



# BC817-16-AU / BC817-25-AU / BC817-40-AU

## Silicon NPN General Purpose Transistors

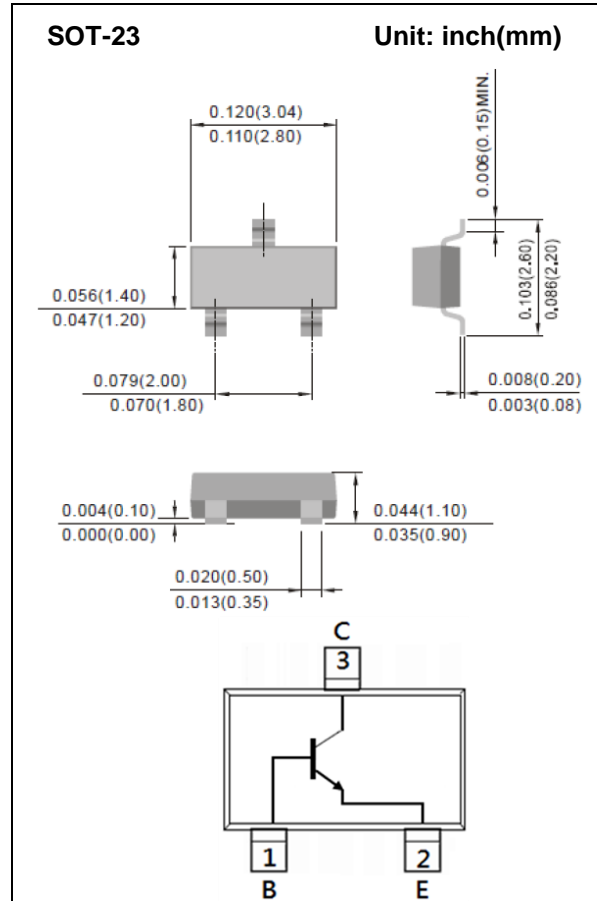
**Voltage** 45V **Current** 500mA

### Features

- Silicon NPN Epitaxial type
- Excellent DC current gain characteristics
- General purpose amplifier application
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 Standard
- PNP complement: BC807-AU series

### Mechanical Data

- Case: SOT-23 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0003 ounces, 0.0084grams
- Marking: BC817-16-AU: 8A  
BC817-25-AU: 8B  
BC817-40-AU: 8C



## 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>                  | 50      | V     |
| Collector-Emitter Voltage                                     | V <sub>CEO</sub>                  | 45      | V     |
| Emitter-Base Voltage  | V <sub>EBO</sub>                  | 5       | V     |
| Collector Current (DC)  | I <sub>C</sub>                    | 500     | mA    |
| Collector Current (Pulse)                                     | I <sub>CP</sub>                   | 1000    | mA    |
| Total Power Dissipation                                       | P <sub>TOT</sub>                  | 330     | mW    |
| 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>                  | 375     | °C/W  |

Note: Mounted on minimum pad mount on FR-4 board.



