# BC846AW-G Thru. BC848CW-G (NPN)

## RoHS Device

## Features

-Power dissipation

PCM: 0.15W (@TA=25°C)

-Collector current

ICM: 0.1A

-Collector-base voltage

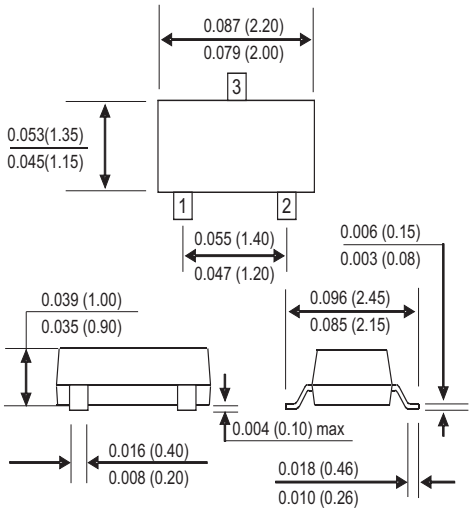
VCBO: BC846W=80V

BC847W=50V

BC848W=30V

-Operating and storage junction temperature range: TJ, TSTG= -55 to +150°C

**SOT-323**




Dimensions in inches and (millimeter)

## Mechanical data

-Case: SOT-323, molded plastic.

-Terminals: solderable per MIL-STD-750, method 2026.

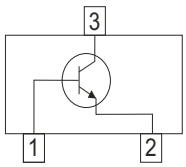
-Approx. weight: 0.008 grams

## Circuit diagram

-1.BASE

-2.EMITTER

-3.COLLECTOR




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

| Parameter | | Symbol | Value | Units |
|---|---|---|---|---|
| Collector-Base Voltage | BC846W-G<br>BC847W-G<br>BC848W-G | VCBO | 80<br>50<br>30 | V |
| Collector-Emitter Voltage | BC846W-G<br>BC847W-G<br>BC848W-G | VCEO | 65<br>45<br>30 | V |
| Emitter-Base Voltage | BC846W-G / BC847W-G<br>BC848W-G | VEBO | 6<br>5 | V |
| Collector Current -Continuous | | IC | 0.1 | A |
| Collector Power Dissipation | | PC | 150 | mW |
| Junction Temperature | | TJ | 150 | °C |
| Storage Temperature Range | | TSTG | -55 to +150 | °C |

## Electrical Characteristics

(BC846AW-G Thru. BC848CW-G, @$T_A$= 25°C unless otherwise specified)

| Parameter | | Symbol | Test Conditions | MIN | TYP | MAX | Units |
|---|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | BC846W-G<br>BC847W-G<br>BC848W-G | $V_{CBO}$ | $I_C$ =10μA , $I_E$=0 | 80<br>50<br>30 | | | V |
| Collector-Emitter Breakdown Voltage | BC846W-G<br>BC846W-G<br>BC848W-G | $V_{CEO}$ | $I_C$ =10mA , $I_B$=0 | 65<br>45<br>30 | | | V |
| Emitter-Base Break Voltage | BC846W-G, BC847W-G<br>BC848W-G | $V_{EBO}$ | $I_E$ =10μA , $I_C$=0 | 6<br>5 | | | V |
| Collector Cutoff Current | | $I_{CBO}$ | $V_{CB}$=30V | | | 15 | nA |
| DC Current Gain | BC846AW,847AW,848AW<br>BC846BW,847BW,848BW<br>BC847CW,848CW | $h_{FE}$ | $V_{CE}$ =5V , $I_C$=10μA | | 90<br>150<br>270 | | |
| | BC846AW,847AW,848AW<br>BC846BW,847BW,848BW<br>BC847CW,848CW | | $V_{CE}$ =5V , $I_C$=2mA | 110<br>200<br>420 | | 220<br>450<br>800 | |
| Collector-Emitter Saturation Voltage | | $V_{CE(sat)}$ | $I_C$ =10mA , $I_B$=0.5mA<br>$I_C$ =100mA , $I_B$=0.5mA | | | 0.25<br>0.60 | 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,848CW | NF | $V_{CE}$ =5V , $I_C$=0.2mA<br>f =1KHz , $R_S$=2KΩ<br>BW=200Hz | | | 10<br>4 | dB |

