



# BC846-AU,BC847-AU,BC848-AU,BC849-AU,BC850-AU SERIES

## NPN GENERAL PURPOSE TRANSISTORS

**VOLTAGE** 30/45/65 Volt **POWER** 330 mWatt

**SOT-23**

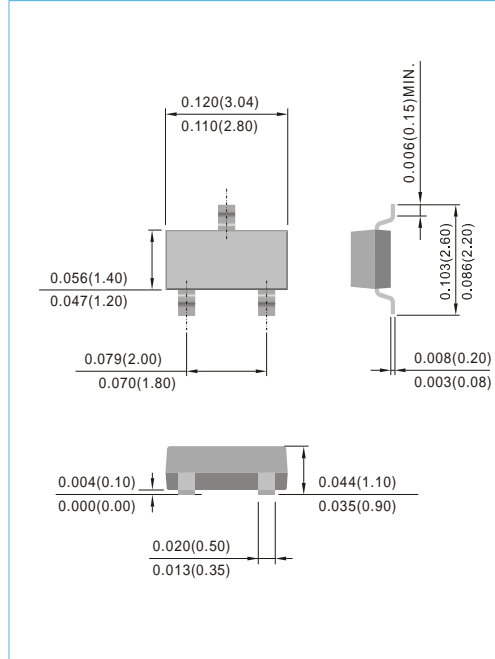
Unit : inch(mm)

### FEATURES

- General purpose amplifier applications
- NPN epitaxial silicon, planar design
- Collector current IC = 100mA
- Acquire quality system certificate : TS16949
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Green molding compound as per IEC61249 Std. . (Halogen Free)

### MECHANICAL DATA

- Case: SOT-23, Plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0003 ounces, 0.0084 grams



Device Marking:				
BC846A-AU=46A	BC847A-AU=47A	BC848A-AU=48A		
BC846B-AU=46B	BC847B-AU=47B	BC848B-AU=48B	BC849B-AU=49B	BC850B-AU=50B
	BC847C-AU=47C	BC848C-AU=48C	BC849C-AU=49C	BC850C-AU=50C

### ABSOLUTE RATINGS

Parameter	Symbol	Value	Units
Collector - Emitter Voltage	V <sub>CEO</sub>	BC846-AU 65	V
		BC847-AU,BC850-AU 45	
		BC848-AU,BC849-AU 30	
Collector - Base Voltage	V <sub>CBO</sub>	BC846-AU 80	V
		BC847-AU,BC850-AU 50	
		BC848-AU,BC849-AU 30	
Emitter - Base Voltage	V <sub>EBO</sub>	BC846-AU 6	V
		BC847-AU,BC850-AU 6	
		BC848-AU,BC849-AU 5	
Collector Current - Continuous	I <sub>c</sub>	100	mA

### THERMAL CHARACTERISTICS

Parameter	Symbol	Value	Units
Max Power Dissipation (Note 1)	P <sub>TOT</sub>	330	mW
Thermal Resistance , Junction to Ambient	R <sub>θJA</sub>	375	°C/W
Operating Junction Temperature and Storage Temperature Range	T <sub>J</sub> ,T <sub>STG</sub>	-55 to 150	°C

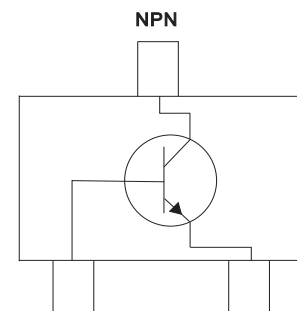
Note 1: Transistor mounted on FR-4 board 8 cm<sup>2</sup>.



