

描述 / Descriptions

TO-252 塑封封装 PNP 半导体三极管。Silicon PNP transistor in a TO-252 Plastic Package.

特征 / Features

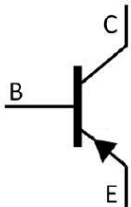
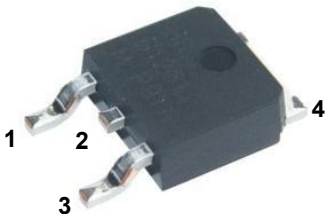
饱和压降小， h_{FE} 高且线性好，符合 AEC-Q101 标准高可靠性要求，无卤产品。

Low saturation voltage, excellent h_{FE} linearity and high h_{FE} , Qualified to AEC-Q101 Standards for High Reliability, HF Product.

用途 / Applications

用于 3 瓦音频放大输出，电压调节器，电源转换和继电器驱动，满足汽车应用的严格要求。

Output stage of 3 watts audio amplifier, voltage regulator, DC-DC converter and relay driver, Meet the stringent requirements of automotive applications.

内部等效电路 / Equivalent Circuit**引脚排列 / Pinning**

PIN1 : Base

PIN 2,4 : Collector

PIN 3 : Emitter

放大及印章代码 / h_{FE} Classifications & Marking

| h_{FE} Classifications Symbol | R | Q | P | E |
|---------------------------------|--------|---------|---------|---------|
| h_{FE} Range | 60~120 | 100~200 | 160~320 | 200~400 |

