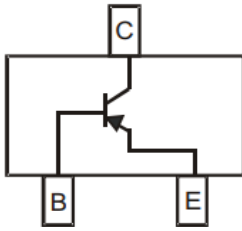


## PNP General Purpose Transistor



**SOT-23**

### Features

- Epoxy meets UL-94 V-0 flammability rating and halogen free
- Moisture Sensitivity Level 1
- High Conductance
- Part no. with suffix "Q" means AEC-Q101 qualified

### Applications

- General purpose switching and amplification

### Mechanical Data

- **Case:** SOT-23
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:**

| Part No. | Marking |
|----------|---------|
| BC856AQ  | 3A      |
| BC856BQ  | 3B      |
| BC857AQ  | 3E      |
| BC857BQ  | 3F      |
| BC857CQ  | 3G      |
| BC858AQ  | 3J      |
| BC858BQ  | 3K      |
| BC858CQ  | 3L      |

### ■ Maximum Ratings (Ta=25°C unless otherwise noted)

| Item                                       | Symbol     | Unit | Conditions | Value                   |     |
|--------------------------------------------|------------|------|------------|-------------------------|-----|
| Collector-Base Voltage                     | $V_{CBO}$  | V    |            | BC856AQ、BC856BQ         | -80 |
|                                            |            |      |            | BC857AQ、BC857BQ、BC857CQ | -50 |
|                                            |            |      |            | BC858AQ、BC858BQ、BC858CQ | -30 |
| Collector-Emitter Voltage                  | $V_{CEO}$  | V    |            | BC856AQ、BC856BQ         | -65 |
|                                            |            |      |            | BC857AQ、BC857BQ、BC857CQ | -45 |
|                                            |            |      |            | BC858AQ、BC858BQ、BC858CQ | -30 |
| Emitter-Base Voltage                       | $V_{EBO}$  | V    |            | -5                      |     |
| Collector Current -Continuous              | $I_C$      | A    |            | -0.1                    |     |
| Total Device Dissipation (*)               | $P_D$      | mW   |            | 300                     |     |
| Thermal Resistance Junction to Ambient (*) | $R_{thJA}$ | K/W  |            | 417                     |     |
| Junction Temperature                       | $T_j$      | °C   |            | 150                     |     |
| Storage Temperature                        | $T_{STG}$  | °C   |            | -55 to +150             |     |

(\*) Device mounted on FR-4 PCB 1.0 x 1.0 x 0.06 inch.



## BC856Q THRU BC858Q

### ■ Electrical Characteristics (Ta=25°C unless otherwise noted)

| Item                                 | Symbol        | Unit | Conditions                            |                          | Min | Max   |
|--------------------------------------|---------------|------|---------------------------------------|--------------------------|-----|-------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | V    | BC856AQ、BC856BQ                       | $I_C=-10\mu A, I_E=0$    | -80 |       |
|                                      |               |      | BC857AQ、BC857BQ、BC857CQ               |                          | -50 |       |
|                                      |               |      | BC858AQ、BC858BQ、BC858CQ               |                          | -30 |       |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | V    | BC856AQ、BC856BQ                       | $I_C=-10mA, I_B=0$       | -65 |       |
|                                      |               |      | BC857AQ、BC857BQ、BC857CQ               |                          | -45 |       |
|                                      |               |      | BC858AQ、BC858BQ、BC858CQ               |                          | -30 |       |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | V    | $I_E=-1\mu A, I_C=0$                  |                          | -5  |       |
| Collector cut-off current            | $I_{CBO}$     | nA   | $V_{CB}=-30V, I_E=0$                  |                          |     | -100  |
| Collector cut-off current            | $I_{CEO}$     | nA   | BC856AQ、BC856BQ                       | $V_{CE}=-65V, I_B=0$     |     | -100  |
|                                      |               |      | BC857AQ、BC857BQ、BC857CQ               | $V_{CE}=-45V, I_B=0$     |     |       |
|                                      |               |      | BC858AQ、BC858BQ、BC858CQ               | $V_{CE}=-30V, I_B=0$     |     |       |
| Emitter cut-off current              | $I_{EBO}$     | nA   | $V_{EB}=-5V, I_C=0$                   |                          |     | -100  |
| DC current gain                      | $h_{FE}$      |      | BC856AQ、BC857AQ、BC858AQ               | $V_{CE}=-5.0V, I_C=-2mA$ | 125 | 250   |
|                                      |               |      | BC856BQ、BC857BQ、BC858BQ               |                          | 220 | 475   |
|                                      |               |      | BC857CQ、BC858CQ                       |                          | 420 | 800   |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | V    | $I_C=-100mA, I_B=-5mA$                |                          |     | -0.65 |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | V    | $I_C=-100mA, I_B=-5mA$                |                          |     | -1.1  |
| Transition frequency                 | $f_T$         | MHz  | $V_{CE}=-5V_{dc}, I_C=-10mA, f=30MHz$ |                          | 100 |       |
| Collector output capacitance         | Cob           | pF   | $V_{CB}=-10V, f=1MHz$                 |                          |     | 4.5   |

