



# BC846AW ~ BC850CW

## NPN GENERAL PURPOSE TRANSISTORS

**VOLTAGE** 30/45/65 Volt **POWER** 250 mWatt

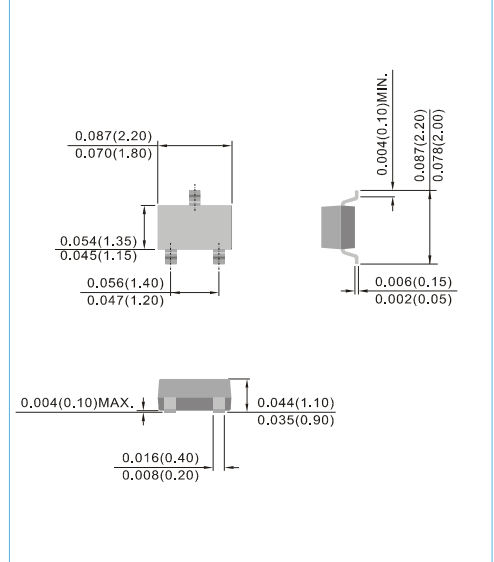
### FEATURES

- General purpose amplifier applications
- NPN epitaxial silicon, planar design
- Collector current IC = 100mA
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### MECHANICAL DATA

- Case: SOT-323, Plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0001 ounce, 0.005 gram

**SOT-323** Unit : inch(mm)



Device Marking:				
BC846AW=46A	BC847AW=47A	BC848AW=48A		
BC846BW=46B	BC847BW=47B	BC848BW=48B	BC849BW=49B	BC850BW=50B
	BC847CW=47C	BC848CW=48C	BC849CW=49C	BC850CW=50C

### ABSOLUTE RATINGS

Parameter	Symbol	Value	Units
Collector - Emitter Voltage	V <sub>CEO</sub>	BC846W	65
		BC847W, BC850W	45
		BC848W, BC849W	30
Collector - Base Voltage	V <sub>CBO</sub>	BC846W	80
		BC847W, BC850W	50
		BC848W, BC849W	30
Emitter - Base Voltage	V <sub>EBO</sub>	BC846W	6.0
		BC847W, BC850W	6.0
		BC848W, BC849W	5.0
Collector Current - Continuous	I <sub>C</sub>	100	mA

### THERMAL CHARACTERISTICS

Parameter	Symbol	Value	Units
Max Power Dissipation (Note 1)	P <sub>TOT</sub>	250	mW
Typical thermal Resistance	R <sub>θJA</sub>	500	°C/W
	R <sub>θJC</sub>	100	
Junction Temperature	T <sub>J</sub>	-55 to 150	°C
Storage Temperature	T <sub>STG</sub>	-55 to 150	°C

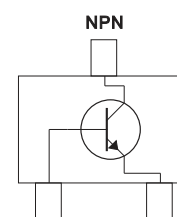
Note 1: Transistor mounted on FR-5 board 1.0 x 0.75 x 0.062 in.