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### ELECTRICAL CHARACTERISTICS

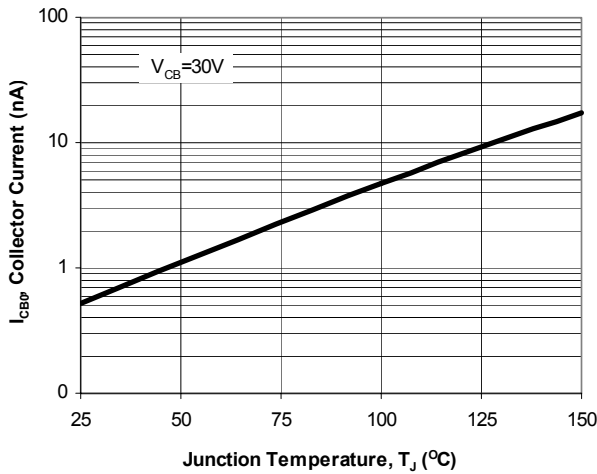
Parameter	Symbol	Test Condition	MIN.	TYP.	MAX.	Units	
Collector - Emitter Breakdown Voltage	BC846A-AU/B-AU BC847A-AU/B-AU/C-AU,BC850B-AU/C-AU BC848A-AU/B-AU/C-AU,BC849B-AU/C-AU	$V_{(BR)CEO}$	IC=10mA, IB=0	65 45 30	-	-	V
Collector - Base Breakdown Voltage	BC846A-AU/B-AU BC847A-AU/B-AU/C-AU,BC850B-AU/C-AU BC848A-AU/B-AU/C-AU,BC849B-AU/C-AU	$V_{(BR)CBO}$	IC=10uA, IE=0	80 50 30	-	-	V
Emitter - Base Breakdown Voltage	BC846A-AU/B-AU BC847A-AU/B-AU/C-AU,BC850B-AU/C-AU BC848A-AU/B-AU/C-AU,BC849B-AU/C-AU	$V_{(BR)EBO}$	IE=10uA, IC=0	6 6 5	-	-	V
Emitter-Base Cutoff Current		$I_{EBO}$	VEB=5	-	-	100	nA
Collector-Base Cutoff Current		$I_{CBO}$	VCB=30V, IE=0 VCB=30V, IE=0, T <sub>J</sub> =150°C	-	-	15 5	nA μA
DC Current Gain	BC846-AU-BC848-AU Suffix "A" BC846-AU-BC850-AU Suffix "B" BC847-AU-BC850-AU Suffix "C"	$h_{FE}$	IC=10uA, VCE=5V	-	90 150 270	-	-
DC Current Gain	BC846-AU-BC848-AU Suffix "A" BC846-AU-BC850-AU Suffix "B" BC847-AU-BC850-AU Suffix "C"	$h_{FE}$	IC=2mA, VCE=5V	110 200 420	180 290 520	220 450 800	-
Collector - Emitter Saturation Voltage		$V_{CE(SAT)}$	IC=10mA, IB=0.5mA IC=100mA, IB=5mA	-	-	0.25 0.6	V
Base - Emitter Saturation Voltage		$V_{BE(SAT)}$	IC=10mA, IB=0.5mA IC=100mA, IB=5mA	-	0.7 0.9	-	V
Base - Emitter Voltage		$V_{BE(ON)}$	IC=2mA, VCE=5V IC=10mA, VCE=5V	0.58 -	0.66 -	0.70 0.77	V
Collector - Base Capacitance		$C_{CBO}$	VCB=10V, IE=0, f=1MHz	-	-	4.5	pF



