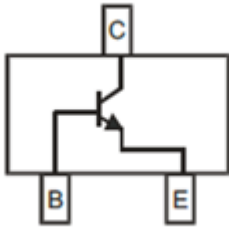


## NPN General Purpose Transistors



**SOT-23**

### Features

- Epoxy meets UL-94 V-0 flammability rating and halogen free
- Moisture Sensitivity Level 1
- Part no. with suffix "Q" means AEC-Q101 qualified

### Applications

- General purpose switching and amplification

### Mechanical Data

- **Case:** SOT-23
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:**

BC846AQ=1A	BC847AQ=1E	BC848AQ=1J
BC846BQ=1B	BC847BQ=1F	BC848BQ=1K
	BC847CQ=1G	BC848CQ=1L

### ■ Maximum Ratings (Ta=25°C unless otherwise noted)

Item	Symbol	Unit	Conditions	Value	
Collector-Base Voltage	$V_{CBO}$	V		BC846AQ、BC846BQ	80
				BC847AQ、BC847BQ、 BC847CQ	50
				BC848AQ、BC848BQ、 BC848CQ	30
Collector-Emitter Voltage	$V_{CEO}$	V		BC846AQ、BC846BQ	65
				BC847AQ、BC847BQ、 BC847CQ	45
				BC848AQ、BC848BQ、 BC848CQ	30
Emitter-Base Voltage	$V_{EBO}$	V		6	
Collector Current -Continuous	$I_C$	A		0.1	
Total Device Dissipation (*)	$P_D$	mW		300	
Thermal Resistance Junction to Ambient (*)	$R_{thJA}$	K/W		417	
Junction Temperature	$T_j$	°C		150	
Storage Temperature	$T_{STG}$	°C		-55 to +150	

(\*) Device mounted on FR-4 PCB 1.0 x 1.0 x 0.06 inch.



# BC846Q THRU BC848Q

## ■ Electrical Characteristics (Ta=25°C unless otherwise noted)

Item	Symbol	Unit	Conditions	Min	Max
Collector-base breakdown voltage	$V_{(BR)CBO}$	V	BC846AQ、BC846BQ	$I_C=10\mu A, I_E=0$	80
			BC847AQ、BC847BQ、 BC847CQ		50
			BC848AQ、BC848BQ、 BC848CQ		30
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	V	BC846AQ、BC846BQ	$I_C=10mA, I_B=0$	65
			BC847AQ、BC847BQ、 BC847CQ		45
			BC848AQ、BC848BQ、 BC848CQ		30
Emitter-base breakdown voltage	$V_{(BR)EBO}$	V	$I_E=10\mu A, I_C=0$	6	
Collector cut-off current	$I_{CBO}$	nA	BC846AQ、BC846BQ	$V_{CB}=70V, I_E=0$	100
			BC847AQ、BC847BQ、 BC847CQ	$V_{CB}=50V, I_E=0$	
			BC848AQ、BC848BQ、 BC848CQ	$V_{CB}=30V, I_E=0$	
Collector cut-off current	$I_{CEO}$	nA	BC846AQ、BC846BQ	$V_{CE}=60V, I_B=0$	100
			BC847AQ、BC847BQ、 BC847CQ	$V_{CE}=45V, I_B=0$	
			BC848AQ、BC848BQ、 BC848CQ	$V_{CE}=30V, I_B=0$	
Emitter cut-off current	$I_{EBO}$	nA	$V_{EB}=5V, I_C=0$		100
DC current gain	$h_{FE}$		BC846AQ、BC847AQ、 BC848AQ	$V_{CE}=5.0V, I_C=2mA$	110
			BC846BQ、BC847BQ、 BC848BQ		200
			BC847CQ、BC848CQ		420
Collector-emitter saturation voltage	$V_{CE(sat)}$	V	$I_C=100mA, I_B=5mA$		0.5
Base-emitter saturation voltage	$V_{BE(sat)}$	V	$I_C=100mA, I_B=5mA$		1.1
Transition frequency	$f_T$	MHz	$V_{CE}=5V_{dc}, I_C=10mA, f=30MHz$	150	
Collector output capacitance	$C_{ob}$	pF	$V_{CB}=10V, f=1MHz$		4.5

