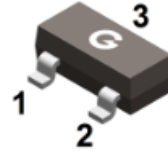
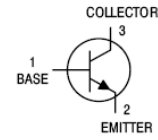


### Features

- High current gain
- Excellent  $h_{FE}$  linearity
- Low noise between 30Hz and 15kHz
- RoHS compliant with Halogen-free

HF



SOT-23

### Mechanical Data

- Case: SOT-23
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208

### Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BC846A/B	SOT-23	3000 pcs / Tape & Reel	1A/1B
BC847A/B/C	SOT-23	3000 pcs / Tape & Reel	1E/1F/1G
BC848A/B/C	SOT-23	3000 pcs / Tape & Reel	1J/1K/1L

### Maximum Ratings (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	BC846	BC847	BC848	Unit
Collector-Base Voltage	$V_{CBO}$	80	50	30	V
Collector-Emitter Voltage	$V_{CEO}$	65	45	30	V
Emitter-Base Voltage	$V_{EBO}$	6	6	5	V
Collector Current (Continuous)	$I_C$	100			mA
Collector Current (Peak)	$I_{CM}$	200			mA

### Thermal Characteristics

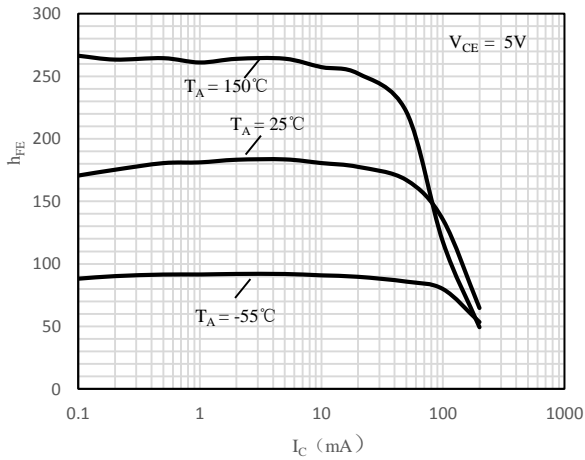
Parameter	Symbol	Value	Unit
Power Dissipation ( $T_A = 25^\circ\text{C}$ )	$P_D$	250	mW
Thermal Resistance Junction-to-Air <sup>*1</sup>	$R_{\theta JA}$	409	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Case <sup>*1</sup>	$R_{\theta JC}$	225	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Lead <sup>*1</sup>	$R_{\theta JL}$	197	$^\circ\text{C/W}$
Operating Junction Temperature	$T_J$	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

Note 1: The data tested by surface mounted on a 15mm \* 15mm \* 1mm FR4-epoxy P.C.B