## BC846AW ~ BC850CW

### ELECTRICAL CHARACTERISTICS

PARAMETER	Symbol	Test Condition	MIN.	TYP.	MAX.	Units
Collector - Emitter Breakdown Voltage BC846AW,BW BC847AW/BW/CW,BC850BW/CW BC848AW/BW/CW,BC849BW/CW	$V_{(BR)CEO}$	$I_C=10mA, I_B=0$	65 45 30	-	-	V
Collector - Base Breakdown Voltage BC846AW,BW BC847AW/BW/CW,BC850BW/CW BC848AW/BW/CW,BC849BW/CW	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	80 50 30	-	-	V
Emitter - Base Breakdown Voltage BC846AW,BW BC847AW/BW/CW,BC850BW/CW BC848AW/BW/CW,BC849BW/CW	$V_{(BR)EBO}$	$I_E=1\mu A, I_C=0$	6 6 5	-	-	V
Emitter-Base Cutoff Current	$I_{EBO}$	$V_{EB}=5$	-	-	100	nA
Collector-Base Cutoff Current	$I_{CBO}$	$V_{CB}=30V, I_E=0$ $V_{CB}=30V, I_E=0, T_J=150^{\circ}C$	-	-	15 5	nA $\mu A$
DC Current Gain BC846~BC848 Suffix "AW" BC846~BC850 Suffix "BW" BC847~BC850 Suffix "CW"	$h_{FE}$	$I_C=10\mu A, V_{CE}=5V$	-	90 150 270	-	-
DC Current Gain BC846~BC848 Suffix "AW" BC846~BC850 Suffix "BW" BC847~BC850 Suffix "CW"	$h_{FE}$	$I_C=2mA, V_{CE}=5V$	110 200 420	180 290 520	220 450 800	-
Collector - Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=10mA, I_B=0.5mA$ $I_C=100mA, I_B=5.0mA$	-	-	0.25 0.6	V
Base - Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=10mA, I_B=0.5mA$ $I_C=100mA, I_B=5mA$	-	0.7 0.9	-	V
Base - Emitter Voltage	$V_{BE(ON)}$	$I_C=2mA, V_{CE}=5V$ $I_C=10mA, V_{CE}=5V$	0.58 -	0.66 -	0.7 0.77	V
Collector - Base Capacitance	$C_{CBO}$	$V_{CB}=10V, I_E=0, f=1MHz$	-	-	4.5	pF