## ■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
BC846AQ、BC846BQ BC847AQ、BC847BQ、BC847CQ BC848AQ、BC848BQ、BC848CQ	F2	Approximate 0.01	3000	30000	120000	7" reel



# BC846Q THRU BC848Q

## Characteristics (Typical)

Fig. 1-Static Characteristic

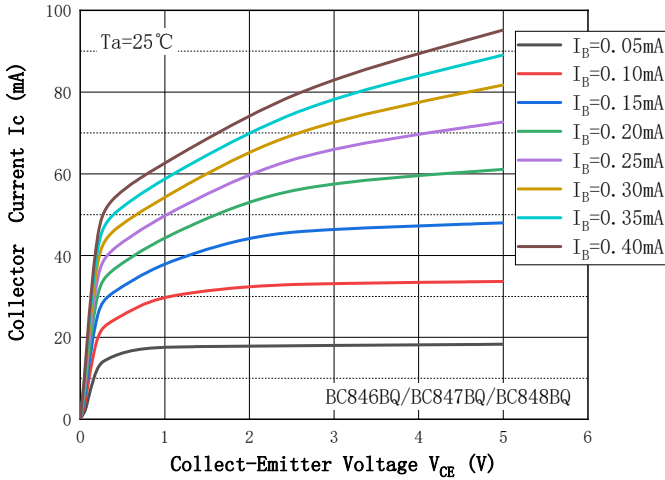


Fig. 2 - DC Current Gian

