



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

### NPN GENERAL PURPOSE TRANSISTORS

**VOLTAGE** 30/45/65 Volts    **POWER** 330 mWatts

#### FEATURES

- General purpose amplifier applications
- NPN epitaxial silicon, planar design
- Collector current  $I_C = 100\text{mA}$
- Lead free in comply with EU RoHS 2002/95/EC directives.
- Green molding compound as per IEC61249 Std. . (Halogen Free)

#### MECHANICAL DATA

Case: SOT-23, Plastic

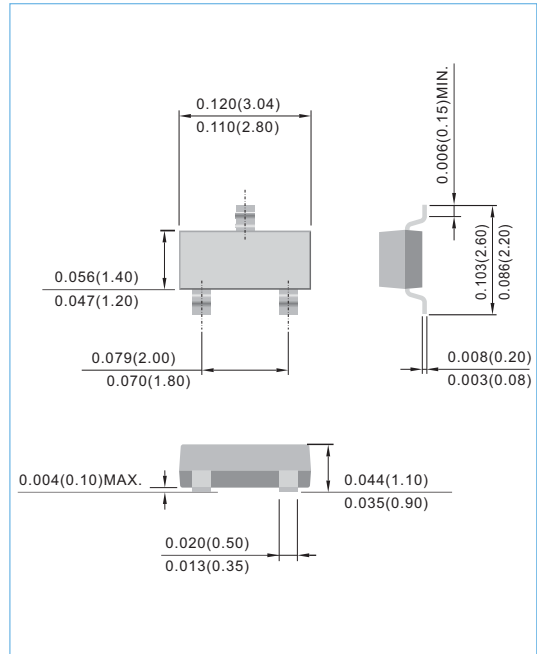
Terminals: Solderable per MIL-STD-750, Method 2026

Approx. Weight: 0.008 gram

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

#### SOT-23

Unit : inch(mm)



#### ABSOLUTE RATINGS

PARAMETER	Symbol	Value	Units
Collector - Emitter Voltage	$V_{CE0}$	65 45 30	V
Collector - Base Voltage	$V_{CB0}$	80 50 30	V
Emitter - Base Voltage	$V_{EB0}$	6.0 6.0 5.0	V
Collector Current - Continuous	$I_C$	100	mA

#### THERMAL CHARACTERISTICS

PARAMETER	Symbol	Value	Units
Max Power Dissipation (Note 1)	$P_{TOT}$	330	mW
Thermal Resistance , Junction to Ambient	$R_{\theta JA}$	375	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^{\circ}\text{C}$

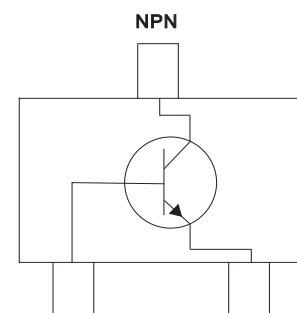
Note 1: Transistor mounted on FR-4 board  $8\text{ cm}^2$ .



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### ELECTRICAL CHARACTERISTICS

