## 描述 / Descriptions

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

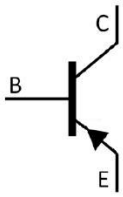
## 特征 / Features

与 BR2N6488 互补。
Complement to BR2N6488.

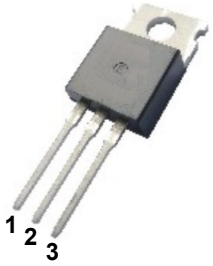
## 用途 / Applications

用于通用开关。
Use in general–purpose amplifier and switching 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℃)

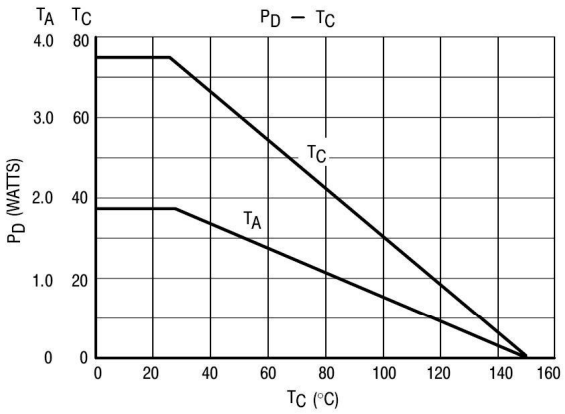
| 参数 Parameter | 符号 Symbol | 数值 Rating | 单位 Unit |
|---|---|---|---|
| Collector to Base Voltage | $V_{CBO}$ | -90 | V |
| Collector to Emitter Voltage | $V_{CEO}$ | -80 | V |
| Emitter to Base Voltage | $V_{EBO}$ | -5.0 | V |
| Collector Current - Continuous | $I_C$ | -15 | A |
| Base Current | $I_B$ | -5.0 | A |
| Total Power Dissipation | $P_D(T_C=25℃)$ | 75 | W |
| | $P_D(T_A=25℃)$ | 1.8 | W |
| Operating and Storage Junction Temperature Range | $T_j$ $T_{stg}$ | -65～+150 | ℃ |
| Thermal Resistance Junction to Case | $R_{\theta JC}$ | 1.67 | ℃/W |
| Thermal Resistance Junction to Ambient | $R_{\theta JA}$ | 70 | ℃/W |

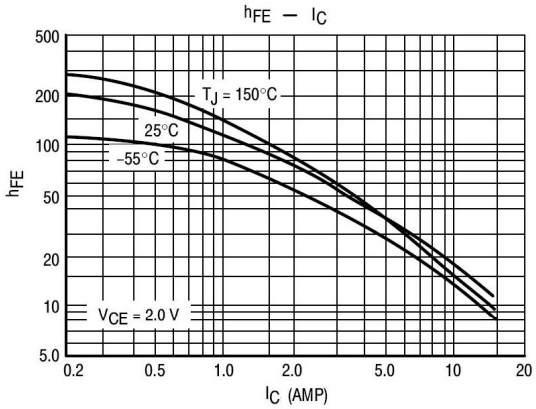
## 电性能参数 / Electrical Characteristics(Ta=25℃)

