

# PBHV8110DH

## NPN Low Vce(sat) Transistor

**Voltage**

**100V**

**Current**

**1A**

### Features

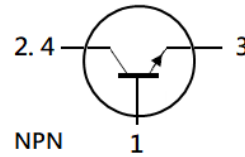
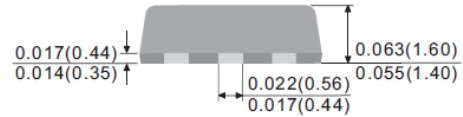
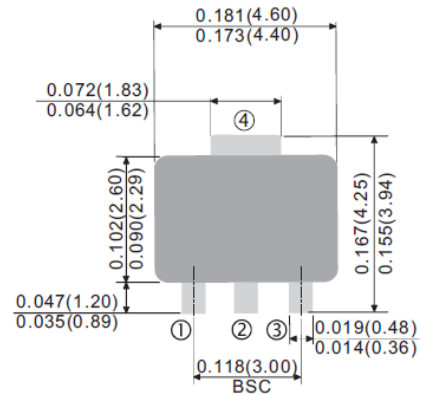
- Silicon NPN epitaxial type
- Low Vce(sat) 0.35V(max)@Ic/Ib= 500mA / 50mA
- High collector current capability
- Excellent DC current gain characteristics
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC61249 Standard
- PNP complement: PBHV9110DH

### Mechanical Data

- Case: SOT-89 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.002 ounces, 0.057 grams
- Marking: 811D

**SOT-89**

**Unit: inch(mm)**



**Pin Assignment:**

1. Base
- 2.4. Collector
3. Emitter

## Maximum Ratings and Thermal Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER   | SYMBOL                            | LIMIT   | UNITS |
|---|-----------------------------------|---------|-------|
| Collector-Base Voltage  | V <sub>CBO</sub>                  | 120     | V     |
| Collector-Emitter Voltage                                     | V <sub>CEO</sub>                  | 100     | V     |
| Emitter-Base Voltage  | V <sub>EBO</sub>                  | 6       | V     |
| Collector Current (DC)  | I <sub>C</sub>                    | 1       | A     |
| Collector Current (Pulse)                                     | I <sub>CP</sub>                   | 3       | A     |
| Power Dissipation   | P <sub>D</sub>                    | 1.4     | W     |
| Junction Temperature  | T <sub>J</sub>                    | 150     | °C    |
| Operating Junction and Storage Temperature Range              | T <sub>J</sub> , T <sub>STG</sub> | -55~150 | °C    |
| Thermal Resistance from Junction to Ambient <sup>(Note)</sup> | R <sub>θJA</sub>                  | 89      | °C/W  |

Note: Mounted on FR4 PCB at 1 inch square copper pad.