## Electrical Characteristic Curves (BC846AW-G Thru. BC848CW-G)

Fig.1 Normalized DC Current Gain

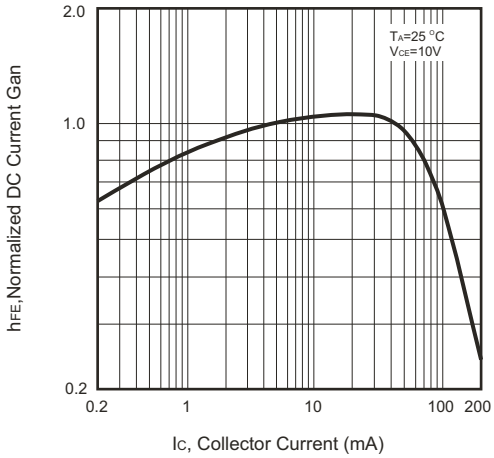



Fig.2 Saturation and On voltage

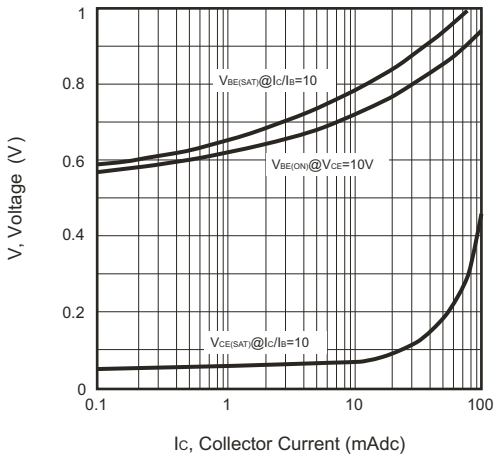



Fig.3 Collector Saturation Region

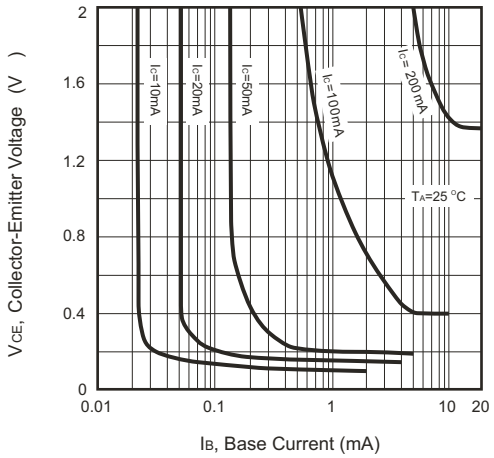