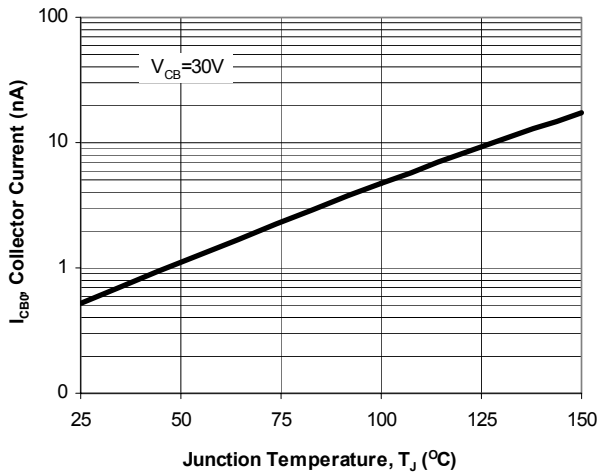
PARAMETER	Symbol	Test Condition	MIN.	TYP.	MAX.	Units
Collector - Emitter Breakdown Voltage BC846A/B BC847A/B/C,BC850B/C BC848A/B/C,BC849B/C	$V_{(BR)CEO}$	$I_C=10mA, I_B=0$	65 45 30	-	-	V
Collector - Base Breakdown Voltage BC846A/B BC847A/B/C,BC850B/C BC848A/B/C,BC849B/C	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	80 50 30	-	-	V
Emitter - Base Breakdown Voltage BC846A/B BC847A/B/C,BC850B/C BC848A/B/C,BC849B/C	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	6.0 6.0 5.0	-	-	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 5.0	nA uA
DC Current Gain BC846~BC848 Suffix "A" BC846~BC850 Suffix "B" BC847~BC850 Suffix "C"	$h_{FE}$	$I_C=10\mu A, V_{CE}=5V$	-	90 150 270	-	-
DC Current Gain BC846~BC848 Suffix "A" BC846~BC850 Suffix "B" BC847~BC850 Suffix "C"	$h_{FE}$	$I_C=2.0mA, V_{CE}=5V$	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	$V_{CE(SAT)}$	$I_C=10mA, I_B=0.5mA$ $I_C=100mA, I_B=5.0mA$	-	0.7 0.9	-	V
Base - Emitter Voltage	$V_{CE(SAT)}$	$I_C=2mA, V_{CE}=5.0V$ $I_C=10mA, V_{CE}=5.0V$	0.58 -	0.66 -	0.70 0.77	V
Collector - Base Capacitance	$C_{CBO}$	$V_{CB}=10V, I_E=0, f=1MH$	-	-	4.5	pF



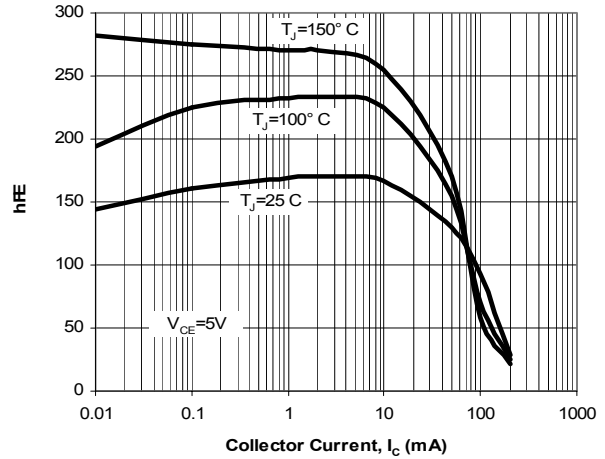


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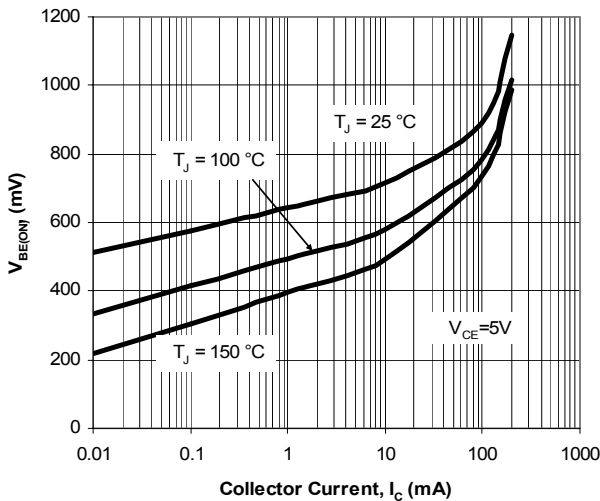
## ELECTRICAL CHARACTERISTICS CURVE (BC846A, BC847A, BC848A)



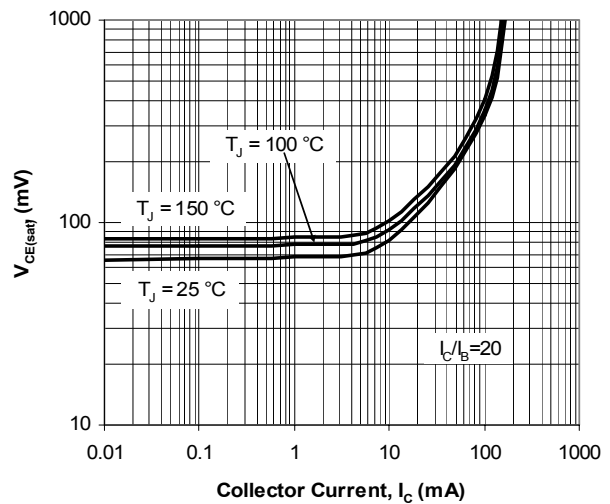
**Fig. 1. Typical  $I_{CB0}$  vs. Junction Temperature**



