



# BC846,BC847,BC848,BC849,BC850 SERIES

## NPN GENERAL PURPOSE TRANSISTORS

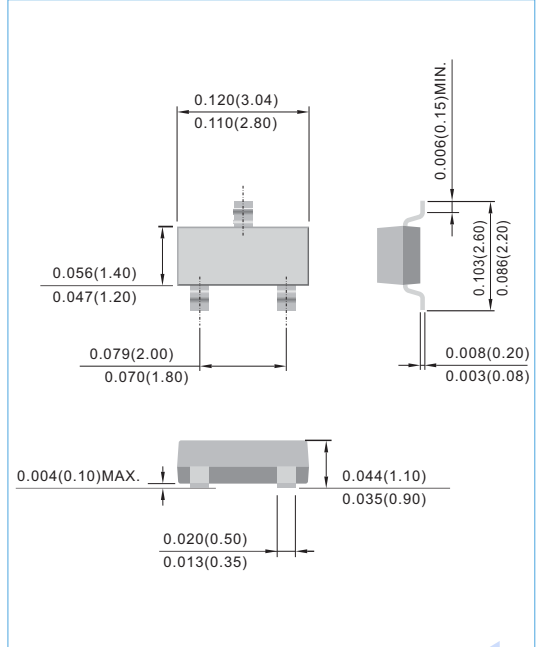
**VOLTAGE** 30/45/65 Volts    **CURRENT** 330 mWatts

**SOT-23**

Unit : inch(mm)

### FEATURES

- General purpose amplifier applications
- NPN epitaxial silicon, planar design
- Collector current IC = 100mA
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### 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

PDF.Support

### ABSOLUTE RATINGS

PARAMETER	Symbol	Value	Units
Collector - Emitter Voltage	$V_{CE0}$	BC846: 65 BC847,BC850: 45 BC848,BC849: 30	V
Collector - Base Voltage	$V_{CB0}$	BC846: 80 BC847,BC850: 50 BC848,BC849: 30	V
Emitter - Base Voltage	$V_{EB0}$	BC846: 6.0 BC847,BC850: 6.0 BC848,BC849: 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	$^{\circ}C/W$
Operating Junction Temperature and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^{\circ}C$

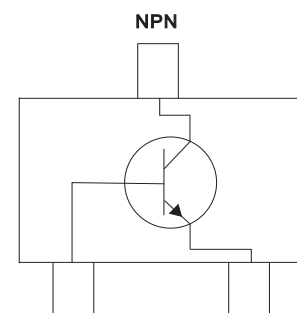
Note 1: Transistor mounted on FR-4 board 8 cm<sup>2</sup>.



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### ELECTRICAL CHARACTERISTICS

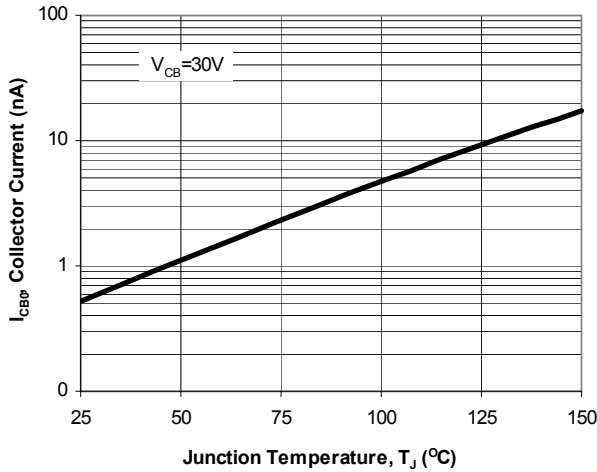
PARAMETER	Symbol	Test Condition	MIN.	TYP.	MAX.	Units
Collector - Emitter Breakdown Voltage BC846A/B BC847A/B/C,BC850B/C BC848A/B/C,BC849B/C	$V_{(BR)CEO}$	$I_C=10mA, I_B=0$	65 45 30	-	-	V
Collector - Base Breakdown Voltage BC846A/B BC847A/B/C,BC850B/C BC848A/B/C,BC849B/C	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	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