**Fig.34**



# BC846AW ~ BC850CW

## ELECTRICAL CHARACTERISTICS CURVE (BC846AW, BAC847AW, BC848AW)

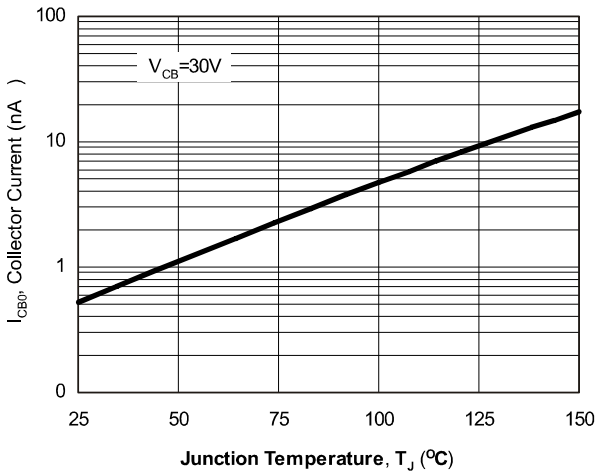


Fig.1 Typical  $I_{CBO}$  vs. Junction Temperature

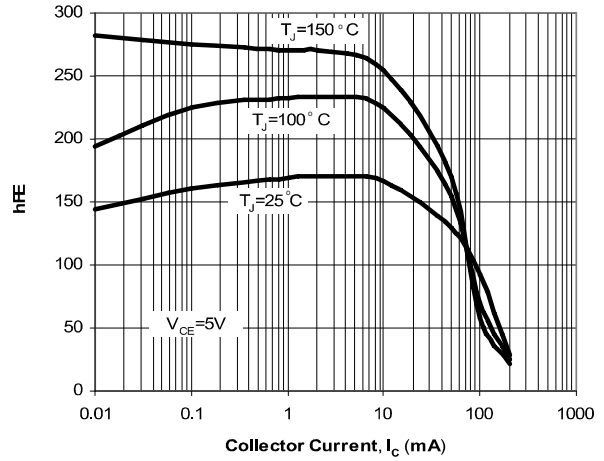


Fig.2 Typical  $h_{FE}$  vs. Collector Current

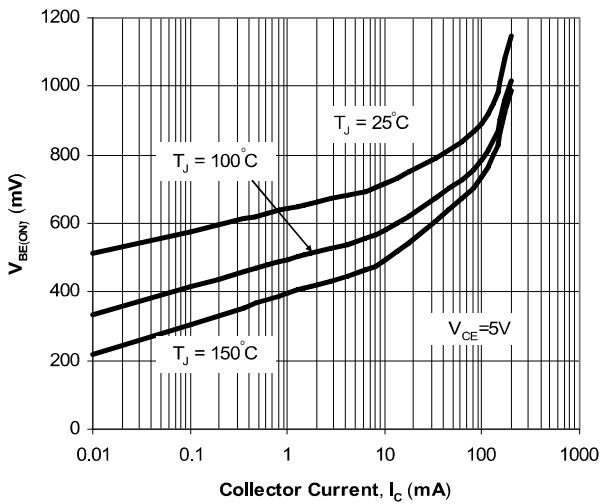


Fig.3 Typical  $V_{BE(ON)}$  vs. Collector Current

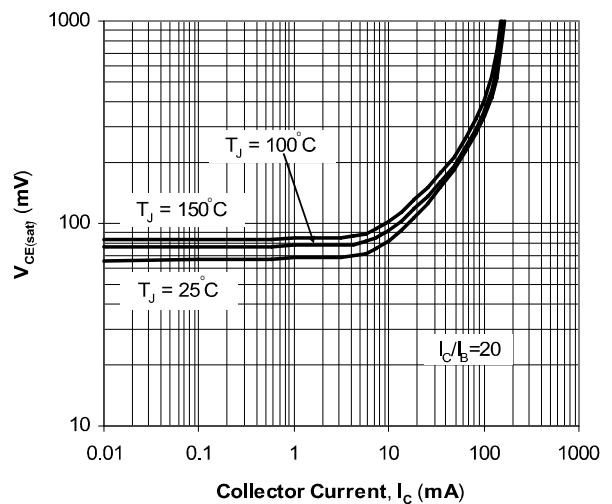


Fig.4 Typical  $V_{CE(SAT)}$  vs. Collector Current

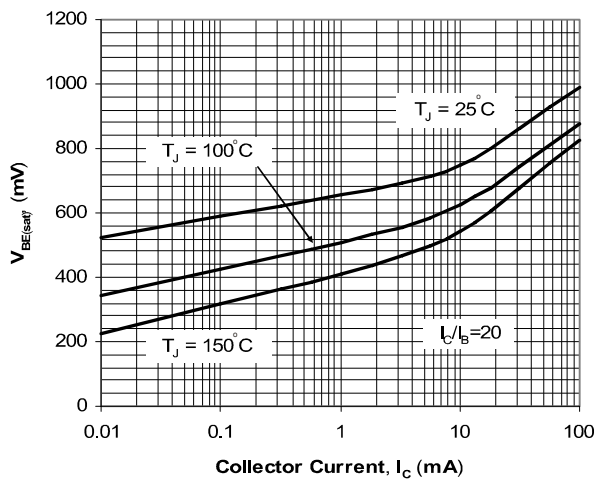


Fig.5 Typical  $V_{BE(SAT)}$  vs. Collector Current

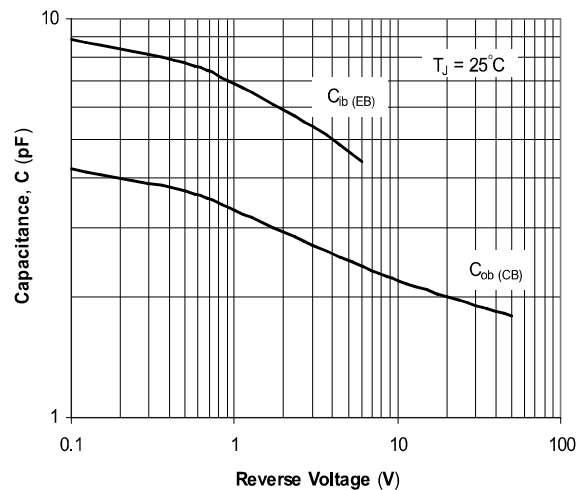


