# MJE13005DRB

Rev.E May.-2016

**DATA SHEET**

## 描述 / Descriptions

TO-263 塑封封装 NPN 半导体三极管。Silicon NPN transistor in a TO-263 Plastic Package.

## 特征 / Features

耐压高,开关速度快。

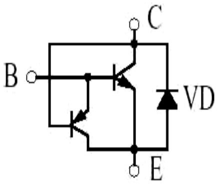
High voltage capability, high speed switching.

## 用途 / Applications

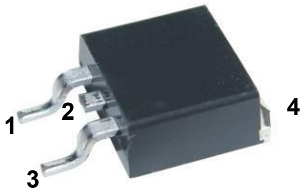
主要用于高频电子照明电路、开关及开关电源。

High frequency electronic lighting, switching power supply applications.

## 内部等效电路 / Equivalent Circuit



## 引脚排列 / Pinning



PIN1：Base PIN 2：Collector PIN 3：Emitter PIN 4：VD

## 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℃)

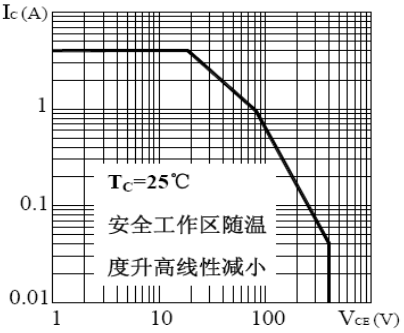
| 参数<br>Parameter | 符号<br>Symbol | 数值<br>Rating | 单位<br>Unit |
|---|---|---|---|
| Collector to Base Voltage | $V_{CBO}$ | 700 | V |
| Collector to Emitter Voltage | $V_{CEO}$ | 400 | V |
| Emitter to Base Voltage | $V_{EBO}$ | 9.0 | V |
| Collector Current - Continuous | $I_C$ | 4.0 | A |
| Collector Power Dissipation | $P_C$ | 2.0 | W |
| Collector Power Dissipation | $P_C$(Tc=25℃) | 75 | W |
| Junction Temperature | $T_j$ | 150 | ℃ |
| Storage Temperature Range | $T_{stg}$ | -55～150 | ℃ |

## 电性能参数 / Electrical Characteristics(Ta=25℃)

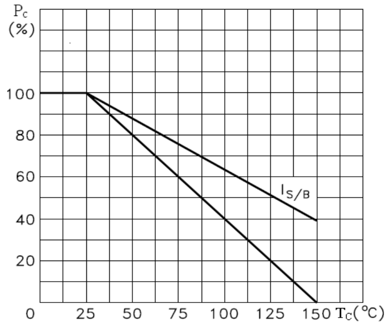
| 参数<br>Parameter | 符号<br>Symbol | 测试条件<br>Test Conditions | 最小值<br>Min | 典型值<br>Typ | 最大值<br>Max | 单位<br>Unit |
|---|---|---|---|---|---|---|
| Collector to Base Breakdown Voltage | $V_{CBO}$ | $I_C$=1mA $I_E$=0 | 700 |  |  | V |
| Collector Cut-Off Current | $V_{CEO}$ | $I_C$=10mA $I_B$=0 | 400 |  |  | V |
| Emitter Base Cut-Off Current | $V_{EBO}$ | $I_E$=1mA $I_C$=0 | 9.0 |  |  | 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 $I_C$=1.0A | 10 |  | 40 |  |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$=2.0A $I_B$=0.5A |  |  | 0.8 | V |
| Base to Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C$=2.0A $I_B$=0.5A |  |  | 1.2 | V |
| Transition Frequency | $f_T$ | $V_{CE}$=10V $I_C$=0.5A<br>f=1.0MHz | 7.0 |  |  | MHz |
| Fall time | $t_f$ | $V_{CE}$=5V $I_C$=0.5A<br>(UI9600) |  |  | 0.8 | μs |
| Storage time | $t_s$ |  |  |  | 4.0 | μs |

## 电参数曲线图 / Electrical Characteristic Curve

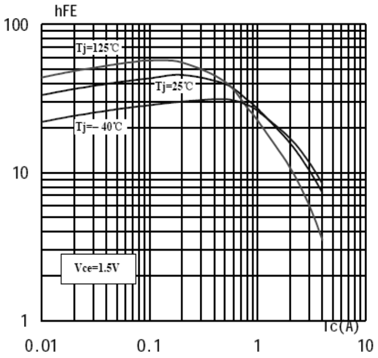
SOA(DC)