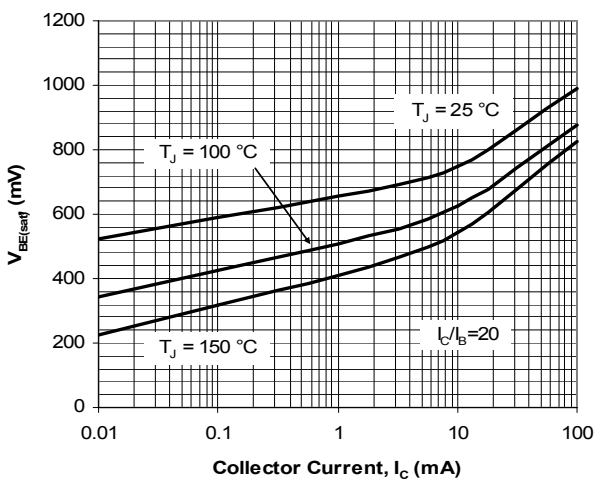
**Fig. 2. Typical  $h_{FE}$  vs. Collector Current**



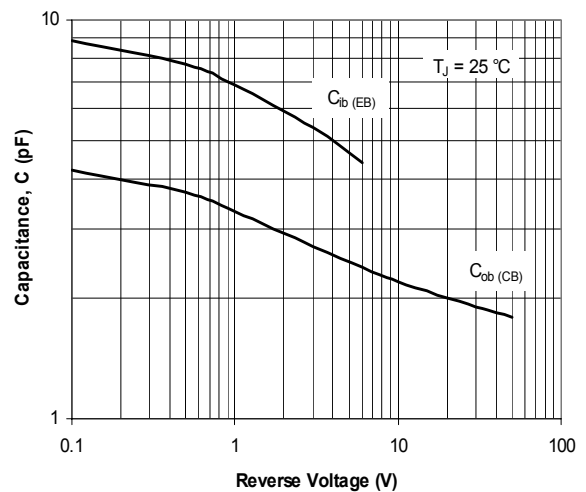
**Fig. 3. Typical  $V_{BE(ON)}$  vs. Collector Current**



