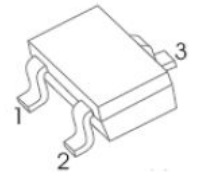


## SOT-323 Plastic-Encapsulate Transistors

**SOT-323**


1. BASE
2. EMITTER
3. COLLECTOR

**FEATURES**

- Ideally suited for automatic insertion
- For Switching and AF Amplifier Applications

**MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)**

| Symbol           | Parameter                                   |        | Value   | Unit |
|------------------|---|--------|---------|------|
| V <sub>CBO</sub> | Collector-Base Voltage                      | BC846W | 80      | V    |
|                  |   | BC847W | 50      |      |
|                  |   | BC848W | 30      |      |
| V <sub>CEO</sub> | Collector-Emitter Voltage                   | BC846W | 65      | V    |
|                  |   | BC847W | 45      |      |
|                  |   | BC848W | 30      |      |
| V <sub>EBO</sub> | Emitter-Base Voltage                        | BC846W | 6       | V    |
|                  |   | BC847W | 6       |      |
|                  |   | BC848W | 5       |      |
| I <sub>C</sub>   | Collector Current –Continuous               |        | 0.1     | A    |
| P <sub>C</sub>   | Collector Power Dissipation                 |        | 150     | mW   |
| R <sub>θJA</sub> | Thermal Resistance From Junction To Ambient |        | 833     | °C/W |
| T <sub>J</sub>   | Junction Temperature                        |        | 150     | °C   |
| T <sub>stg</sub> | Storage Temperature                         |        | -55-150 | °C   |

