

## BC856AW ~ BC859CW

### PNP GENERAL PURPOSE TRANSISTORS

**VOLTAGE** 30/45/65 Volts **POWER** 250 mWatts

#### FEATURES

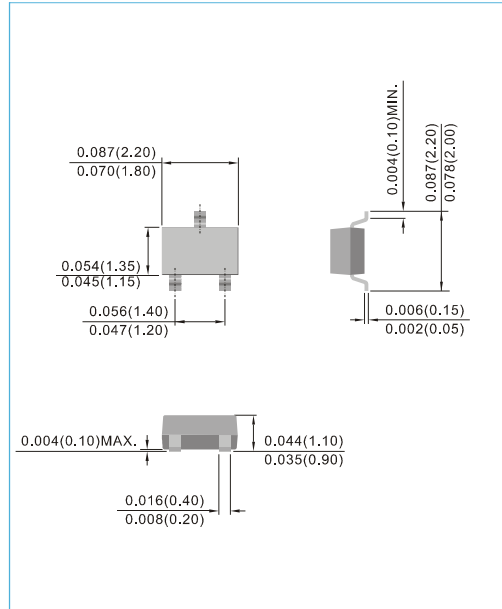
- General purpose amplifier applications
- PNP epitaxial silicon, planar design
- Collector current  $I_C = 100\text{mA}$
- Complimentary (NPN) Devices : BC846AW/BC847AW/BC848AW/BC849BW Series
- Lead free in comply with EU RoHS 2011/65/EU directives
- Green molding compound as per IEC61249 Std. . (Halogen Free)

#### MECHANICAL DATA

- Case: SOT-323, Plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0002 ounce, 0.005 gram

|                 |             |             |             |
|-----------------|-------------|-------------|-------------|
| Device Marking: |             |             |             |
| BC856AW=56A     | BC857AW=57A | BC858AW=58A |             |
| BC856BW=56B     | BC857BW=57B | BC858BW=58B | BC859BW=59B |
|                 | BC857CW=57C | BC858CW=58C | BC859CW=59C |

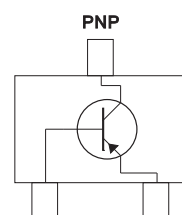
**SOT-323** Unit : inch(mm)



### ABSOLUTE MAXIMUM RATINGS

| Parameter                       | Symbol    | Value                    | Units |
|---------------------------------|-----------|--------------------------|-------|
| Collector - Emitter Voltage     | $V_{CEO}$ | -65<br>-45<br>-30<br>-30 | V     |
| Collector - Base Voltage        | $V_{CBO}$ | -80<br>-50<br>-30<br>-30 | V     |
| Emitter - Base Voltage          | $V_{EBO}$ | 6<br>6<br>-5<br>-5       | V     |
| Collector Current - Continuous  | $I_C$     | -100                     | mA    |
| Max. Power Dissipation (Note 1) | $P_{TOT}$ | 250                      | mW    |
| Storage Temperature Range       | $T_{STG}$ | -55 to 150               | °C    |
| Junction Temperature Range      | $T_J$     | -55 to 150               | °C    |

Note : 1. Transistor mounted on FR-5 board 1 x 0.75 x 0.062 in.



**Fig.35**

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### THERMAL CHARACTERISTICS

| PARAMETER                                  | Symbol                             | Value      | Units |
|--------------------------------------------|------------------------------------|------------|-------|
| Thermal Resistance<br>(Note 2)<br>(Note 3) | $R_{\theta JA}$<br>$R_{\theta JC}$ | 500<br>200 | °C/W  |

Note : 2.Mounted on an FR4 PCB, single-sided copper, mini pad.

3.Mounted on an FR4 PCB, single-sided copper, with 100cm<sup>2</sup> copper pad area

