

# 2SC5147(BR3DA5147F)

Rev.C Feb.-2015

## 描述 / Descriptions

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

## 特征 / Features

击穿电压高，集电极输出电容小，安全工作区宽。

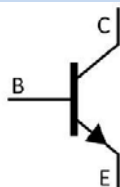
High breakdown voltage, low collector output capacitance, wide SOA.

## 用途 / Applications

用于彩电色度信号输出及视频信号放大。

Ideal for Color TV chroma output and amplification of video signals.

## 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 | D      | E       |
| $h_{FE}$ Range                     | 60~120 | 100~200 |

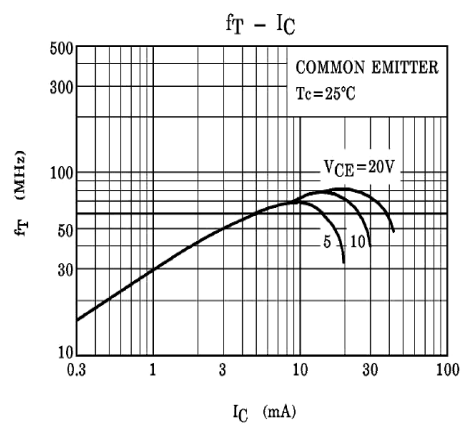
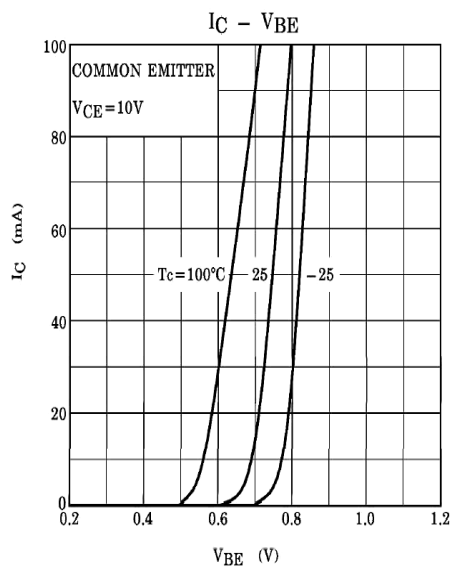
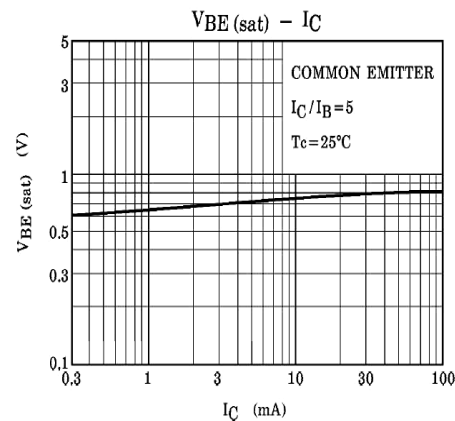
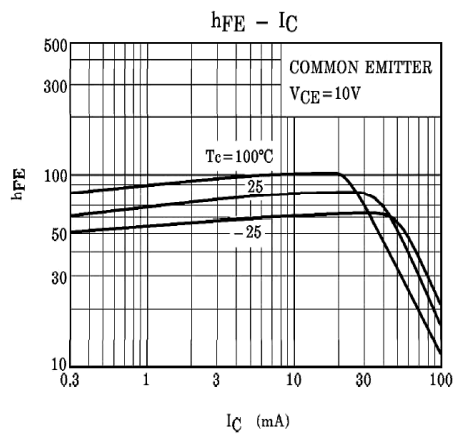
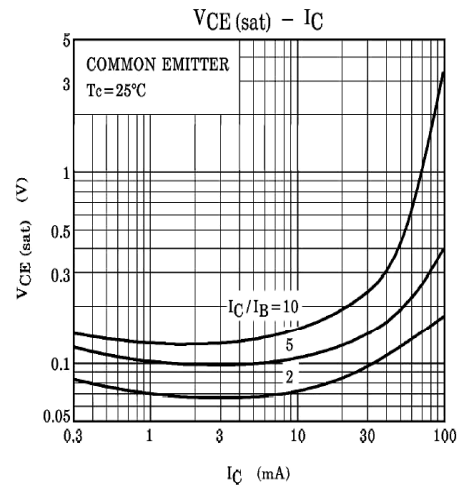
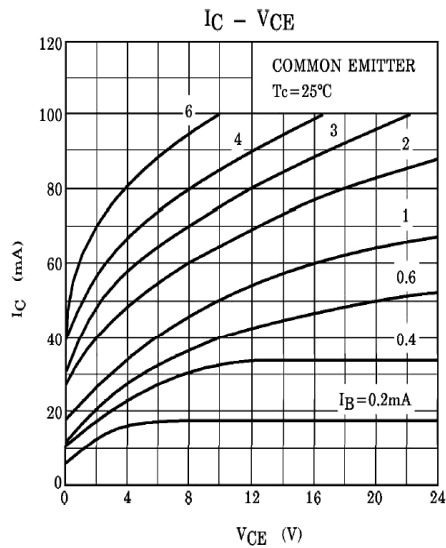
**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