### ■ Ordering Information (Example)

| PREFERRED P/N                                                         | PACKING CODE | UNIT WEIGHT(g)      | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|-----------------------------------------------------------------------|--------------|---------------------|----------------------|-------------------------|----------------------------|---------------|
| BC856AQ、BC856BQ<br>BC857AQ、BC857BQ、BC857CQ<br>BC858AQ、BC858BQ、BC858CQ | F2           | Approximate<br>0.01 | 3000                 | 30000                   | 120000                     | 7" reel       |



## BC856Q THRU BC858Q

### ■ Characteristics (Typical)

Fig.1 - Static characteristic

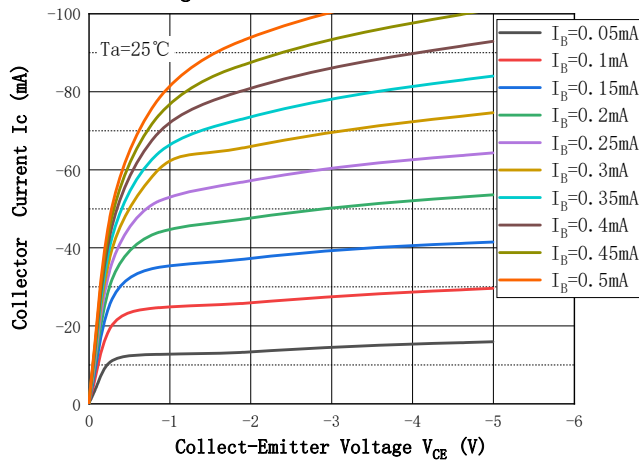


Fig.2 - DC Current Gain

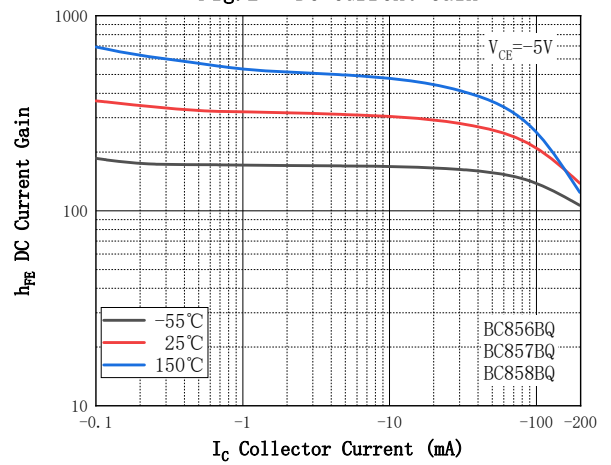


Fig.3 - Static characteristic

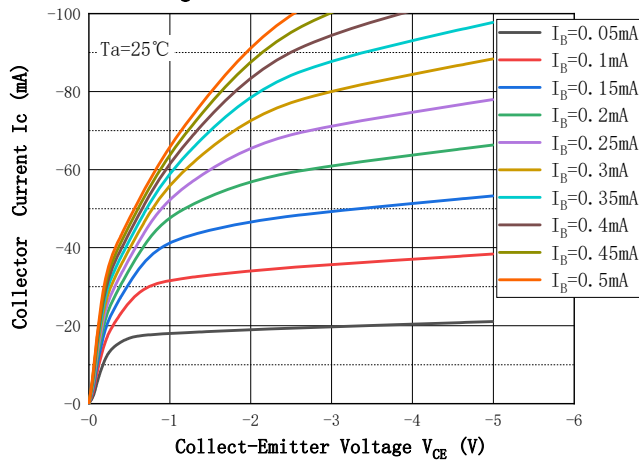


Fig.4 - DC Current Gain

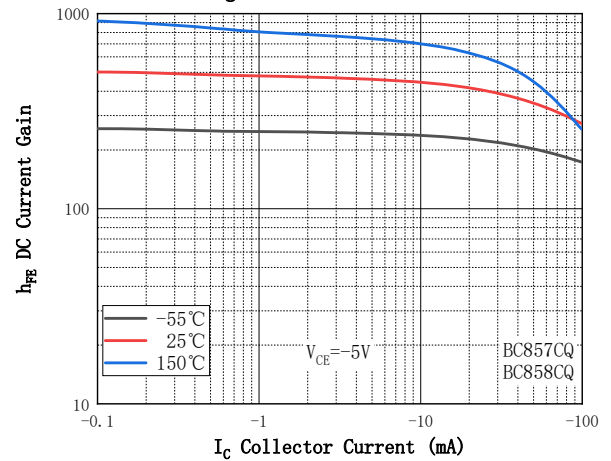


Fig.5 - Collect-Emmitter Saturation Voltage

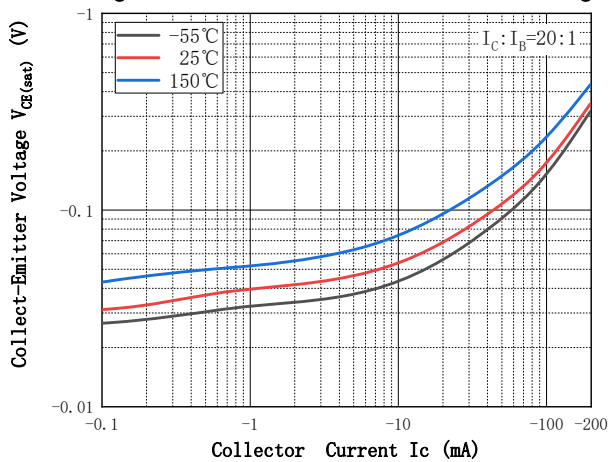
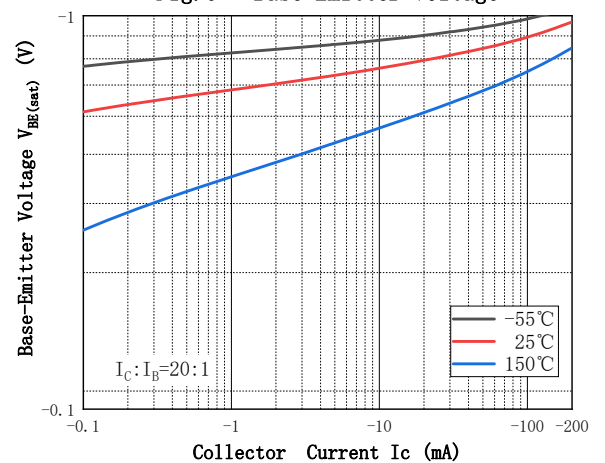


