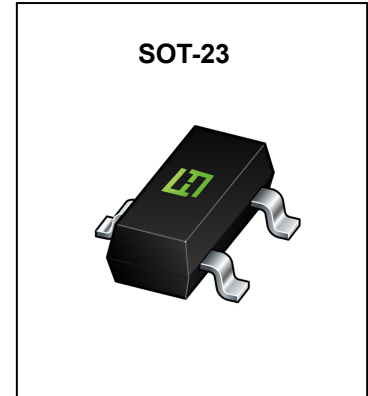


## FEATURES

- Ideally suited for automatic insertion
- Epitaxial planar die construction
- Complementary NPN type available(BC817)

## MAXIMUM RATINGS ( $T_a=25^{\circ}\text{C}$ unless otherwise noted)

| Symbol                         | Parameter  | Value    | Unit                 |
|--------------------------------|--|----------|----------------------|
| $V_{\text{CBO}}$               | Collector-Base Voltage                           | -50      | V                    |
| $V_{\text{CEO}}$               | Collector-Emitter Voltage                        | -45      | V                    |
| $V_{\text{EBO}}$               | Emitter-Base Voltage                             | -5       | V                    |
| $I_{\text{C}}$                 | Collector Current                                | -500     | mA                   |
| $P_{\text{C}}$                 | Collector Power Dissipation                      | 300      | mW                   |
| $R_{\theta\text{JA}}$          | Thermal Resistance From Junction To Ambient      | 417      | $^{\circ}\text{C/W}$ |
| $T_{\text{J}}, T_{\text{stg}}$ | Operation Junction and Storage Temperature Range | -55~+150 | $^{\circ}\text{C}$   |