**DEVICE MARKING**

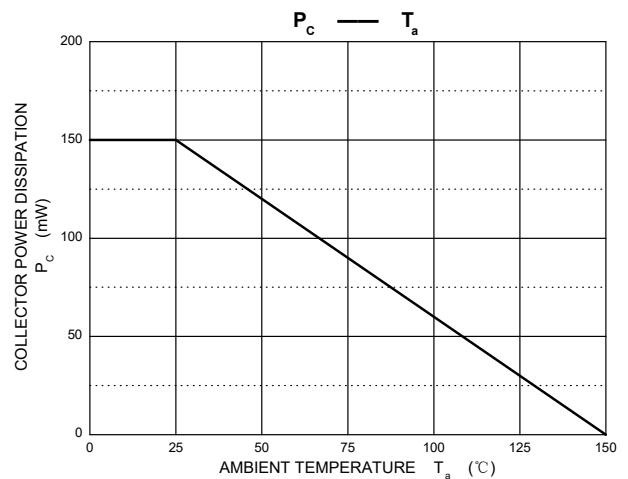
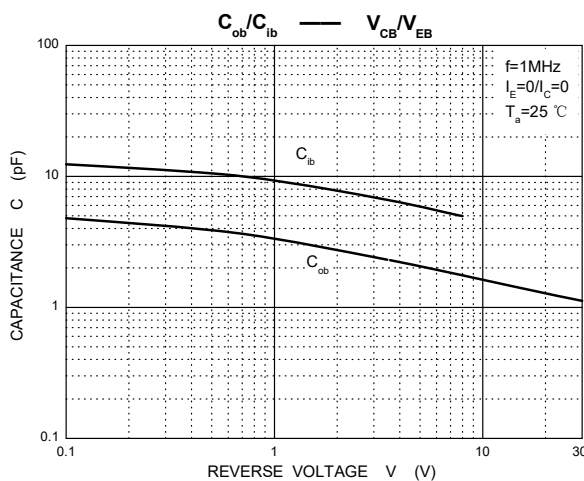
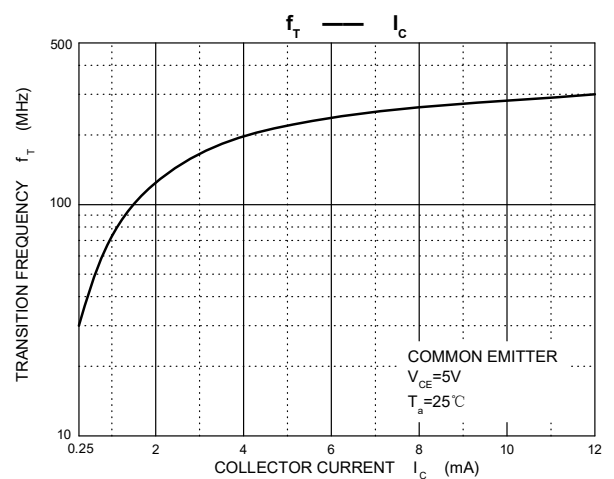
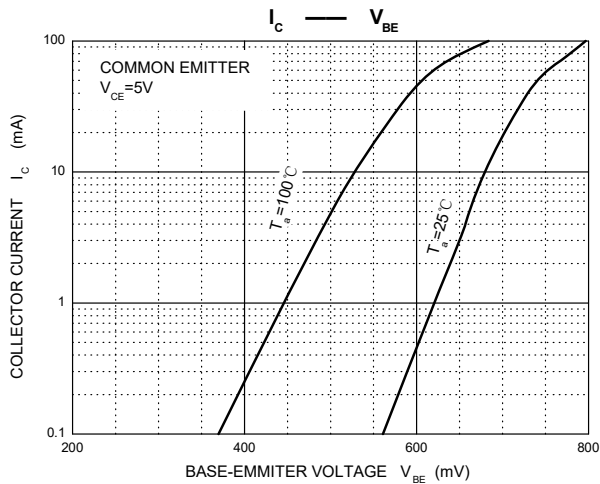
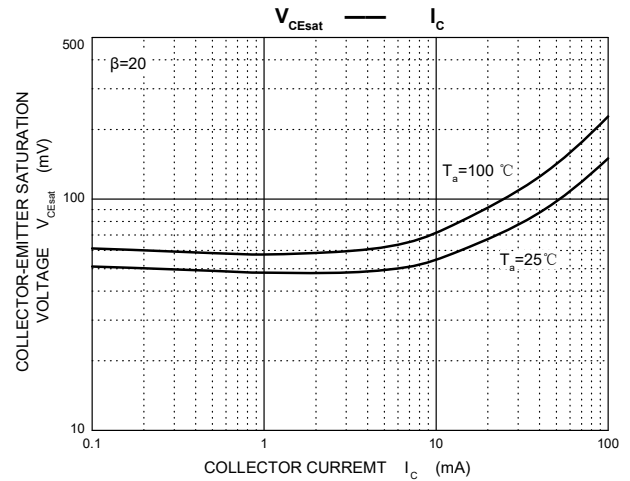
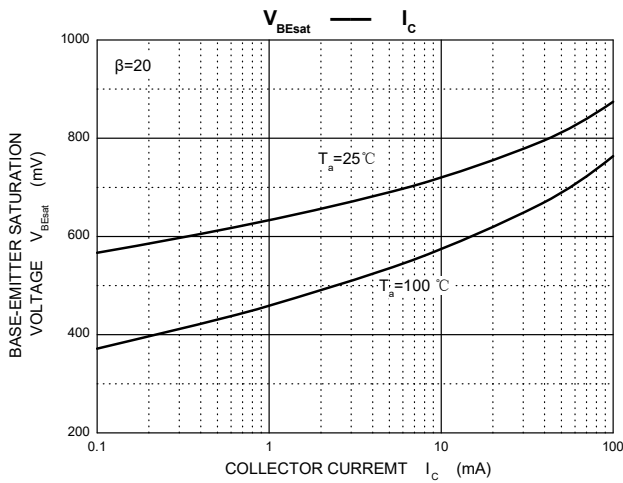
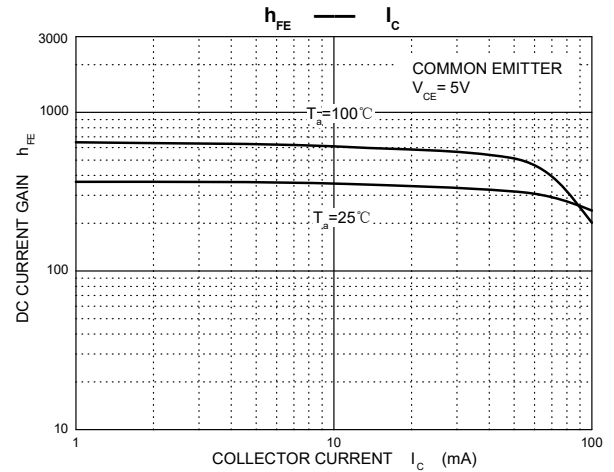
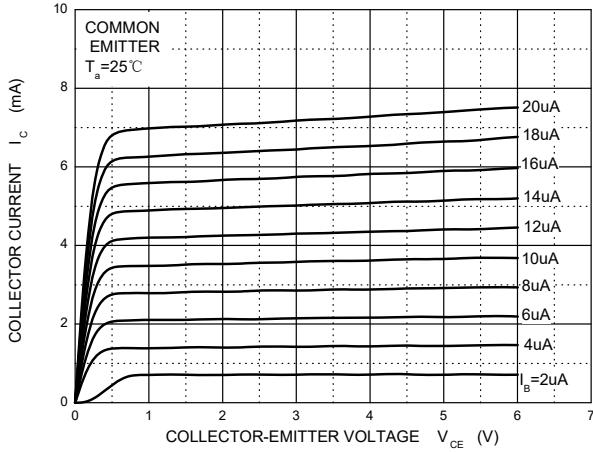
**BC846AW=1A; BC846BW=1B;**  
**BC847AW=1E; BC847BW=1F; BC847CW=1G;**  
**BC848AW=1J; BC848BW=1K; BC848CW=1L**