### ELECTRICAL CHARACTERISTICS (T<sub>J</sub>=25°C, unless otherwise noted)

| PARAMETER                                                                                                                                     | Symbol               | MIN.              | TYP.              | MAX.              | Units    |
|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------|-------------------|-------------------|----------|
| Collector - Emitter Breakdown Voltage<br>(I <sub>C</sub> =-10mA, I <sub>B</sub> =0)                                                           | $V_{(BR)CEO}$        | -65<br>-45<br>-30 | -                 | -                 | V        |
| Collector - Base Breakdown Voltage<br>(I <sub>C</sub> =-10μA, I <sub>E</sub> =0)                                                              | $V_{(BR)CBO}$        | -80<br>-50<br>-30 | -                 | -                 | V        |
| Emitter-Base Breakdown Voltage<br>(I <sub>E</sub> =-1μA, I <sub>C</sub> =0)                                                                   | $V_{(BR)EBO}$        | -5.0              | -                 | -                 | V        |
| Emitter-Base Cutoff Current<br>(V <sub>EB</sub> =-5V)                                                                                         | I <sub>EBO</sub>     | -                 | -                 | -100              | nA       |
| Collector-Base Cutoff Current<br>(V <sub>CB</sub> =-30V, I <sub>E</sub> =0)                                                                   | I <sub>CBO</sub>     | -                 | -                 | -15<br>-4.0       | nA<br>μA |
| DC Current Gain<br>(I <sub>C</sub> =-10μA, V <sub>CE</sub> =-5V)                                                                              | h <sub>FE</sub>      | -                 | 90<br>150<br>270  | -                 | -        |
| DC Current Gain<br>(I <sub>C</sub> =-2.0mA, V <sub>CE</sub> =-5V)                                                                             | h <sub>FE</sub>      | 110<br>200<br>420 | 180<br>290<br>520 | 220<br>450<br>800 | -        |
| Collector - Emitter Saturation Voltage<br>(I <sub>C</sub> =-10mA, I <sub>B</sub> =-0.5mA)<br>(I <sub>C</sub> =-100mA, I <sub>B</sub> =-5.0mA) | V <sub>CE(SAT)</sub> | -<br>-            | -<br>-            | -0.3<br>-0.65     | V        |
| Base - Emitter Saturation Voltage<br>(I <sub>C</sub> =-10mA, I <sub>B</sub> =-0.5mA)<br>(I <sub>C</sub> =-100mA, I <sub>B</sub> =-5.0mA)      | V <sub>BE(SAT)</sub> | -<br>-            | -0.7<br>-0.9      | -<br>-            | V        |
| Base - Emitter Voltage<br>(I <sub>C</sub> =-2mA, V <sub>CE</sub> =-5.0V)<br>(I <sub>C</sub> =-10mA, V <sub>CE</sub> =-5.0V)                   | V <sub>BE(ON)</sub>  | -0.60<br>-        | -<br>-            | -0.75<br>-0.82    | V        |
| Collector - Base Capacitance<br>(V <sub>CB</sub> =-10V, I <sub>E</sub> =0, f=1MHz)                                                            | C <sub>CB</sub>      | -                 | -                 | 4.5               | pF       |
| Current-Gain-Bandwidth Product<br>(I <sub>C</sub> =-10mA, V <sub>CE</sub> =-5.0V, f=100MHz)                                                   | F.                   | -                 | 200               | -                 | MHz      |

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### ELECTRICAL CHARACTERISTICS CURVES

