



# PBHV8050SA

## Silicon NPN Triple Diffuse High Voltage Transistor

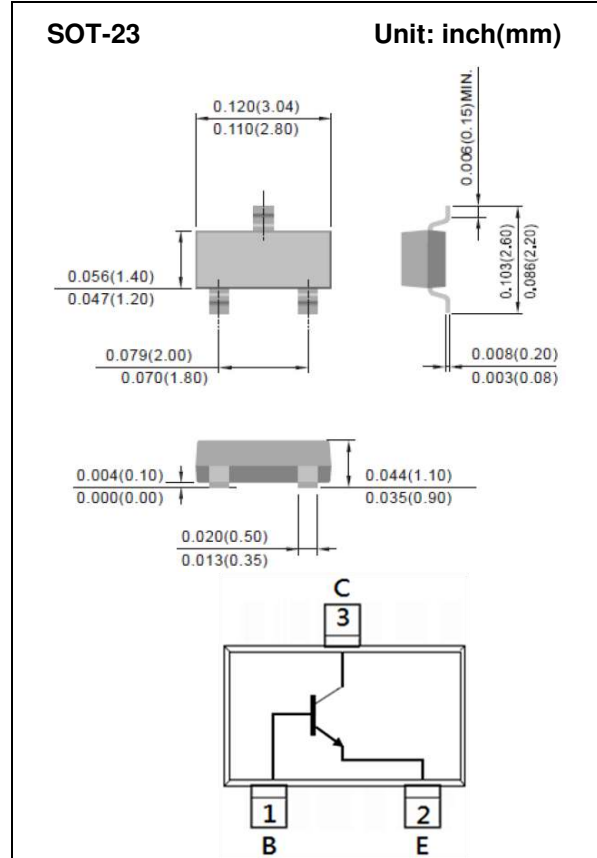
**Voltage** 500V **Current** 150mA

### Features

- Silicon NPN Triple diffuse type
- Excellent DC current gain characteristics
- Low Saturation Voltage
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case: SOT-23 Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0003 ounces, 0.0084grams



### 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>                  | 500     | V     |
| Collector-Emitter Voltage   | V <sub>CEO</sub>                  | 500     | V     |
| Emitter-Base Voltage  | V <sub>EBO</sub>                  | 5       | V     |
| Collector Current (DC)  | I <sub>C</sub>                    | 150     | mA    |
| Collector Current (Pulse)   | I <sub>CP</sub>                   | 500     | mA    |
| Total Power Dissipation   | P <sub>TOTAL</sub>                | 0.5     | W     |
| Operating Junction and Storage Temperature Range                      | T <sub>J</sub> , T <sub>STG</sub> | -55~150 | °C    |
| Typical Thermal Resistance from Junction to Ambient <sup>(Note)</sup> | R <sub>θJA</sub>                  | 250     | °C/W  |

Note: Mounted on a 1 inch FR-4 with 2oz. square pad of copper.



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## Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| PARAMETER                            | SYMBOL        | TEST CONDITION                             | MIN. | TYP. | MAX. | UNITS |
|--------------------------------------|---------------|--|------|------|------|-------|
| <b>OFF Characteristics</b>           |               |  |      |      |      |       |
| Collector-Emitter Breakdown Voltage  | $BV_{CEO}$    | $I_C= 10\text{mA}, I_B= 0\text{A}$         | 500  | -    | -    | V     |
| Collector-Base Breakdown Voltage     | $BV_{CBO}$    | $I_C= 0.1\text{mA}, I_E= 0\text{A}$        | 500  | -    | -    | V     |
| Emitter-Base Breakdown Voltage       | $BV_{EBO}$    | $I_E= 0.1\text{mA}, I_C= 0\text{A}$        | 5    | -    | -    | V     |
| Collector-Base Cutoff Current        | $I_{CBO}$     | $V_{CB}= 500\text{V}, I_E= 0\text{A}$      | -    | -    | 100  | nA    |
| Emitter-Base Cutoff Current          | $I_{EBO}$     | $V_{EB}= 5\text{V}$                        | -    | -    | 100  | nA    |
| Collector-Emitter Cutoff Current     | $I_{CES}$     | $V_{CES}= 500\text{V}$                     | -    | -    | 100  | nA    |
| <b>ON characteristics</b>            |               |  |      |      |      |       |
| DC Current Gain                      | $h_{FE}$      | $V_{CE}= 10\text{V } I_C= 1\text{mA}$      | 150  | -    | 300  | -     |
|                                      |               | $V_{CE}= 10\text{V } I_C= 50\text{mA}$     | 80   | -    | 300  |       |
|                                      |               | $V_{CE}= 10\text{V } I_C= 100\text{mA}$    | -    | 15   | -    |       |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C= 20\text{mA}, I_B= 2\text{mA}$        | -    | -    | 0.2  | V     |
|                                      |               | $I_C= 50\text{mA}, I_B= 10\text{mA}$       | -    | -    | 0.5  |       |
| Base-Emitter Saturation voltage      | $V_{BE(SAT)}$ | $I_C= 50\text{mA}, I_B= 10\text{mA}$       | -    | -    | 0.9  | V     |
| Base-Emitter Turn-on voltage         | $V_{BE(on)}$  | $I_C= 50\text{mA}, V_{CE}= 10\text{V}$     | -    | -    | 0.9  |       |
| Transition Frequency                 | $f_T$         | $I_C= -10\text{mA}, V_{CE}= 20\text{V}$    | -    | 50   | -    | MHz   |
| Collector Output Capacitance         | $C_{OB}$      | $V_{CB}= 20\text{V}, f=1\text{MHz}$        | -    | -    | 8    | pF    |
| Turn On Time                         | $t_{ON}$      | $V_{CE}= 100\text{V}, I_C= 50\text{mA}$    | -    | 110  | -    | nS    |
| Turn Off Time                        | $t_{OFF}$     | $I_{B1}= 5\text{mA}, I_{B2}= -10\text{mA}$ | -    | 1500 | -    | nS    |