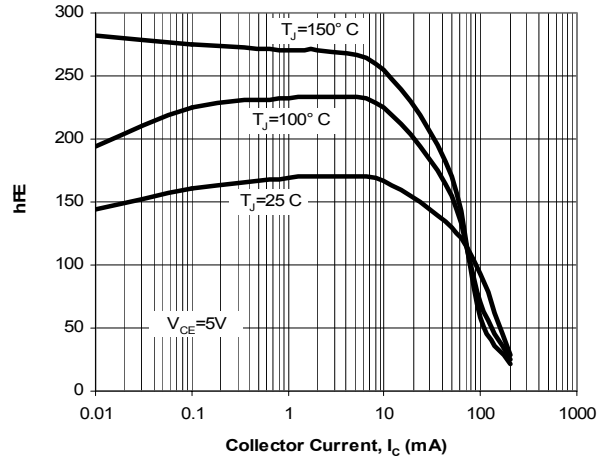


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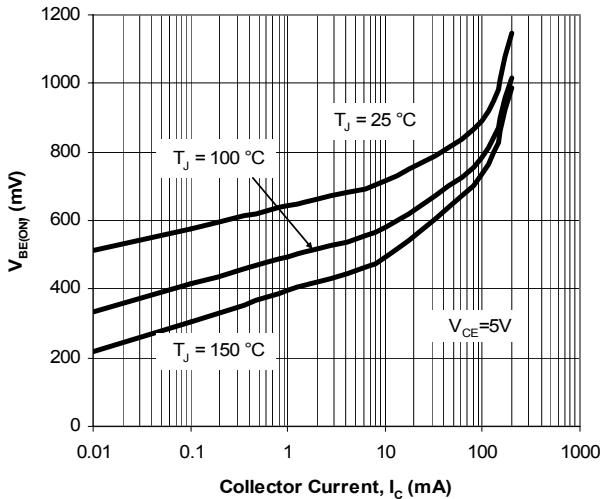
## ELECTRICAL CHARACTERISTICS CURVE (BC846A, BC847A, BC848A)



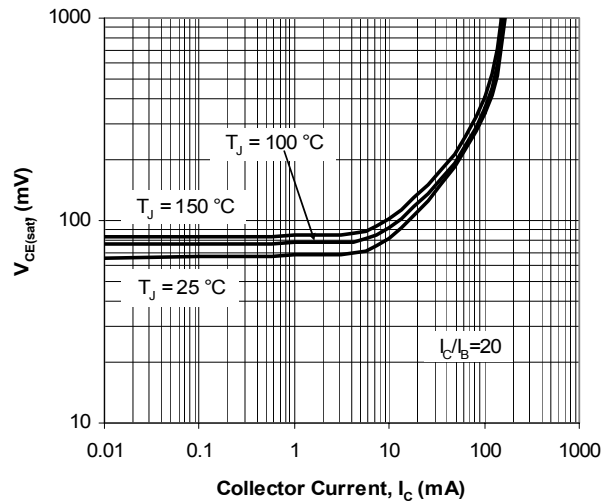
**Fig. 1. Typical  $I_{CB0}$  vs. Junction Temperature**



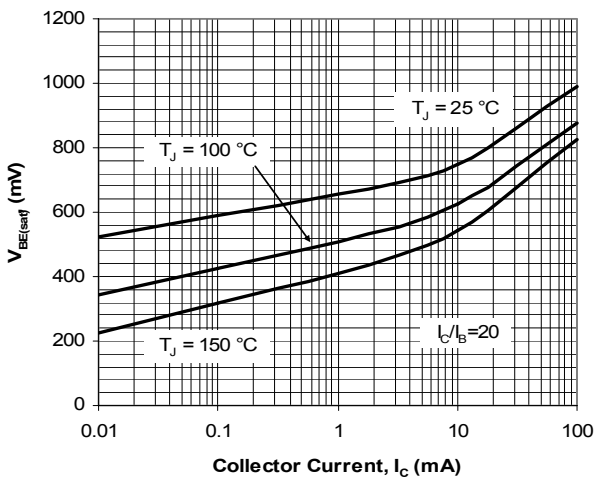
**Fig. 2. Typical  $h_{FE}$  vs. Collector Current**