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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  | $BV_{CEO}$    | $I_C=10\text{mA}, I_B=0\text{A}$   | 45                                   | -    | -    | V             |     |
| Collector-Base Breakdown Voltage     | $BV_{CBO}$    | $I_C=10\mu\text{A}, I_E=0\text{A}$ | 50                                   | -    | -    | V             |     |
| Emitter-Base Breakdown Voltage       | $BV_{EBO}$    | $I_E=1\mu\text{A}, I_C=0\text{A}$  | 5                                    | -    | -    | V             |     |
| Collector-Base Cutoff Current        | $I_{CBO}$     | $V_{CB}=20\text{V}, I_E=0\text{A}$ | -                                    | -    | 100  | nA            |     |
| Collector-Base Cutoff Current        | $I_{CBO}$     | $T_j=125^\circ\text{C}$            | -                                    | -    | 5    | $\mu\text{A}$ |     |
| Emitter-Base Cutoff Current          | $I_{EBO}$     | $V_{EB}=5\text{V}$                 | -                                    | -    | 100  | nA            |     |
| <b>ON characteristics</b>            |               |                                    |                                      |      |      |               |     |
| DC Current Gain                      | BC817-16-AU   | $h_{FE}$                           | $V_{CE}=1\text{V}, I_C=100\text{mA}$ | 100  | -    | 250           |     |
|                                      | BC817-25-AU   |                                    |                                      | 160  | -    | 400           |     |
|                                      | BC817-40-AU   |                                    |                                      | 250  | -    | 600           |     |
| DC Current Gain                      |               |                                    | $V_{CE}=1\text{V}, I_C=500\text{mA}$ | 40   | -    | -             |     |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ |                                    | $I_C=500\text{mA}, I_B=50\text{mA}$  | -    | -    | 0.7           | V   |
| Base-Emitter Turn-on voltage         | $V_{BE(on)}$  |                                    | $I_C=500\text{mA}, V_{CE}=1\text{V}$ | -    | -    | 1.2           | V   |
| Transition Frequency                 | $f_T$         |                                    | $I_C=10\text{mA}, V_{CE}=5\text{V}$  | 100  | -    | -             | MHz |
| Collector Output Capacitance         | $C_{OB}$      |                                    | $V_{CB}=10\text{V}, f=1\text{MHz}$   | -    | 7    | -             | pF  |



# BC817-16-AU / BC817-25-AU / BC817-40-AU

## TYPICAL CHARACTERISTIC CURVES

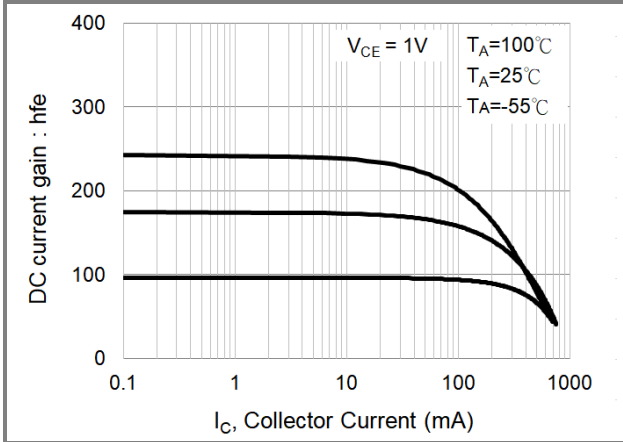


Fig.1 DC Current Gain(-16)

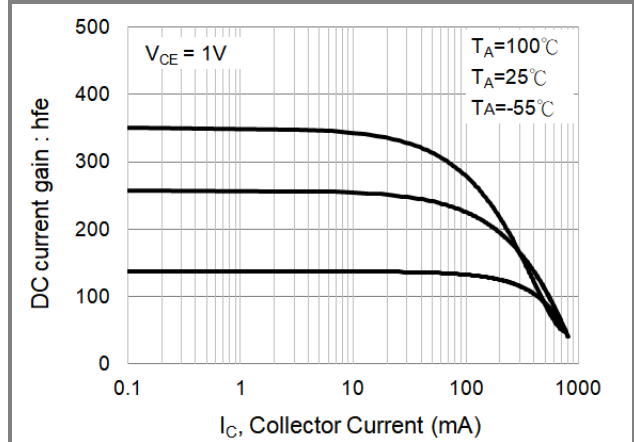


Fig.2 DC Current Gain (-25)

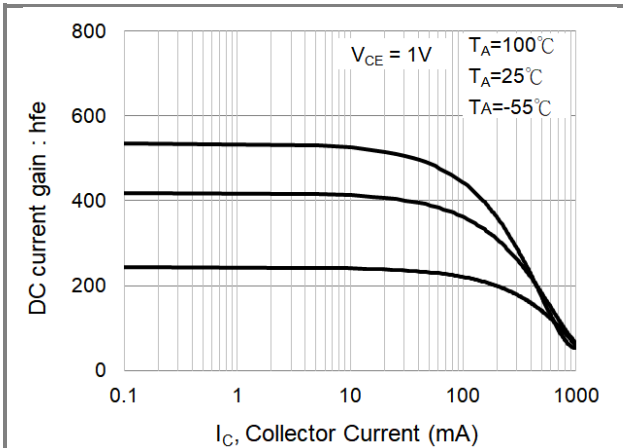


Fig.3 DC Current Gain (-40)