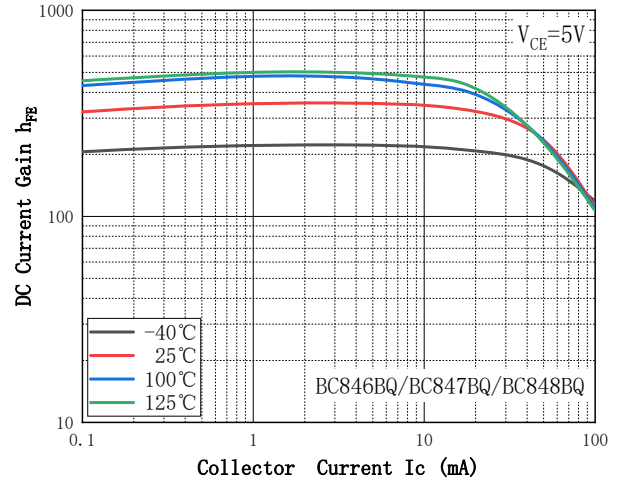


Fig. 3-Static Characteristic

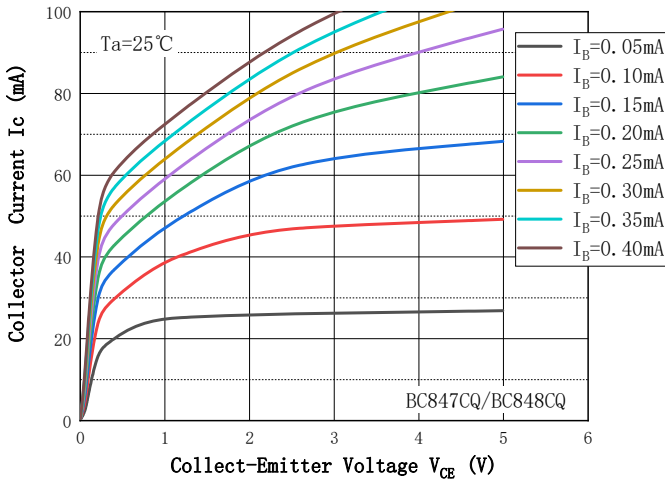


Fig. 4 - DC Current Gian

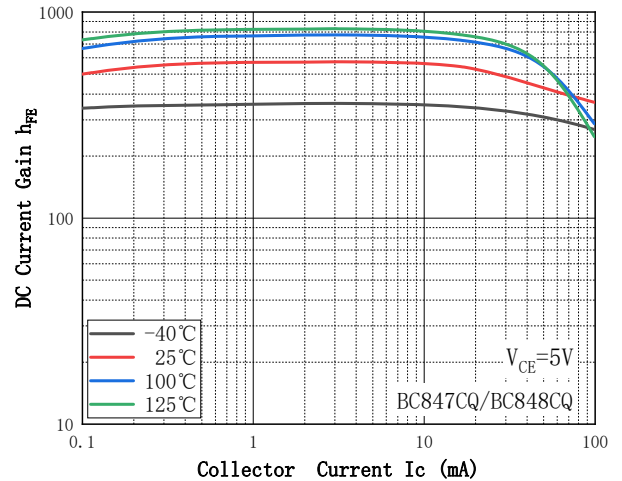


Fig. 5 - Collect-Emittor Saturation Voltage

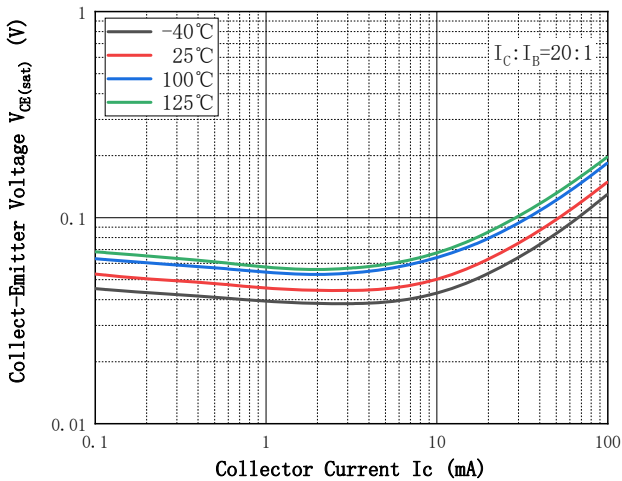
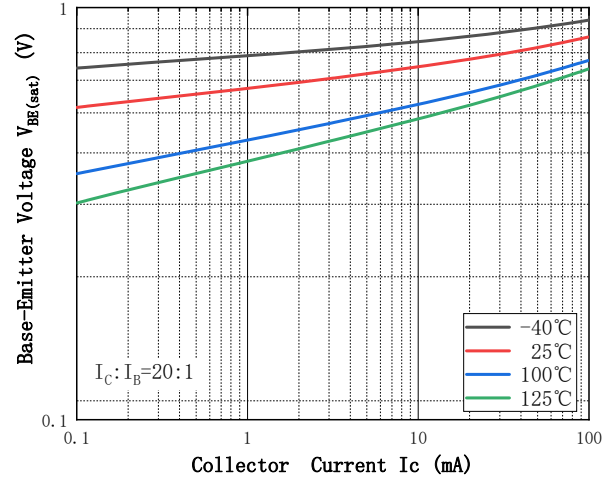


