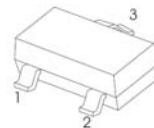




## FEATURES

- Ideally suited for automatic insertion
- For switching and AF amplifier applications

### SOT-23



1.BASE  
2.EMITTER  
3.COLLECTOR

| Type number | Marking code |
|-------------|--------------|
| BC846A      | 1A           |
| BC846B      | 1B           |
| BC847A      | 1E           |
| BC847B      | 1F           |
| BC847C      | 1G           |
| BC848A      | 1J           |
| BC848B      | 1K           |
| BC848C      | 1L           |

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

### MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

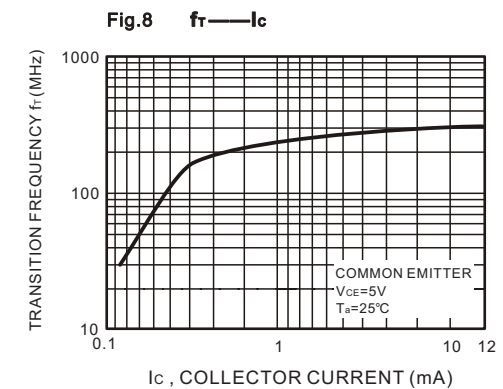
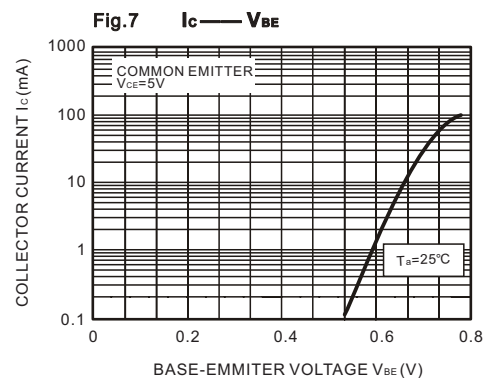
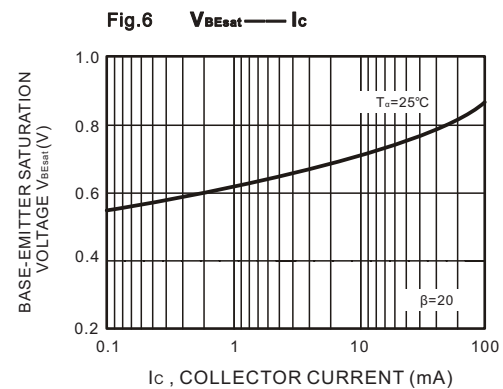
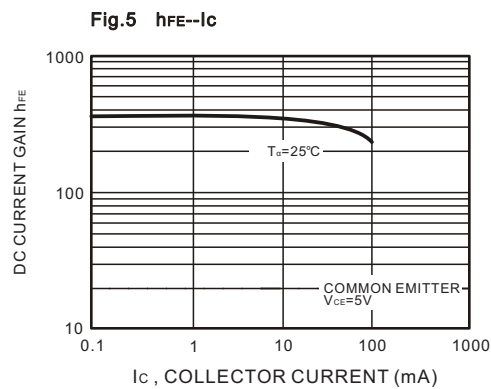
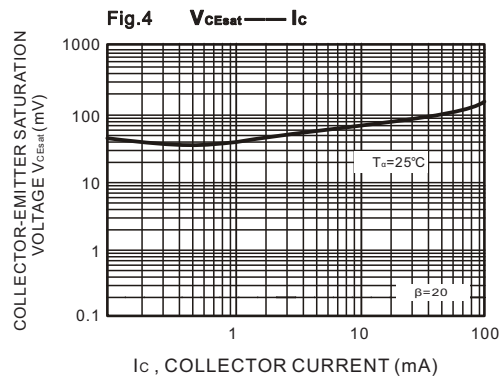
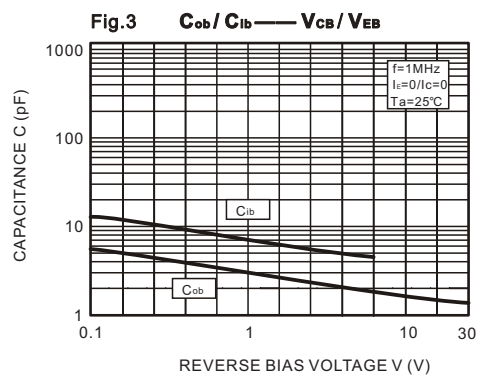
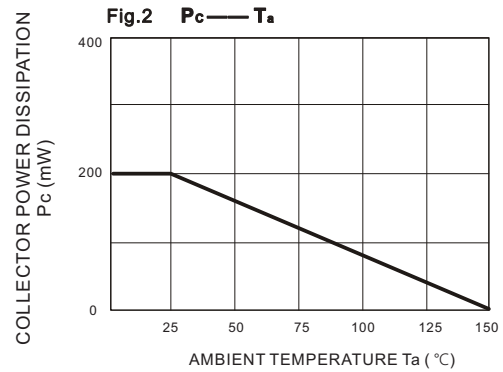
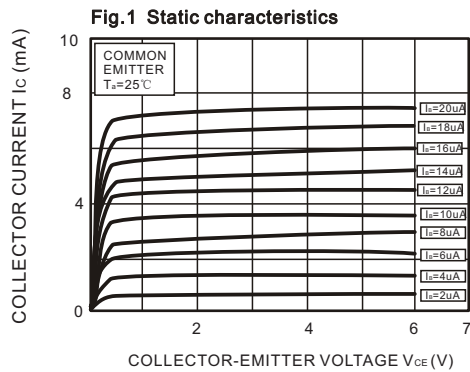
| Parameter                                   |                         | Symbol     | Value          | Unit |
|---------------------------------------------|-------------------------|------------|----------------|------|
| Collector–Base Voltage                      | BC846<br>BC847<br>BC848 | $V_{CBO}$  | 80<br>50<br>30 | V    |
| Collector–Emitter Voltage                   | BC846<br>BC847<br>BC848 | $V_{CEO}$  | 65<br>45<br>30 | V    |
| Emitter–Base Voltage                        |                         | $V_{EBO}$  | 6              | V    |
| Collector Current — Continuous              |                         | $I_C$      | 0.1            | A    |
| Collector Power Dissipation                 |                         | $P_C$      | 200            | mW   |
| Thermal Resistance From Junction To Ambient |                         | $R_{thJA}$ | 625            | °C/W |
| Junction Temperature                        |                         | $T_J$      | 150            | °C   |
| Storage Temperature                         |                         | $T_{stg}$  | -55~+150       | °C   |

### ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted.)

| Parameter                                                                | Symbol        | Test conditions                                                               | Min               | Typ | Max               | Unit    |
|--------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------|-------------------|-----|-------------------|---------|
| Collector-base breakdown voltage<br>BC846<br>BC847<br>BC848              | $V_{CBO}$     | $I_C = 10\mu A, I_E = 0$                                                      | 80<br>50<br>30    |     |                   | V       |
| Collector-emitter breakdown voltage<br>BC846<br>BC847<br>BC848           | $V_{CEO}$     | $I_C = 10mA, I_B = 0$                                                         | 65<br>45<br>30    |     |                   | V       |
| Emitter-base breakdown voltage                                           | $V_{EBO}$     | $I_E = 10\mu A, I_C = 0$                                                      | 6                 |     |                   | V       |
| Collector cut-off current<br>BC846<br>BC847<br>BC848                     | $I_{CBO}$     | $V_{CB} = 70V, I_E = 0$<br>$V_{CB} = 50V, I_E = 0$<br>$V_{CB} = 30V, I_E = 0$ |                   |     | 0.1               | $\mu A$ |
| Collector cut-off current<br>BC846<br>BC847<br>BC848                     | $I_{CEO}$     | $V_{CE} = 60V, I_B = 0$<br>$V_{CE} = 45V, I_B = 0$<br>$V_{CE} = 30V, I_B = 0$ |                   |     | 0.1               | $\mu A$ |
| Emitter cut-off current                                                  | $I_{EBO}$     | $V_{EB} = 5V, I_C = 0$                                                        |                   |     | 0.1               | $\mu A$ |
| DC current gain<br>BC846A,847A,848A<br>BC846B,847B,848B<br>BC847C,BC848C | $h_{FE}$      | $V_{CE} = 5V, I_C = 2mA$                                                      | 110<br>200<br>420 |     | 220<br>450<br>800 |         |
| Collector-emitter saturation voltage                                     | $V_{CE(sat)}$ | $I_C = 100mA, I_B = 5mA$                                                      |                   |     | 0.5               | V       |
| Base-emitter saturation voltage                                          | $V_{BE(sat)}$ | $I_C = 100mA, I_B = 5mA$                                                      |                   |     | 1.1               | V       |
| Transition frequency                                                     | $f_T$         | $V_{CE} = 5V,$<br>$I_C = 10mA, f = 100MHz$                                    | 100               |     |                   | MHz     |
| Collector output capacitance                                             | $C_{ob}$      | $V_{CB} = 10V, f = 1MHz$                                                      |                   |     | 4.5               | pF      |

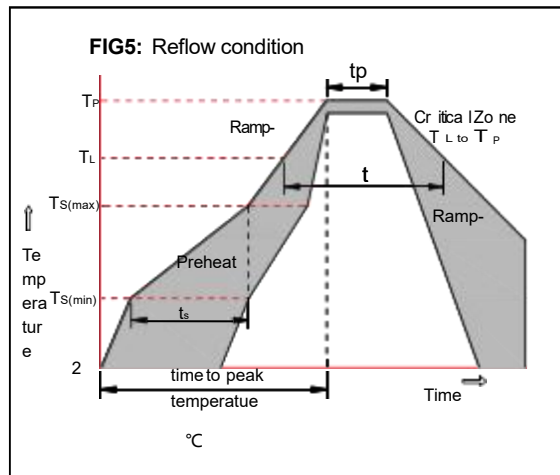


**RATING AND CHARACTERISTIC CURVES**



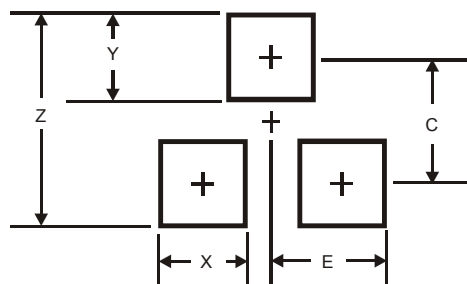
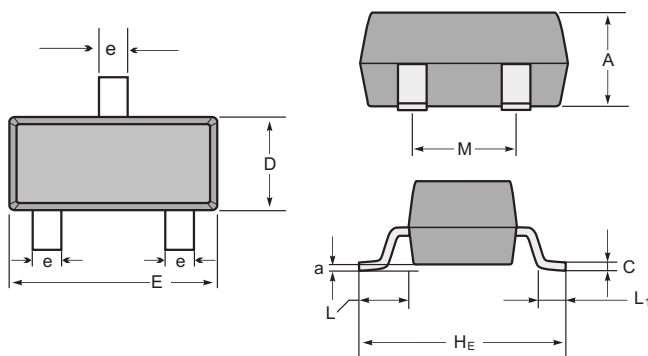
## Soldering parameters

