

# MSKSEMI

SEMICONDUCTOR



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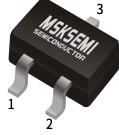
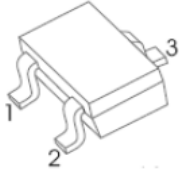


PLED

Product data sheet

TRANSISTOR (NPN)

BC846W/BC847W/BC848W



- 1. BASE
- 2. EMITTER
- 3. COLLECTOR

**SOT-323**

**FEATURES**

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

**P/N MARK**

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

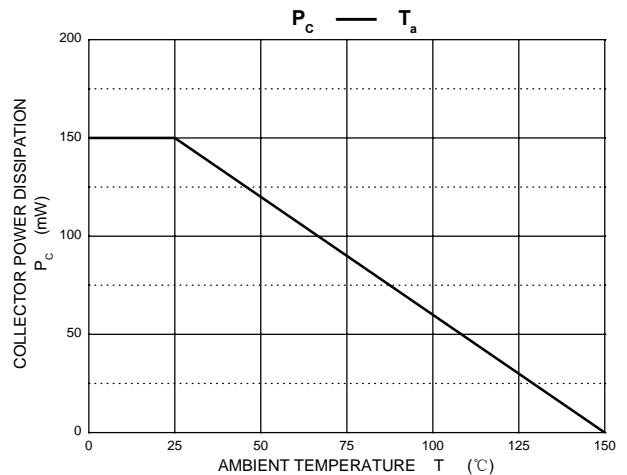
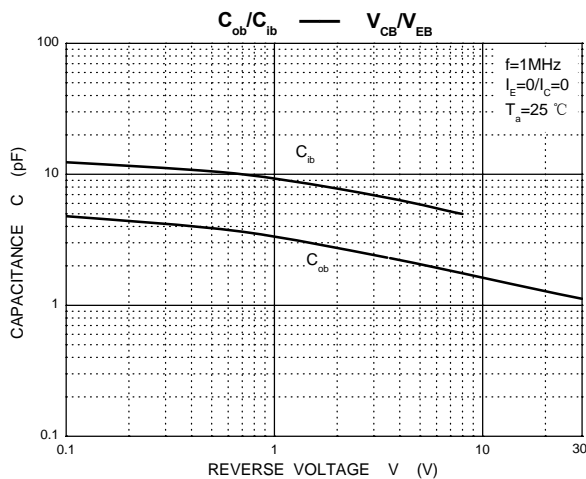
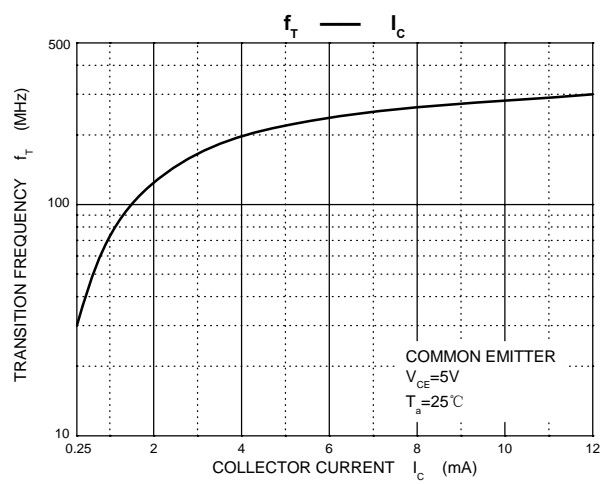
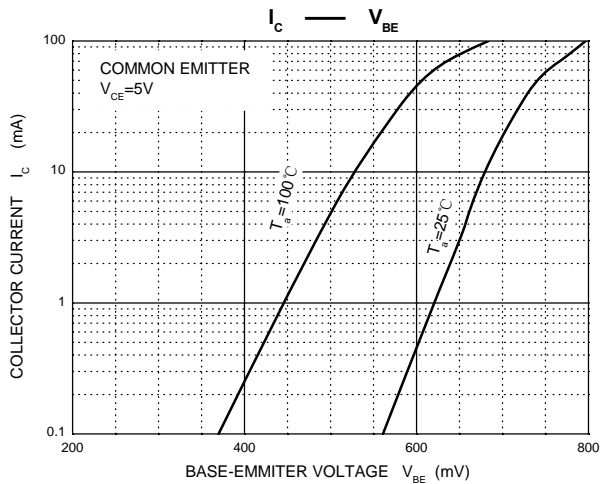
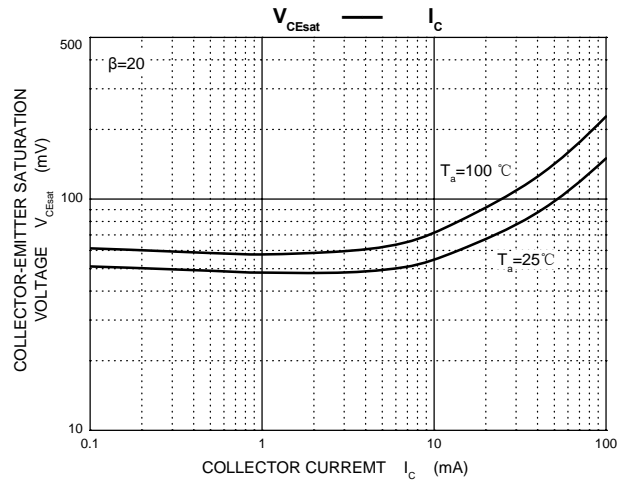
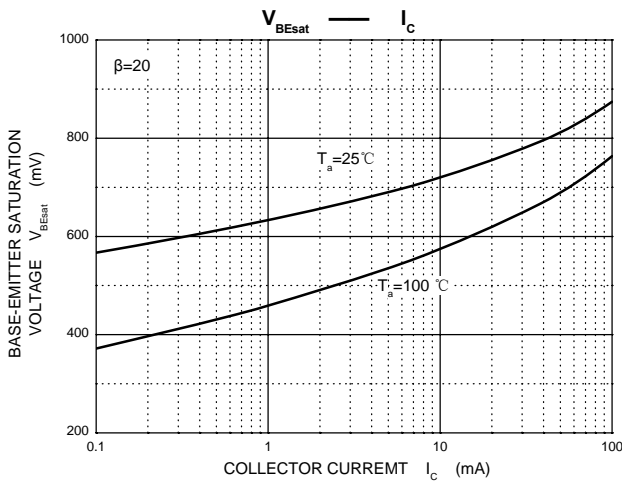
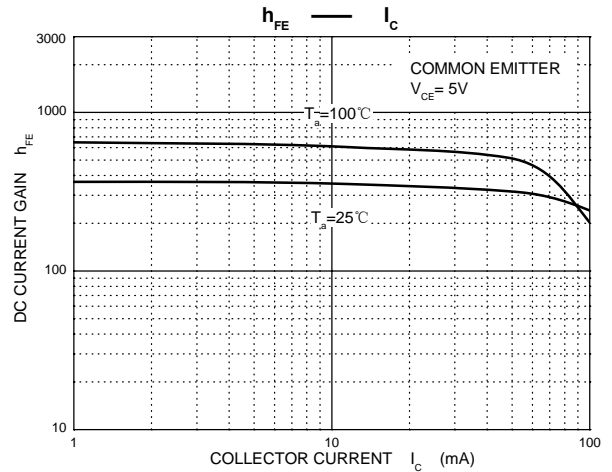
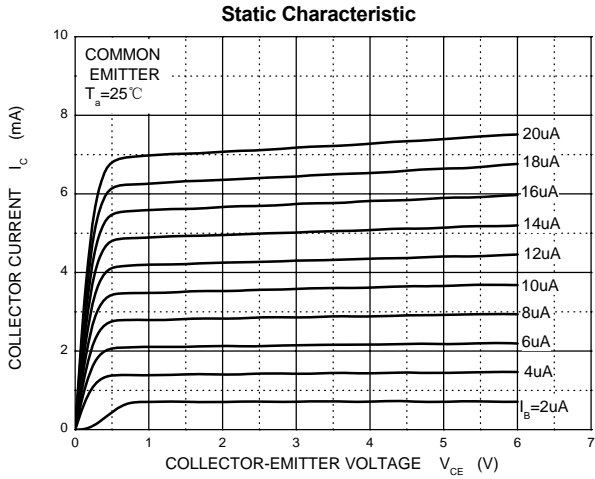
**MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)**