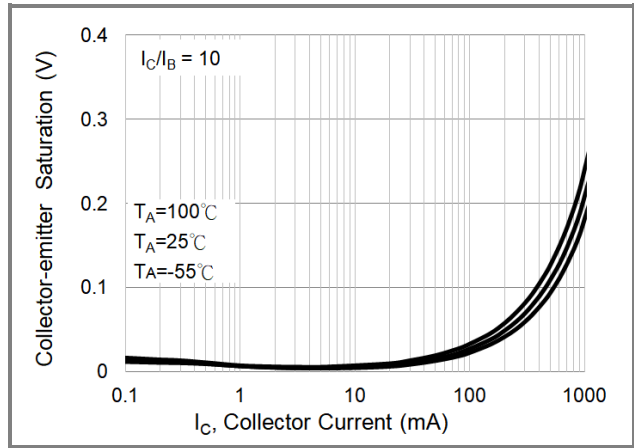


Fig.4 Collector-Emitter Saturation Voltage (-16)

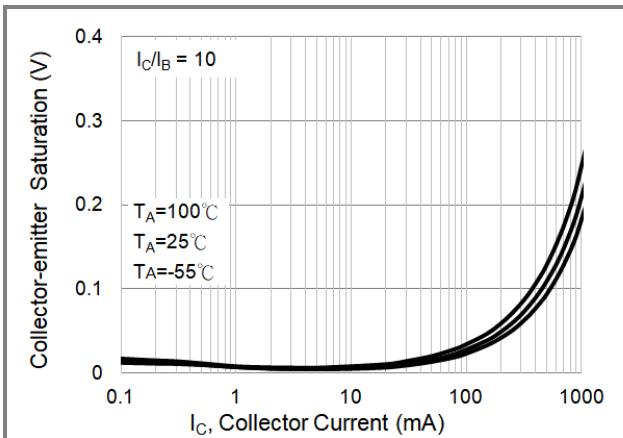


Fig.5 Collector-Emitter Saturation Voltage (-25)

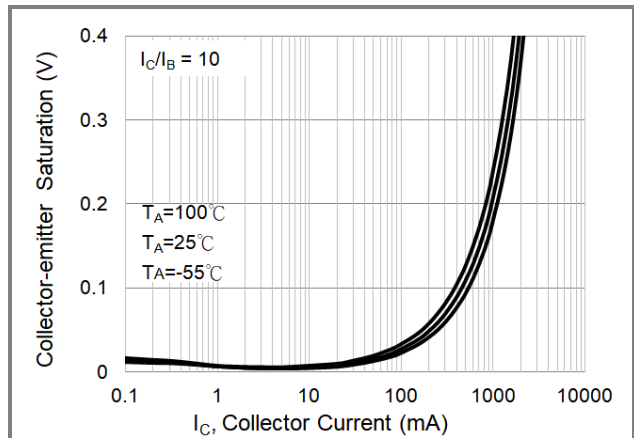


Fig.6 Collector-Emitter Saturation Voltage (-40)



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## TYPICAL CHARACTERISTIC CURVES

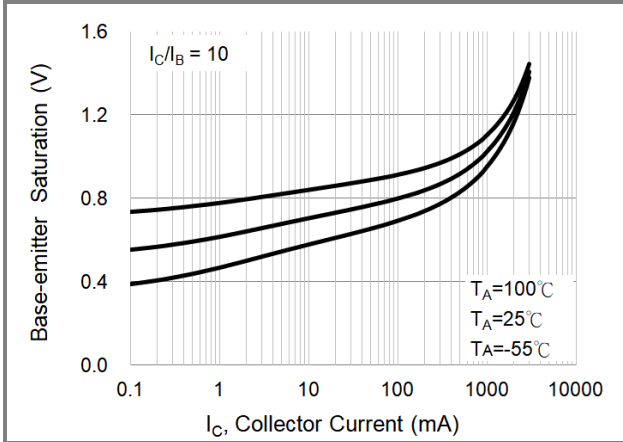


Fig.7 Base-Emitter Saturation Voltage (-16)