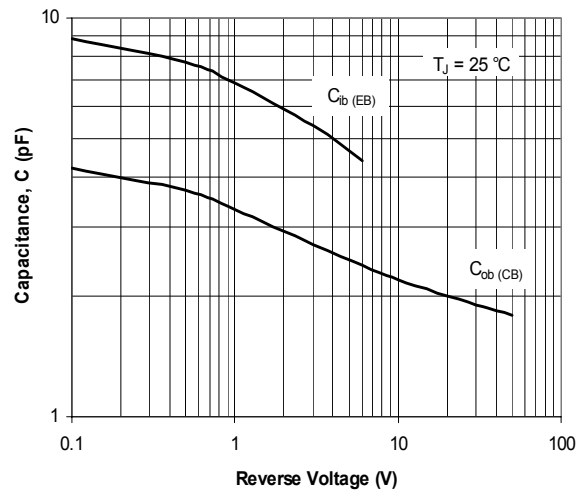
**Fig. 3. Typical  $V_{BE(ON)}$  vs. Collector Current**



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



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

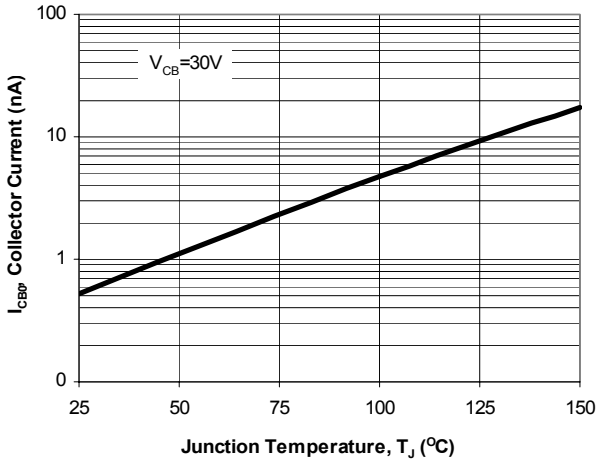


**Fig. 6. Typical Capacitances vs. Reverse Voltage**

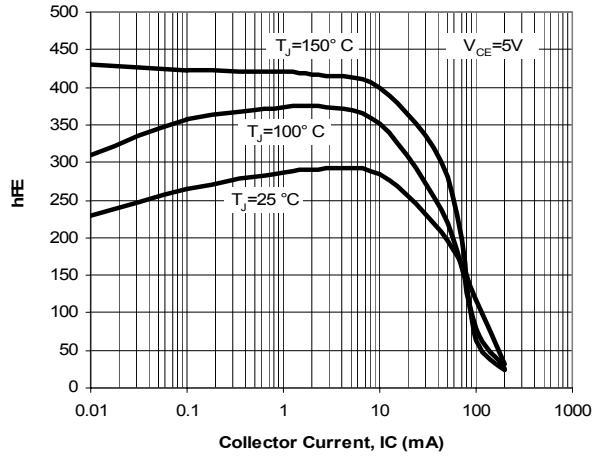


# BC846, BC847, BC848, BC849, BC850 SERIES

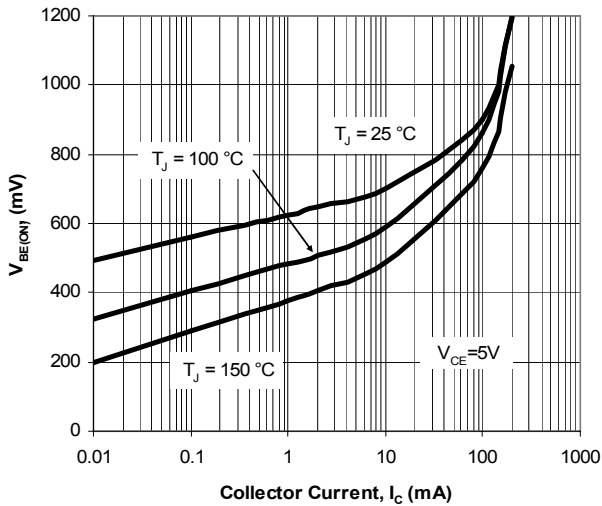
## ELECTRICAL CHARACTERISTICS CURVE (BC846B, BC847B, BC848B, BC849B, BC850B)



