

## BCX56-16-AU

### NPN Low Vce(sat) Transistor

**Voltage**

**100V**

**Current**

**1A**

#### Features

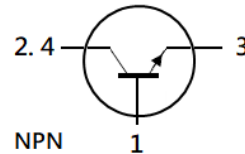
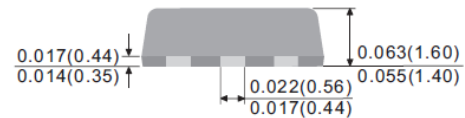
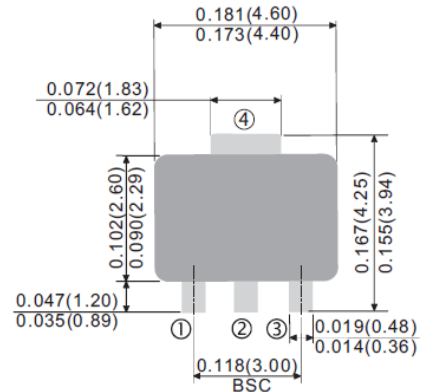
- Silicon NPN epitaxial type
- Low Vce(sat) 0.35V(max)@Ic/Ib= 500mA / 50mA
- High collector current capability
- Excellent DC current gain characteristics
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC61249 Standard
- PNP complement: BCX53-16-AU

#### 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.

## BCX56-16-AU

### 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             | $BV_{CEO}$    | $I_C=10\text{mA}$ , $I_B=0\text{A}$                        | 100  | -    | -    | V     |
| Collector-Base Breakdown Voltage                | $BV_{CBO}$    | $I_C=0.1\text{mA}$ , $I_E=0\text{A}$                       | 120  | -    | -    | V     |
| Emitter-Base Breakdown Voltage                  | $BV_{EBO}$    | $I_E=0.1\text{mA}$ , $I_C=0\text{A}$                       | 6    | -    | -    | V     |
| Collector Cutoff Current                        | $I_{CBO}$     | $V_{CB}=80\text{V}$ , $I_E=0\text{A}$                      | -    | -    | 100  | nA    |
| Emitter Cutoff Current                          | $I_{EBO}$     | $V_{EB}=6\text{V}$ , $I_C=0\text{A}$                       | -    | -    | 100  | nA    |
| <b>ON characteristics</b>                       |               |                                                            |      |      |      |       |
| DC Current Gain<br>(Note1)                      | $h_{FE}$      | $V_{CE}=2\text{V}$ , $I_C=5\text{mA}$                      | 100  | -    | -    | -     |
|                                                 |               | $V_{CE}=2\text{V}$ , $I_C=150\text{mA}$                    | 100  | -    | 250  |       |
|                                                 |               | $V_{CE}=2\text{V}$ , $I_C=500\text{mA}$                    | 40   | -    | -    |       |
| Collector-Emitter Saturation Voltage<br>(Note1) | $V_{CE(SAT)}$ | $I_C=0.1\text{A}$ , $I_B=10\text{mA}$                      | -    | 60   | 120  | mV    |
|                                                 |               | $I_C=0.5\text{A}$ , $I_B=50\text{mA}$                      | -    | 150  | 350  |       |
|                                                 |               | $I_C=1\text{A}$ , $I_B=0.1\text{A}$                        | -    | 250  | 500  |       |
| Base-Emitter Saturation voltage<br>(Note1)      | $V_{BE(SAT)}$ | $I_C=0.1\text{A}$ , $I_B=10\text{mA}$                      | -    | -    | 1.0  | V     |
|                                                 |               | $I_C=0.5\text{A}$ , $I_B=50\text{mA}$                      | -    | -    | 1.1  |       |
| Transition Frequency                            | $f_T$         | $V_{CE}=5\text{V}$ , $I_E=-50\text{mA}$                    | 100  | -    | -    | MHz   |
| Collector Output Capacitance                    | $C_{OB}$      | $V_{CB}=10\text{V}$ , $I_E=0\text{A}$ ,<br>$f=1\text{MHz}$ | -    | -    | 10   | pF    |