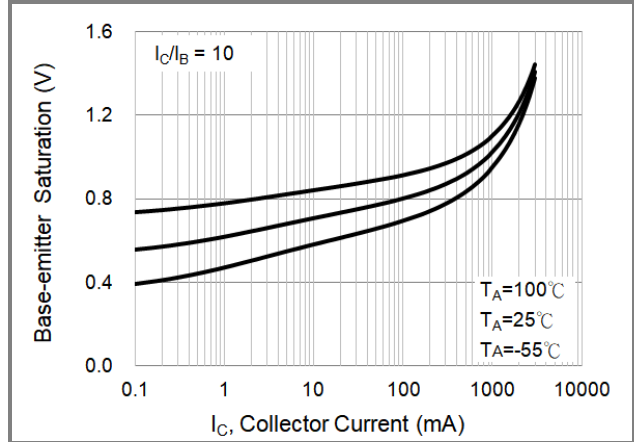


Fig.8 Base-Emitter Saturation Voltage (-25)

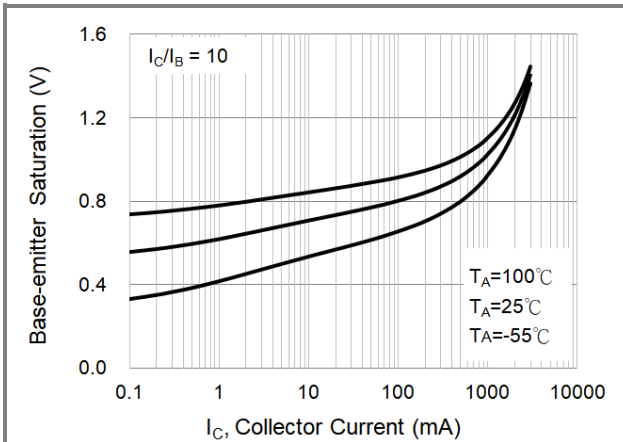


Fig.9 Base-Emitter Saturation Voltage (-40)

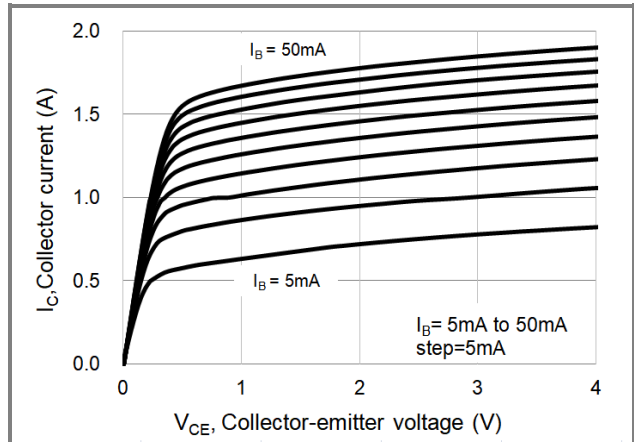


Fig.10 Collector Current (-16)

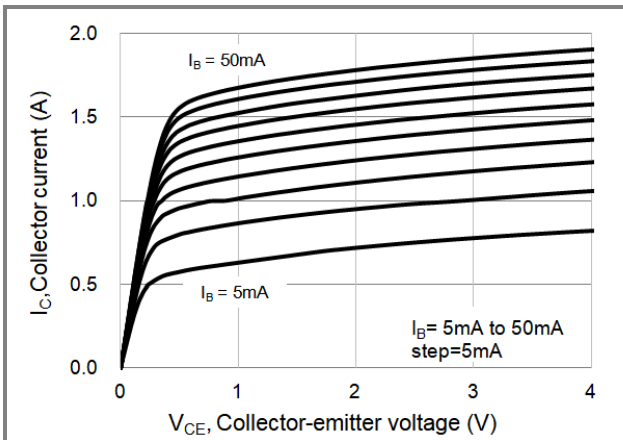


Fig.11 Collector Current (-25)

