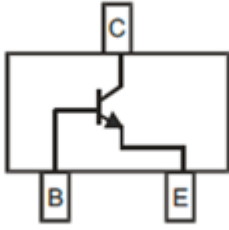


## NPN General Purpose Transistors



**SOT-323**

### 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-323
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:**

BC846AWQ=1A	BC847AWQ=1E	BC848AWQ=1J
BC846BWQ=1B	BC847BWQ=1F	BC848BWQ=1K
	BC847CWQ=1G	BC848CWQ=1L

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

Item	Symbol	Unit	Conditions	Value	
Collector-Base Voltage	$V_{CBO}$	V		BC846AWQ、BC846BWQ	80
				BC847AWQ、BC847BWQ、 BC847CWQ	50
				BC848AWQ、BC848BWQ、 BC848CWQ	30
Collector-Emitter Voltage	$V_{CEO}$	V		BC846AWQ、BC846BWQ	65
				BC847AWQ、BC847BWQ、 BC847CWQ	45
				BC848AWQ、BC848BWQ、 BC848CWQ	30
Emitter-Base Voltage	$V_{EBO}$	V		6	
Collector Current -Continuous	$I_C$	A		0.1	
Total Device Dissipation (*)	$P_D$	mW		200	
Thermal Resistance Junction to Ambient (*)	$R_{thJA}$	K/W		625	
Junction Temperature	$T_j$	°C		-55 to +150	
Storage Temperature	$T_{STG}$	°C		-55 to +150	

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



# BC846AWQ THRU BC848CWQ

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

Item	Symbol	Unit	Conditions	Min	Max
Collector-base breakdown voltage	$V_{(BR)CBO}$	V	BC846AWQ、BC846BWQ	$I_C=10\mu A, I_E=0$	80
			BC847AWQ、 BC847BWQ、BC847CWQ		50
			BC848AWQ、 BC848BWQ、BC848CWQ		30
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	V	BC846AWQ、BC846BWQ	$I_C=10mA, I_B=0$	65
			BC847AWQ、 BC847BWQ、BC847CWQ		45
			BC848AWQ、 BC848BWQ、BC848CWQ		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	BC846AWQ、BC846BWQ	$V_{CB}=70V, I_E=0$	100
			BC847AWQ、 BC847BWQ、BC847CWQ	$V_{CB}=50V, I_E=0$	
			BC848AWQ、 BC848BWQ、BC848CWQ	$V_{CB}=30V, I_E=0$	
Collector cut-off current	$I_{CEO}$	nA	BC846AWQ、BC846BWQ	$V_{CE}=60V, I_B=0$	100
			BC847AWQ、 BC847BWQ、BC847CWQ	$V_{CE}=45V, I_B=0$	
			BC848AWQ、 BC848BWQ、BC848CWQ	$V_{CE}=30V, I_B=0$	
Emitter cut-off current	$I_{EBO}$	nA	$V_{EB}=5V, I_C=0$		100
DC current gain	$h_{FE}$		BC846AWQ、 BC847AWQ、BC848AWQ	$V_{CE}=5.0V, I_C=2mA$	110
			BC846BWQ、 BC847BWQ、BC848BWQ		200
			BC847CWQ、BC848CWQ		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
BC846AWQ、BC846BWQ BC847AWQ、BC847BWQ、BC847CWQ BC848AWQ、BC848BWQ、BC848CWQ	F2	Approximate 0.005	3000	30000	120000	7" reel