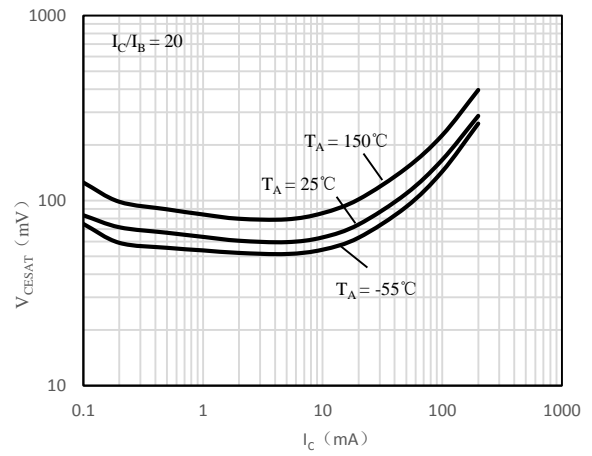
### Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage BC846	$V_{(BR)CBO}$	$I_C = 10\mu\text{A}, I_E = 0$	80	-	-	V
Collector-Base Breakdown Voltage BC847			50	-	-	
Collector-Base Breakdown Voltage BC848			30	-	-	
Collector-Emitter Breakdown Voltage BC846	$V_{(BR)CEO}$	$I_C = 10\text{mA}, I_B = 0$	65	-	-	V
Collector-Emitter Breakdown Voltage BC847			45	-	-	V
Collector-Emitter Breakdown Voltage BC848			30	-	-	V
Emitter-Base Breakdown Voltage BC846	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}, I_C = 0$	6	-	-	V
Emitter-Base Breakdown Voltage BC847			6	-	-	V
Emitter-Base Breakdown Voltage BC848			5	-	-	V
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 30\text{V}, I_E = 0$	-	-	15	nA
		$V_{CB} = 30\text{V}, I_E = 0$ $T_J = 150^\circ\text{C}$	-	-	5	$\mu\text{A}$
Emitter-base Cut-off Current	$I_{EBO}$	$V_{EB} = 5\text{V}, I_C = 0$	-	-	100	nA
Collector-emitter Cut-off Current	$I_{CEO}$	$V_{CE} = 30\text{V}, I_B = 0$	-	-	1	$\mu\text{A}$
DC Current Gain BC846/847/848A	$h_{FE}$	$V_{CE} = 5\text{V}, I_C = 10\mu\text{A}$	-	110	-	-
DC Current Gain BC846/847/848B			-	250	-	-
DC Current Gain BC847/848C			-	480	-	-
DC Current Gain BC846/847/848A		$V_{CE} = 5\text{V}, I_C = 2\text{mA}$	110	-	220	-
DC Current Gain BC846/847/848B			200	-	450	-
DC Current Gain BC847/848C			420	-	800	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{mA}, I_B = 0.5\text{mA}$	-	0.09	0.25	V
		$I_C = 100\text{mA}, I_B = 5\text{mA}$	-	0.20	0.60	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10\text{mA}, I_B = 0.5\text{mA}$	-	0.70	0.90	V
		$I_C = 100\text{mA}, I_B = 5\text{mA}$	-	0.90	1.10	V
Base-Emitter Voltage	$V_{BE(ON)}$	$V_{CE} = 5\text{V}, I_C = 2\text{mA}$	0.58	0.66	0.70	V
		$V_{CE} = 5\text{V}, I_C = 10\text{mA}$	-	-	0.77	V
Transition Frequency	$f_T$	$V_{CE} = 5\text{V}, I_C = 10\text{mA}$ $f = 100\text{MHz}$	100	-	-	MHz
Collector Capacitance	$C_C$	$V_{CB} = 10\text{V}, I_E = I_C = 0$ $f = 100\text{MHz}$	-	2.5	-	pF

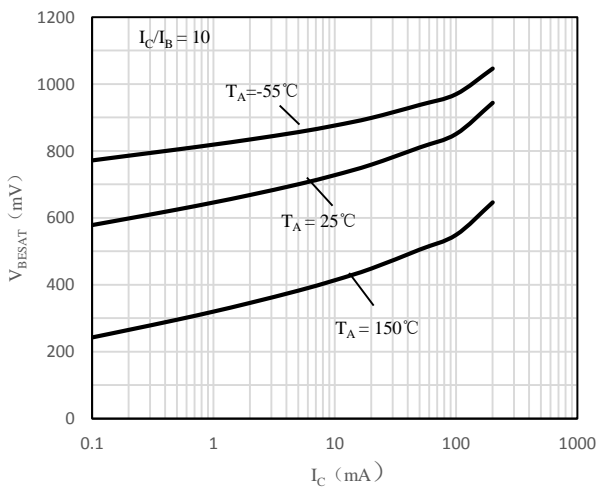
**Ratings and Characteristic Curves-BC846/847/848A** (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)