| 参数<br>Parameter                | 符号<br>Symbol                  | 数值<br>Rating | 单位<br>Unit         |
|--------------------------------|-------------------------------|--------------|--------------------|
| Collector to Base Voltage      | $V_{CBO}$                     | 300          | V                  |
| Collector to Emitter Voltage   | $V_{CEO}$                     | 300          | V                  |
| Emitter to Base Voltage        | $V_{EBO}$                     | 5.0          | V                  |
| Collector Current - Continuous | $I_C$                         | 100          | mA                 |
| Collector Power Dissipation    | $P_C(T_a=25^{\circ}\text{C})$ | 2.0          | W                  |
| Collector Power Dissipation    | $P_C(T_c=25^{\circ}\text{C})$ | 10           | W                  |
| Junction Temperature           | $T_j$                         | 150          | $^{\circ}\text{C}$ |
| Storage Temperature Range      | $T_{stg}$                     | -55~150      | $^{\circ}\text{C}$ |

**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     | $V_{CBO}$     | $I_C=50\mu\text{A}$ $I_E=0$                               | 300        |            |            | V             |
| Collector to Emitter Breakdown Voltage  | $V_{CEO}$     | $I_C=100\mu\text{A}$ $I_B=0$                              | 300        |            |            | V             |
| Emitter to Base Breakdown Voltage       | $V_{EBO}$     | $I_E=50\mu\text{A}$ $I_C=0$                               | 5.0        |            |            | V             |
| Collector Cut-Off Current               | $I_{CBO}$     | $V_{CB}=200\text{V}$ $I_B=0$                              |            |            | 0.5        | $\mu\text{A}$ |
| Emitter Cut-Off Current                 | $I_{EBO}$     | $V_{EB}=4.0\text{V}$ $I_B=0$                              |            |            | 0.5        | $\mu\text{A}$ |
| DC Current Gain                         | $h_{FE}$      | $V_{CE}=10\text{V}$ $I_C=10\text{mA}$                     | 60         |            | 200        |               |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=50\text{mA}$ $I_B=5.0\text{mA}$                      |            | 0.2        | 1.0        | V             |
| Transition Frequency                    | $f_T$         | $V_{CE}=30\text{V}$ $I_C=20\text{mA}$<br>$f=30\text{MHz}$ | 50         | 100        |            | MHz           |
| Collector output capacitance            | $C_{ob}$      | $V_{CB}=30\text{V}$ $I_E=0$<br>$f=1.0\text{MHz}$          |            | 3.0        |            | pF            |

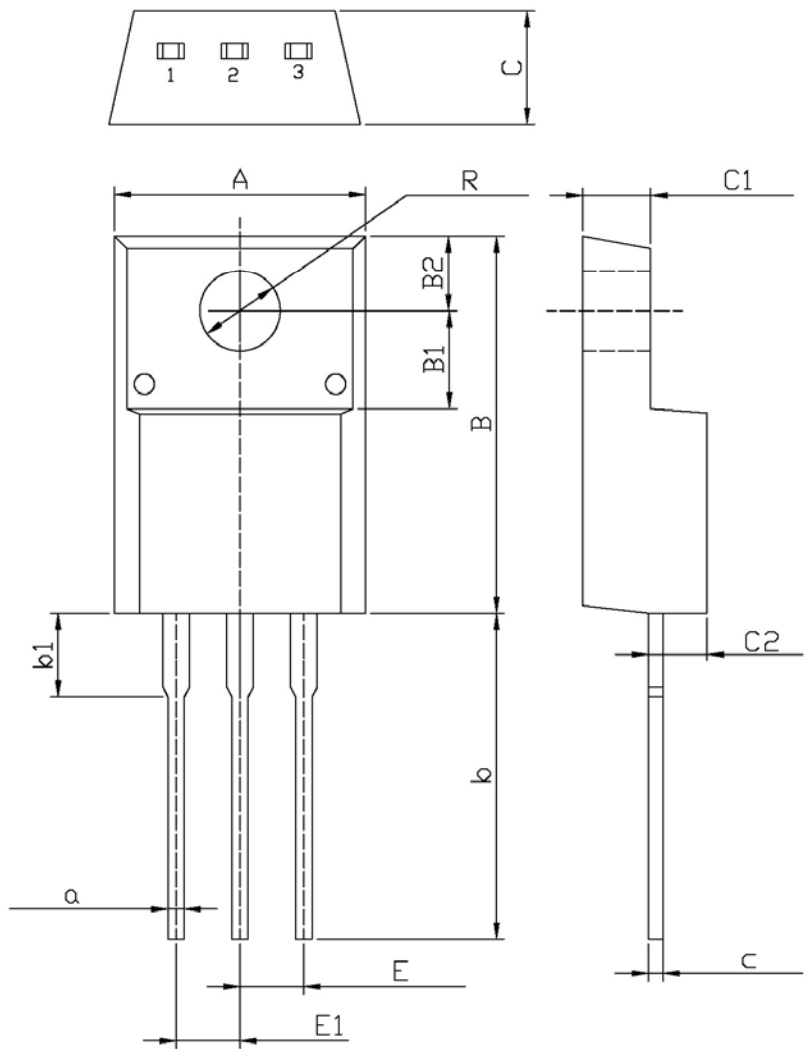
## 电参数曲线图 / Electrical Characteristic Curve