# PBHV8110DH

## Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER                                       | SYMBOL               | TEST CONDITION  | MIN. | TYP. | MAX. | UNITS |
|---|----------------------|---|------|------|------|-------|
| <b>OFF Characteristics</b>                      |                      |   |      |      |      |       |
| Collector-Emitter Breakdown Voltage             | BV <sub>CEO</sub>    | I <sub>C</sub> = 10mA, I <sub>B</sub> = 0A            | 100  | -    | -    | V     |
| Collector-Base Breakdown Voltage                | BV <sub>CBO</sub>    | I <sub>C</sub> = 0.1mA, I <sub>E</sub> = 0A           | 120  | -    | -    | V     |
| Emitter-Base Breakdown Voltage                  | BV <sub>EBO</sub>    | I <sub>E</sub> = 0.1mA, I <sub>C</sub> = 0A           | 6    | -    | -    | V     |
| Collector Cutoff Current                        | I <sub>CBO</sub>     | V <sub>CB</sub> = 120V, I <sub>E</sub> = 0A           | -    | -    | 500  | nA    |
| Emitter Cutoff Current                          | I <sub>EBO</sub>     | V <sub>EB</sub> = 6V, I <sub>C</sub> = 0A             | -    | -    | 500  | nA    |
| <b>ON characteristics</b>                       |                      |   |      |      |      |       |
| DC Current Gain<br>(Note1)                      | h <sub>FE</sub>      | V <sub>CE</sub> = 2V, I <sub>C</sub> = 150mA          | 140  | -    | 330  | -     |
|   |                      | V <sub>CE</sub> = 5V, I <sub>C</sub> = 500mA          | 100  | -    | 300  |       |
|   |                      | V <sub>CE</sub> = 5V, I <sub>C</sub> = 1A             | 40   | -    | -    |       |
| Collector-Emitter Saturation Voltage<br>(Note1) | V <sub>CE(SAT)</sub> | I <sub>C</sub> = 0.1A, I <sub>B</sub> = 10mA          | -    | 38   | 120  | mV    |
|   |                      | I <sub>C</sub> = 0.5A, I <sub>B</sub> = 50mA          | -    | 117  | 350  |       |
|   |                      | I <sub>C</sub> = 1A, I <sub>B</sub> = 0.1A            | -    | 220  | 450  |       |
| Base-Emitter Saturation voltage<br>(Note1)      | V <sub>BE(SAT)</sub> | I <sub>C</sub> = 0.1A, I <sub>B</sub> = 10mA          | -    | -    | 1.0  | V     |
|   |                      | I <sub>C</sub> = 0.5A, I <sub>B</sub> = 50mA          | -    | -    | 1.1  |       |
| Transition Frequency                            | f <sub>T</sub>       | V <sub>CE</sub> = 5V, I <sub>E</sub> = -50mA          | 100  | -    | -    | MHz   |
| Collector Output Capacitance                    | C <sub>OB</sub>      | V <sub>CB</sub> = 10V, I <sub>E</sub> = 0A,<br>f=1MHz | -    | -    | 10   | pF    |