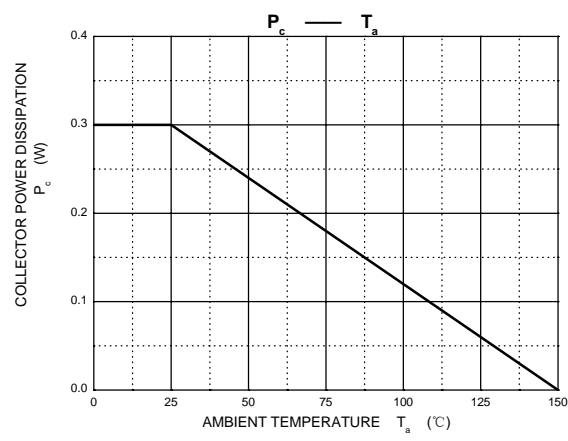
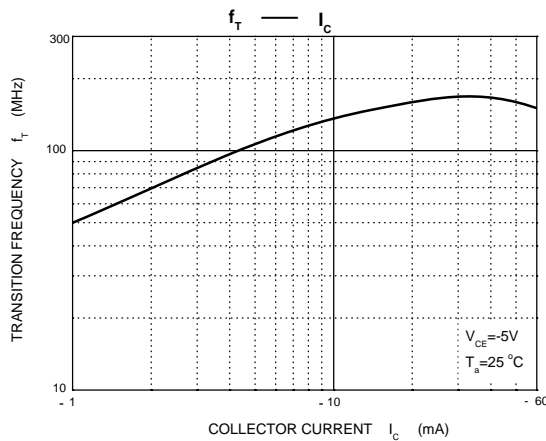
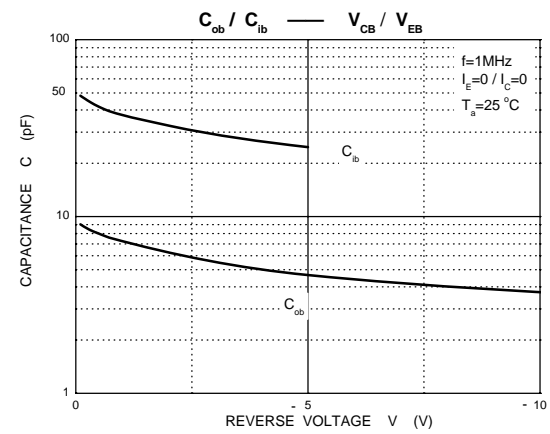
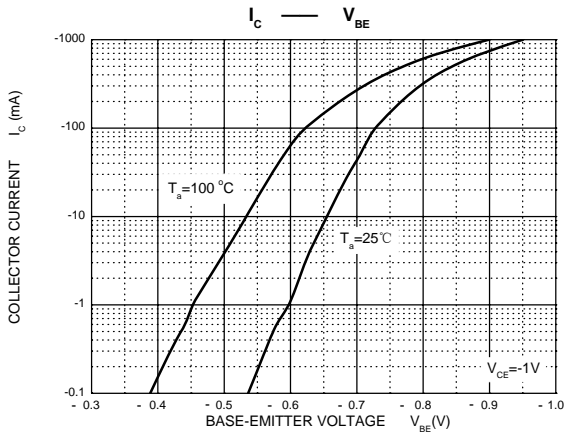
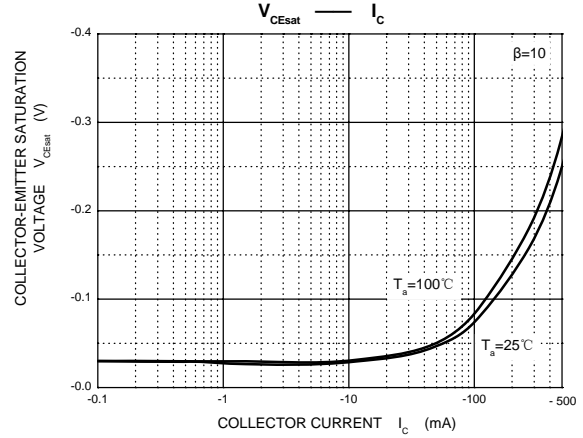
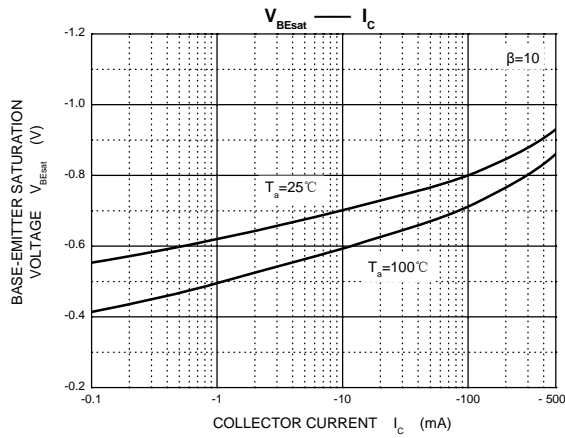
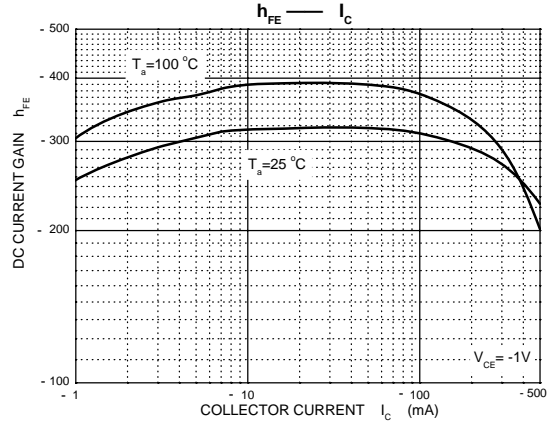
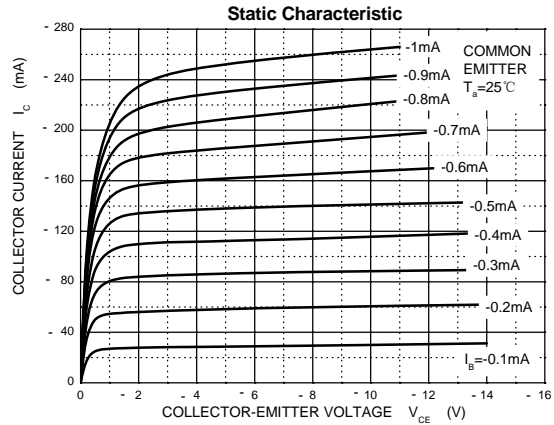


## ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$ unless otherwise specified)

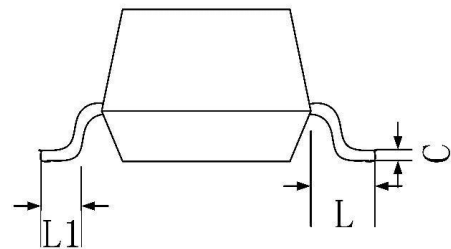
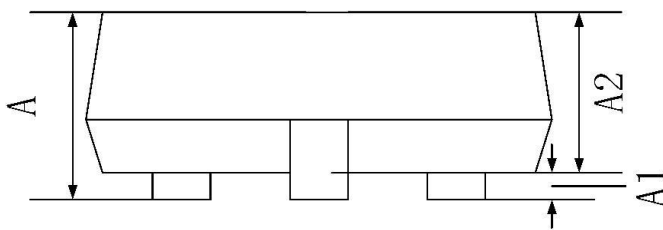
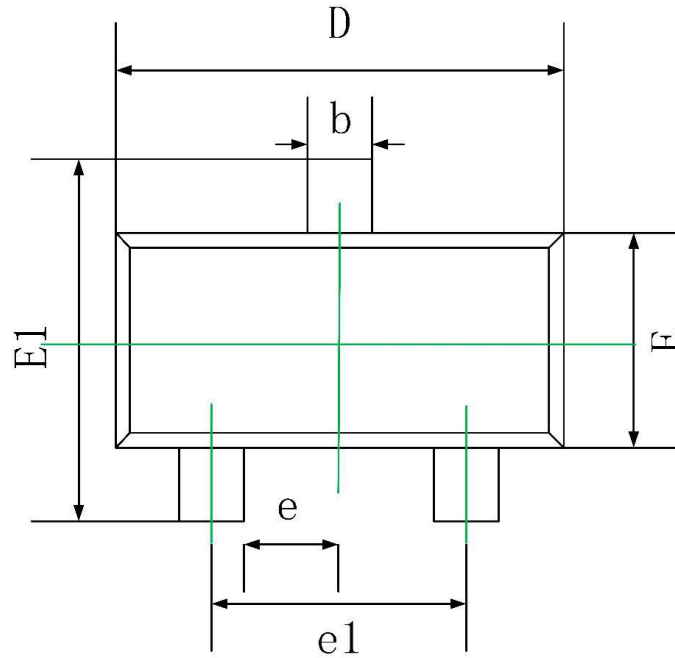
| Parameter                            | Symbol               | Test conditions  | Min | Max  | Unit          |
|--------------------------------------|----------------------|--|-----|------|---------------|
| Collector-base breakdown voltage     | $V_{\text{CBO}}$     | $I_{\text{C}} = -10\mu\text{A}, I_{\text{E}} = 0$                                | -50 |      | V             |
| Collector-emitter breakdown voltage  | $V_{\text{CEO}}$     | $I_{\text{C}} = -10\text{mA}, I_{\text{B}} = 0$                                  | -45 |      | V             |
| Emitter-base breakdown voltage       | $V_{\text{EBO}}$     | $I_{\text{E}} = -1\mu\text{A}, I_{\text{C}} = 0$                                 | -5  |      | V             |
| Collector cut-off current            | $I_{\text{CBO}}$     | $V_{\text{CB}} = -45\text{V}, I_{\text{E}} = 0$                                  |     | -0.1 | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{\text{EBO}}$     | $V_{\text{EB}} = -4\text{V}, I_{\text{C}} = 0$                                   |     | -0.1 | $\mu\text{A}$ |
| DC current gain                      | $h_{\text{FE}(1)}$   | $V_{\text{CE}} = -1\text{V}, I_{\text{C}} = -100\text{mA}$                       | 100 | 600  |               |
|                                      | $h_{\text{FE}(2)}$   | $V_{\text{CE}} = -1\text{V}, I_{\text{C}} = -500\text{mA}$                       | 40  |      |               |
| Collector-emitter saturation voltage | $V_{\text{CE(sat)}}$ | $I_{\text{C}} = -500\text{mA}, I_{\text{B}} = -50\text{mA}$                      |     | -0.7 | V             |
| Base-emitter saturation voltage      | $V_{\text{BE(sat)}}$ | $I_{\text{C}} = -500\text{mA}, I_{\text{B}} = -50\text{mA}$                      |     | -1.2 | V             |
| Transition frequency                 | $f_{\text{T}}$       | $V_{\text{CE}} = -5\text{V}, I_{\text{C}} = -10\text{mA}$<br>$f = 100\text{MHz}$ | 100 |      | MHz           |

## CLASSIFICATION OF $h_{\text{FE}(1)}$

| Rank    | BC807-16 | BC807-25 | BC807-40 |
|---------|----------|----------|----------|
| Range   | 100-250  | 160-400  | 250-600  |
| Marking | 5A       | 5B       | 5C       |



**SOT-23 Package Information**



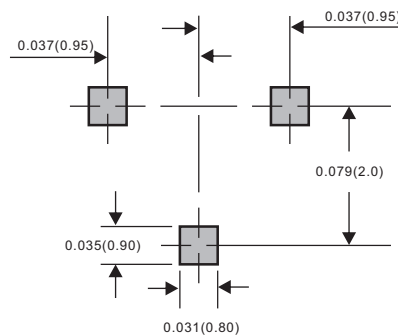
| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.900                     | 1.150 | 0.035                | 0.045 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.900                     | 1.050 | 0.035                | 0.041 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 2.800                     | 3.000 | 0.110                | 0.118 |
| E      | 1.200                     | 1.400 | 0.047                | 0.055 |
| E1     | 2.250                     | 2.550 | 0.089                | 0.100 |
| e      | 0.950 TYP.                |       | 0.037 TYP.           |       |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.550 REF.                |       | 0.022 REF.           |       |
| L1     | 0.300                     | 0.500 | 0.012                | 0.020 |