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## TYPICAL CHARACTERISTIC CURVES

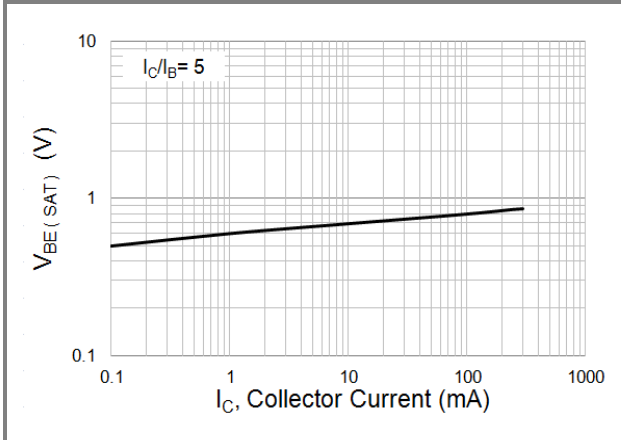


Fig.1 Typical Base-Emitter Saturation Voltage

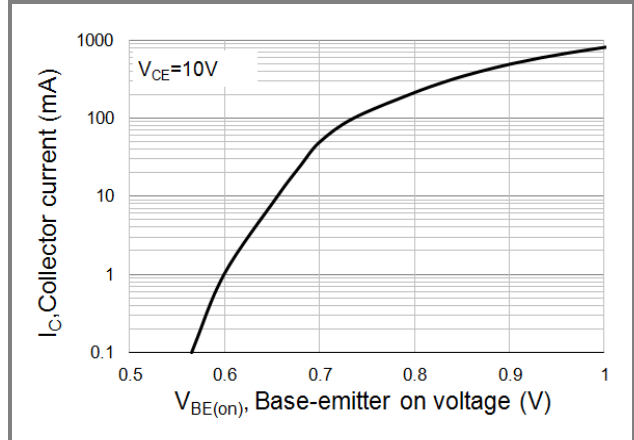


Fig.2 Typical Base-Emitter Turn-on Voltage

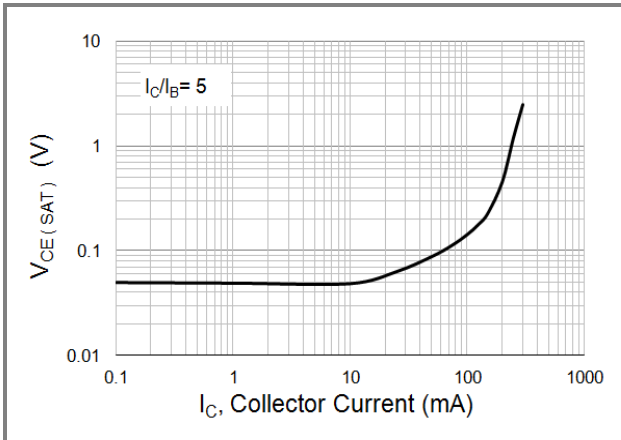


Fig.3 Typical Collector-Emitter Saturation

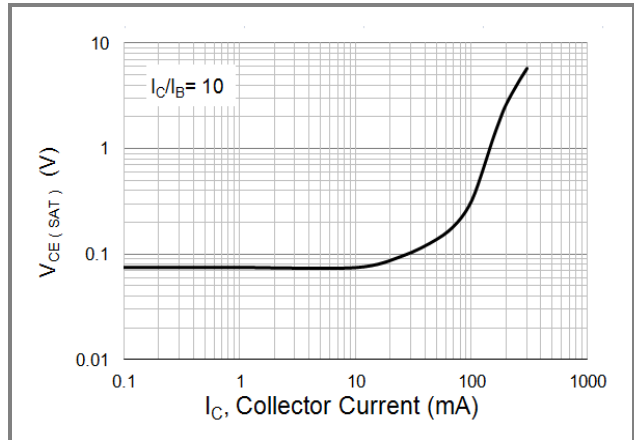


Fig.4 Typical Collector-Emitter Saturation

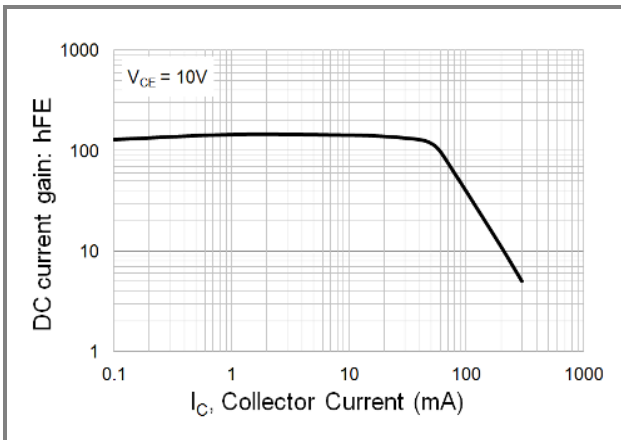


Fig.5 Typical DC Current Gain vs Collector Current