Note: 1. Pulse width ≤ 300us, Duty cycle ≤ 2%

# PBHV8110DH

## TYPICAL CHARACTERISTIC CURVES

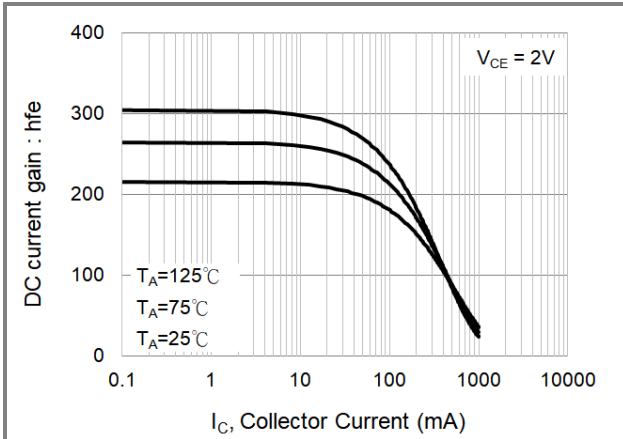


Fig.1 DC Current Gain

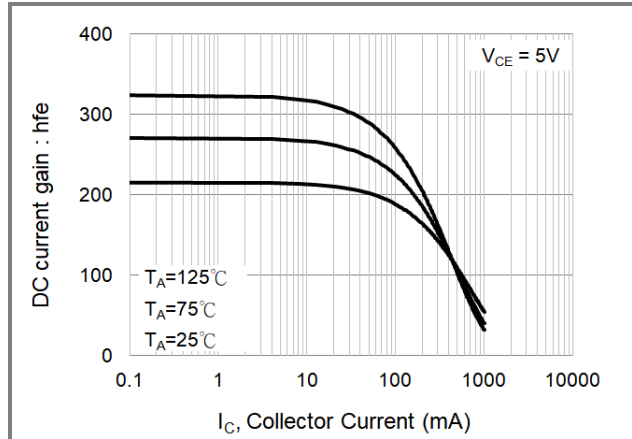


Fig.2 DC Current Gain

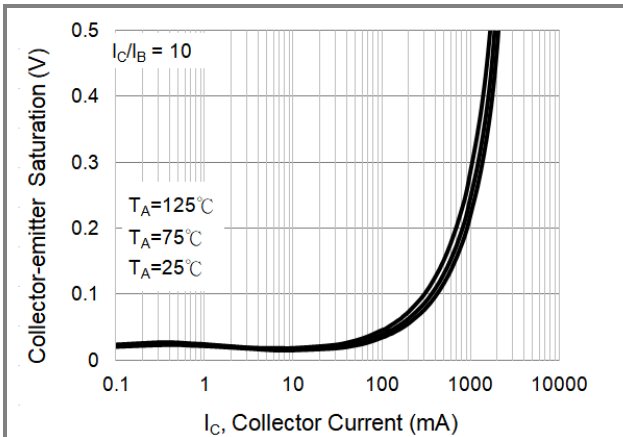


Fig.3 Collector-Emitter Saturation Voltage

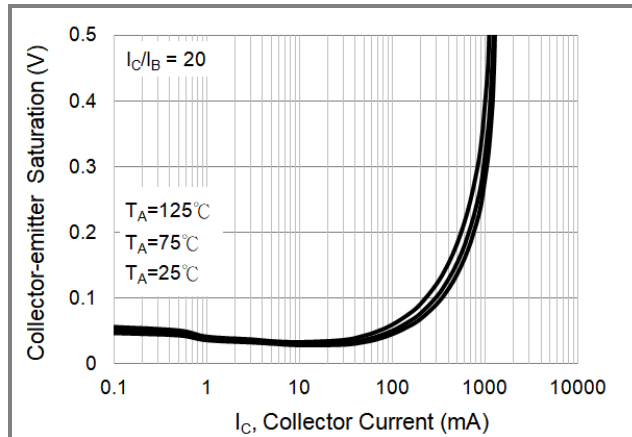