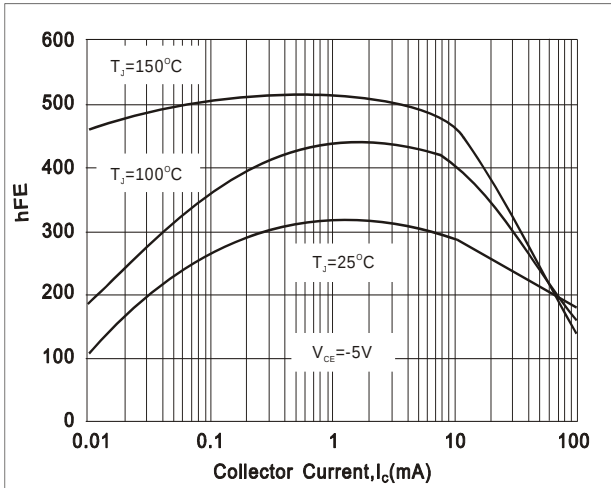


Fig.1- TYPICAL  $h_{FE}$  vs. Collector Current

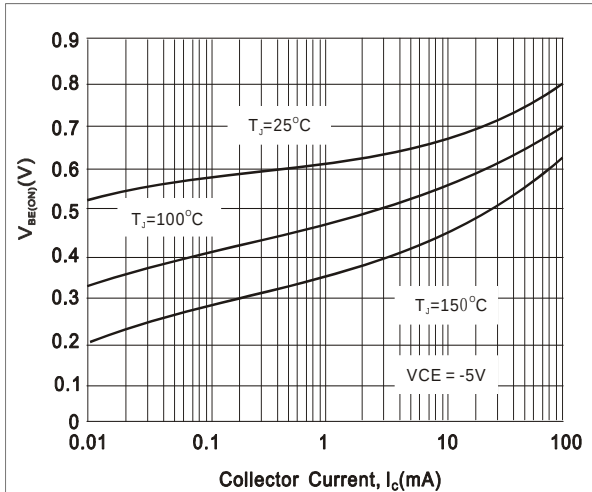


Fig.2- TYPICAL  $V_{BE(ON)}$  vs. Collector Current

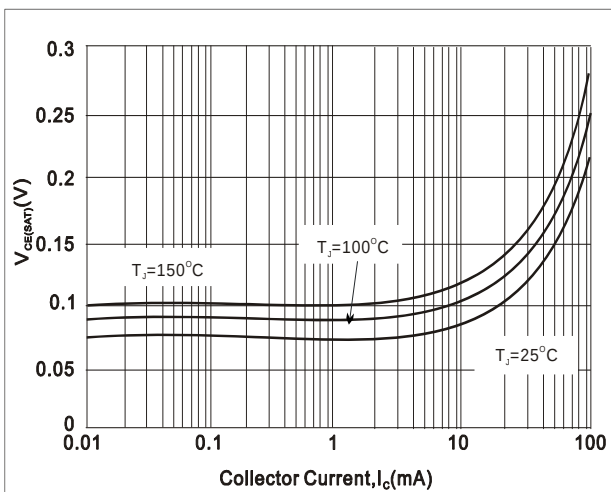


Fig.3- TYPICAL  $V_{CE(SAT)}$  vs. Collector Current

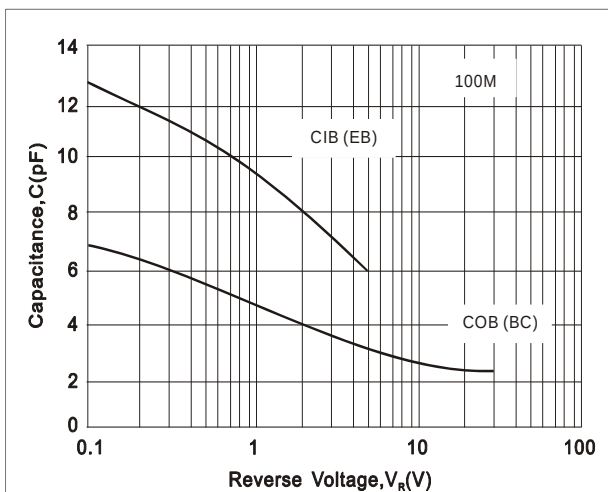


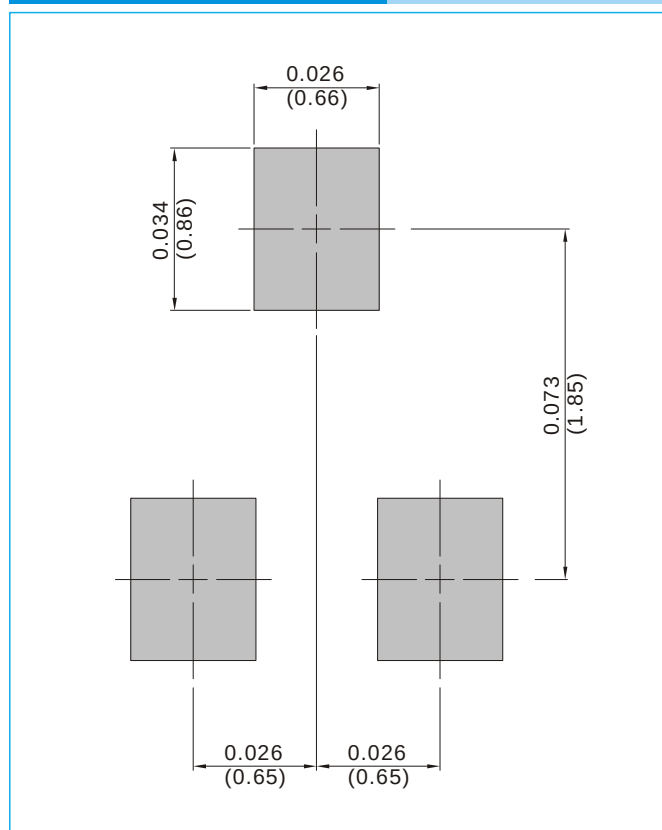
Fig.4- TYPICAL CAPACITANCES vs. REVERSE VOLTAGE

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### MOUNTING PAD LAYOUT

**SOT-323**

Unit : inch(mm)



### ORDER INFORMATION

- Packing information
  - T/R - 12K per 13" plastic Reel
  - T/R - 3K per 7" plastic Reel

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### Part No\_packing code\_Version

BC856AW\_R1\_00001

BC856AW\_R2\_00001

For example :

RB500V-40\_R2\_00001



| Packing Code XX                      |                      |                                  |                      | Version Code XXXXX |                      |                                       |
|--------------------------------------|----------------------|----------------------------------|----------------------|--------------------|----------------------|---------------------------------------|
| Packing type                         | 1 <sup>st</sup> Code | Packing size code                | 2 <sup>nd</sup> Code | HF or RoHS         | 1 <sup>st</sup> Code | 2 <sup>nd</sup> ~5 <sup>th</sup> Code |
| Tape and Ammunition Box (T/B)        | A                    | N/A                              | 0                    | HF                 | 0                    | serial number                         |
| Tape and Reel (T/R)                  | R                    | 7"                               | 1                    | RoHS               | 1                    | serial number                         |
| Bulk Packing (B/P)                   | B                    | 13"                              | 2                    |                    |                      |                                       |
| Tube Packing (T/P)                   | T                    | 26mm                             | X                    |                    |                      |                                       |
| Tape and Reel (Right Oriented) (TRR) | S                    | 52mm                             | Y                    |                    |                      |                                       |
| Tape and Reel (Left Oriented) (TRL)  | L                    | PANASERT T/B CATHODE UP (PBCU)   | U                    |                    |                      |                                       |
| FORMING                              | F                    | PANASERT T/B CATHODE DOWN (PBCD) | D                    |                    |                      |                                       |



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