Fig.4 Base-Emitter Temperature Coefficient

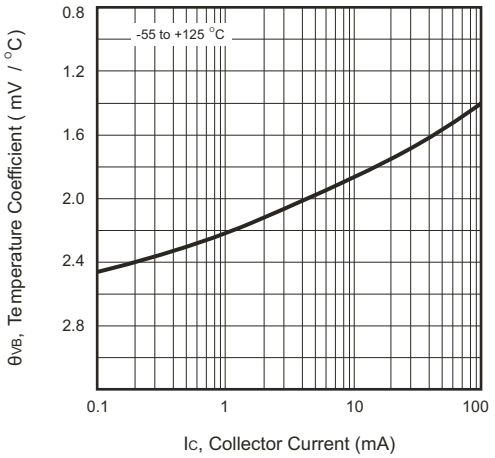



Fig.5 Capacitance

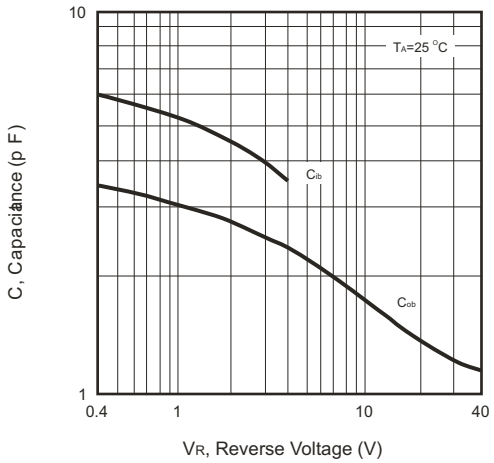
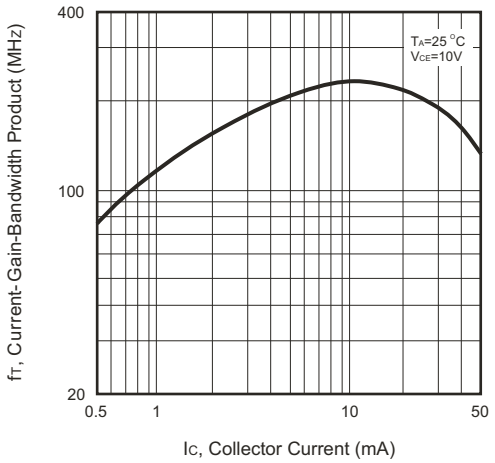
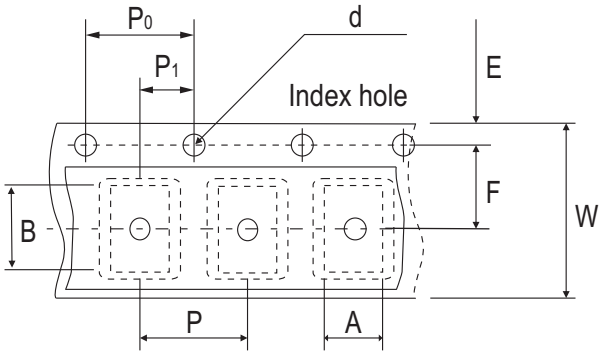
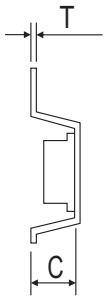