Fig.4 Collector-Emitter Saturation Voltage

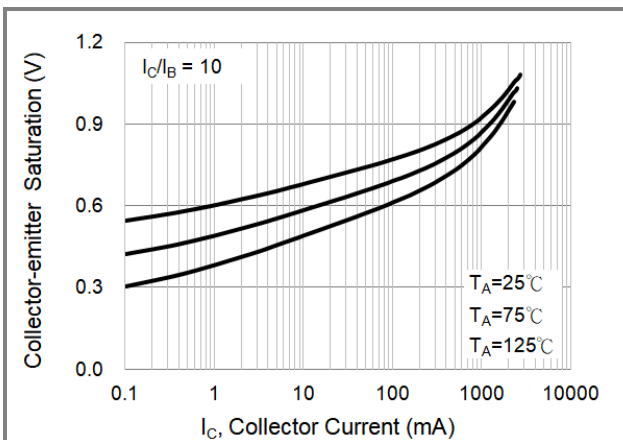


Fig.5 Base-Emitter Saturation Voltage

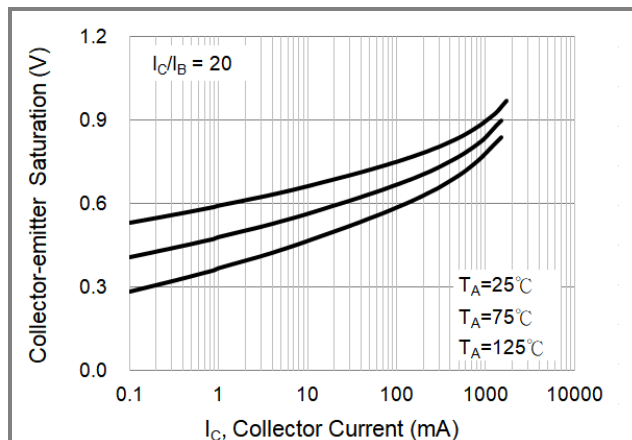
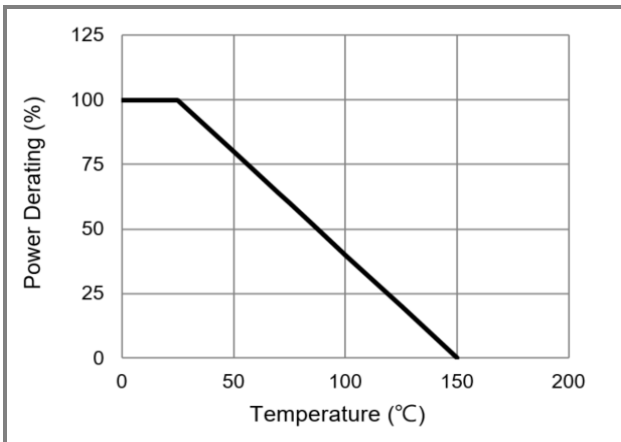
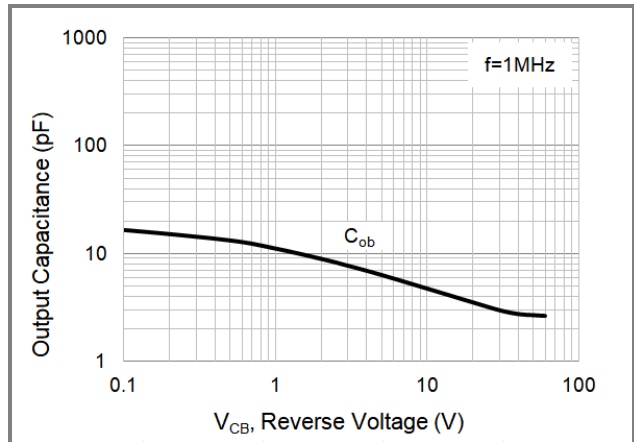
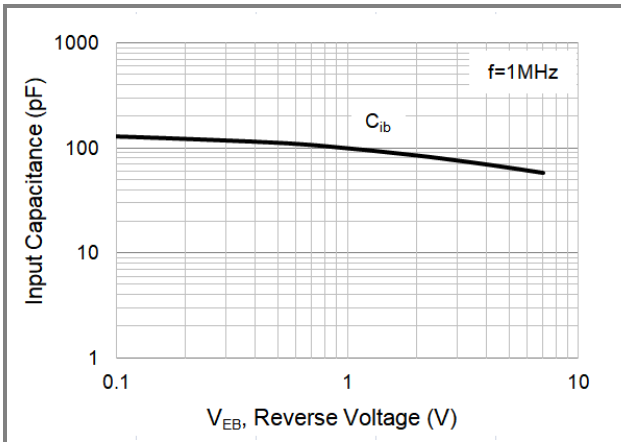
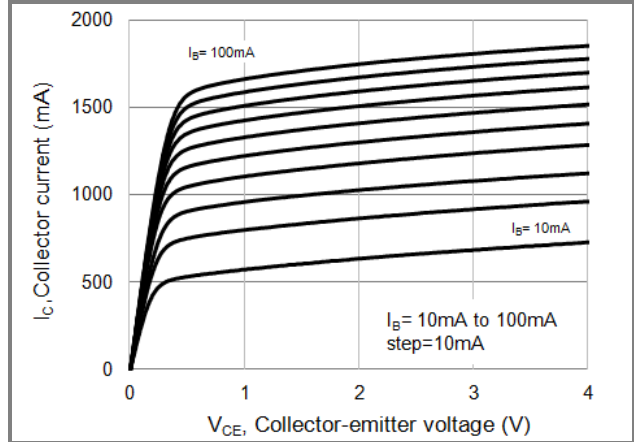
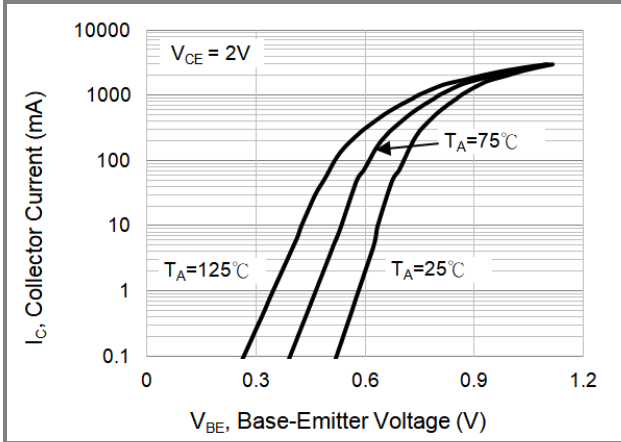