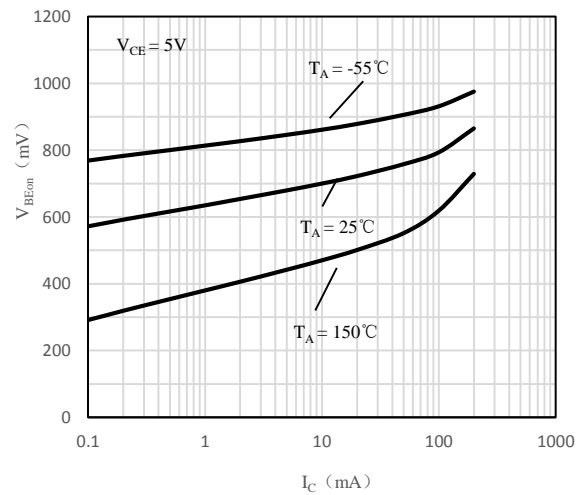
**Fig 1  $h_{FE}$  vs.  $I_C$**



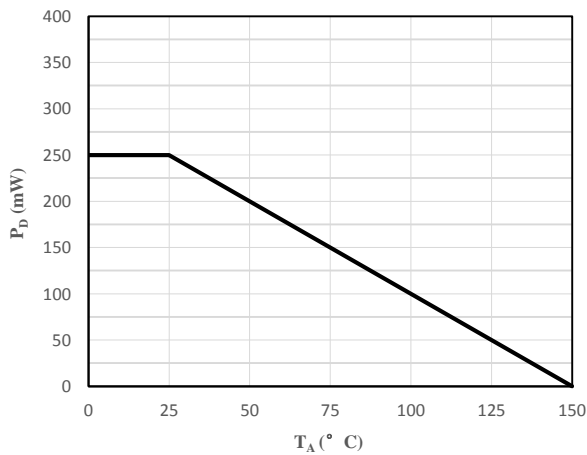
**Fig 2  $V_{CE(sat)}$  vs.  $I_C$**



**Fig 3  $V_{BE(sat)}$  vs.  $I_C$**

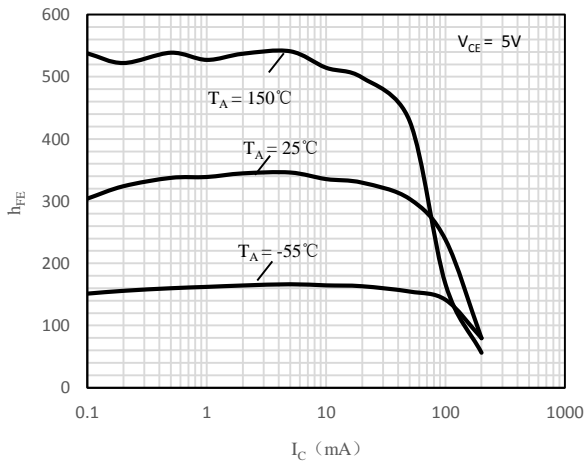


**Fig 4  $V_{BE(on)}$  vs.  $I_C$**

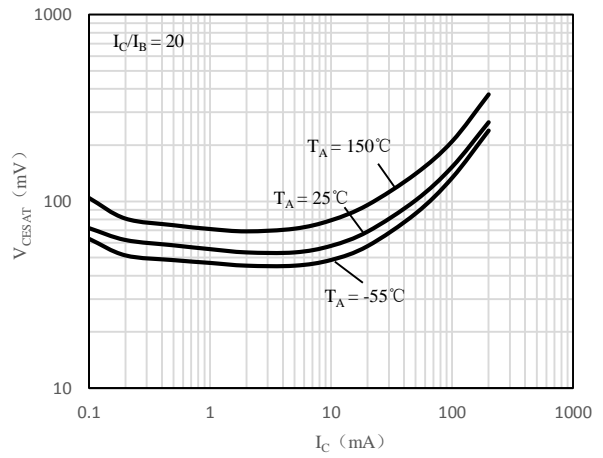


**Fig 5 Power Derating Curve**

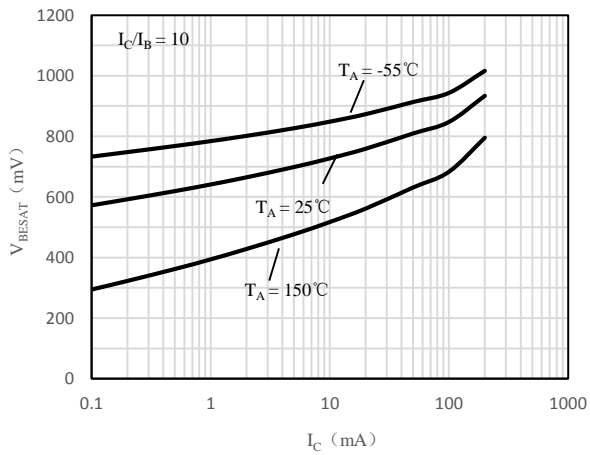
**Ratings and Characteristic Curves-BC846/847/848B** (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)