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



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

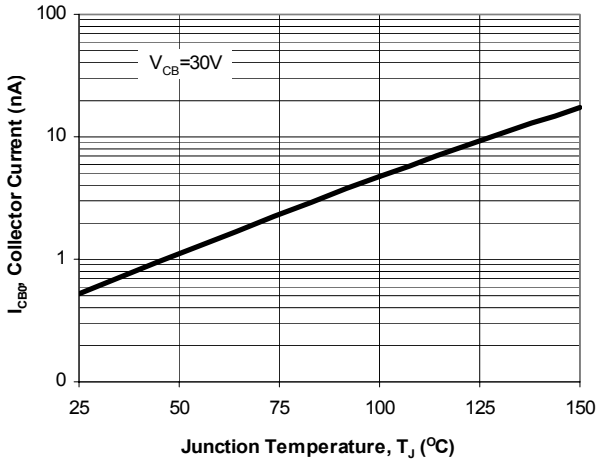


**Fig. 6. Typical Capacitances vs. Reverse Voltage**

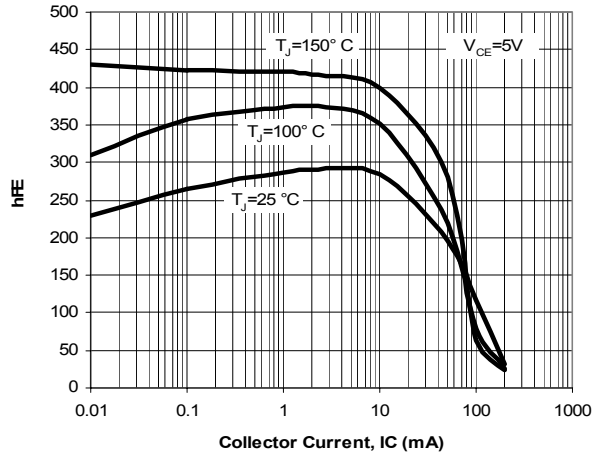


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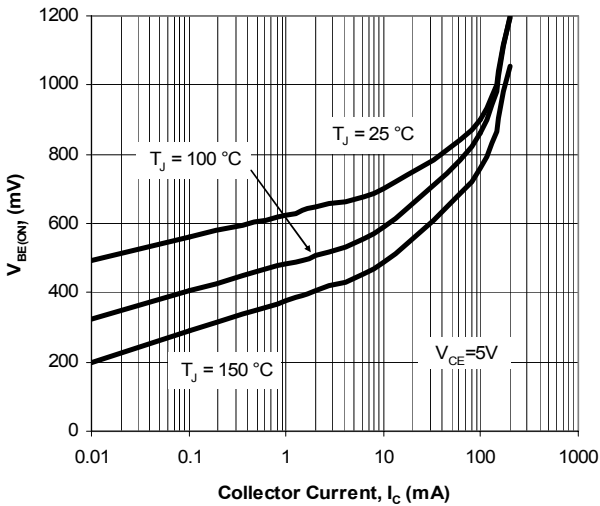
## ELECTRICAL CHARACTERISTICS CURVE (BC846B, BC847B, BC848B, BC849B, BC850B)



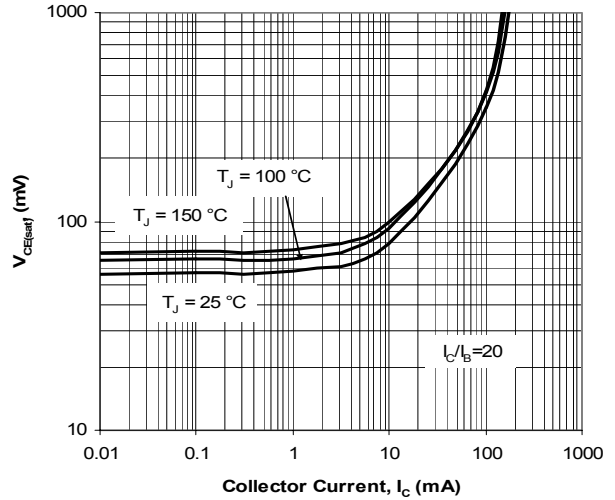
**Fig. 1. Typical  $I_{CB0}$  vs. Junction Temperature**



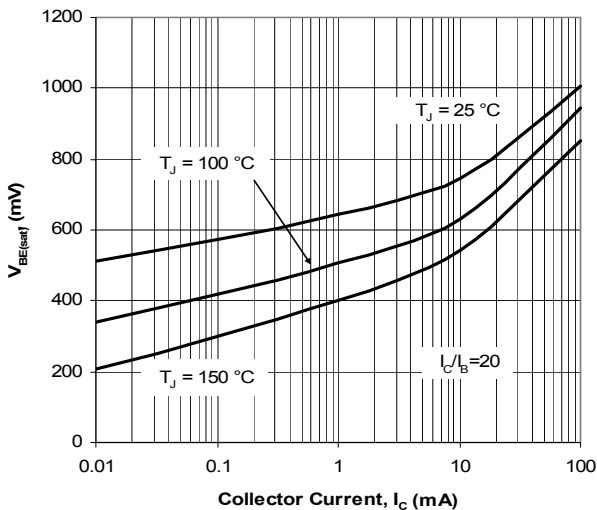
**Fig. 2. Typical  $h_{FE}$  vs. Collector Current**



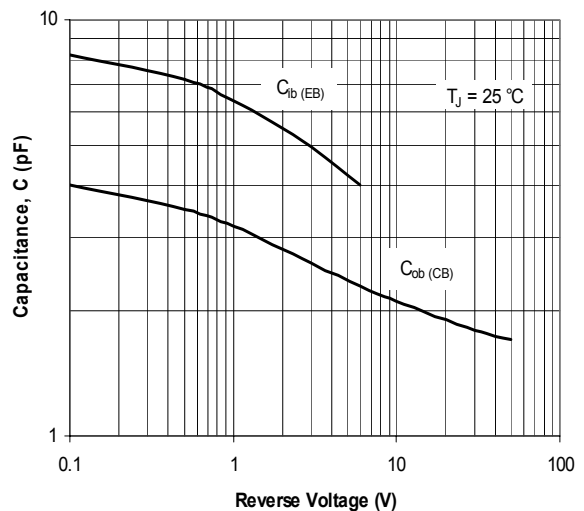
**Fig. 3. Typical  $V_{BE(ON)}$  vs. Collector Current**