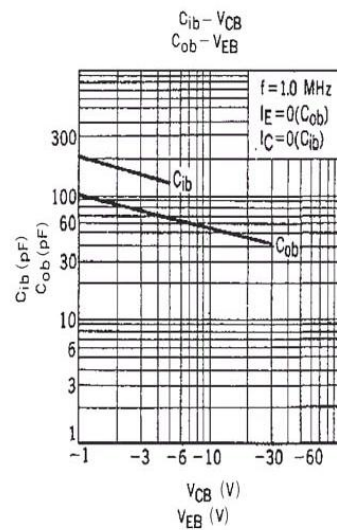
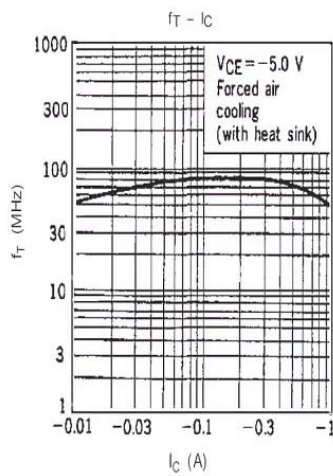
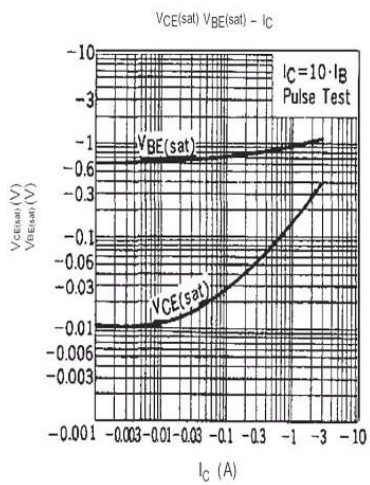
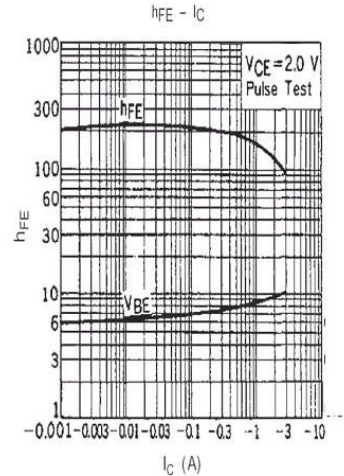
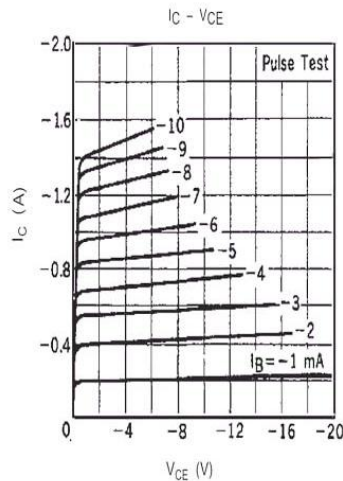
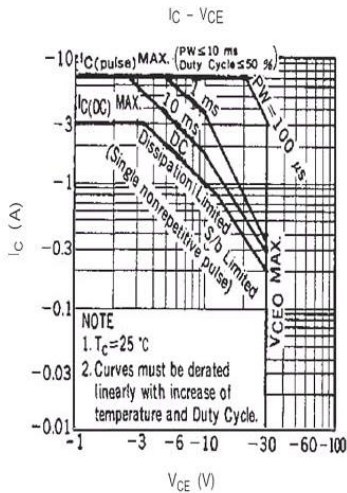
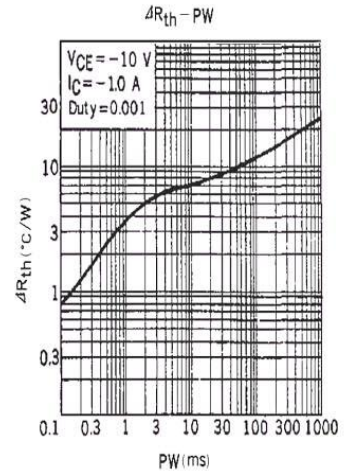
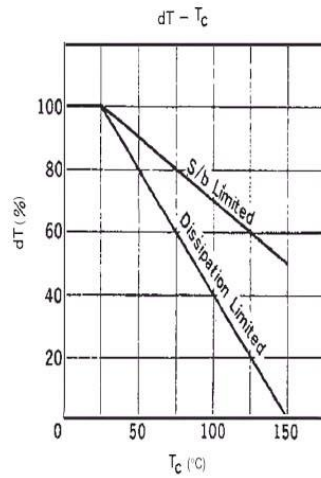
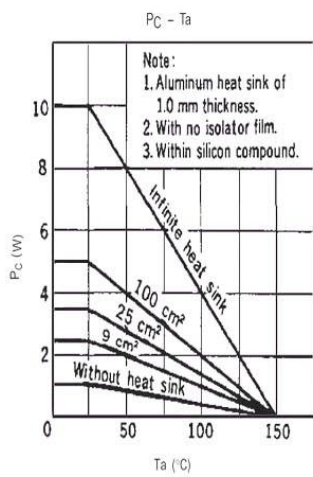
极限参数 / Absolute Maximum Ratings(Ta=25°C)

| 参数 Parameter | 符号 Symbol | 数值 Rating | 单位 Unit |
|--------------------------------|-----------------------------|--------------|------------|
| Collector to Base Voltage | V_{CBO} | -40 | V |
| Collector to Emitter Voltage | V_{CEO} | -30 | V |
| Emitter to Base Voltage | V_{EBO} | -5.0 | V |
| Collector Current - Continuous | I_C | -3.0 | A |
| Collector Power Dissipation | P_C | 1.0 | W |
| | $P_C(T_C=25^\circ\text{C})$ | 10 | W |
| Junction Temperature | T_j | 150 | °C |
| Storage Temperature Range | T_{stg} | -55~150 | °C |