Fig.6 Typical Capacitances vs. Reverse Voltage



# BC846AW ~ BC850CW

## ELECTRICAL CHARACTERISTICS CURVE (BC846BW, BAC847BW, BC848BW, BC849BW, BC850BW)

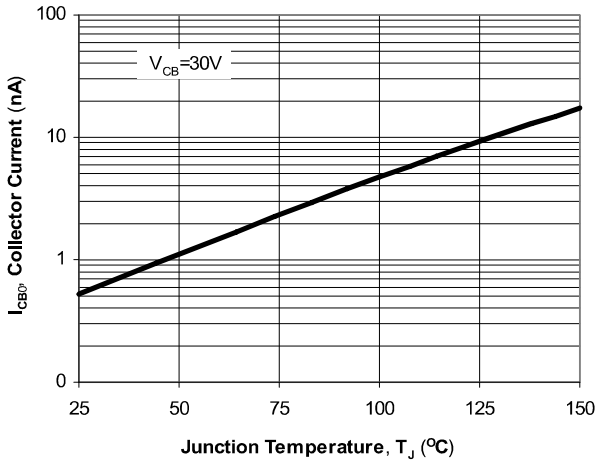


Fig.1 Typical  $I_{CBO}$  vs. Junction Temperature

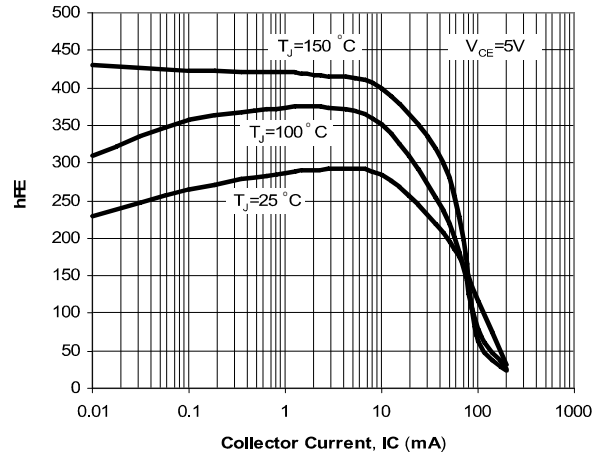


Fig.2 Typical  $h_{FE}$  vs. Collector Current

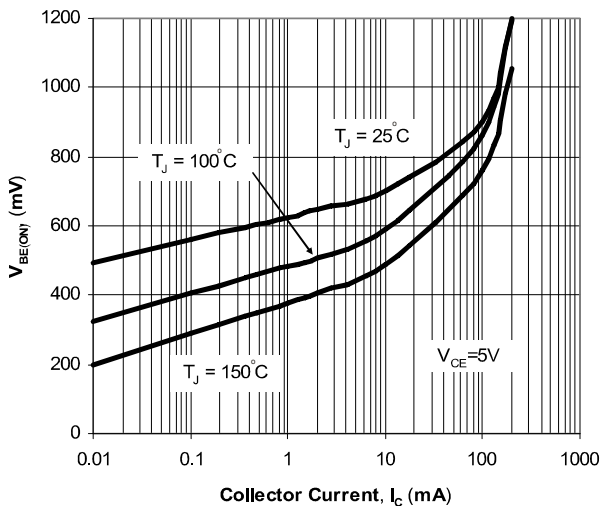


Fig.3 Typical  $V_{BE(ON)}$  vs. Collector Current

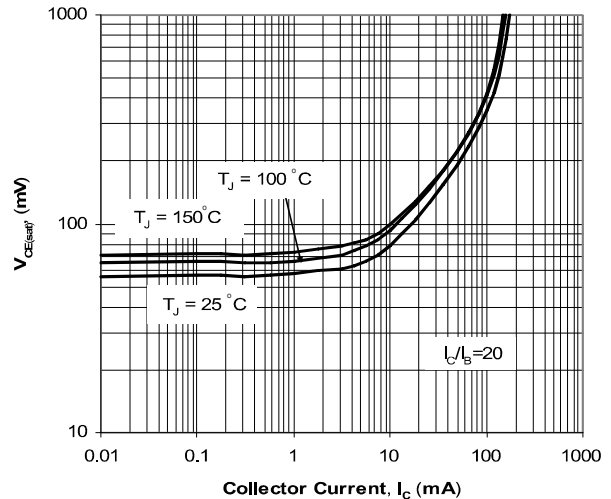


Fig.4 Typical  $V_{CE(SAT)}$  vs. Collector Current

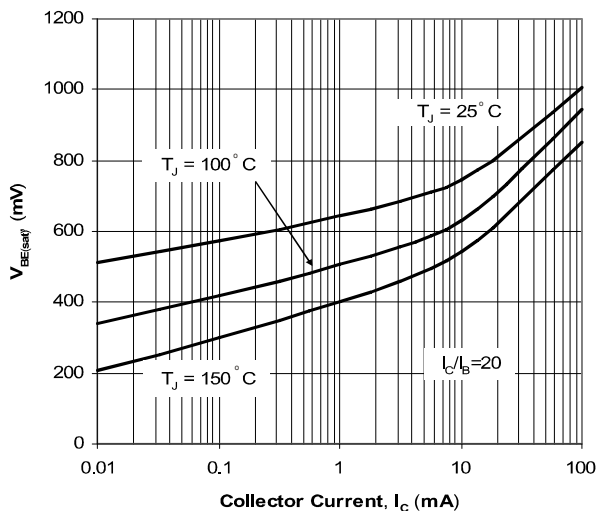


Fig.5 Typical  $V_{BE(SAT)}$  vs. Collector Current