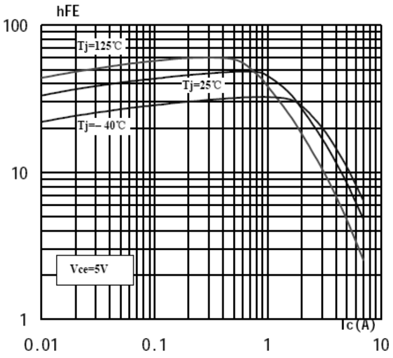
$P_C$-$T_C$



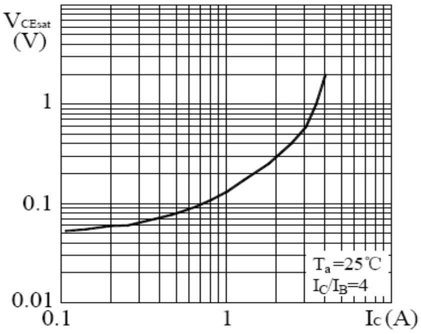
$h_{FE}$-Ic



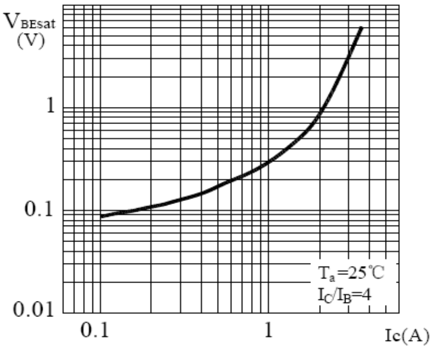
$h_{FE}$-Ic



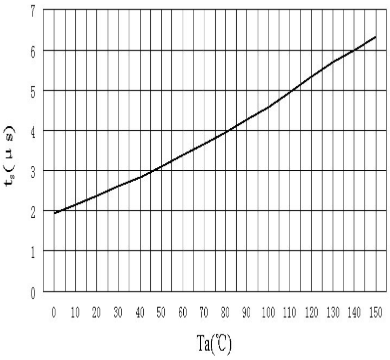
Vces-$I_C$



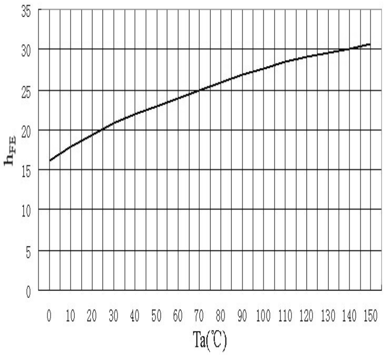
Vbes-$I_C$



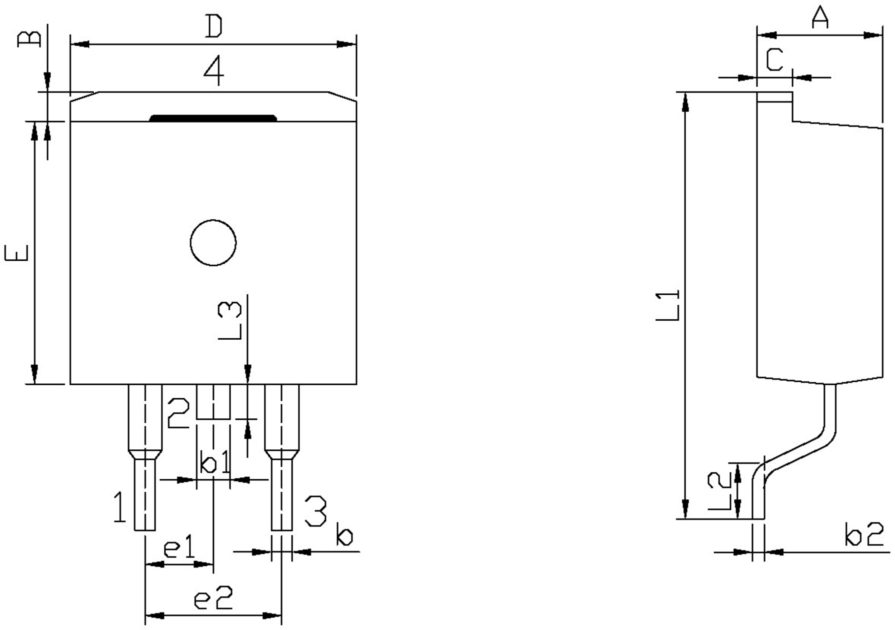
$t_S$-Ta



$h_{FE}$-Ta



## 外形尺寸图 / Package Dimensions

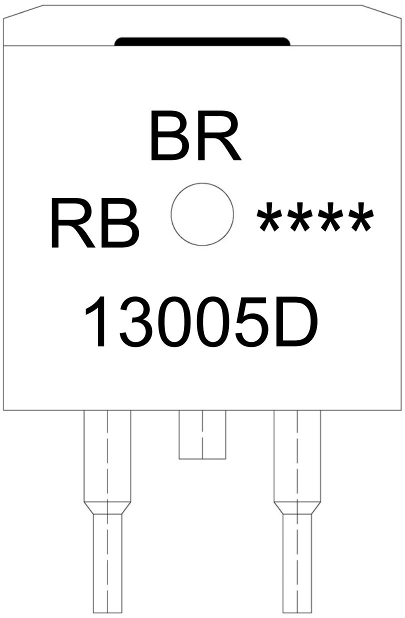


单位：mm

| Symbol | Dimensions In Millimeters |  | Symbol | Dimensions In Millimeters |  |
|---|---|---|---|---|---|
|  | Min | Max |  | Min | Max |
| A | 4.30 | 4.70 | E | 9.00 | 9.40 |
| B | 1.00 | 1.40 | e1 | 2.34 | 2.74 |
| b | 0.70 | 0.90 | e2 | 4.88 | 5.28 |
| b1 | 1.15 | 1.35 | L1 | 15.00 | 16.00 |
| b2 | 0.40 | 0.60 | L2 | 2.24 | 2.84 |
| C | 1.20 | 1.40 | L3 | 1.20 | 1.60 |
| D | 9.80 | 10.20 |  |  |  |

TO-263