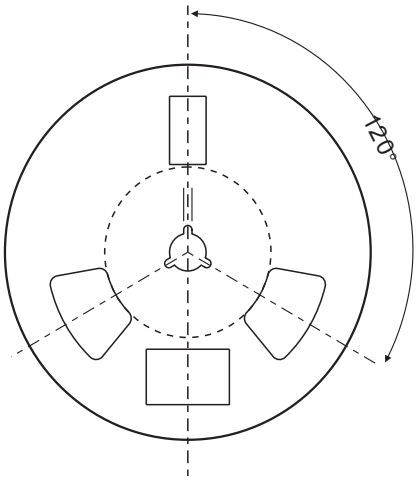

Fig.6 Current Gain Bandwidth Product

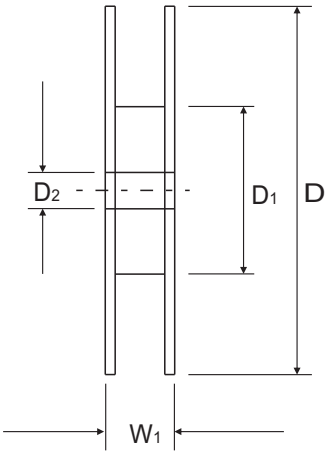


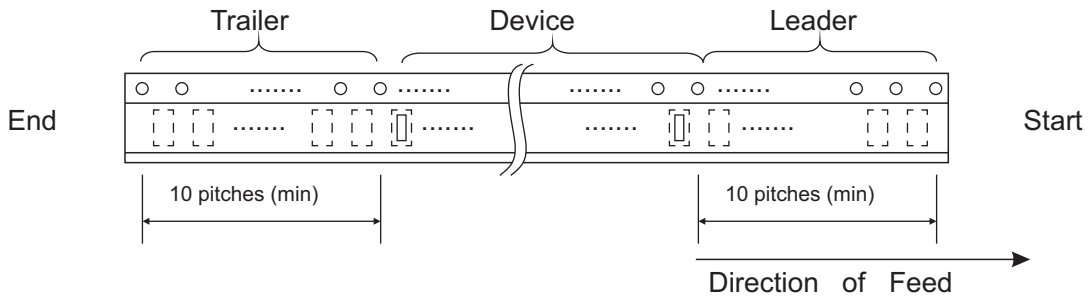
# Reel Taping Specification



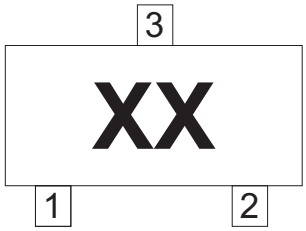




| | SYMBOL | A | B | C | d | D | D1 | D2 |
|---|---|---|---|---|---|---|---|---|
| SOT-323 | (mm) | 2.25 ± 0.10 | 2.55 ± 0.10 | 1.19 ± 0.10 | 1.55 + 0.10 | 178 ± 1.00 | 54.40 ± 0.40 | 13.0 ± 0.20 |
| | (inch) | 0.089 ± 0.004 | 0.100 ± 0.004 | 0.047 ± 0.004 | 0.061 + 0.004 | 7.008 ± 0.039 | 2.142 ± 0.016 | 0.512 ± 0.008 |

| | SYMBOL | E | F | P | P0 | P1 | W | W1 |
|---|---|---|---|---|---|---|---|---|
| SOT-323 | (mm) | 1.75 ± 0.10 | 3.50 ± 0.05 | 4.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.10 | 8.00 + 0.30 / - 0.10 | 9.50 ± 1.00 |
| | (inch) | 0.069 ± 0.004 | 0.138± 0.002 | 0.158 ± 0.004 | 0.158 ± 0.004 | 0.079 ± 0.004 | 0.315 + 0.012 / - 0.004 | 0.374 ± 0.039 |

## Marking Code

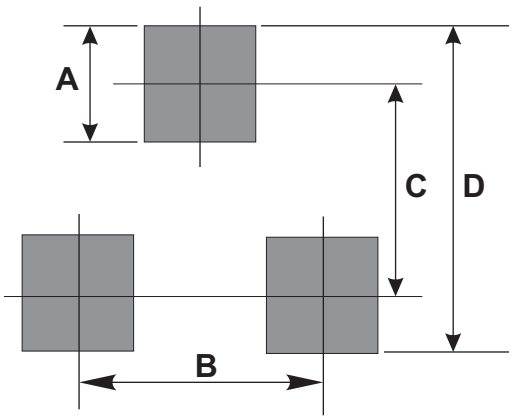
| Part Number | Marking Code |
|---|---|
| BC846AW-G | 1A |
| BC847AW-G | 1E |
| BC848AW-G | 1J |
| BC846BW-G | 1B |
| BC847BW-G | 1F |
| BC848BW-G | 1K |
| BC847CW-G | 1G |
| BC848CW-G | 1L |




**xx = Product type marking code**

## Suggested PAD Layout

| SIZE | SOT-323 | |
|---|---|---|
| | (mm) | (inch) |
| A | 0.80 | 0.031 |
| B | 1.30 | 0.051 |
| C | 1.94 | 0.076 |
| D | 2.74 | 0.108 |




## Standard Packaging

| Case Type | REEL PACK | |
|---|---|---|
| | REEL ( pcs ) | Reel Size (inch) |
| SOT-323 | 3,000 | 7 |

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