| Symbol                                | Parameter  | Value        | Unit |
|---------------------------------------|--|--------------|------|
| <b>V<sub>CB0</sub></b>                | Collector-Base Voltage                           | BC846W<br>80 | V    |
|                                       |  | BC847W<br>50 |      |
|                                       |  | BC848W<br>30 |      |
| <b>V<sub>CEO</sub></b>                | Collector-Emitter Voltage                        | BC846W<br>65 | V    |
|                                       |  | BC847W<br>45 |      |
|                                       |  | BC848W<br>30 |      |
| <b>V<sub>EBO</sub></b>                | Emitter-Base Voltage                             | BC846W<br>6  | V    |
|                                       |  | BC847W<br>6  |      |
|                                       |  | BC848W<br>5  |      |
| <b>I<sub>c</sub></b>                  | Collector Current –Continuous                    | 0.1          | A    |
| <b>P<sub>c</sub></b>                  | Collector Power Dissipation                      | 150          | mW   |
| <b>R<sub>θJA</sub></b>                | Thermal Resistance From Junction To Ambient      | 833          | °C/W |
| <b>T<sub>J</sub>, T<sub>stg</sub></b> | Operation Junction and Storage Temperature Range | -55-150      | °C   |

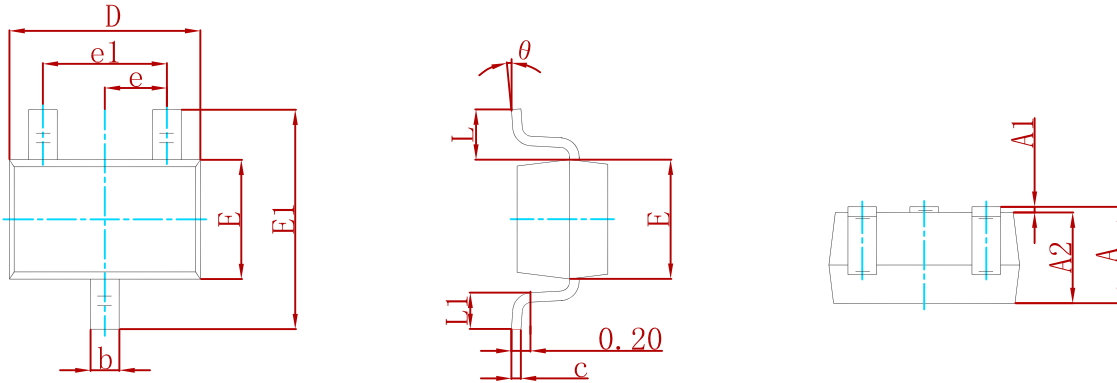
**ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)**

| Parameter                            | Symbol   | Test conditions   | Min                       | Typ              | Max                       | Unit |
|--------------------------------------|--|---|---------------------------|------------------|---------------------------|------|
| Collector-base breakdown voltage     | BC846W<br>BC847W<br>BC848W   | V <sub>CBO</sub> I <sub>C</sub> = 10μA, I <sub>E</sub> =0   | 80<br>50<br>30            |                  |                           | V    |
| Collector-emitter breakdown voltage  | BC846W<br>BC847W<br>BC848W   | V <sub>CEO</sub> I <sub>C</sub> = 10mA, I <sub>B</sub> =0   | 65<br>45<br>30            |                  |                           | V    |
| Emitter-base breakdown voltage       | BC846W<br>BC847W<br>BC848W   | V <sub>EBO</sub> I <sub>E</sub> = 1 μA, I <sub>C</sub> =0   | 6<br>6<br>5               |                  |                           | V    |
| Collector Cutoff Current             |  | I <sub>CBO</sub> V <sub>CB</sub> =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 | h <sub>FE</sub> V <sub>CE</sub> = 5V, I <sub>C</sub> = 10μA<br><br>V <sub>CE</sub> = 5V, I <sub>C</sub> = 2mA   | <br><br>110<br>200<br>420 | 90<br>150<br>270 | <br><br>220<br>450<br>800 |      |
| Collector-emitter saturation voltage |  | V <sub>CE(sat)</sub> I <sub>C</sub> =10mA, I <sub>B</sub> =0.5mA<br>I <sub>C</sub> =100mA, I <sub>B</sub> = 5mA |                           |                  | 0.25<br>0.6               | V    |
| Base-emitter saturation voltage      |  | V <sub>BE(sat)</sub> I <sub>C</sub> =10mA, I <sub>B</sub> =0.5mA<br>I <sub>C</sub> =100mA, I <sub>B</sub> = 5mA |                           | 0.7<br>0.9       |                           | V    |
| Base-emitter voltage                 |  | V <sub>BE(on)</sub> V <sub>CE</sub> = 5V, I <sub>C</sub> = 2mA<br>V <sub>CE</sub> = 5V, I <sub>C</sub> = 10mA   | 580                       | 660              | 700<br>770                | mV   |
| Transition frequency                 |  | f <sub>T</sub> V <sub>CE</sub> = 5 V, I <sub>C</sub> = 10mA<br>f=100MHz   | 100                       |                  |                           | MHz  |
| Collector output capacitance         |  | C <sub>ob</sub> V <sub>CB</sub> =10V,f=1MHz   |                           |                  | 4.5                       | pF   |
| Noise figure                         | BC846AW,847AW,848AW<br>BC846BW,847BW,848BW<br>BC847CW,BC848CW  | NF V <sub>CE</sub> =5V,I <sub>C</sub> =0.2mA,<br>f=1KHz,R <sub>S</sub> =2KΩ<br>BW=200Hz                         |                           |                  | F€<br>10<br>4             | dB   |

Typical Characteristics

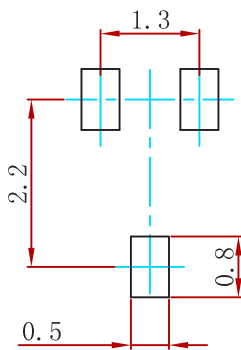


**PACKAGE MECHANICAL DATA**



| 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°    |

**Suggested Pad Layout**



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

**REEL SPECIFICATION**

| P/N                  | PKG     | QTY  |
|----------------------|---------|------|
| BC846W/BC847W/BC848W | SOT-323 | 3000 |

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