Note: 1. Pulse width $\leq 300\mu\text{s}$ , Duty cycle $\leq 2\%$

## BCX56-16-AU

### TYPICAL CHARACTERISTIC CURVES

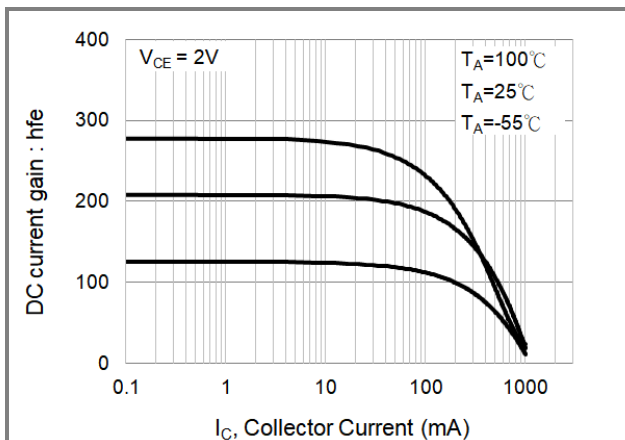


Fig.1 DC Current Gain

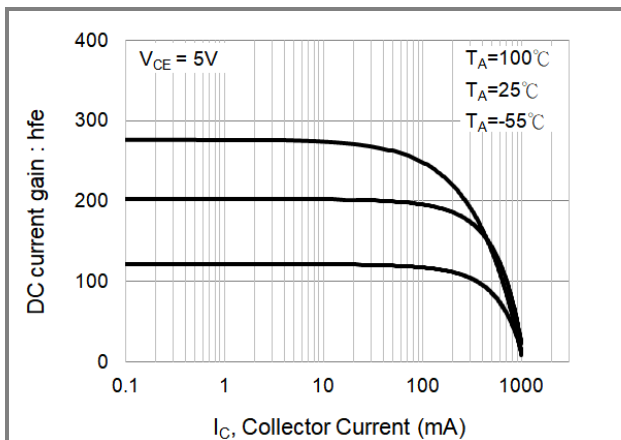


Fig.2 DC Current Gain

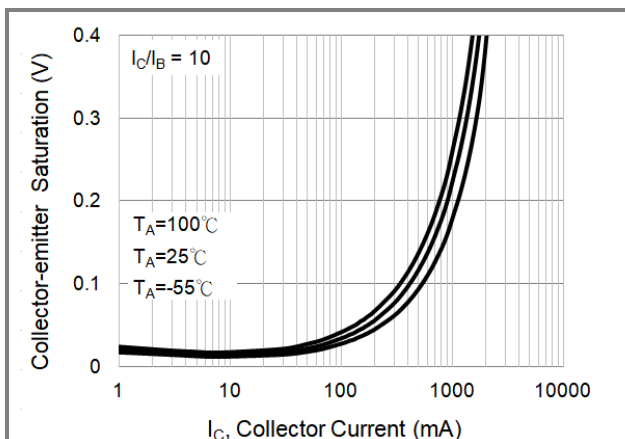


Fig.3 Collector-Emitter Saturation Voltage

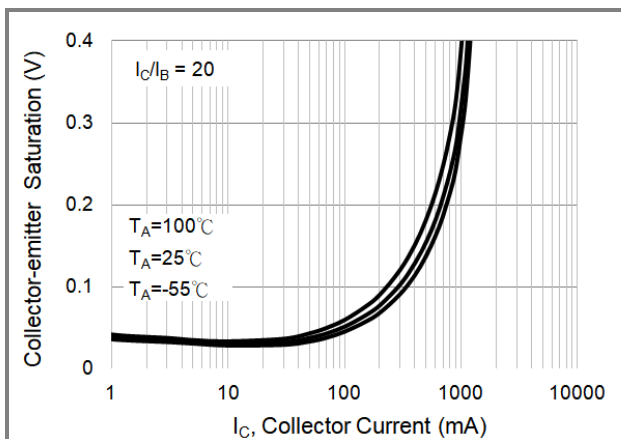


Fig.4 Collector-Emitter Saturation Voltage

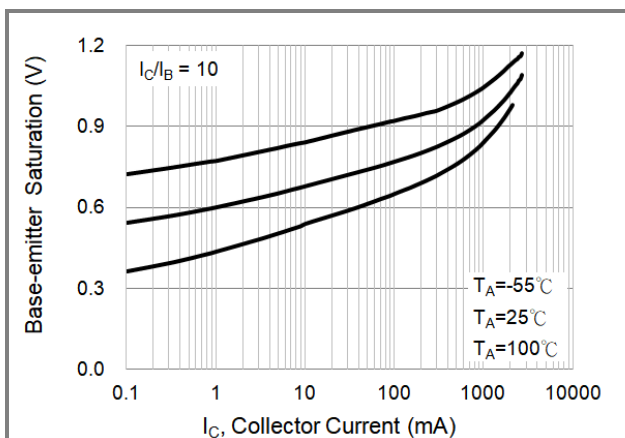


Fig.5 Base-Emitter Saturation Voltage

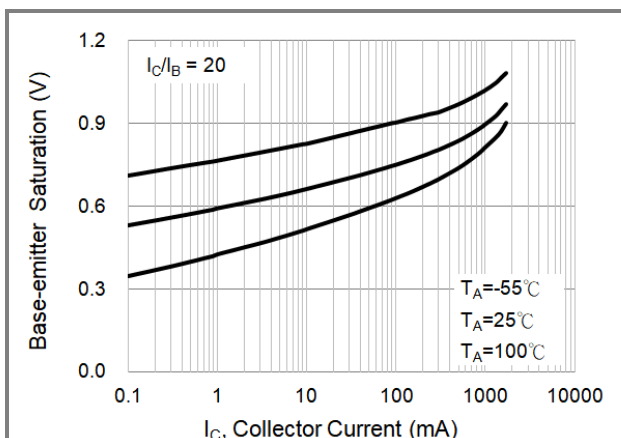


Fig.6 Base-Emitter Saturation Voltage