Fig. 6 - Base-Emittor Voltage





# BC846Q THRU BC848Q

Fig. 7 - Base-Emitter On Voltage

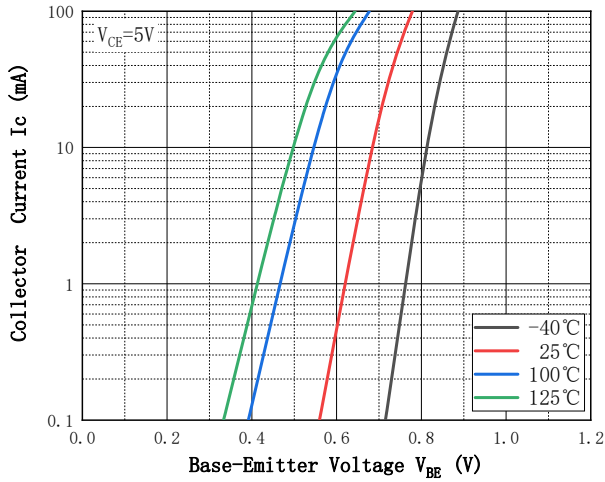
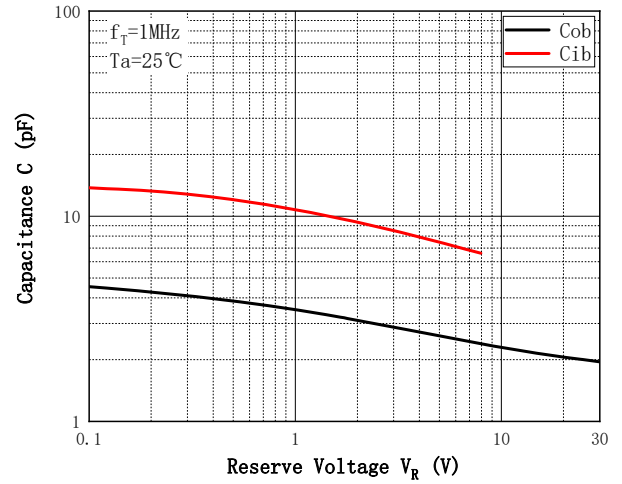
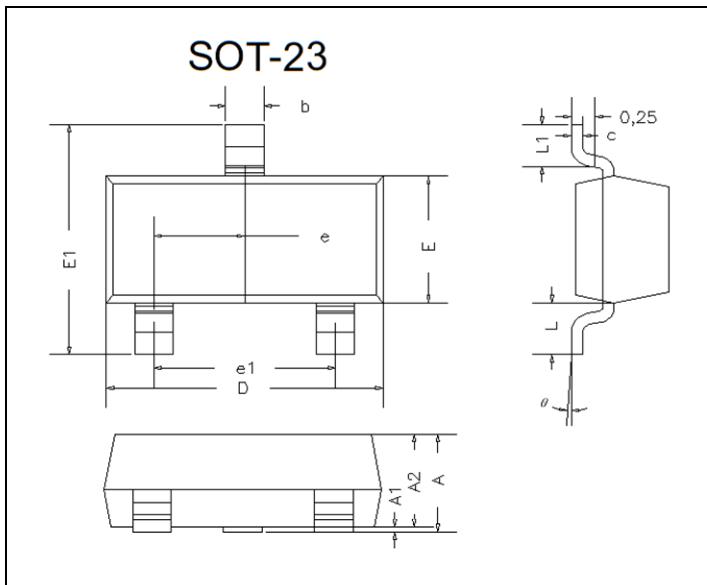


Fig. 8 -  $C_{ob}/C_{ib} - V_{CB}/V_{EB}$

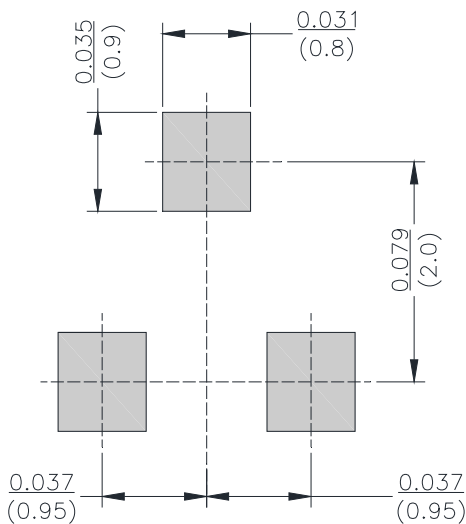


## ■ SOT-23 Package Outline Dimensions



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.035	0.045	0.90	1.15	
A1	0.000	0.004	0.00	0.10	
A2	0.035	0.041	0.90	1.05	
b	0.012	0.020	0.30	0.50	
c	0.004	0.008	0.10	0.20	
D	0.110	0.118	2.80	3.00	
E	0.047	0.055	1.20	1.40	
E1	0.089	0.100	2.25	2.55	
e	0.370TYP		0.95TYP		
e1	0.071	0.079	1.80	2.00	
L	0.220REF		0.55REF		
L1	0.012	0.020	0.30	0.50	
$\theta$	0°	8°	0°	8°	

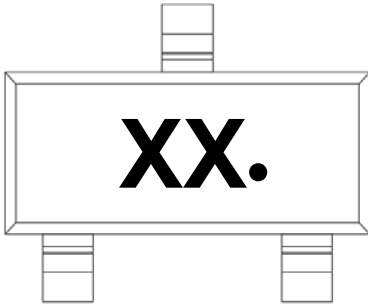
## ■ SOT-23 Suggested Pad Layout



Unit:  $\frac{\text{inch}}{\text{mm}}$



## ■ Marking Information



**Note:**

1. All marking is at middle of the product body
2. All marking is in laser marking
3. XX is Marking Code
4. Body color: Black



## BC846Q THRU BC848Q

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### Disclaimer

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