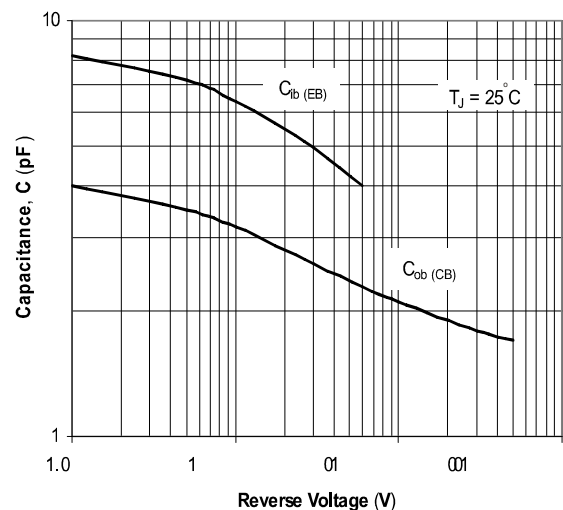


Fig.6 Typical Capacitances vs. Reverse Voltage



# BC846AW ~ BC850CW

## ELECTRICAL CHARACTERISTICS CURVE (BAC847CW,BC848CW,BC849CW,BC850CW)

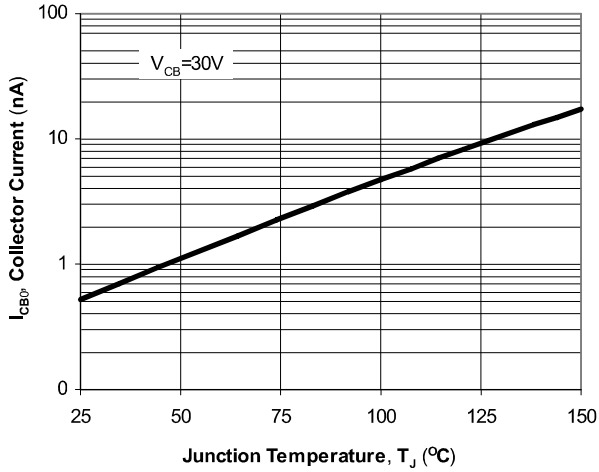


Fig.1 Typical  $I_{CBO}$  vs. Junction Temperature

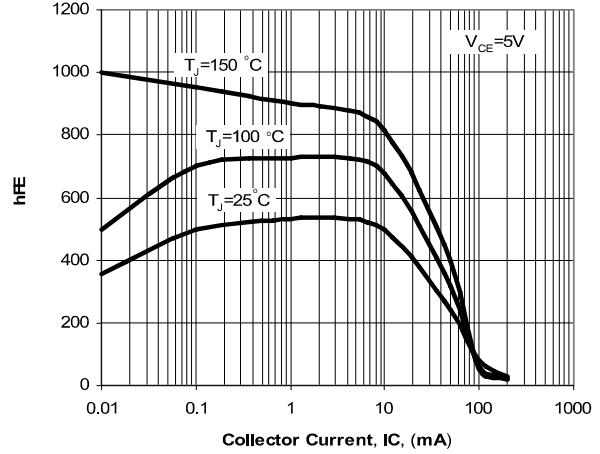


Fig.2 Typical  $h_{FE}$  vs. Collector Current

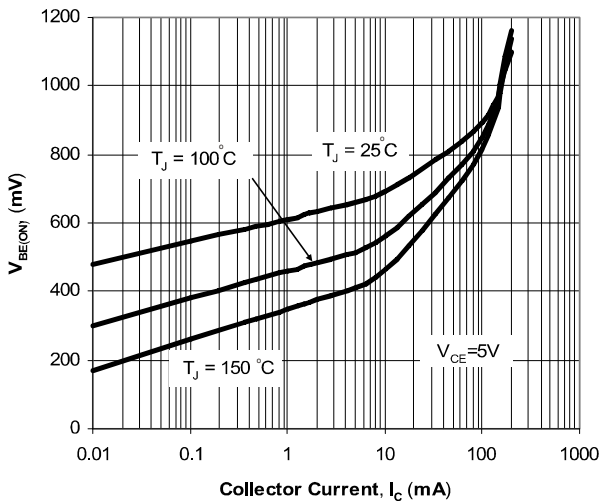


Fig.3 Typical  $V_{BE(ON)}$  vs. Collector Current

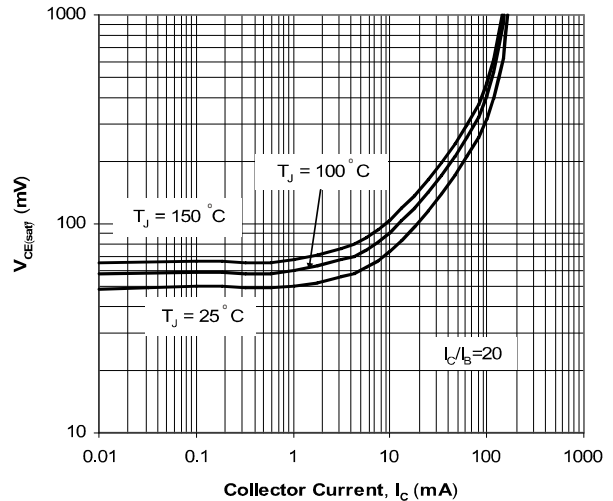


Fig.4 Typical  $V_{CE(SAT)}$  vs. Collector Current

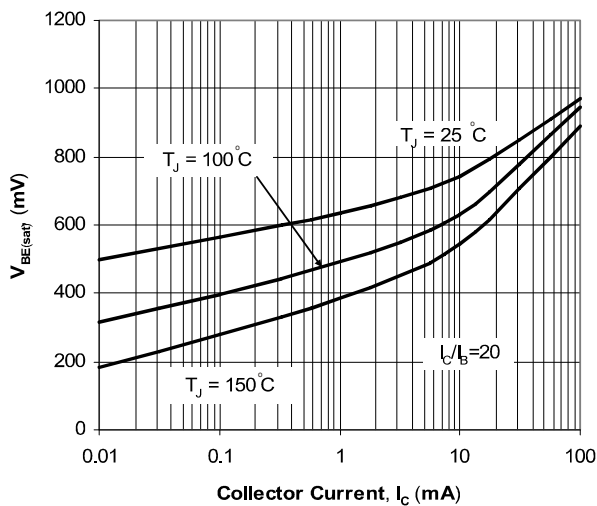


