

## / Descriptions

Silicon NPN transistor in a TO-220 Plastic Package.

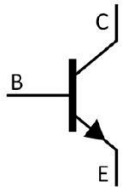
## / Features

High  $V_{CEO}$ , larger  $I_C$ , complement to BD912.

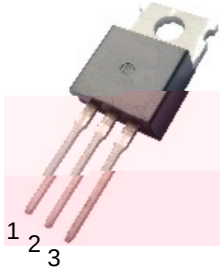
## / Applications

Use in power linear and switching applications.

## / Equivalent Circuit



## / Pinning



|      |      |       |           |       |         |
|------|------|-------|-----------|-------|---------|
| PIN1 | Base | PIN 2 | Collector | PIN 3 | Emitter |
|------|------|-------|-----------|-------|---------|

## / $h_{FE}$ Classifications & Marking

See Marking Instructions.

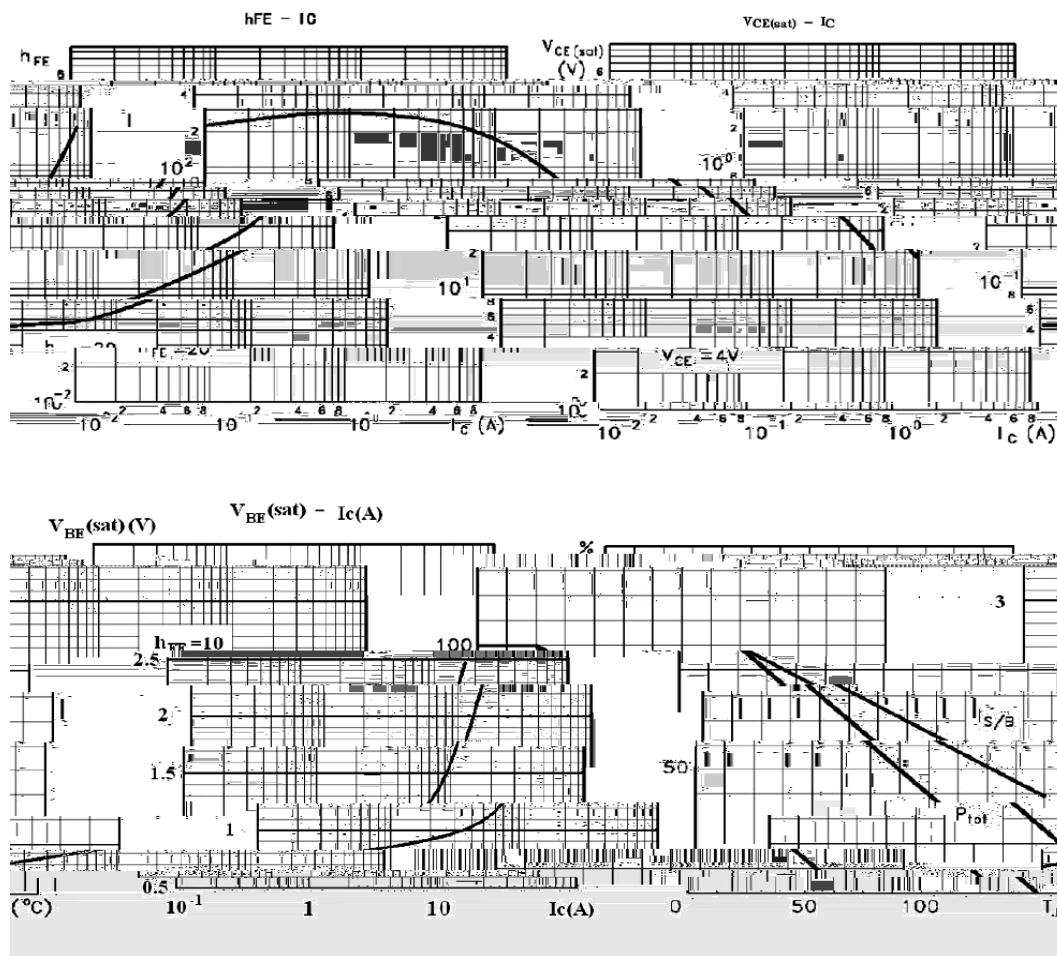
/ Absolute Maximum Ratings(Ta=25 )

