

## 描述 / Descriptions

TO-251 塑封封装 NPN 半导体三极管。Silicon NPN transistor in a TO-251 Plastic Package.

## 特征 / Features

耐压高,饱和压降低,集电极输出电容低,与 MPSA92I 互补。

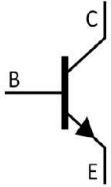
High voltage, Low saturation voltage, low collector capacitance output, complementary pair with MPSA92I.

## 用途 / Applications

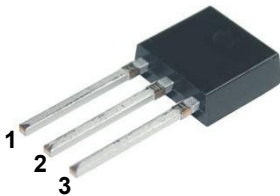
高电压控制电路。

High voltage control circuit.

## 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.

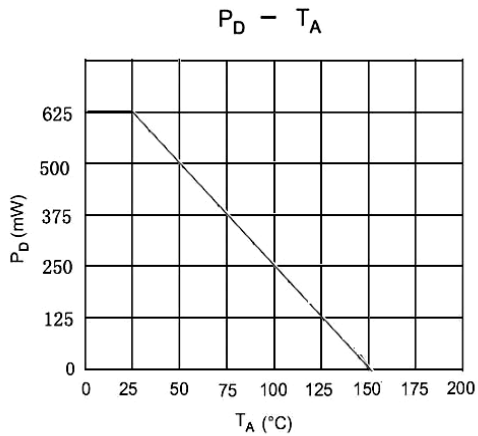
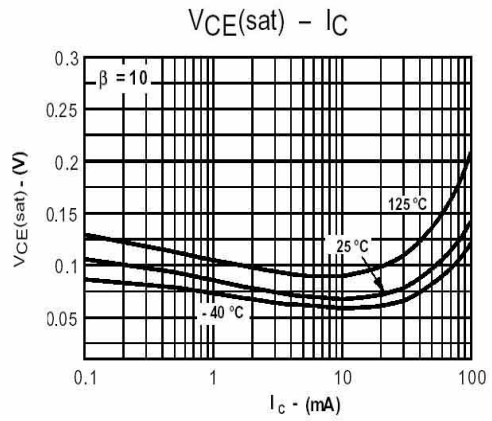
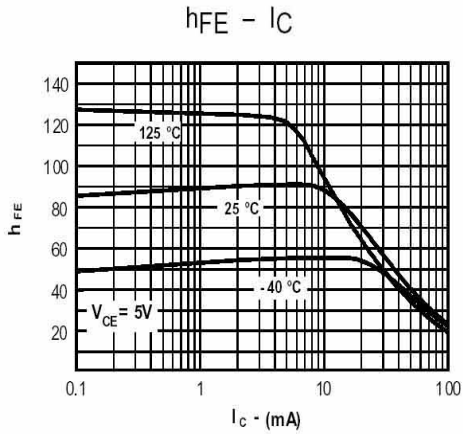
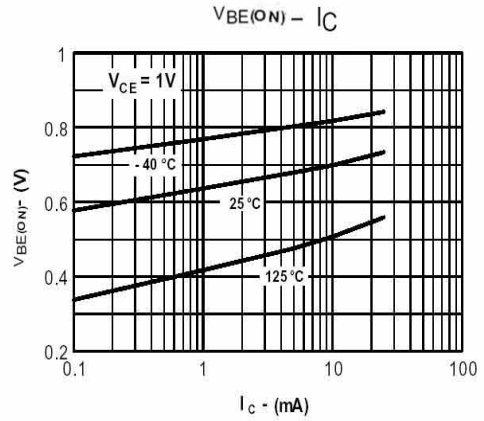
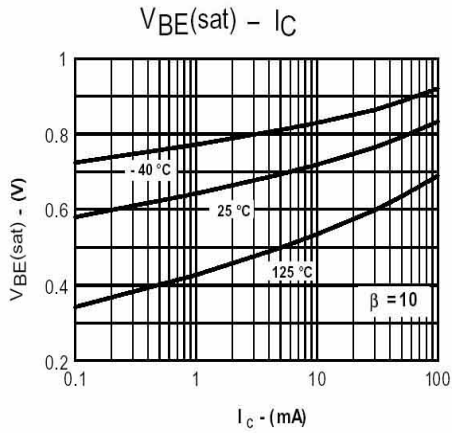
**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

| 参数<br>Parameter                | 符号<br>Symbol | 数值<br>Rating | 单位<br>Unit |
|--------------------------------|--------------|--------------|------------|
| Collector to Base Voltage      | $V_{CBO}$    | 300          | V          |
| Collector to Emitter Voltage   | $V_{CEO}$    | 300          | V          |
| Emitter to Base Voltage        | $V_{EBO}$    | 6.0          | V          |
| Collector Current - Continuous | $I_C$        | 500          | mA         |
| Collector Power Dissipation    | $P_C$        | 625          | mW         |
| Junction Temperature           | $T_j$        | 150          | °C         |
| Storage Temperature Range      | $T_{stg}$    | -55~150      | °C         |