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



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

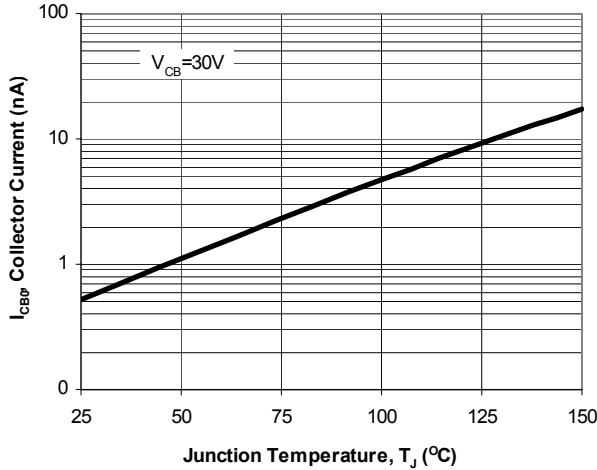


**Fig. 6. Typical Capacitances vs. Reverse Voltage**

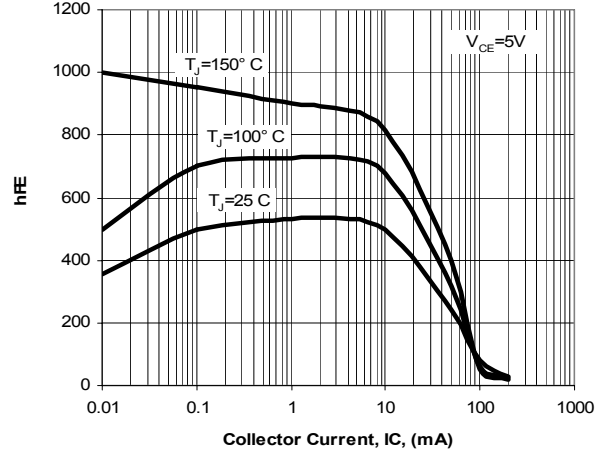


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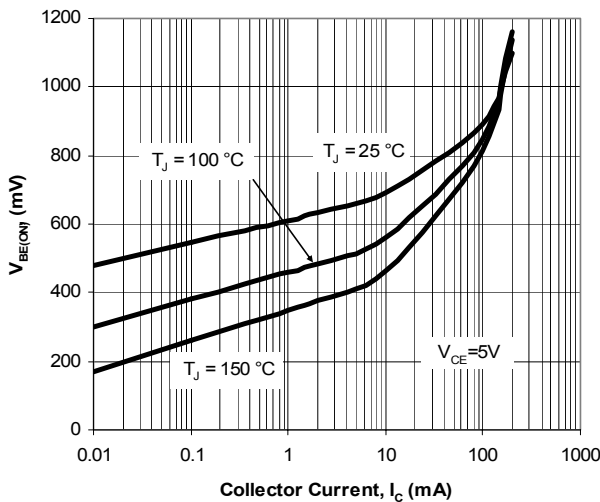
## ELECTRICAL CHARACTERISTICS CURVE (BC847C, BC848C, BC849C, BC850C)



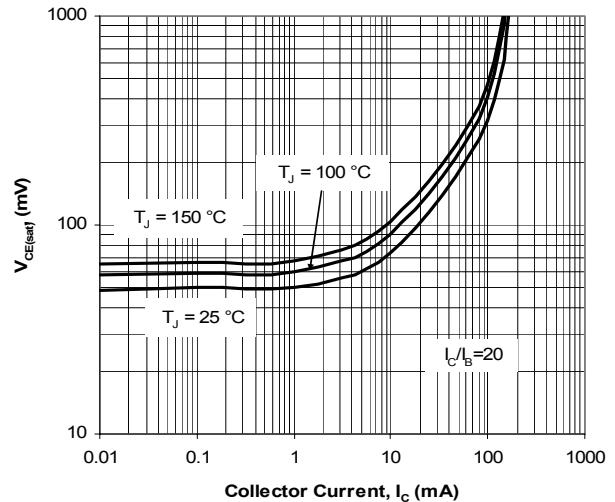
**Fig. 1. Typical  $I_{CB0}$  vs. Junction Temperature**