| Parameter                      | Symbol        | Rating  | Unit |
|--------------------------------|---------------|---------|------|
| Collector to Base Voltage      | $V_{CBO}$     | 100     | V    |
| Collector to Emitter Voltage   | $V_{CEO}$     | 100     | V    |
| Emitter to Base Voltage        | $V_{EBO}$     | 5.0     | V    |
| Collector Current - Continuous | $I_C$         | 15      | A    |
| Base Current – Continuous      | $I_B$         | 5.0     | A    |
| Collector Power Dissipation    | $P_C(T_C=25)$ | 90      | W    |
| Junction Temperature           | $T_J$         | 150     |      |
| Storage Temperature Range      | $T_{stg}$     | -55 150 |      |

/ Electrical Characteristics(Ta=25 )

| Parameter                               | Symbol           | Test Conditions                    | Min | Typ | Max | Unit |
|-----------------------------------------|------------------|------------------------------------|-----|-----|-----|------|
| Collector to Emitter Breakdown Voltage  | $V_{CEO}$        | $I_C=1.0mA$ $I_B=0$                | 100 |     |     | V    |
| Collector Cut-Off Current               | $I_{CBO(1)}$     | $V_{CB}=100V$ $I_E=0$              |     |     | 0.5 | mA   |
|                                         | $I_{CBO(2)}$     | $V_{CB}=100V$ $I_E=0$<br>$T_C=150$ |     |     | 5.0 | mA   |
| Collector Cut-Off Current               | $I_{CEO}$        | $V_{CE}=50V$ $I_B=0$               |     |     | 1.0 | mA   |
| Emitter Cut-Off Current                 | $I_{EBO}$        | $V_{EB}=5.0V$ $I_C=0$              |     |     | 1.0 | mA   |
| DC Current Gain                         | $h_{FE(1)}$      | $V_{CE}=4.0V$ $I_C=0.5A$           | 40  |     | 250 |      |
|                                         | $h_{FE(2)}$      | $V_{CE}=4.0V$ $I_C=5.0A$           | 15  |     | 150 |      |
|                                         | $h_{FE(3)}$      | $V_{CE}=4.0V$ $I_C=10A$            | 5   |     |     |      |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)(1)}$ | $I_C=5.0A$ $I_B=0.5A$              |     |     | 1.0 | V    |
|                                         | $V_{CE(sat)(2)}$ | $I_C=10A$ $I_B=2.5A$               |     |     | 3.0 | V    |
| Base to Emitter Saturation Voltage      | $V_{BE(sat)}$    | $I_C=10A$ $I_B=2.5A$               |     |     | 2.5 | V    |
| Base to Emitter Voltage                 | $V_{BE}$         | $V_{CE}=4.0V$ $I_C=5.0A$           |     |     | 1.5 | V    |
| Transition Frequency                    | $f_T$            | $V_{CE}=4.0V$ $I_C=0.5A$           | 3.0 |     |     | MHz  |