## BCX56-16-AU

### TYPICAL CHARACTERISTIC CURVES

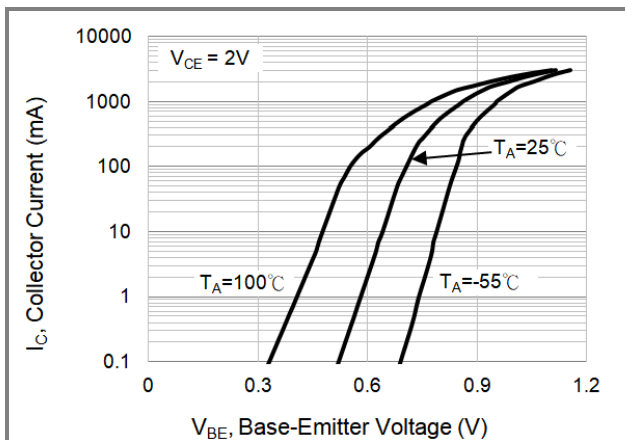


Fig.7 Base-Emitter Voltage

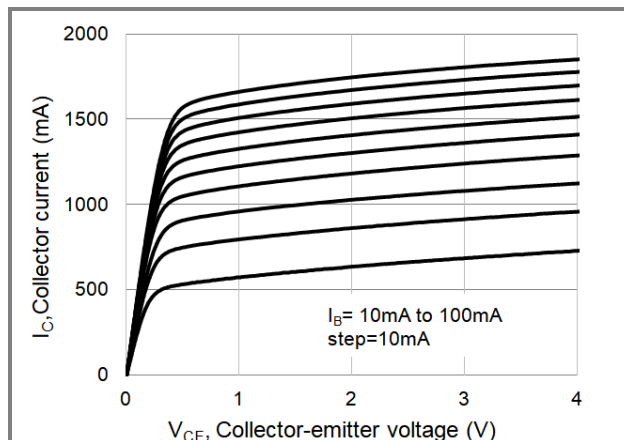


Fig.8 Collector Current

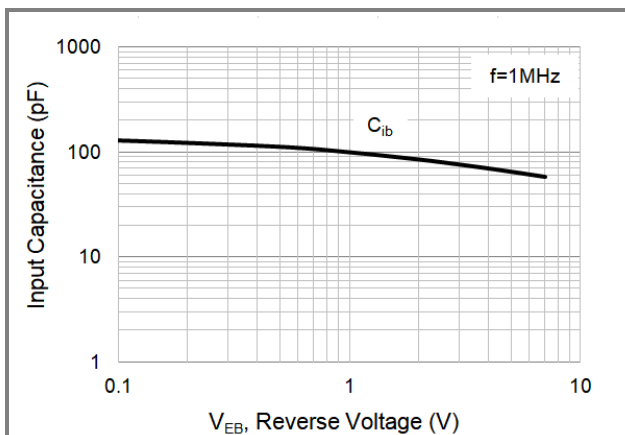


Fig.9 Input Capacitance

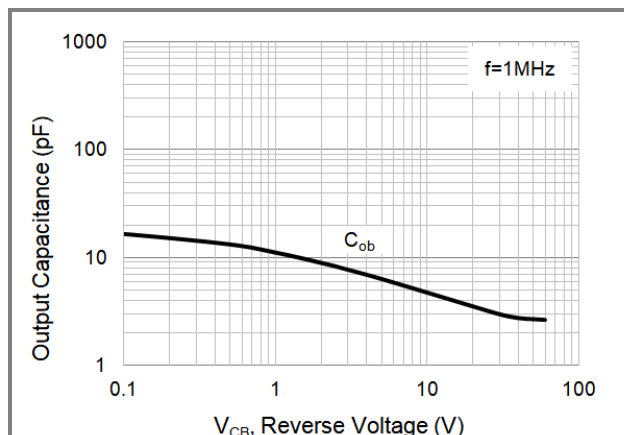


Fig.10 Output Capacitance

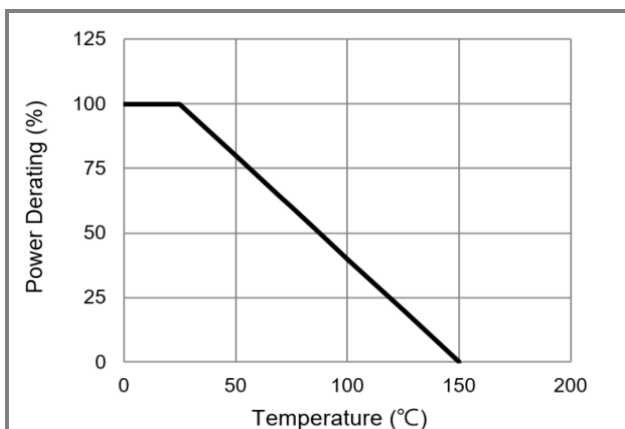


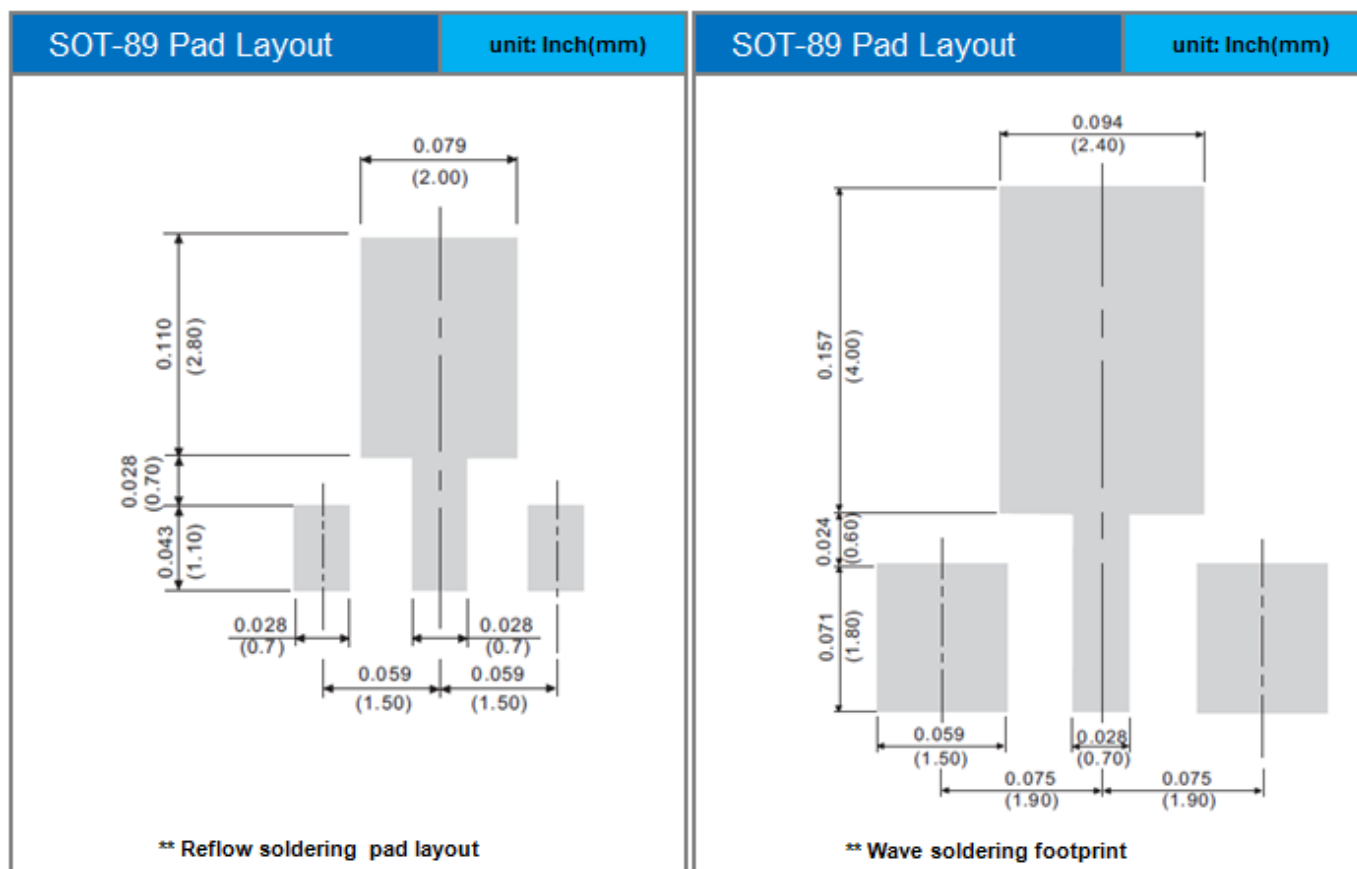
Fig.11 Power Derating Curve

## BCX56-16-AU

### Product and Packing Information

| Part No.    | Package Type | Packing Type        | Marking |
|-------------|--------------|---------------------|---------|
| BCX56-16-AU | SOT-89       | 1,000 pcs / 7" reel | 811D    |

### Mounting Pad Layout



## BCX56-16-AU

---

### Disclaimer

- Reproducing and modifying information of the document is prohibited without permission from Panjit International Inc..
- Panjit International Inc. reserves the rights to make changes of the content herein the document anytime without notification. Please refer to our website for the latest document.
- Panjit International Inc. disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- Panjit International Inc. does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Panjit International Inc. makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown herein are not designed and authorized for equipments relating to human life and for any applications concerning life-saving or life-sustaining, such as medical instruments, aerospace machinery et cetera. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Panjit International Inc. for any damages resulting from such improper use or sale.
- Since Panjit uses lot number as the tracking base, please provide the lot number for tracking when complaining.