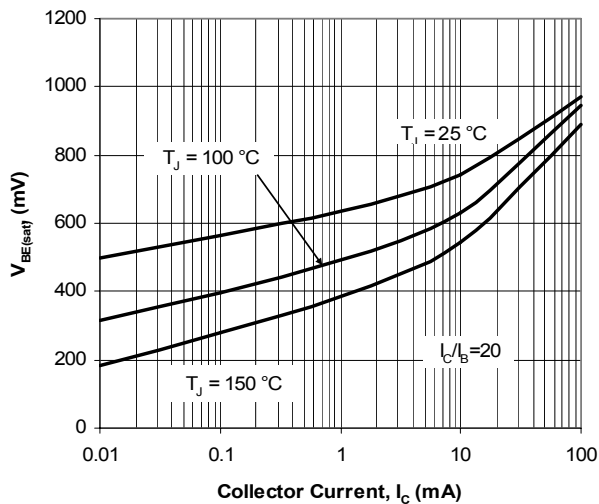
**Fig. 2. Typical  $h_{FE}$  vs. Collector Current**



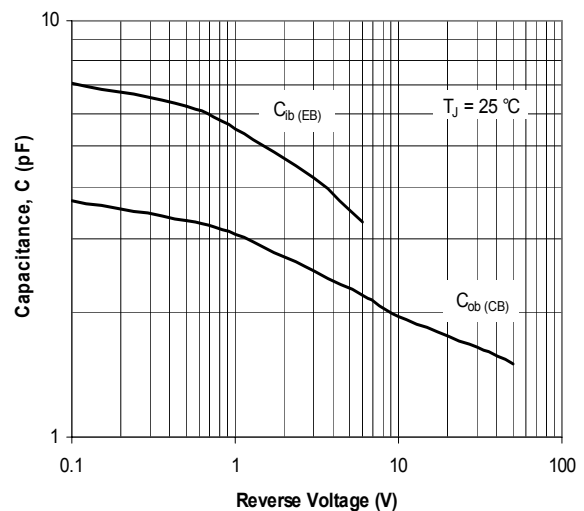
**Fig. 3. Typical  $V_{BE(ON)}$  vs. Collector Current**



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



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

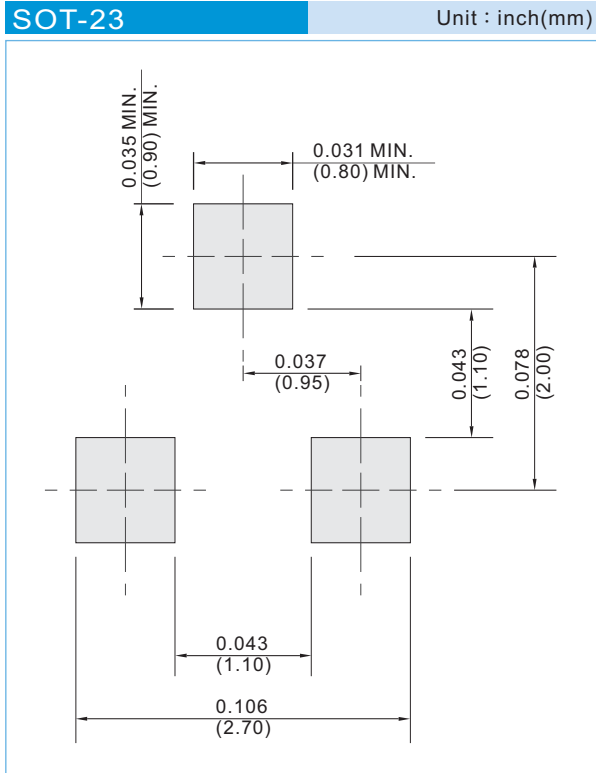


**Fig. 6. Typical Capacitances vs. Reverse Voltage**



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

### MOUNTING PAD LAYOUT



### ORDER INFORMATION

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



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### Part No\_packing code\_Version

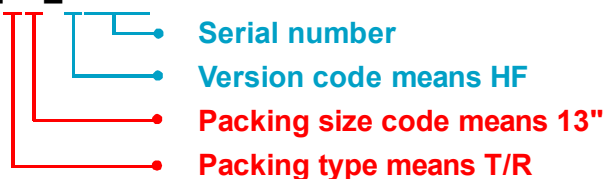
BC846\_R1\_00001

BC846\_R2\_00001

For example :

**RB500V-40\_R2\_00001**

Part No.



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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