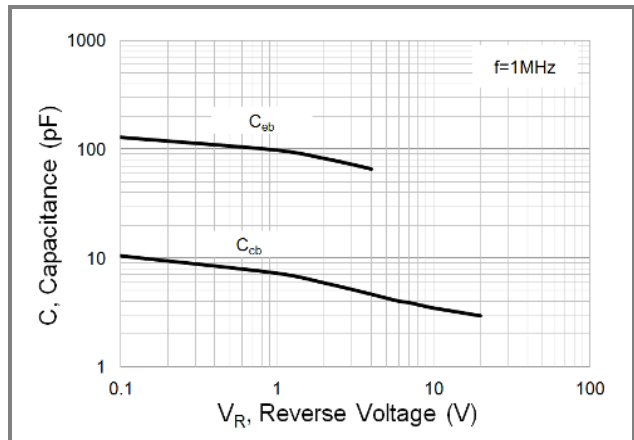


Fig.6 Typical Capacitance

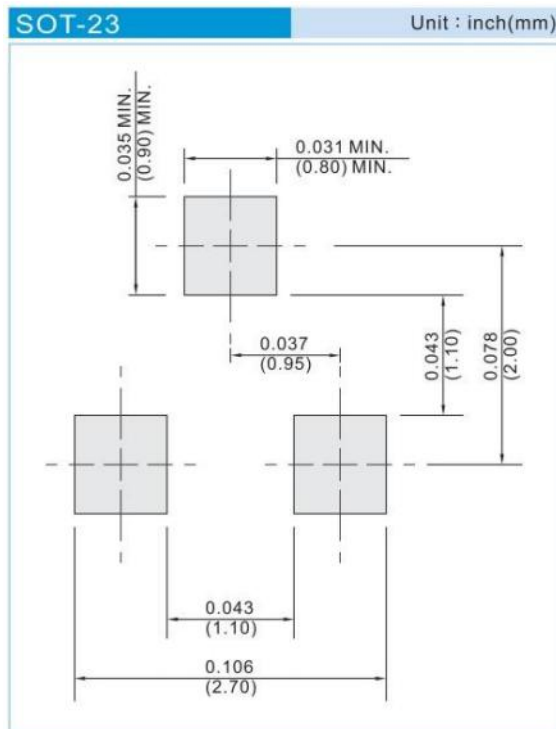


# PBHV8050SA

## PART NO PACKING CODE VERSION

| Part No Packing Code | Package Type | Packing Type     | Marking | Version      |
|----------------------|--------------|------------------|---------|--------------|
| PBHV8050SA_R1_00001  | SOT-23       | 3K pcs / 7" reel | C1A     | Halogen free |

## MOUNTING PAD LAYOUT





## PBHV8050SA

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