## Pinning information

| Pin   | Simplified outline | Symbol |
|---|--------------------|--------|
| PinB Base<br>PinC Collector<br>PinE Emitter |                    |        |

## Suggested solder pad layout

### SOT-23



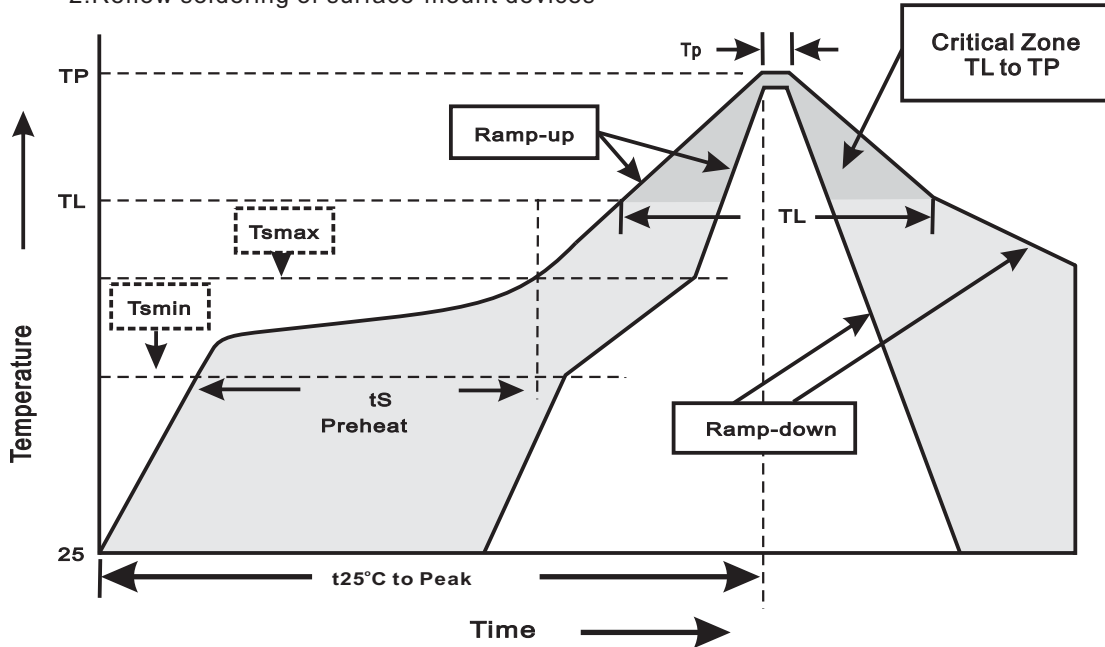
Dimensions in inches and (millimeters)

## Reel packing

| PACKAGE | REEL SIZE | REEL (pcs) | COMPONENT SPACING (m/m) | BOX (pcs) | INNER BOX (m/m) | REEL DIA, (m/m) | CARTON SIZE (m/m) | CARTON (pcs) | APPROX. GROSS WEIGHT (kg) |
|---------|-----------|------------|-------------------------|-----------|-----------------|-----------------|-------------------|--------------|---------------------------|
| SOT-23  | 7"        | 3,000      | 4.0                     | 30,000    | 183*123*183     | 178             | 382*257*387       | 240,000      | 11.6                      |

**Suggested thermal profiles for soldering processes**

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

| Profile Feature  | Soldering Condition         |
|--|-----------------------------|
| Average ramp-up rate(TL to TP)   | <3°C/sec                    |
| Preheat<br>-Temperature Min(Tsmin)<br>-Temperature Max(Tsmax)<br>-Time(min to max)(ts) | 150°C<br>200°C<br>60~120sec |
| Tsmax to TL<br>-Ramp-upRate  | <3°C/sec                    |
| Time maintained above:<br>-Temperature(TL)<br>-Time(tL)                                | 217°C<br>60~260sec          |
| Peak Temperature(TP)   | 255°C-0/+5°C                |
| Time within 5°C of actual Peak Temperature(tp)   | 10~30sec                    |
| Ramp-down Rate   | <6°C/sec                    |
| Time 25°C to Peak Temperature  | <6minutes                   |

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