## 印章说明 / Marking Instructions



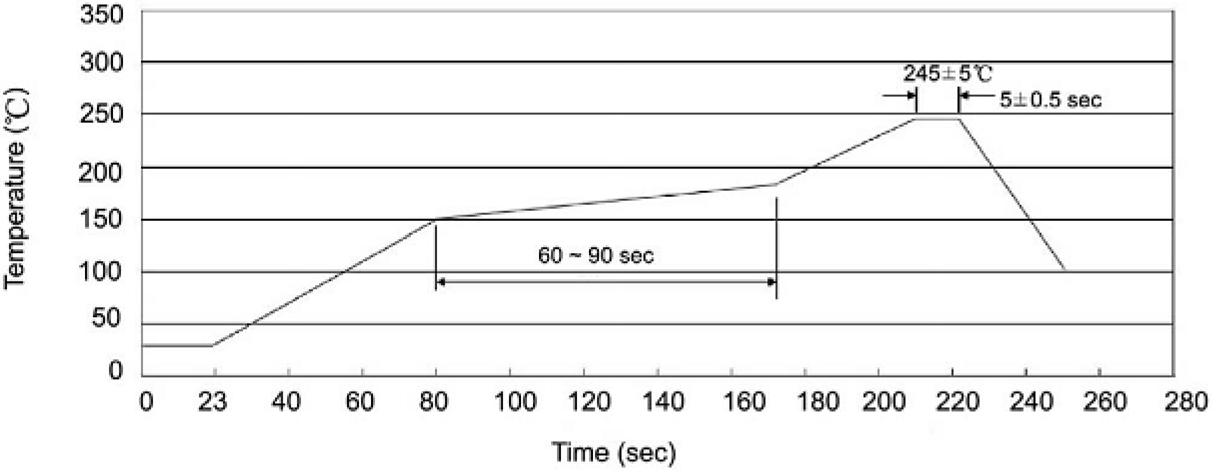
说明：

| | |
|---|---|
| BR： | 为公司代码 |
| 13005D： | 为型号代码 |
| RB: | 为规格代码 |
| ****： | 为生产批号代码，随生产批号变化。 |

Note:

| | |
|---|---|
| BR: | Company Code |
| 13005D: | Product Type. |
| RB: | Specification Code |
| ****: | 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 25 ~ 150℃，时间 60 ~ 90sec;
2、峰值温度 245±5℃，时间持续为 5±0.5sec;
3、焊接制程冷却速度为 2 ~ 10℃/sec.

Note:
1.Preheating:25~150℃, Time:60~90sec.
2.Peak Temp.:245±5℃, Duration:5±0.5sec.
3. Cooling Speed: 2~10℃/sec.

## 耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：260±5℃ 时间：10±1 sec.

Temp.:260±5℃ 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-263 | 800 | 1 | 800 | 5 | 4,000 | 13″ ×24 | 360×360×50 | 385×257×392 |

### 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-263 | 50 | 20 | 1,000 | 5 | 5,000 | 532×33×7.0 | 555×164×50 | 575×290×180 |

## 使用说明 / Notices