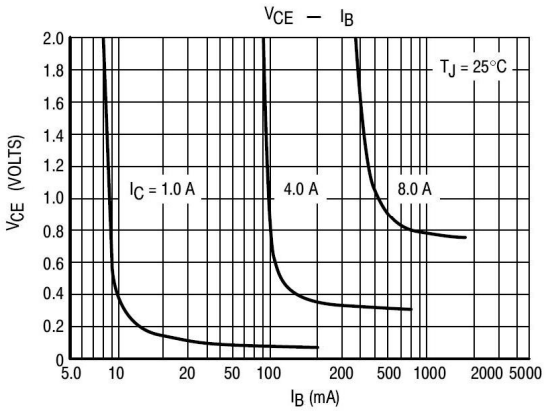
| 参数 Parameter | 符号 Symbol | 测试条件 Test Conditions | 最小值 Min | 典型值 Typ | 最大值 Max | 单位 Unit |
|---|---|---|---|---|---|---|
| Collector Emitter Sustaining Voltage | $V_{CEO(sus)}$ | $I_C$=-200mA $I_B$=0 | -80 | | | V |
| Collector Emitter Sustaining Voltage | $V_{CEX}$ | $I_C$=-200mA $V_{BE}$=-1.5V | -90 | | | V |
| Collector Cut-Off Current | $I_{CEX}$ | $V_{CB}$=-85V $V_{BE(off)}$=-1.5V | | | -500 | μA |
| | | $V_{CB}$=-80V $V_{BE(off)}$=-1.5V $T_C$=150℃ | | | -5.0 | μA |
| Collector Cut-Off Current | $I_{CEO}$ | $V_{CE}$=-40V $I_B$=0 | | | -1.0 | mA |
| Emitter Cut-Off Current | $I_{EBO}$ | $V_{EB}$=-5.0V $I_C$=0 | | | -1.0 | mA |
| DC Current Gain | $h_{FE(1)}$ | $V_{CE}$=-4.0V $I_C$=-5.0A | 20 | | 150 | |
| | $h_{FE(2)}$ | $V_{CE}$=-4.0V $I_C$=-15A | 5.0 | | | |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$=-5.0A $I_B$=-0.5A | | | -1.3 | V |
| | | $I_C$=-15A $I_B$=-5.0A | | | -3.5 | V |
| Base to Emitter On Voltage | $V_{BE(on)}$ | $I_C$=-5.0A $V_{CE}$=-4.0V | | | -1.3 | V |
| | | $I_C$=-15A $V_{CE}$=-4.0V | | | -3.5 | V |
| Transition Frequency | $f_T$ | $I_C$=-1.0A $V_{CE}$=-4.0V f=1.0MHz | 5.0 | | | MHz |
| Small-Signal Current Gain | $h_{fe}$ | $I_C$=-1.0A $V_{CE}$=-4.0V f=1.0kHz | 25 | | | |

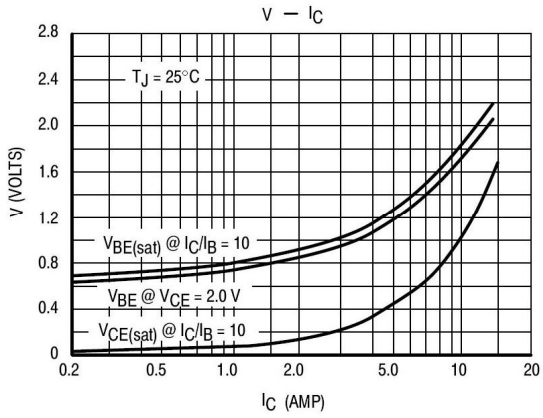
*Pulse test: pulse width ≤300 μs; duty cycle ≤2%.

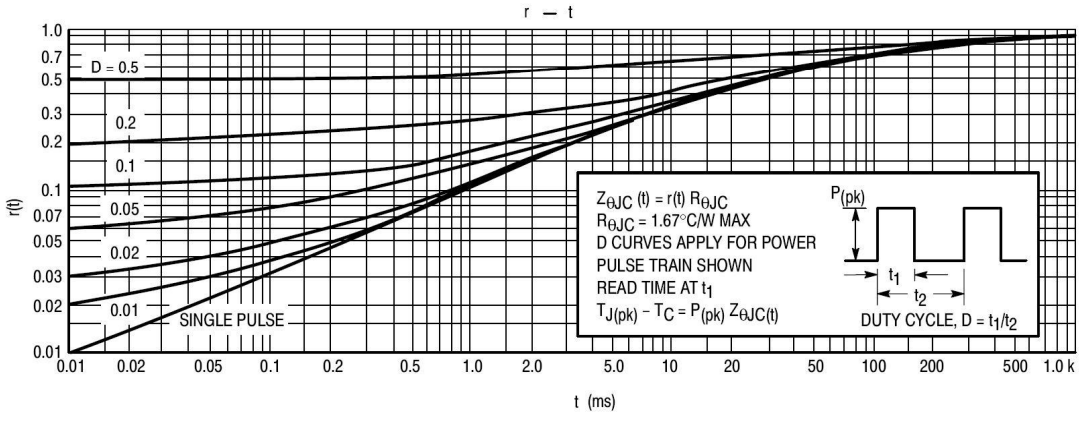
## 电参数曲线图 / Electrical Characteristic Curve