Fig.6 - Base-Emitter Voltage





## BC856Q THRU BC858Q

Fig.7 - Base-Emitter On Voltage

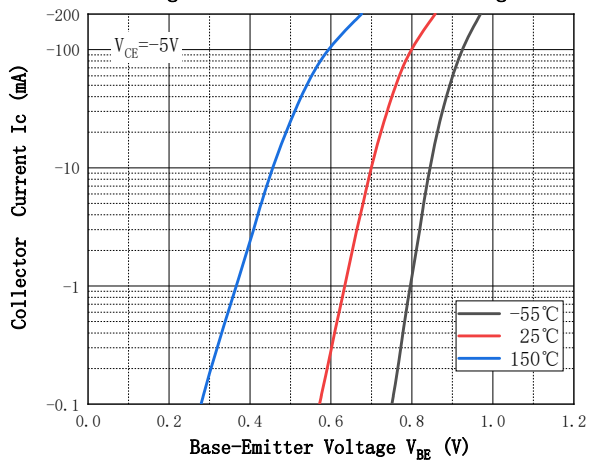
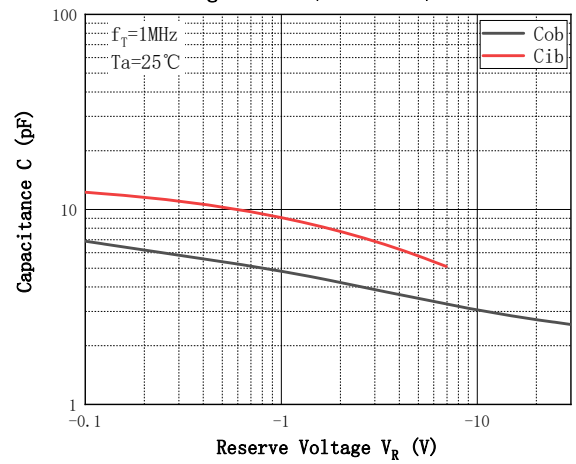
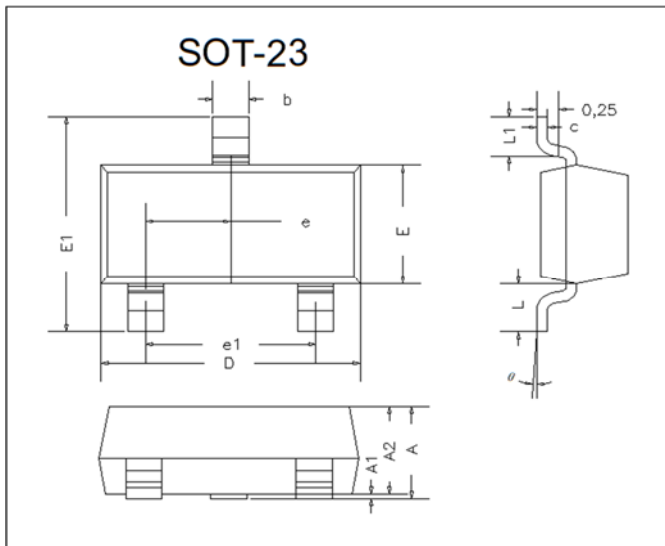


Fig.8 - Cob/Cib—VCB/VEB

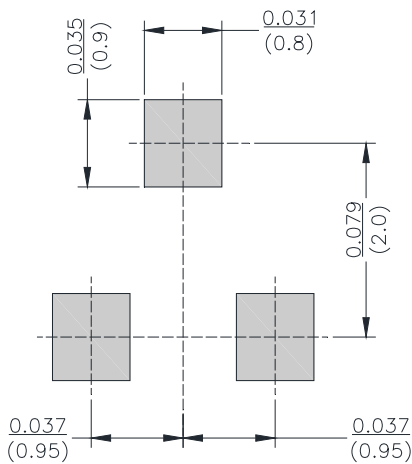


### ■SOT-23 Package Outline Dimensions



| DIM | INCHES   |       | MM      |      | NOTE |
|-----|----------|-------|---------|------|------|
|     | MIN      | MAX   | MIN     | MAX  |      |
| A   | 0.035    | 0.045 | 0.90    | 1.15 |      |
| A1  | 0.000    | 0.004 | 0.00    | 0.10 |      |
| A2  | 0.035    | 0.041 | 0.90    | 1.05 |      |
| b   | 0.012    | 0.020 | 0.30    | 0.50 |      |
| c   | 0.004    | 0.008 | 0.10    | 0.20 |      |
| D   | 0.110    | 0.118 | 2.80    | 3.00 |      |
| E   | 0.047    | 0.055 | 1.20    | 1.40 |      |
| E1  | 0.089    | 0.100 | 2.25    | 2.55 |      |
| e   | 0.370TYP |       | 0.95TYP |      |      |
| e1  | 0.071    | 0.079 | 1.80    | 2.00 |      |
| L   | 0.220REF |       | 0.55REF |      |      |
| L1  | 0.012    | 0.020 | 0.30    | 0.50 |      |
| θ   | 0°       | 8°    | 0°      | 8°   |      |

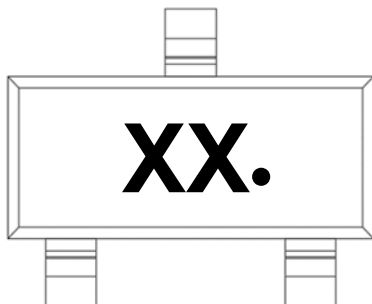
### ■SOT-23 Suggested Pad Layout



Unit:  $\frac{\text{inch}}{\text{mm}}$



### ■ Marking Information



**Note:**

1. All marking is at middle of the product body
2. All marking is in laser marking
3. XX is Marking Code
4. Body color: Black



## BC856Q THRU BC858Q

---

### Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with automotive electronics, are not designed for use in medical, life-saving, lifesustaining, or military. Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website [http:// www.21yangjie.com](http://www.21yangjie.com) , or consult your nearest Yangjie's sales office for further assistance.