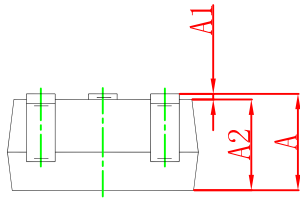
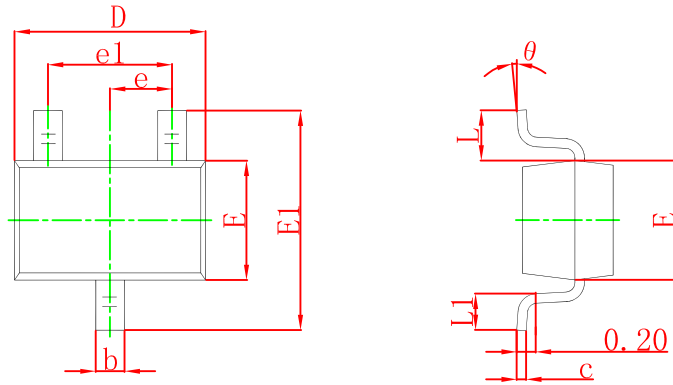
**ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)**

| Parameter                            | Symbol   | Test conditions   | Min | Typ        | Max         | Unit |
|--------------------------------------|--|---|-----|------------|-------------|------|
| Collector-base breakdown voltage     | BC846W   | $I_C = 10\mu A, I_E = 0$  | 80  |            |             | V    |
|                                      | BC847W   |   | 50  |            |             |      |
|                                      | BC848W   |   | 30  |            |             |      |
| Collector-emitter breakdown voltage  | BC846W   | $I_C = 10mA, I_B = 0$   | 65  |            |             | V    |
|                                      | BC847W   |   | 45  |            |             |      |
|                                      | BC848W   |   | 30  |            |             |      |
| Emitter-base breakdown voltage       | BC846W   | $I_E = 1\mu A, I_C = 0$   | 6   |            |             | V    |
|                                      | BC847W   |   | 6   |            |             |      |
|                                      | BC848W   |   | 5   |            |             |      |
| Collector Cutoff Current             | $I_{CBO}$  | $V_{CB} = 30V$  |     |            | 15          | nA   |
| DC current gain                      | BC846AW,847AW,848AW<br>BC846BW,847BW,848BW<br>BC847CW,BC848CW<br>BC846AW,847AW,848AW<br>BC846BW,847BW,848BW<br>BC847CW,BC848CW | $V_{CE} = 5V, I_C = 10\mu A$  |     | 90         |             |      |
|                                      |  |   |     | 150        |             |      |
|                                      |  | $V_{CE} = 5V, I_C = 2mA$  | 110 | 220        |             |      |
|                                      |  |   | 200 | 450        |             |      |
|                                      |  |   | 420 | 800        |             |      |
| Collector-emitter saturation voltage | $V_{CE(sat)}$  | $I_C = 10mA, I_B = 0.5mA$<br>$I_C = 100mA, I_B = 5mA$                     |     |            | 0.25<br>0.6 | V    |
| Base-emitter saturation voltage      | $V_{BE(sat)}$  | $I_C = 10mA, I_B = 0.5mA$<br>$I_C = 100mA, I_B = 5mA$                     |     | 0.7<br>0.9 |             | V    |
| Base-emitter voltage                 | $V_{BE(on)}$   | $V_{CE} = 5V, I_C = 2mA$<br>$V_{CE} = 5V, I_C = 10mA$                     | 580 | 660        | 700<br>770  | mV   |
| Transition frequency                 | $f_T$  | $V_{CE} = 5V, I_C = 10mA$<br>$f = 100MHz$                                 | 100 |            |             | MHz  |
| Collector output capacitance         | $C_{ob}$   | $V_{CB} = 10V, f = 1MHz$  |     |            | 4.5         | pF   |
| Noise figure                         | BC846AW,847AW,848AW<br>BC846BW,847BW,848BW<br>BC847CW,BC848CW  | $V_{CE} = 5V, I_C = 0.2mA,$<br>$f = 1KHz, R_S = 2K\Omega$<br>$BW = 200Hz$ |     |            | 10<br>4     | dB   |

**Typical Characteristics**

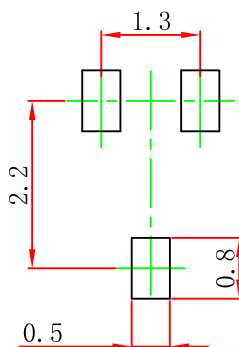
TRANSISTOR (NPN)

**Static Characteristic**




| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 0.900                     | 1.100 | 0.035                | 0.043 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.900                     | 1.000 | 0.035                | 0.039 |
| b      | 0.200                     | 0.400 | 0.008                | 0.016 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 2.000                     | 2.200 | 0.079                | 0.087 |
| E      | 1.150                     | 1.350 | 0.045                | 0.053 |
| E1     | 2.150                     | 2.450 | 0.085                | 0.096 |
| e      | 0.650 TYP                 |       | 0.026 TYP            |       |
| e1     | 1.200                     | 1.400 | 0.047                | 0.055 |
| L      | 0.525 REF                 |       | 0.021 REF            |       |
| L1     | 0.260                     | 0.460 | 0.010                | 0.018 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

### SOT-323 Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05$  mm.
3. The pad layout is for reference purposes only.