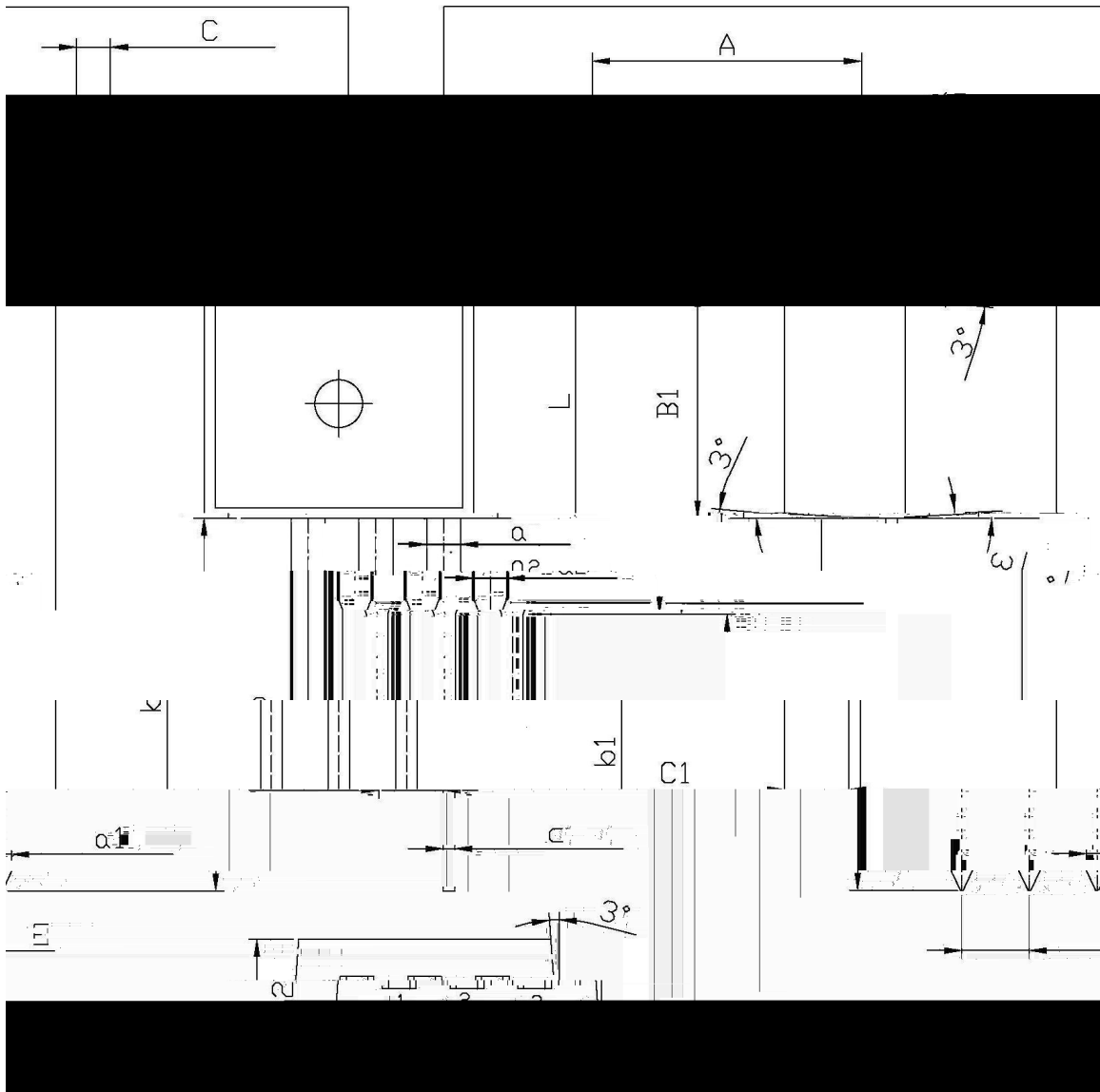
/ Electrical Characteristic Curve



/ Package Dimensions

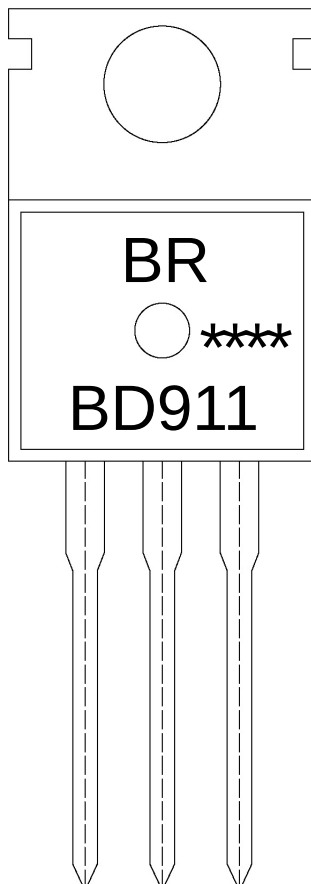
单位: mm

TO-220



| Symbol | Dimensions in Millimeters |      | Symbol | Dimensions in Millimeters |      |
|--------|---------------------------|------|--------|---------------------------|------|
|        | Min                       | Max  |        | Min                       | Max  |
| A      | 9.8                       | 10.2 | C      | 1.2                       | 1.4  |
| B      | 3.56                      | 3.64 | B1     | 6.3                       | 6.7  |
| B1     | 9.0                       | 9.4  | C1     | 1.25                      | 1.45 |
| C      | 0.4                       | 0.6  | a      | 1.25                      | 1.45 |
| a      | 1.25                      | 1.45 | b1     | 1.25                      | 1.45 |
| b1     | 1.25                      | 1.45 |        |                           |      |