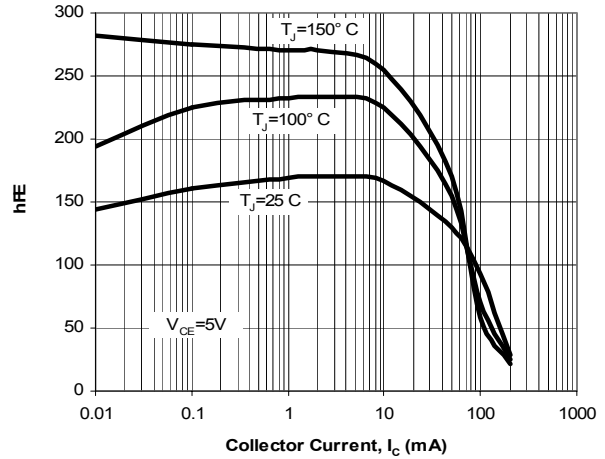


# BC846-AU, BC847-AU, BC848-AU, BC849-AU, BC850-AU SERIES

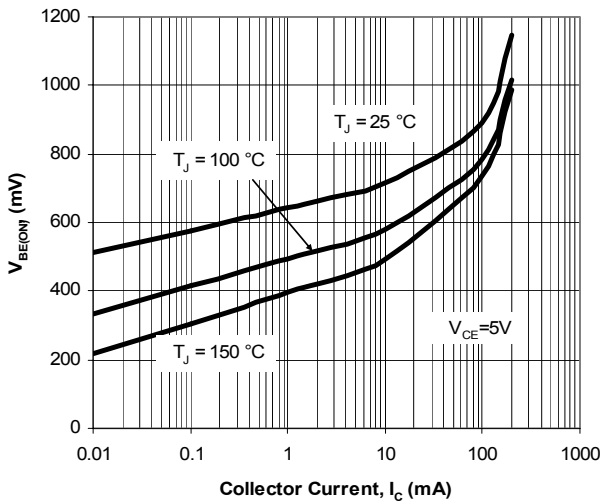
## ELECTRICAL CHARACTERISTICS CURVE (BC846A-AU, BC847A-AU, BC848A-AU)



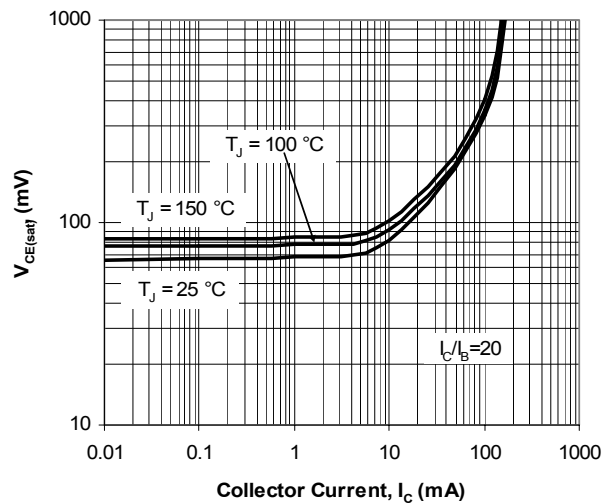
**Fig. 1. Typical  $I_{CB0}$  vs. Junction Temperature**



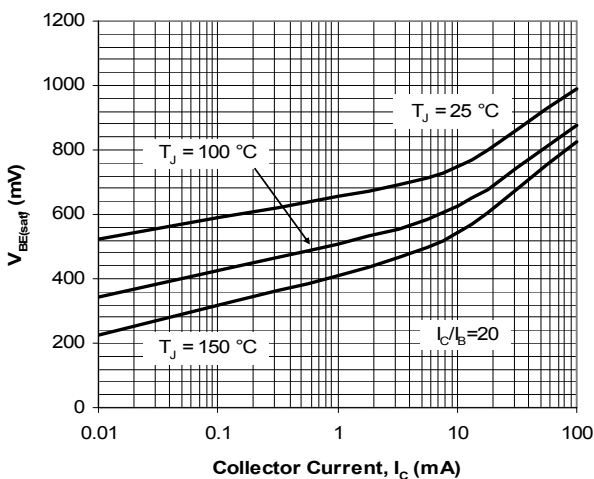
**Fig. 2. Typical  $h_{FE}$  vs. Collector Current**



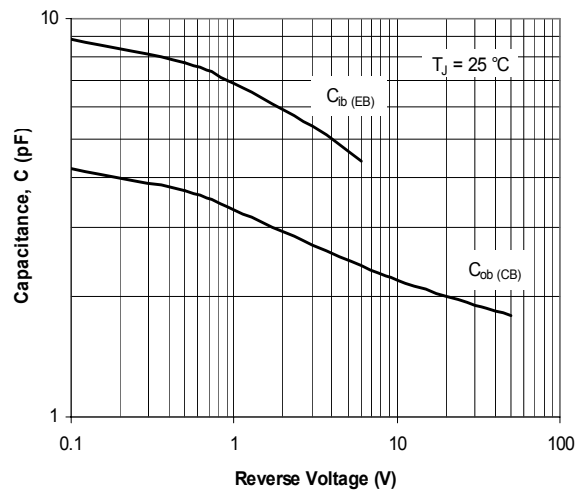
**Fig. 3. Typical  $V_{BE(ON)}$  vs. Collector Current**