| Reflow Condition                                        |                                   | Pb-Free assembly<br>(see as below) |
|---------------------------------------------------------|-----------------------------------|------------------------------------|
| Pre Heat                                                | -Temperature Min ( $T_{s(min)}$ ) | +150°C                             |
|                                                         | -Temperature Max( $T_{s(max)}$ )  | +200°C                             |
|                                                         | -Time (Min to Max) (ts)           | 60-180 secs.                       |
| Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak) |                                   | 3°C/sec. Max                       |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                    |                                   | 3°C/sec. Max                       |
| Reflow                                                  | -Temperature( $T_L$ )(Liquid us)  | +217°C                             |
|                                                         | -Temperature( $t_L$ )             | 60-150 secs.                       |
| Peak Temp ( $T_P$ )                                     |                                   | +260(+0/-5)°C                      |
| Time within 5°C of actual Peak Temp ( $t_P$ )           |                                   | 30 secs. Max                       |
| Ramp-down Rate                                          |                                   | 6°C/sec. Max                       |
| Time 25°C to Peak Temp ( $T_P$ )                        |                                   | 8 min. Max                         |
| Do not exceed                                           |                                   | +260°C                             |



## Package Dimensions & Suggested Pad Layout

### SOT23



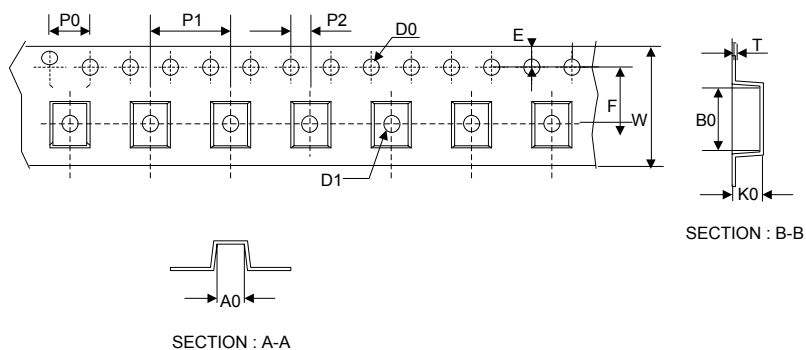
### SOT-23 mechanical data

| UNIT | A   | C   | D    | E   | H <sub>E</sub> | e   | M   | L    | L <sub>1</sub> | a          |
|------|-----|-----|------|-----|----------------|-----|-----|------|----------------|------------|
| mm   | max | 1.1 | 0.15 | 1.4 | 3.0            | 2.6 | 0.5 | 1.95 | 0.55 (ref)     | 0.36 (ref) |
|      | min | 0.9 | 0.08 | 1.2 | 2.8            | 2.2 | 0.3 | 1.7  |                | 0.15       |
| mil  | max | 43  | 6    | 55  | 118            | 102 | 20  | 77   | 22 (ref)       | 14 (ref)   |
|      | min | 35  | 3    | 47  | 110            | 87  | 12  | 67   |                | 6          |

| Dimensions | SOT23 |
|------------|-------|
| Z          | 2.9   |
| X          | 0.8   |
| Y          | 0.9   |
| C          | 2.0   |
| E          | 1.35  |

**Tape & reel specification**

**Tape**



| Symbol            | Dimension (mm) |
|-------------------|----------------|
| P0                | 4.00±0.10      |
| P1                | 4.00±0.10      |
| P2                | 2.00±0.10      |
| D0                | 1.55±0.10      |
| D1                | 1.05±0.10      |
| E                 | 1.55±0.10      |
| F                 | 3.60±0.10      |
| W                 | 8.00±0.10      |
| A0                | 3.80±0.20      |
| B0                | 3.25±0.20      |
| K0                | 1.45±0.10      |
| T                 | 0.25±0.05      |
| D2                | 178.0±3.0      |
| D3                | 55Min.         |
| D4                | R24.0±3.0      |
| G                 | R82.0±3.0      |
| I                 | 13.0±2.0       |
| W1                | 11.0±3.0       |
| Quantity: 3000PCS |                |

**7" Reel**