/ Marking Instructions



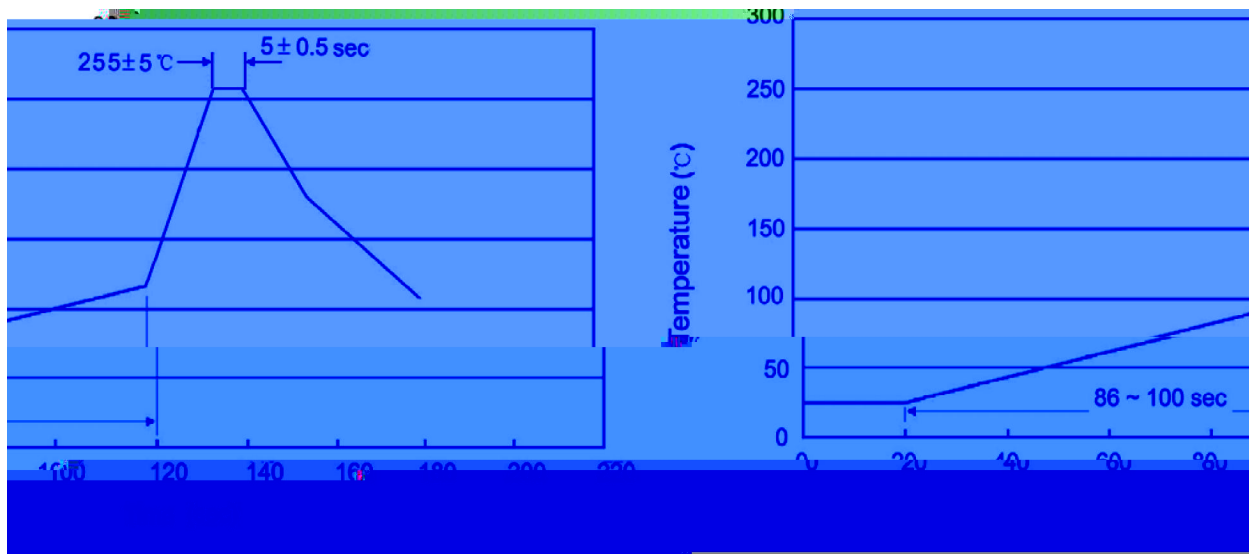
Note:

BR: Company Code

BD911: Product Type.

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

( ) / Temperature Profile for Dip Soldering(Pb-Free)



Note:

- |   |     |     |    |         |                                         |
|---|-----|-----|----|---------|-----------------------------------------|
| 1 | 25  | 150 | 60 | 90sec;  | 1.Preheating:25~150 , Time:60~90sec.    |
| 2 | 255 | 5   | 5  | 0.5sec; | 2.Peak Temp.:255 5 , Duration:5 0.5sec. |
| 3 |     | 2   | 10 | /sec.   | 3. Cooling Speed: 2~10 /sec.            |

/ Resistance to Soldering Heat Test Conditions

270 5                      10 1 sec.                      Temp.:270±5                      Time:10±1 sec

/ Packaging SPEC.

/ BULK

| Package Type | Units          |                     |                      |                            |                      | Dimension (unit mm <sup>3</sup> ) |             |             |
|--------------|----------------|---------------------|----------------------|----------------------------|----------------------|-----------------------------------|-------------|-------------|
|              | Units/Bag<br>/ | Bags/Inner Box<br>/ | Units/Inner Box<br>/ | Inner Boxes/Outer Box<br>/ | Units/Outer Box<br>/ | Bag                               | Inner Box   | Outer Box   |
| TO-220/F     | 200            | 10                  | 2,000                | 5                          | 10,000               | 135×190                           | 237×172×102 | 560×245×195 |

/ TUBE

| Package Type | Units           |                      |                      |                            |                      | Dimension (unit mm <sup>3</sup> ) |            |             |
|--------------|-----------------|----------------------|----------------------|----------------------------|----------------------|-----------------------------------|------------|-------------|
|              | Units/Tube<br>/ | Tubes/Inner Box<br>/ | Units/Inner Box<br>/ | Inner Boxes/Outer Box<br>/ | Units/Outer Box<br>/ | Tube                              | Inner Box  | Outer Box   |
| TO-220/F     | 50              | 20                   | 1,000                | 5                          | 5,000                | 532×31.4×5.5                      | 555×164×50 | 575×290×180 |

/ Notices