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



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

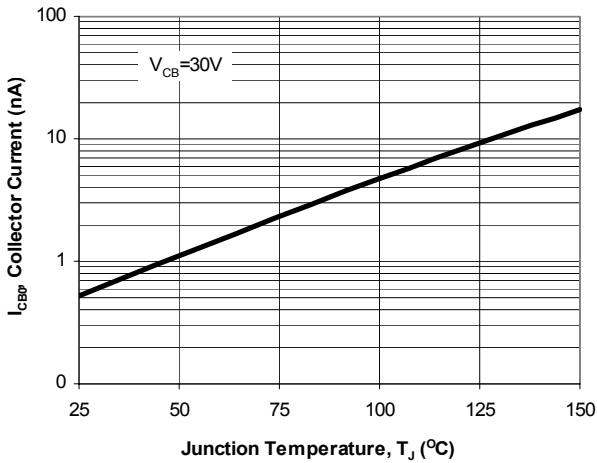


**Fig. 6. Typical Capacitances vs. Reverse Voltage**

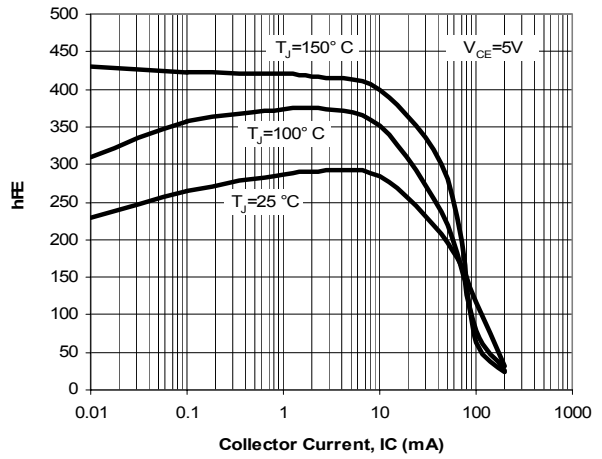


# BC846-AU, BC847-AU, BC848-AU, BC849-AU, BC850-AU SERIES

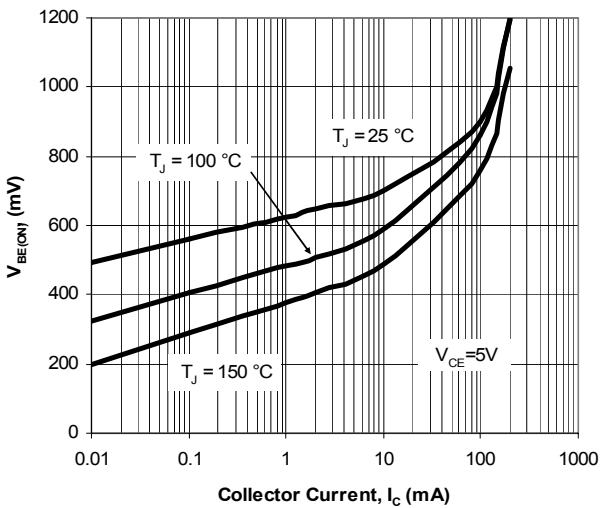
## ELECTRICAL CHARACTERISTICS CURVE (BC846B-AU, BC847B-AU, BC848B-AU, BC849B-AU, BC850B-AU)



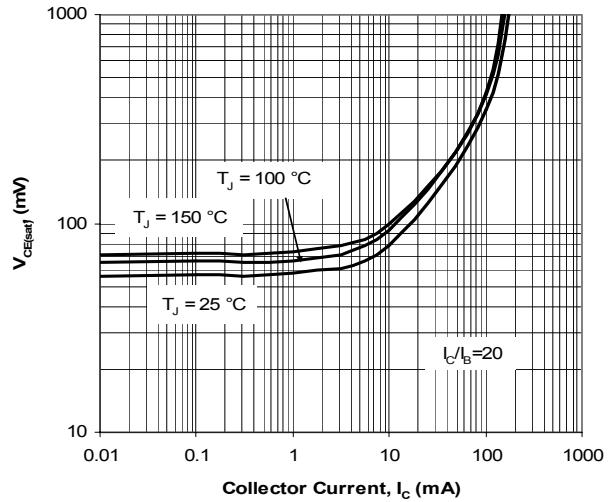
**Fig. 1. Typical  $I_{CB0}$  vs. Junction Temperature**