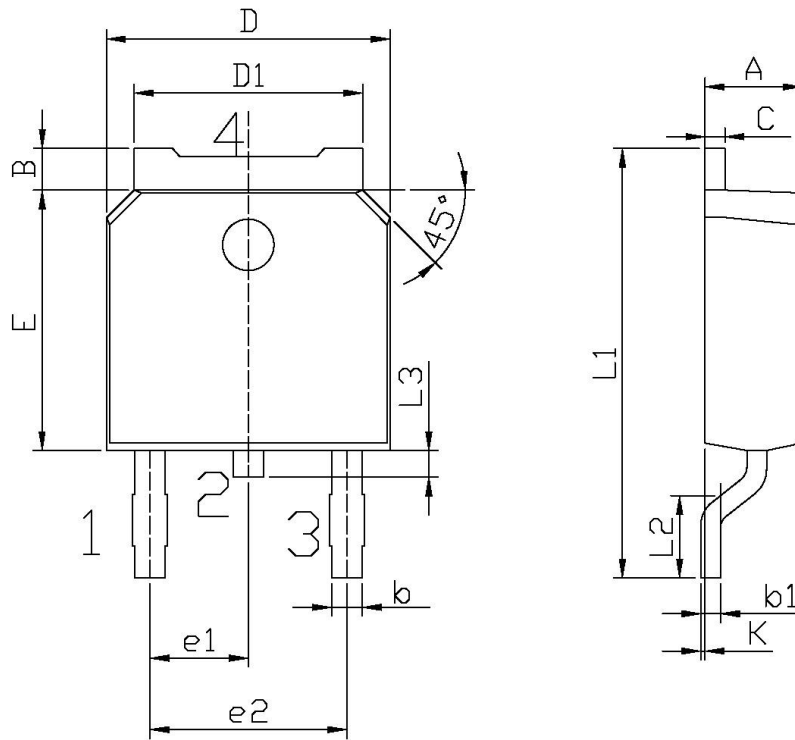
电性能参数 / Electrical Characteristics(Ta=25°C)

| 参数 Parameter | 符号 Symbol | 测试条件 Test Conditions | 最小值 Min | 典型值 Typ | 最大值 Max | 单位 Unit |
|---|---------------|--|------------|------------|------------|---------------|
| Collector to Base Breakdown Voltage | V_{CBO} | $I_C=-100\mu\text{A}$ $I_E=0$ | -40 | | | V |
| Collector to Emitter Breakdown Voltage | V_{CEO} | $I_C=-1\text{mA}$ $I_B=0$ | -30 | | | V |
| Emitter to Base Breakdown Voltage | V_{EBO} | $I_E=-10\mu\text{A}$ $I_C=0$ | -5.0 | | | V |
| Collector Cut-Off Current | I_{CBO} | $V_{CB}=-30\text{V}$ $I_E=0$ | | | -1.0 | μA |
| Emitter Cut-Off Current | I_{EBO} | $V_{EB}=-3.0\text{V}$ $I_C=0$ | | | -1.0 | μA |
| DC Current Gain | $h_{FE(1)}$ | $V_{CE}=-2.0\text{V}$ $I_C=-1.0\text{A}$ | 60 | 160 | 400 | |
| | $h_{FE(2)}$ | $V_{CE}=-2.0\text{V}$ $I_C=-20\text{mA}$ | 30 | 220 | | |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=-2.0\text{A}$ $I_B=-0.2\text{A}$ | | -0.3 | -0.5 | V |
| Base to Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=-2.0\text{A}$ $I_B=-0.2\text{A}$ | | -1.0 | -2.0 | V |
| Transition Frequency | f_T | $I_C=-1.0\text{A}$ $V_{CE}=-5.0\text{V}$ | | 80 | | MHz |
| Collector output capacitance | C_{ob} | $V_{CB}=-10\text{V}$ $f=1.0\text{MHz}$ $I_E=0$ | | 55 | | pF |