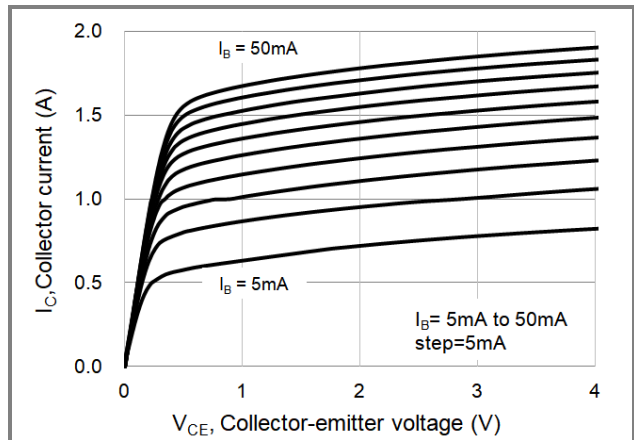


Fig.12 Collector Current (-40)

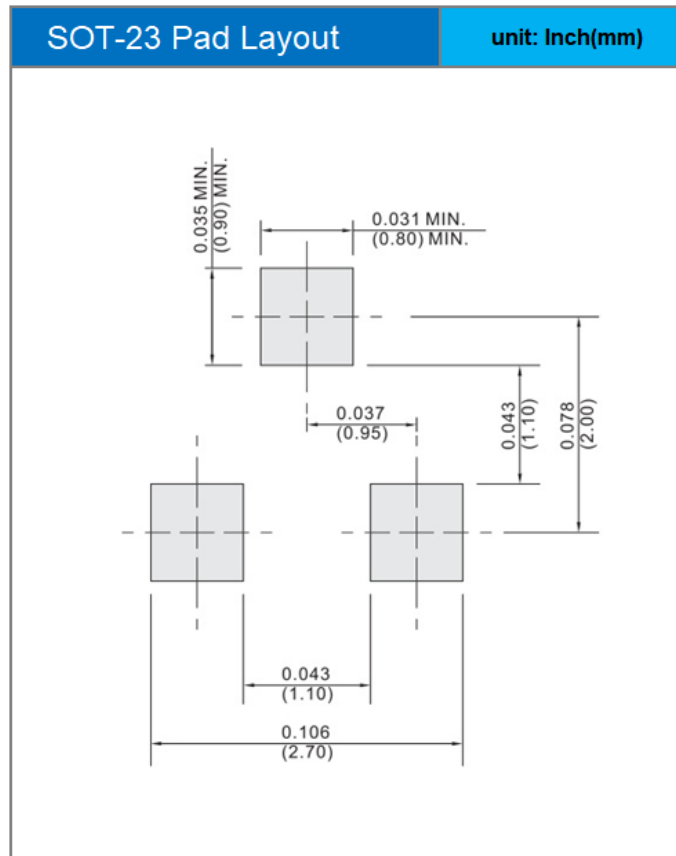


# BC817-16-AU / BC817-25-AU / BC817-40-AU

## PART NO PACKING CODE VERSION

| Part No Packing Code | Package Type | Packing type     | Marking | Version      |
|----------------------|--------------|------------------|---------|--------------|
| BC817-16-AU_R1_000A1 | SOT-23       | 3K pcs / 7" reel | 8A      | Halogen free |
| BC817-25-AU_R1_000A1 | SOT-23       | 3K pcs / 7" reel | 8B      | Halogen free |
| BC817-40-AU_R1_000A1 | SOT-23       | 3K pcs / 7" reel | 8C      | Halogen free |

## MOUNTING PAD LAYOUT





## BC817-16-AU / BC817-25-AU / BC817-40-AU

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