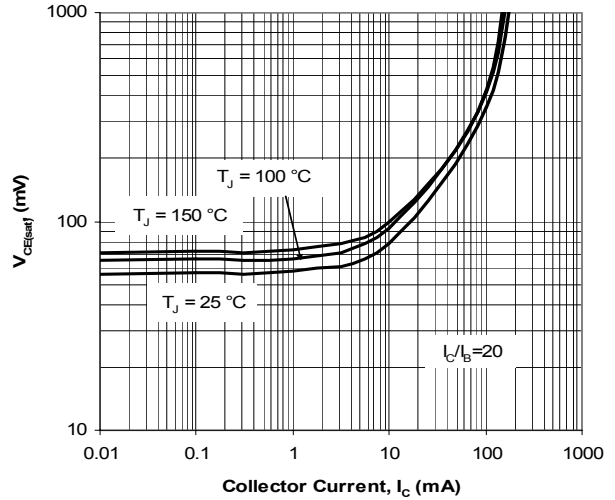
**Fig. 1. Typical  $I_{CB0}$  vs. Junction Temperature**



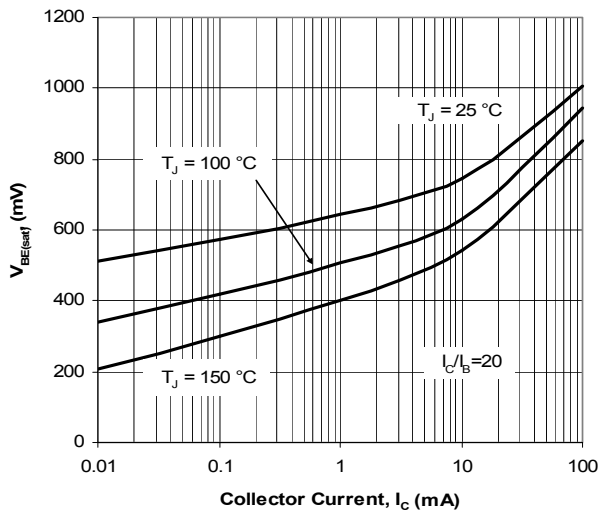
**Fig. 2. Typical  $h_{FE}$  vs. Collector Current**



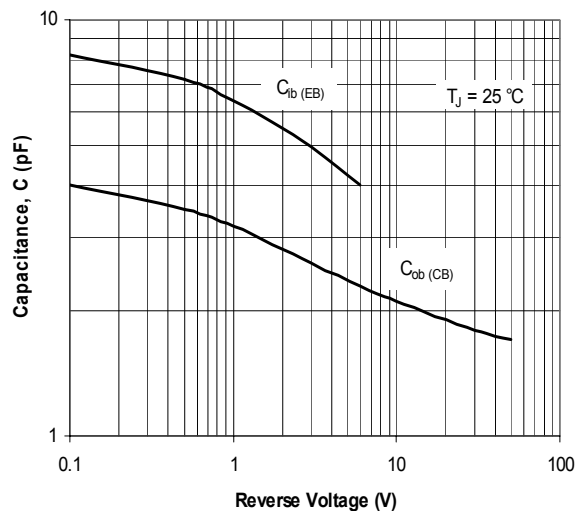
**Fig. 3. Typical  $V_{BE(ON)}$  vs. Collector Current**