Fig.5 Typical  $V_{BE(SAT)}$  vs. Collector Current

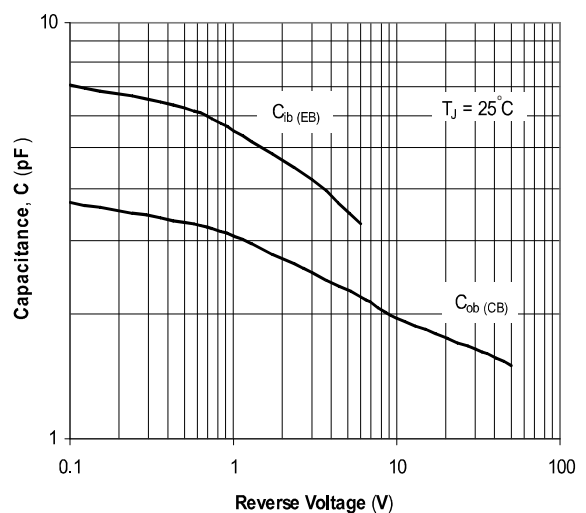


Fig.6 Typical Capacitances vs. Reverse Voltage

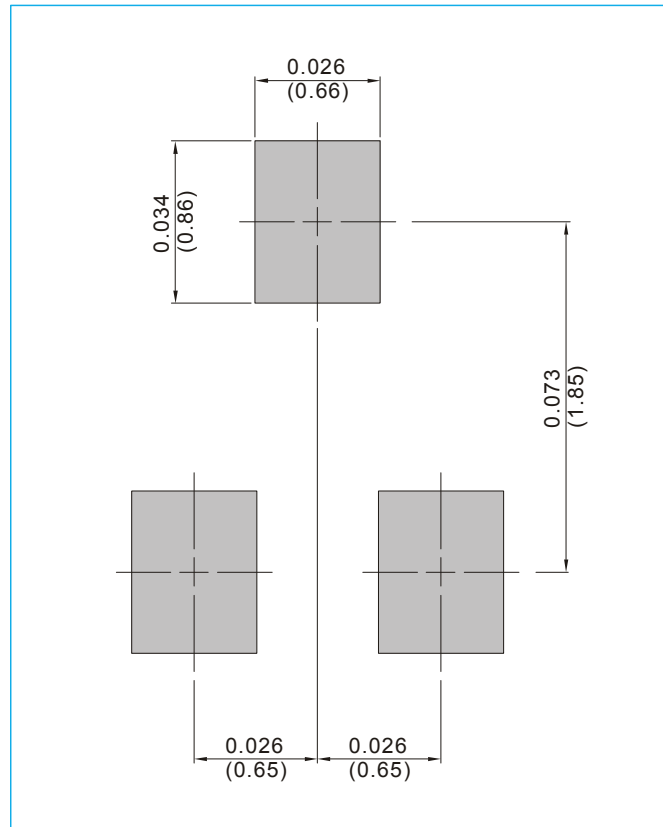


## BC846AW ~ BC850CW

### MOUNTING PAD LAYOUT

**SOT-323**

Unit : inch(mm)



### ORDER INFORMATION

- Packing information
  - T/R - 12K per 13" plastic Reel
  - T/R - 3K per 7" plastic Reel



## BC846AW ~ BC850CW

### Part No\_packing code\_Version

BC846AW\_R1\_00001

BC846AW\_R2\_00001

For example :

**RB500V-40** **R2** **00001**



Packing Code <b>XX</b>				Version Code <b>XXXXX</b>		
Packing type	1 <sup>st</sup> Code	Packing size code	2 <sup>nd</sup> Code	HF or RoHS	1 <sup>st</sup> Code	2 <sup>nd</sup> ~5 <sup>th</sup> Code
Tape and Ammunition Box (T/B)	<b>A</b>	N/A	<b>0</b>	<b>HF</b>	<b>0</b>	serial number
Tape and Reel (T/R)	<b>R</b>	7"	<b>1</b>	<b>RoHS</b>	<b>1</b>	serial number
Bulk Packing (B/P)	<b>B</b>	13"	<b>2</b>			
Tube Packing (T/P)	<b>T</b>	26mm	<b>X</b>			
Tape and Reel (Right Oriented) (TRR)	<b>S</b>	52mm	<b>Y</b>			
Tape and Reel (Left Oriented) (TRL)	<b>L</b>	PANASERT T/B CATHODE UP (PBCU)	<b>U</b>			
FORMING	<b>F</b>	PANASERT T/B CATHODE DOWN (PBCD)	<b>D</b>			



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