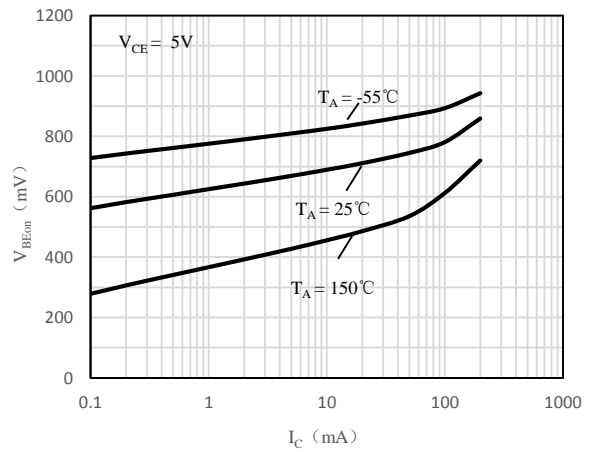
**Fig 1  $h_{FE}$  vs.  $I_C$**



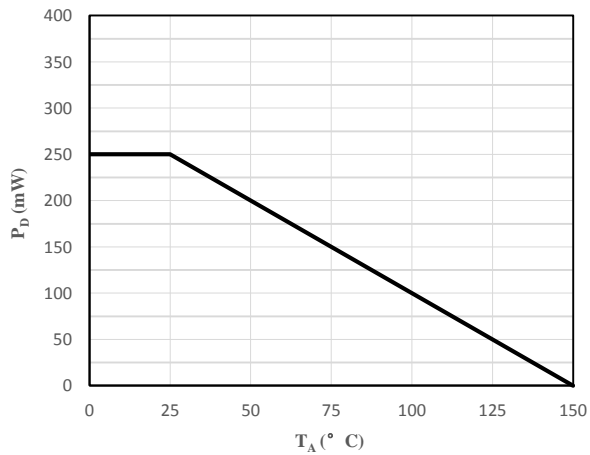
**Fig 2  $V_{CE(sat)}$  vs.  $I_C$**



**Fig 3  $V_{BE(sat)}$  vs.  $I_C$**

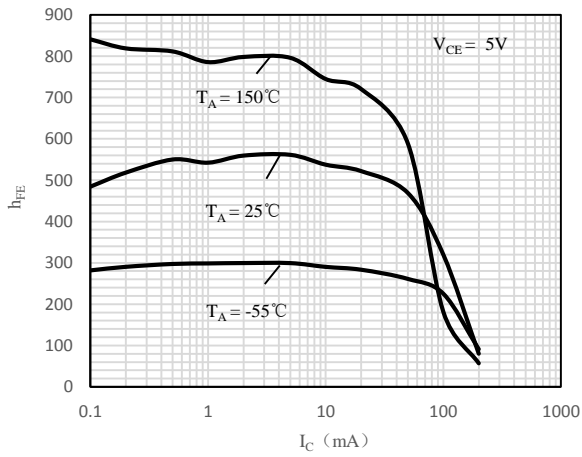


**Fig 4  $V_{BE(ON)}$  vs.  $I_C$**

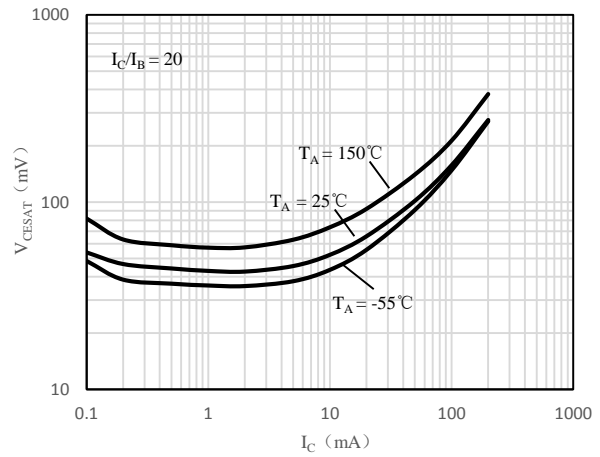


**Fig 5 Power Derating Curve**

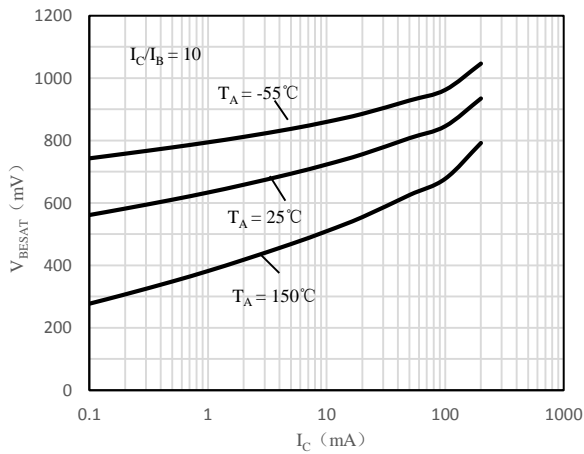
**Ratings and Characteristic Curves-BC847/848C** (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)