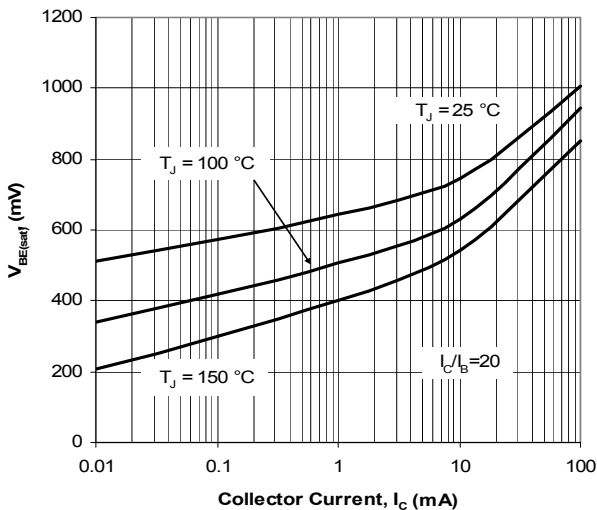
**Fig. 2. Typical  $h_{FE}$  vs. Collector Current**



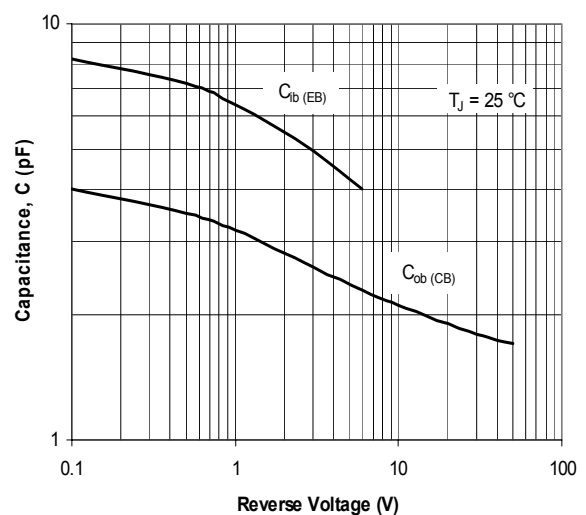
**Fig. 3. Typical  $V_{BE(ON)}$  vs. Collector Current**