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



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

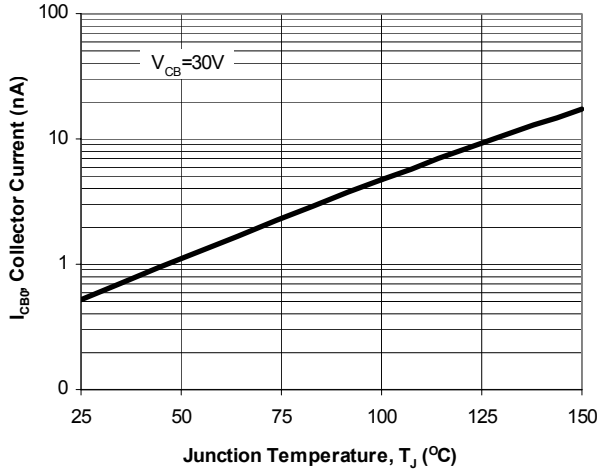


**Fig. 6. Typical Capacitances vs. Reverse Voltage**

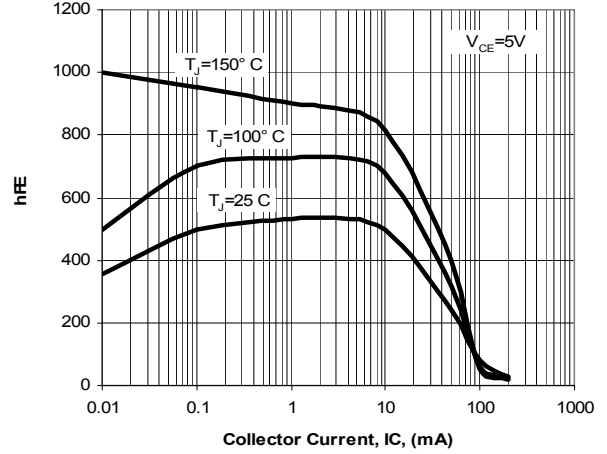


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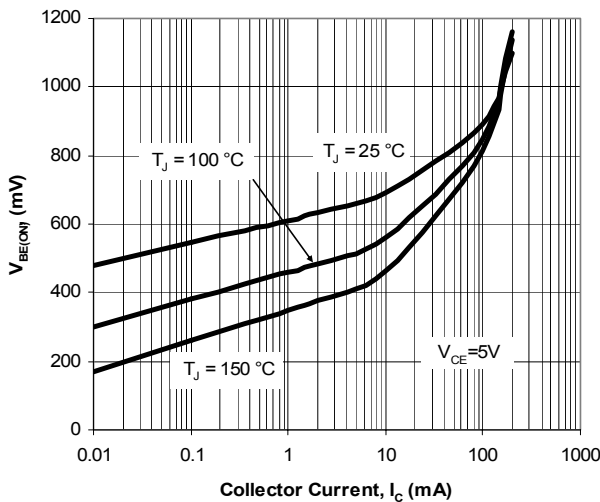
## ELECTRICAL CHARACTERISTICS CURVE (BC847C, BC848C, BC849C, BC850C)



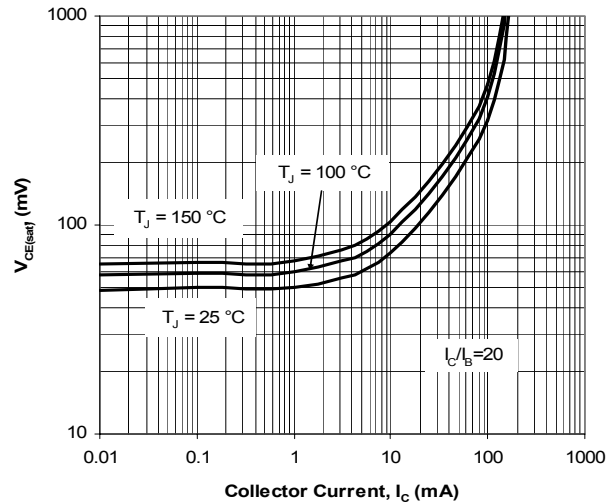
**Fig. 1. Typical  $I_{CB0}$  vs. Junction Temperature**



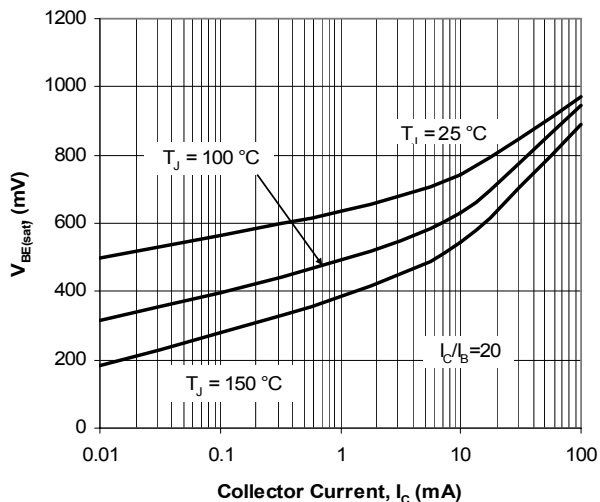
**Fig. 2. Typical  $h_{FE}$  vs. Collector Current**