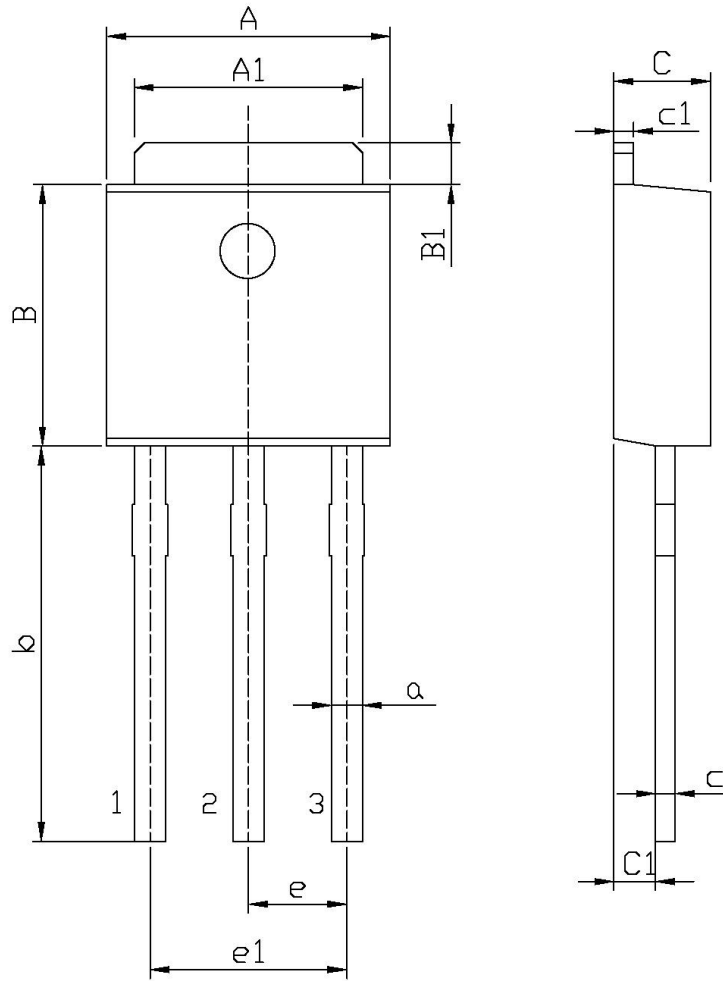
**电性能参数 / Electrical Characteristics(Ta=25°C)**

| 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     | $V_{CBO}$     | $I_C=100\mu A$ $I_E=0$             | 300        |            |            | V          |
| Collector to Emitter Breakdown Voltage  | $V_{CEO}$     | $I_C=1.0mA$ $I_B=0$                | 300        |            |            | V          |
| Emitter to Base Breakdown Voltage       | $V_{EBO}$     | $I_E=100\mu A$ $I_C=0$             | 6.0        |            |            | V          |
| Collector Cut-Off Current               | $I_{CBO}$     | $V_{CB}=200V$ $I_E=0$              |            |            | 0.1        | $\mu A$    |
| Emitter Cut-Off Current                 | $I_{EBO}$     | $V_{BE}=6.0V$ $I_C=0$              |            |            | 0.1        | $\mu A$    |
| DC Current Gain                         | $h_{FE(1)}$   | $V_{CE}=10V$ $I_C=10mA$            | 40         |            |            |            |
|   | $h_{FE(2)}$   | $V_{CE}=10V$ $I_C=30mA$            | 40         |            |            |            |
|   | $h_{FE(3)}$   | $V_{CE}=10V$ $I_C=1.0mA$           | 25         |            |            |            |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=20mA$ $I_B=2.0mA$             |            |            | 0.5        | V          |
| Base to Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C=20mA$ $I_B=2.0mA$             |            |            | 0.9        | V          |
| Transition Frequency                    | $f_T$         | $V_{CE}=20V$ $f=100MHz$ $I_C=10mA$ | 50         |            |            | MHz        |
| Collector output capacitance            | $C_{ob}$      | $V_{CB}=20V$ $f=1.0MHz$ $I_E=0$    |            |            | 3.0        | pF         |

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



外形尺寸图 / Package Dimensions

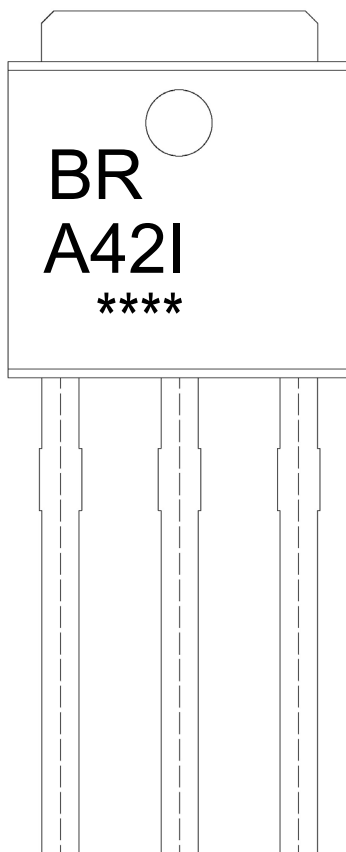


单位: mm

| Symbol | Dimensions In Millimeters |      | Symbol | Dimensions In Millimeters |      |
|--------|---------------------------|------|--------|---------------------------|------|
|        | Min                       | Max  |        | Min                       | Max  |
| A      | 6.45                      | 6.75 | a      | 0.50                      | 0.70 |
| A1     | 5.10                      | 5.50 | b      | 9.00                      | 9.40 |
| B      | 5.95                      | 6.25 | c      | 0.45                      | 0.55 |
| B1     | 0.95                      | 1.25 | c1     | 0.45                      | 0.55 |
| C      | 2.20                      | 2.40 | e      | 2.24                      | 2.34 |
| C1     | 0.95                      | 1.15 | e1     | 4.43                      | 4.73 |

TO-251

印章说明 / Marking Instructions



说明：

BR： 为公司代码  
A42I： 为型号代码  
\*\*\*\*： 为生产批号代码，随生产批号变化。

Note:

BR: Company Code  
A42I: Product Type.  
\*\*\*\*: 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-251               | 1,000            | 10                    | 10,000                 | 5                            | 50,000                 | 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-251/252           | 75                 | 48                      | 3,600                  | 5                            | 18,000                 | 526×20.5×5.25                           | 555×164×50  | 575×290×180 |

**使用说明 / Notices**