电参数曲线图 / Electrical Characteristic Curve



外形尺寸图 / Package Dimensions

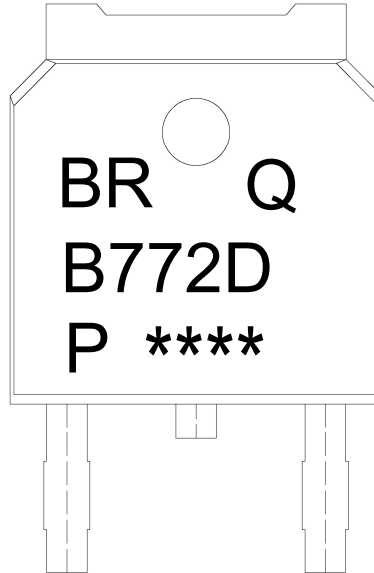


单位: mm

| Symbol | Dimensions In Millimeters | | Symbol | Dimensions In Millimeters | |
|--------|---------------------------|------|--------|---------------------------|-------|
| | Min | Max | | Min | Max |
| A | 2.20 | 2.40 | E | 5.95 | 6.25 |
| B | 0.95 | 1.25 | e1 | 2.24 | 2.34 |
| b | 0.70 | 0.90 | e2 | 4.43 | 4.73 |
| b1 | 0.45 | 0.55 | L1 | 9.85 | 10.35 |
| C | 0.45 | 0.55 | L2 | 1.70 | 2.00 |
| D | 6.45 | 6.75 | L3 | 0.60 | 0.90 |
| D1 | 5.10 | 5.50 | K | 0.00 | 0.10 |

TO-252

印章说明 / Marking Instructions



说明：

BR： 为公司代码

Q： 为汽车无卤产品标识

B772D： 为型号代码

P： 为 h_{FE} 分档代码

****： 为生产批号代码，随生产批号变化。

Note:

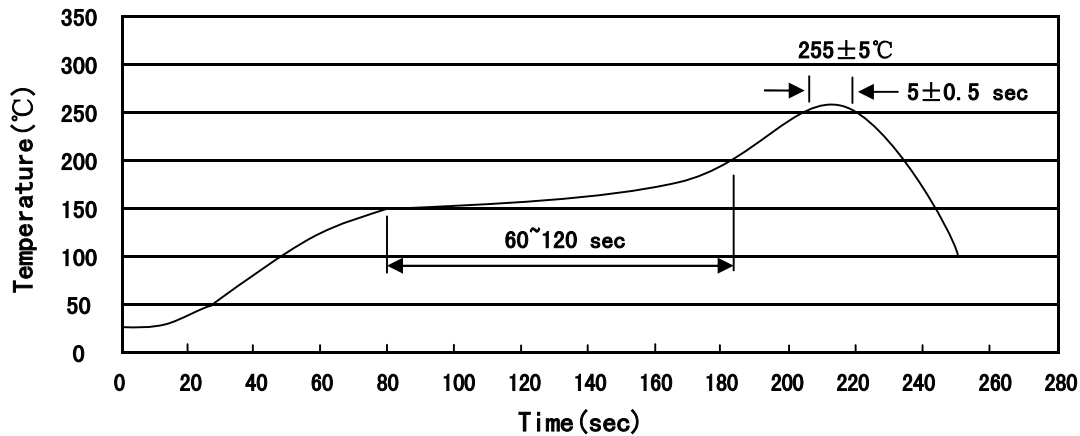
BR: Company Code

Q: Automobile halogen-free product Code

B772D: Product Type Code

P: h_{FE} Classifications Symbol

****: Lot No. Code, code change with Lot No

回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)


说明：

- 1、预热温度 150~200°C，时间 60~120sec;
- 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:150~200°C, Time:60~120sec.
- 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：260±5°C

时间：10±1 sec.

Temp.:260±5°C

Time:10±1 sec

包装规格 / Packaging SPEC.

卷盘包装 / REEL

| Package Type 封装形式 | Units 包装数量 | | | | | Dimension 包装尺寸 (unit: mm ³) | | |
|----------------------|--------------------|-------------------------|------------------------|------------------------------|------------------------|---|-------------|-------------|
| | Units/Reel 只/卷盘 | Reels/Inner Box 卷盘/盒 | Units/Inner Box 只/盒 | Inner Boxes/Outer Box 盒/箱 | Units/Outer Box 只/箱 | Reel | Inner Box 盒 | Outer Box 箱 |
| TO-252 | 2,500 | 2 | 5,000 | 6 | 30,000 | 13" ×16 | 360×360×50 | 380×335×366 |

套管包装 / TUBE

| Package Type 封装形式 | Units 包装数量 | | | | | Dimension 包装尺寸 (unit: mm ³) | | |
|----------------------|--------------------|-------------------------|------------------------|------------------------------|------------------------|---|-------------|-------------|
| | Units/Tube 只/套管 | Tubes/Inner Box 套管/盒 | Units/Inner Box 只/盒 | Inner Boxes/Outer Box 盒/箱 | Units/Outer Box 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