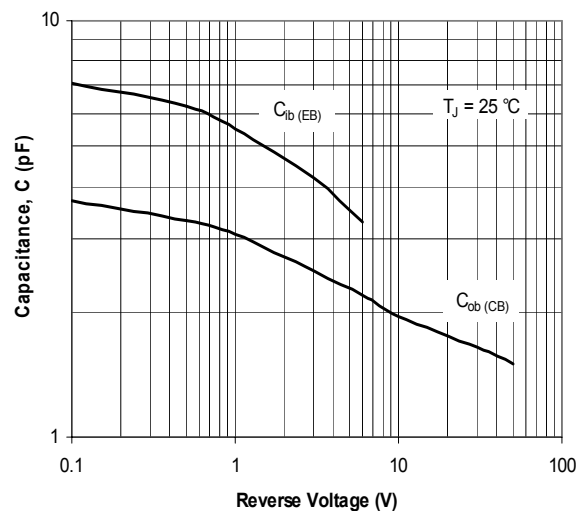
**Fig. 3. Typical  $V_{BE(ON)}$  vs. Collector Current**



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



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

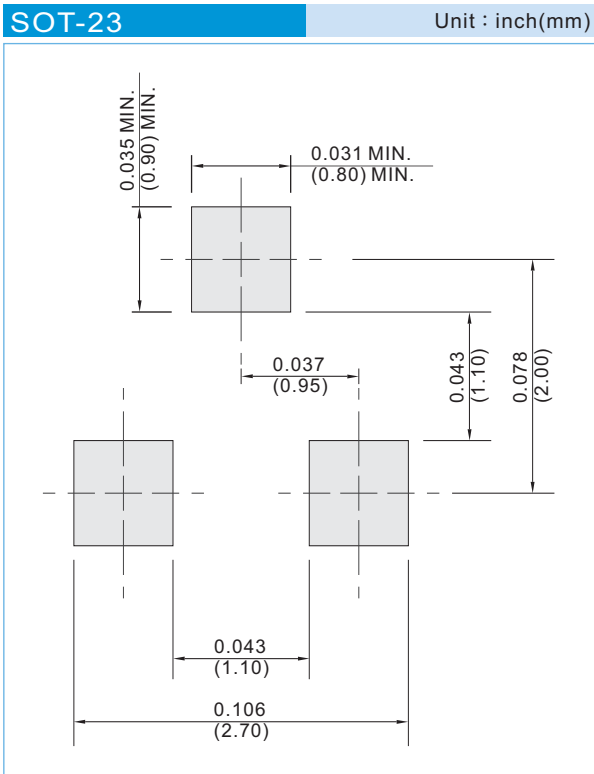


**Fig. 6. Typical Capacitances vs. Reverse Voltage**



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### MOUNTING PAD LAYOUT



### ORDER INFORMATION

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

### LEGAL STATEMENT

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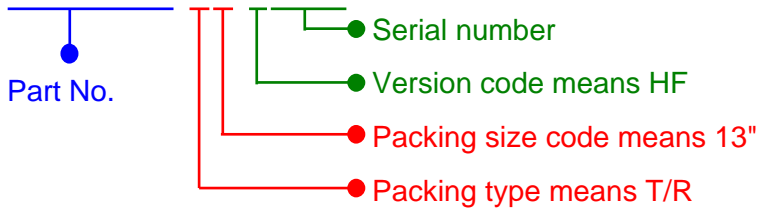
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For example :

**RB500V-40\_R2\_00001**



**Part No\_packing code\_Version**

BC846A\_R1\_00001  
BC846A\_R1\_10001  
BC846A\_R2\_00001  
BC846A\_R2\_10001

Packing Code <b>XX</b>				Version Code <b>XXXXX</b>		
Packing type	<b>1<sup>st</sup> Code</b>	Packing size code	<b>2<sup>nd</sup> Code</b>	HF or RoHS	<b>1<sup>st</sup> Code</b>	<b>2<sup>nd</sup>~5<sup>th</sup> Code</b>
T/B	<b>A</b>	N/A	<b>0</b>	HF	<b>0</b>	<b>serial number</b>
T/R	<b>R</b>	7"	<b>1</b>	RoHS	<b>1</b>	<b>serial number</b>
B/P	<b>B</b>	13"	<b>2</b>			
T/P	<b>T</b>	26mm	<b>X</b>			
TRR	<b>S</b>	52mm	<b>Y</b>			
TRL	<b>L</b>	PBCU	<b>U</b>			
FORMING	<b>F</b>	PBCD	<b>D</b>			