外形尺寸图 / Package Dimensions

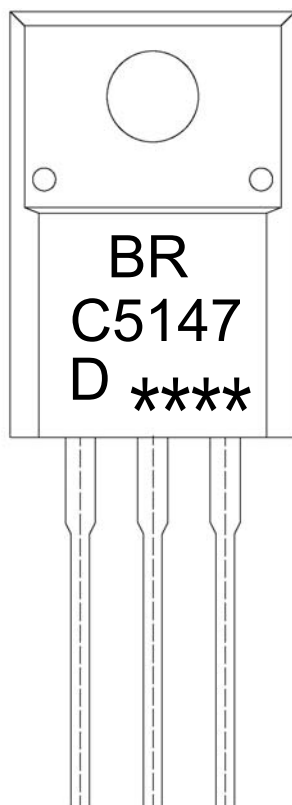
TO-220F

单位: mm



| Symbol | Dimensions In Millimeters |      | Symbol | Dimensions In Millimeters |      |
|--------|---------------------------|------|--------|---------------------------|------|
|        | Min                       | Max  |        | Min                       | Max  |
| C      | 4.3                       | 4.7  | b1     | 2.9                       | 3.9  |
| A      | 9.7                       | 10.3 | a      | 0.55                      | 0.75 |
| B      | 14.7                      | 15.3 | E      | 2.29                      | 2.79 |
| B1     | 3.8                       | 4.0  | E1     | 2.29                      | 2.79 |
| B2     | 2.9                       | 3.1  | C1     | 2.5                       | 2.9  |
| R      | 3.0                       | 3.4  | C2     | 2.5                       | 2.7  |
| b      | 12.5                      | 13.5 | c      | 0.5                       | 0.7  |

印章说明 / Marking Instructions



说明：

BR： 为公司代码

C5147： 为型号代码

D： 为  $h_{FE}$  分档代码

\*\*\*\*： 为生产批号代码，随生产批号变化。

Note:

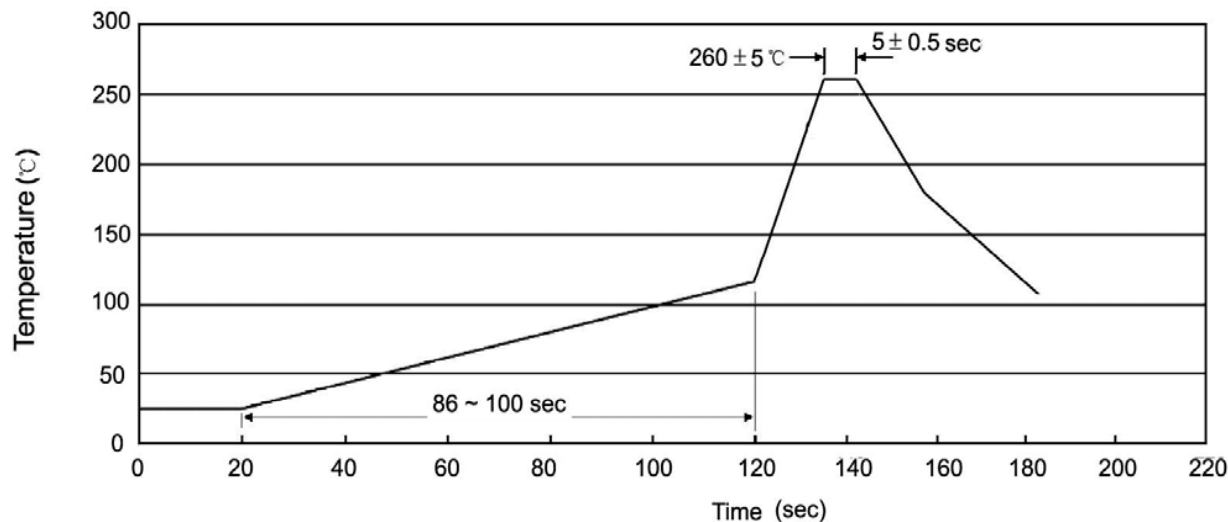
BR: Company Code.

C5147: Product Type.

D:  $h_{FE}$  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 260±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.:260±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