Fig.6 Base-Emitter Saturation Voltage

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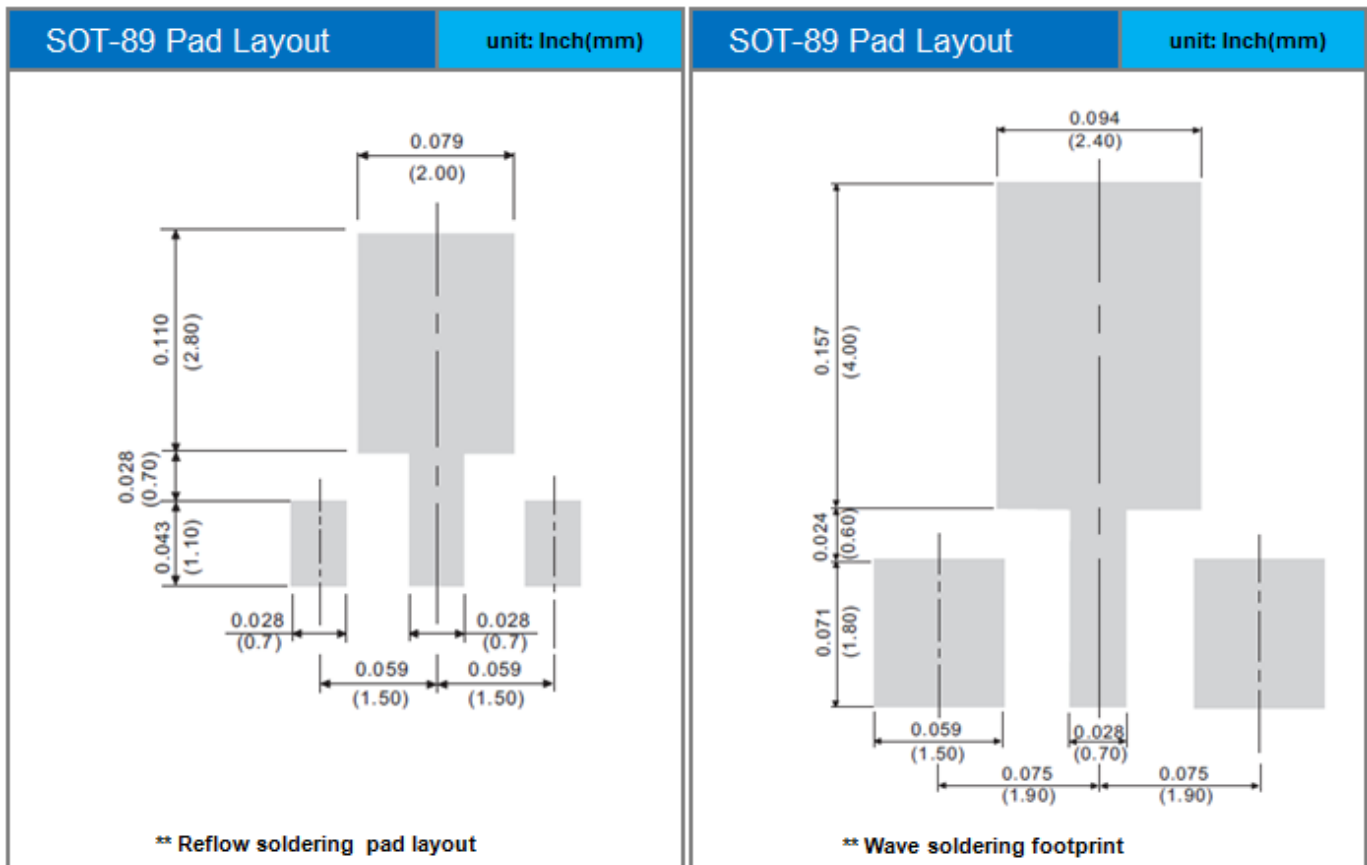


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## Product and Packing Information

| Part No.   | Package Type | Packing Type     | Marking |
|------------|--------------|------------------|---------|
| PBHV8110DH | SOT-89       | 1k pcs / 7" reel | 811D    |

## Mounting Pad Layout



## **PBHV8110DH**

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