**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**



# BC846-AU, BC847-AU, BC848-AU, BC849-AU, BC850-AU SERIES

## ELECTRICAL CHARACTERISTICS CURVE (BC847C-AU, BC848C-AU, BC849C-AU, BC850C-AU)

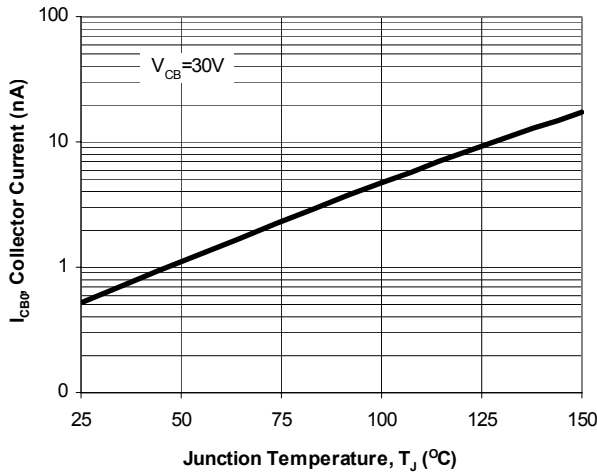


Fig. 1. Typical  $I_{CBO}$  vs. Junction Temperature

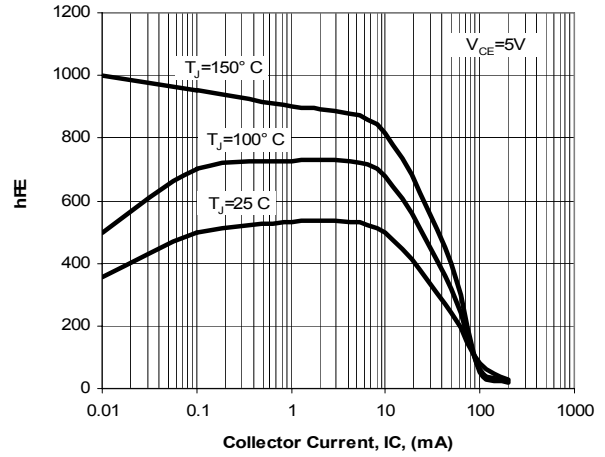


Fig. 2. Typical  $h_{FE}$  vs. Collector Current

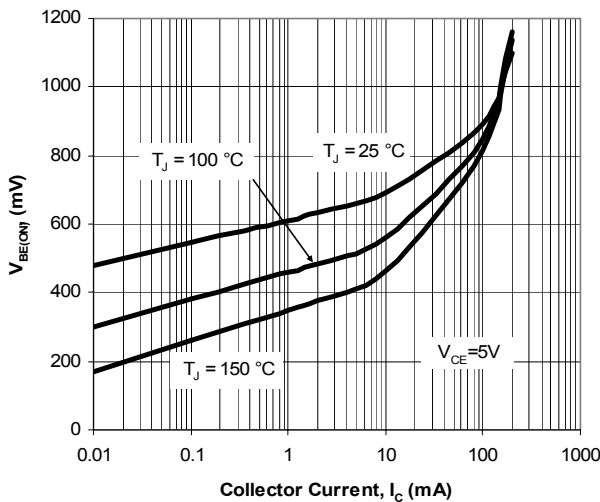


Fig. 3. Typical  $V_{BE(ON)}$  vs. Collector Current

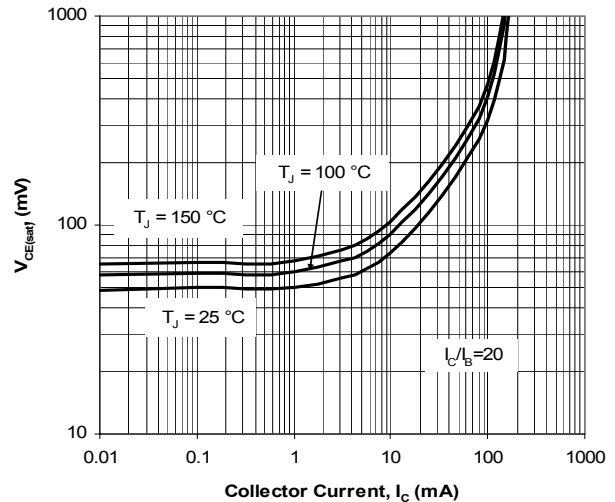


Fig. 4. Typical  $V_{CE(SAT)}$  vs. Collector Current

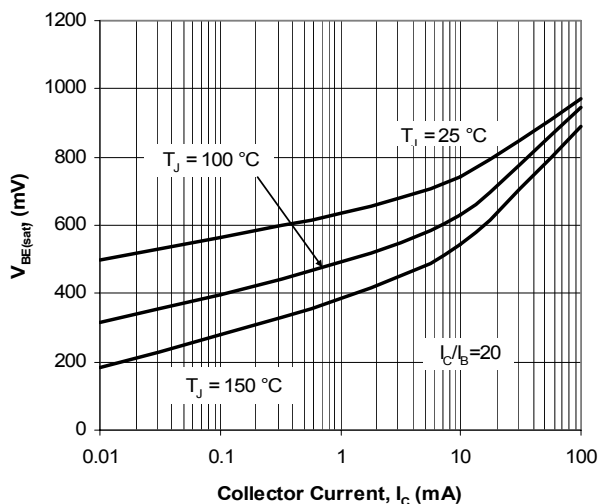


Fig. 5. Typical  $V_{BE(SAT)}$  vs. Collector Current

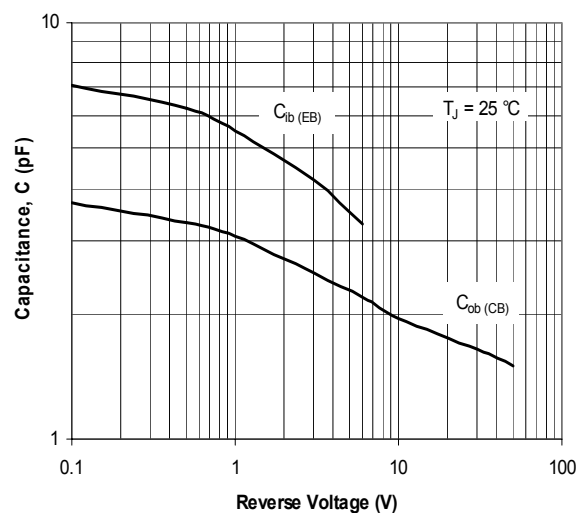


Fig. 6. Typical Capacitances vs. Reverse Voltage

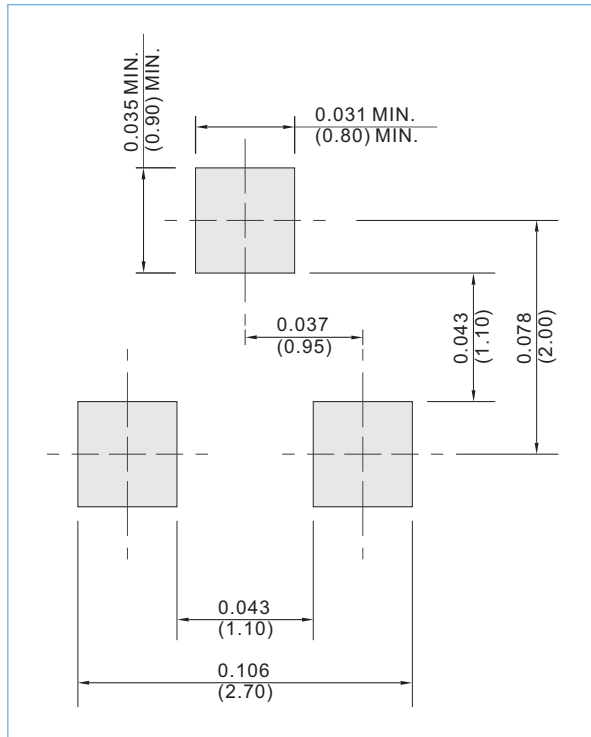