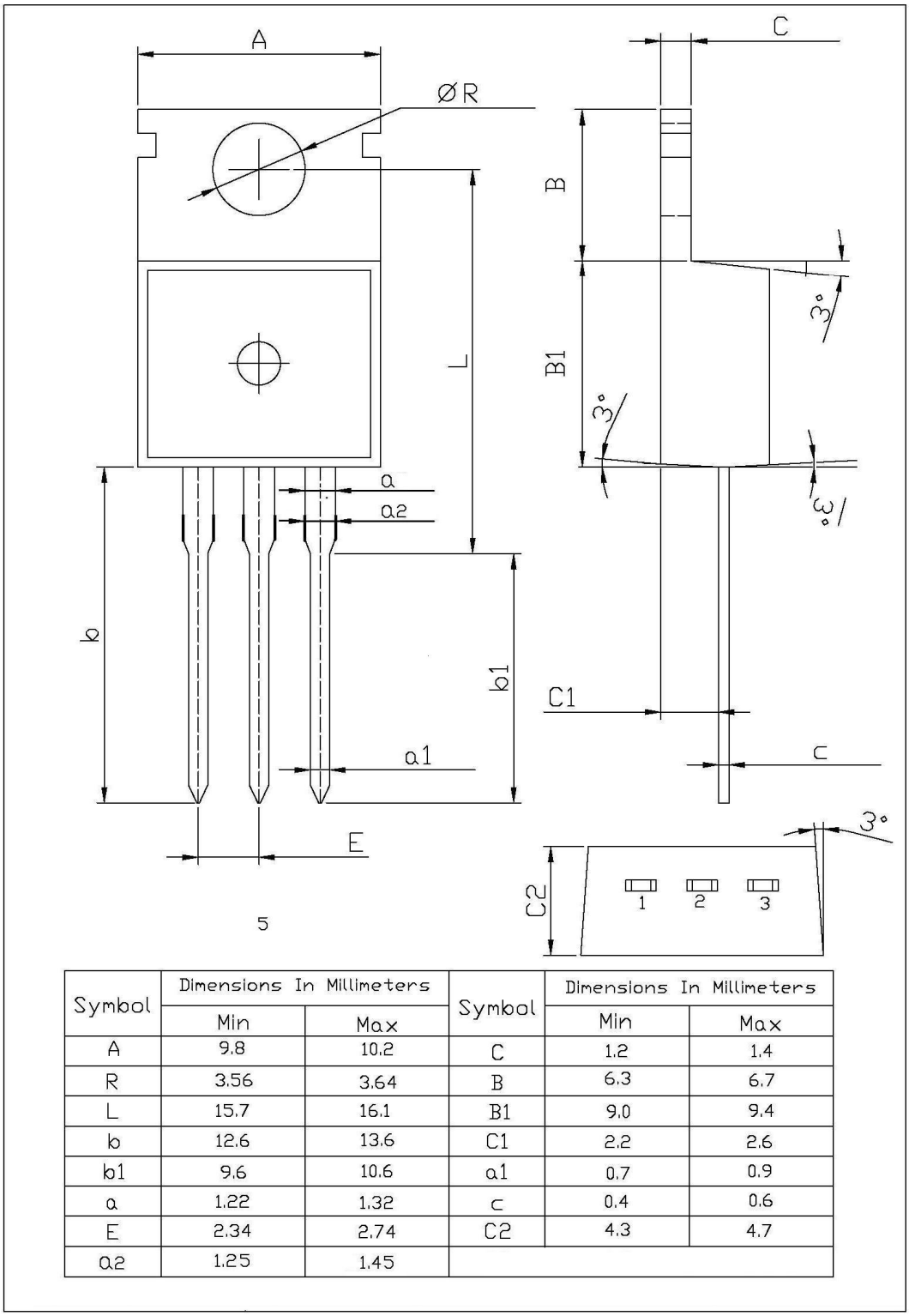



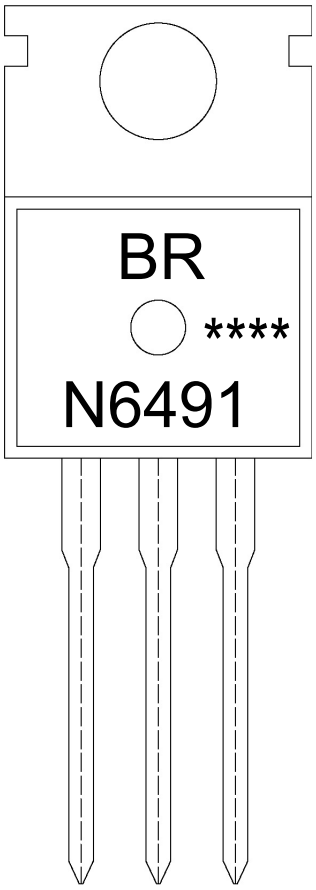
## 外形尺寸图 / Package Dimensions

TO-220 单位：mm




| Symbol | Dimensions In Millimeters | | Symbol | Dimensions In Millimeters | |
|---|---|---|---|---|---|
| | Min | Max | | Min | Max |
| A | 9.8 | 10.2 | C | 1.2 | 1.4 |
| R | 3.56 | 3.64 | B | 6.3 | 6.7 |
| L | 15.7 | 16.1 | B1 | 9.0 | 9.4 |
| b | 12.6 | 13.6 | C1 | 2.2 | 2.6 |
| b1 | 9.6 | 10.6 | a1 | 0.7 | 0.9 |
| a | 1.22 | 1.32 | c | 0.4 | 0.6 |
| E | 2.34 | 2.74 | C2 | 4.3 | 4.7 |
| a2 | 1.25 | 1.45 | | | |

## 印章说明 / Marking Instructions




说明：

BR： 为公司代码

N6491： 为型号代码

****： 为生产批号代码，随生产批号变化。

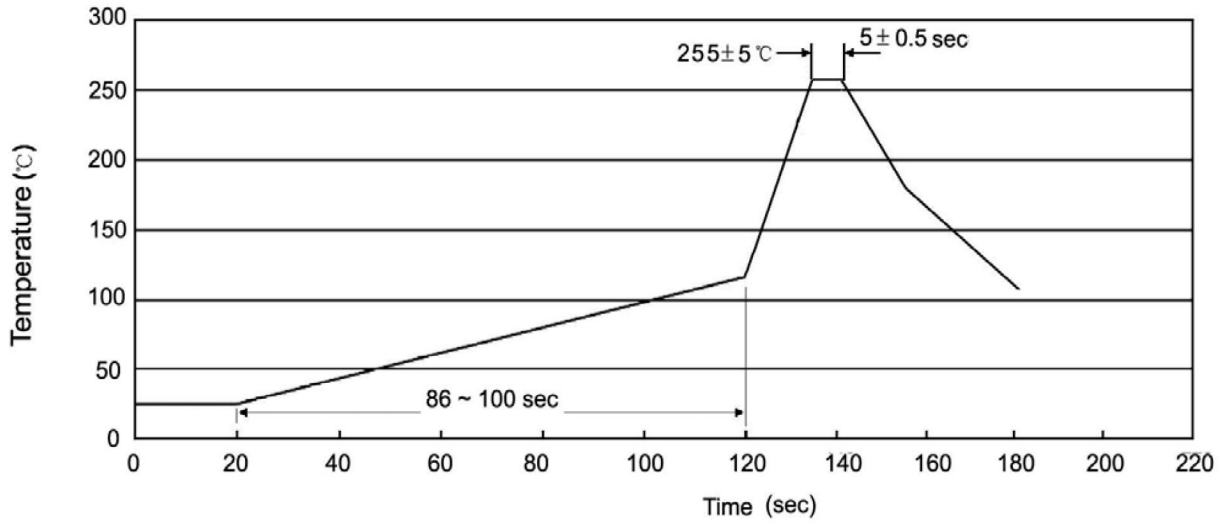
Note:

BR: Company Code

N6491: 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℃，时间 60～90sec;

2、峰值温度 255±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.:255±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：270±5℃　　时间：10±1 sec.　　Temp.:270±5℃　　Time:10±1 sec

## 包装规格 / Packaging SPEC.

散件包装 / BULK

| Package Type 封装形式 | Units 包装数量 | | | | | Dimension 包装尺寸 (unit: mm³) | | |
|---|---|---|---|---|---|---|---|---|
| | Units/Bag 只/袋 | Bags/Inner Box 袋/盒 | Units/Inner Box 只/盒 | Inner Boxes/Outer Box 盒/箱 | Units/Outer Box 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 封装形式 | Units 包装数量 | | | | | Dimension 包装尺寸 (unit: mm³) | | |
|---|---|---|---|---|---|---|---|---|
| | 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-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