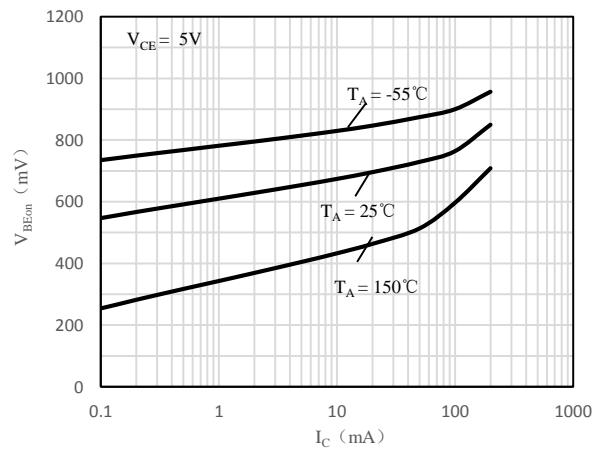
**Fig 1  $h_{FE}$  vs.  $I_C$**



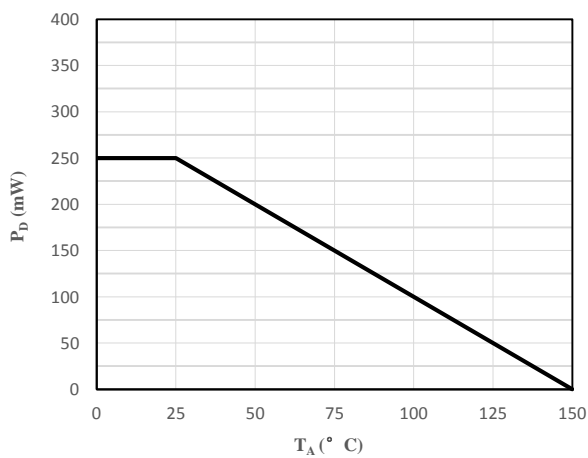
**Fig 2  $V_{CE(sat)}$  vs.  $I_C$**



**Fig 3  $V_{BE(sat)}$  vs.  $I_C$**

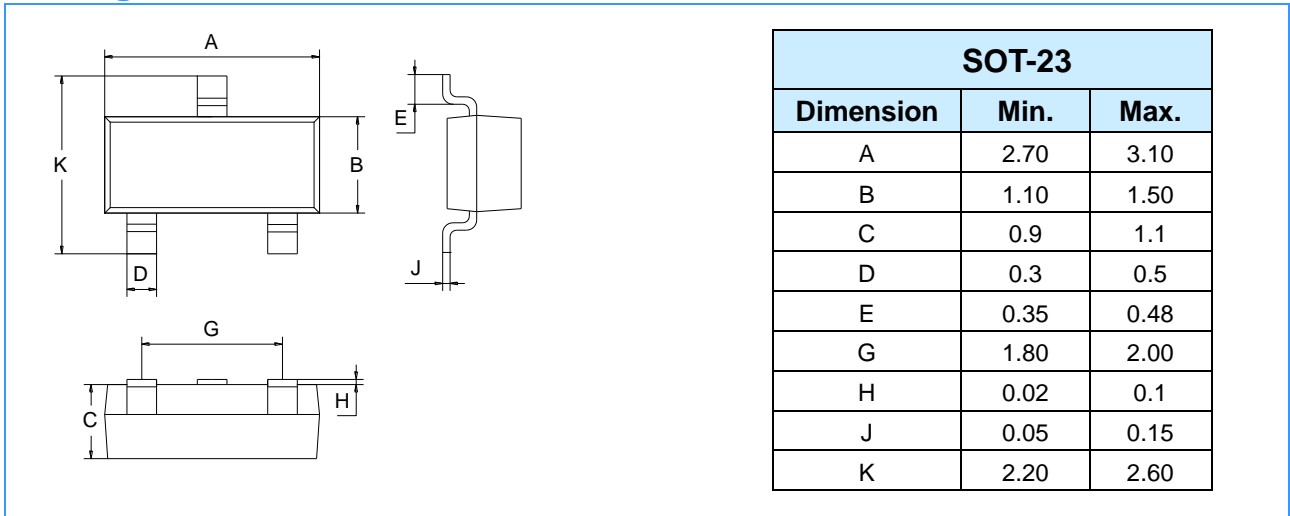


**Fig 4  $V_{BE(on)}$  vs.  $I_C$**



**Fig 5 Power Derating Curve**

**Package Outline Dimensions** (Unit: mm)



**Package Outline Dimensions** (Unit: mm)

