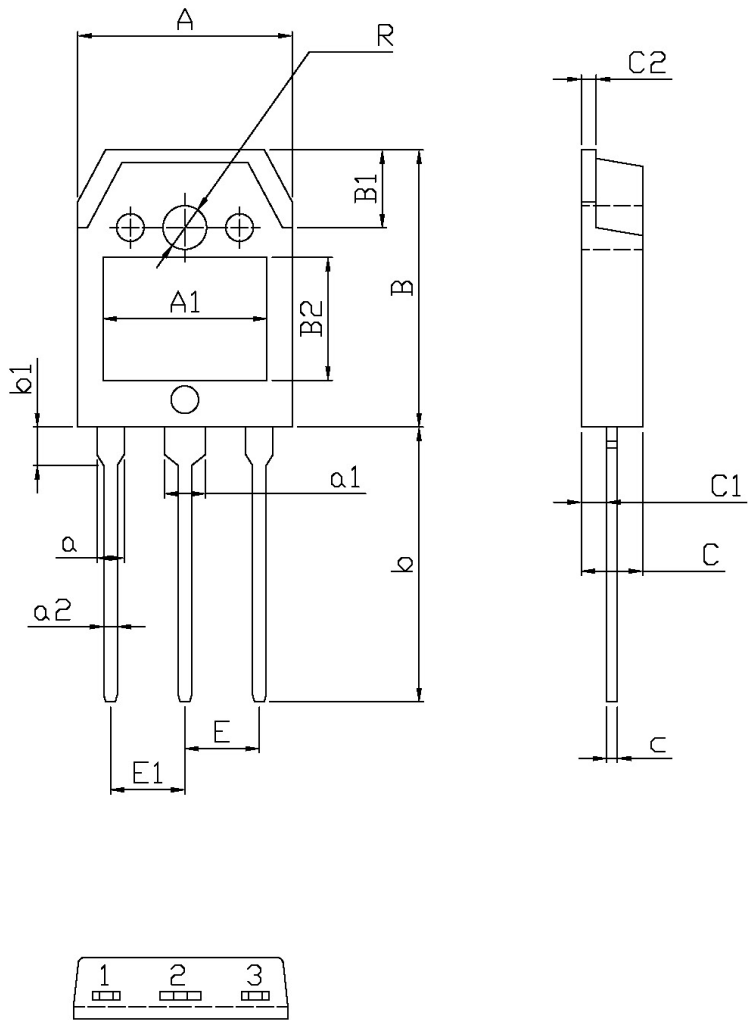
## 电参数曲线图 / Electrical Characteristic Curve



外形尺寸图 / Package Dimensions

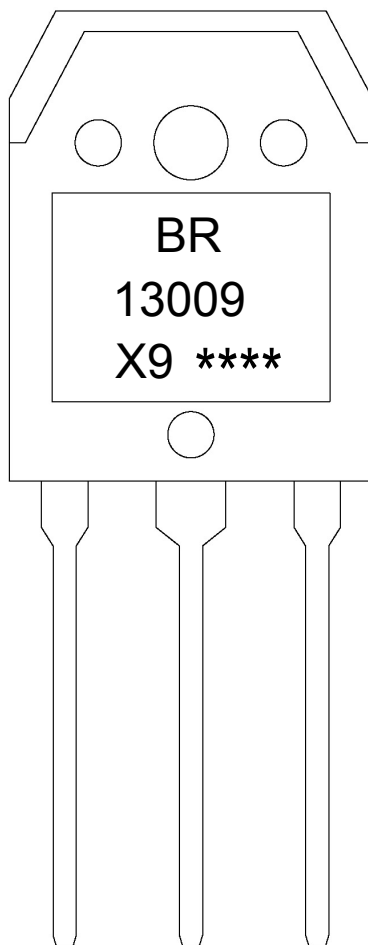
T□-3P

单位: mm



| Symbol | Dimensions In Millimeters |      | Symbol | Dimensions In Millimeters |     |
|--------|---------------------------|------|--------|---------------------------|-----|
|        | Min                       | Max  |        | Min                       | Max |
| A      | 15.4                      | 16.0 | a2     | 0.8                       | 1.2 |
| R      | 3.1                       | 3.5  | E      | 5.45                      |     |
| B      | 19.8                      | 20.8 | E1     | 5.45                      |     |
| B1     | 5.5                       | 5.9  | C      | 4.3                       | 4.7 |
| B2     | 9.0                       |      | C1     | 1.2                       | 1.6 |
| A1     | 12.0                      |      | C2     | 1.4                       | 1.6 |
| b      | 19.6                      | 20.6 | c      | 0.5                       | 0.7 |
| b1     | 3.0                       | 3.4  |        |                           |     |
| a      | 1.8                       | 2.2  |        |                           |     |
| a1     | 2.8                       | 3.2  |        |                           |     |

**印章说明 / Marking Instructions**



说明：

BR： 为公司代码

13009： 为型号代码

X9： 为规格代码

\*\*\*\*： 为生产批号代码，随生产批号变化。

Note:

BR: Company Code.

13009: Product Type.

X9: Specifications Code.

\*\*\*\*: 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.

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-3P                | 30                 | 15                      | 450                    | 5                            | 2250                   | 497.5×46×8                              | 555×164×50  | 575×290×180 |

## 使用说明 / Notices