## BC846-AU,BC847-AU,BC848-AU,BC849-AU,BC850-AU SERIES

### MOUNTING PAD LAYOUT

**SOT-23**

Unit : inch(mm)



### ORDER INFORMATION

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



## BC846!5 I ,BC847!5 I ,BC848!5 I ,BC849!5 I ,BC850!5 I SERIES

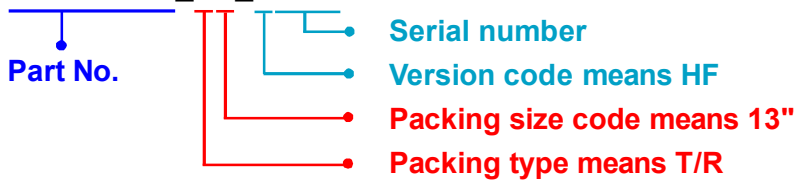
### Part No\_packing code\_Version

BC846-AU\_R1\_000A1

BC846-AU\_R2\_000A1

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)	A	N/A	0	HF	0	serial number
Tape and Reel (T/R)	R	7"	1	RoHS	1	serial number
Bulk Packing (B/P)	B	13"	2			
Tube Packing (T/P)	T	26mm	X			
Tape and Reel (Right Oriented) (TRR)	S	52mm	Y			
Tape and Reel (Left Oriented) (TRL)	L	PANASERT T/B CATHODE UP (PBCU)	U			
FORMING	F	PANASERT T/B CATHODE DOWN (PBCD)	D			



## BC846!5 I ,BC847!5 I ,BC848!5 I ,BC849!5 I ,BC850!5 I SERIES

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