# BC846AWQ THRU BC848CWQ

## ■ Characteristics (Typical)

Fig. 1-Static Characteristic

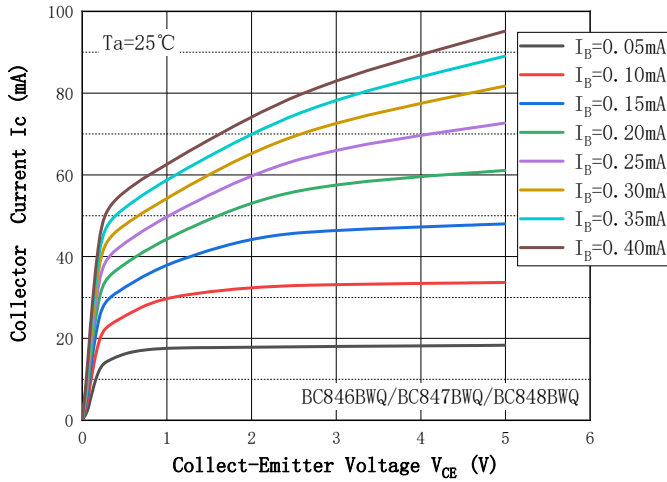


Fig. 2 - DC Current Gian

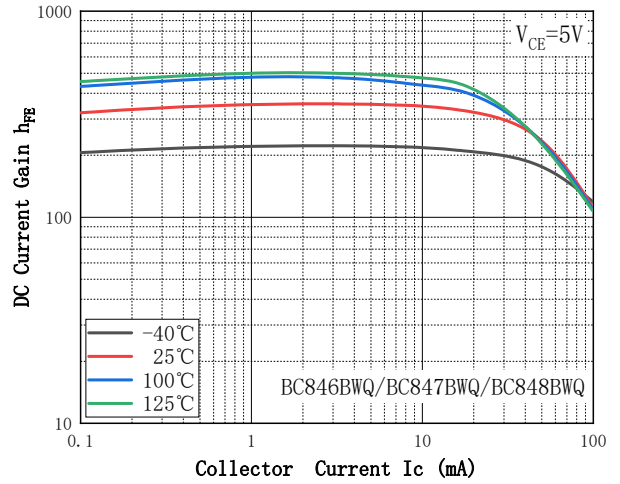


Fig. 3-Static Characteristic

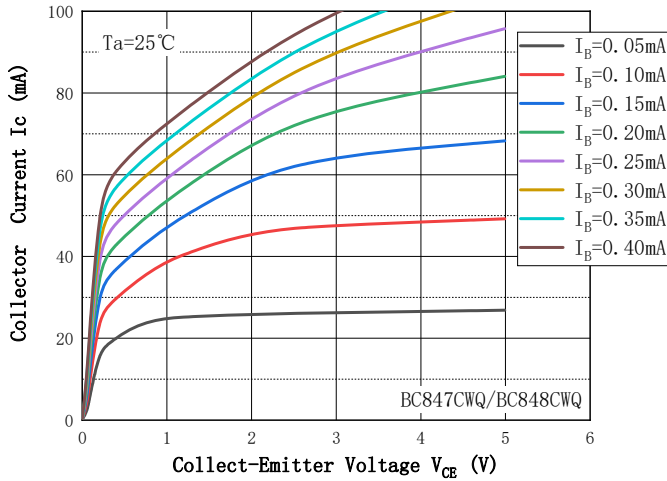


Fig. 4 - DC Current Gian

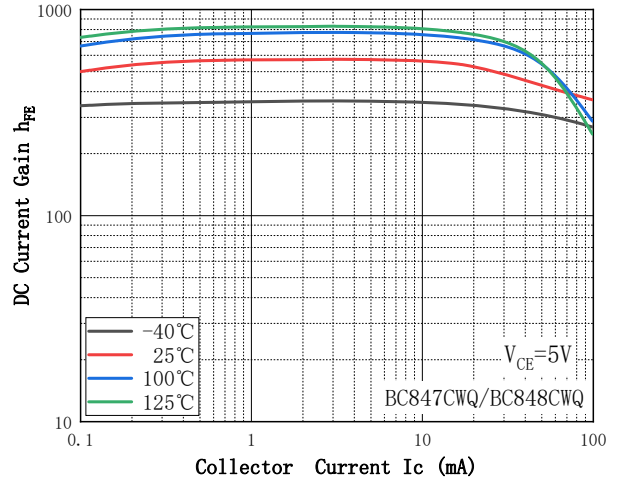


Fig. 5 - Collect-Emittor Saturation Voltage

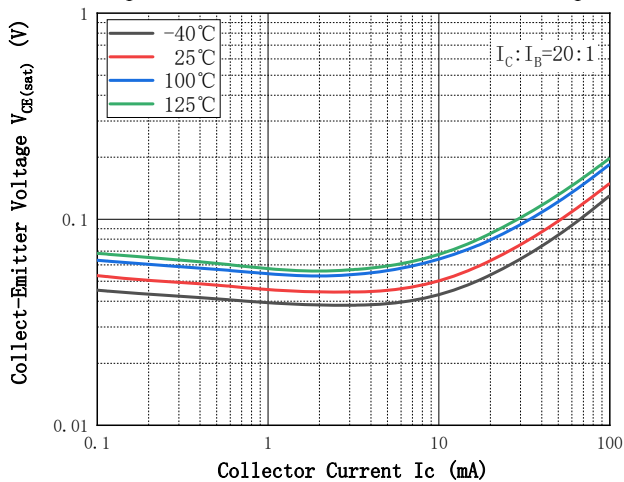
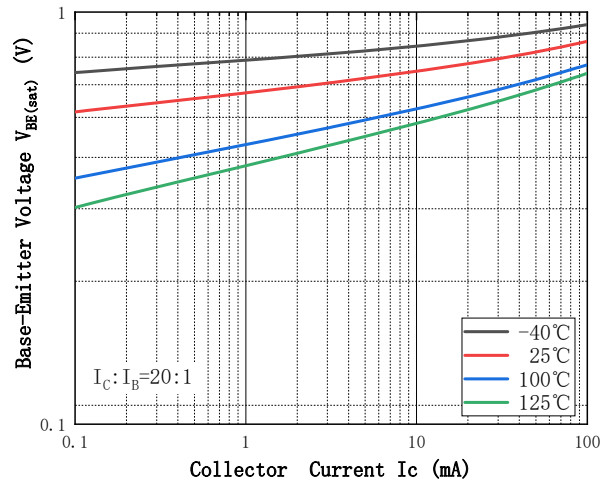


Fig. 6 - Base-Emittor Voltage





# BC846AWQ THRU BC848CWQ

Fig. 7 - Base-Emitter On Voltage

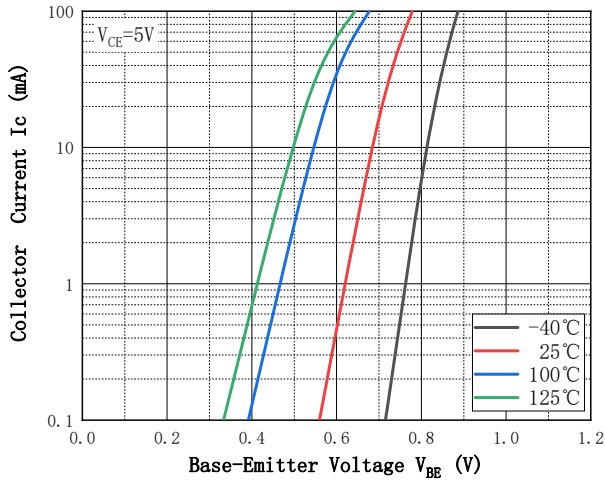
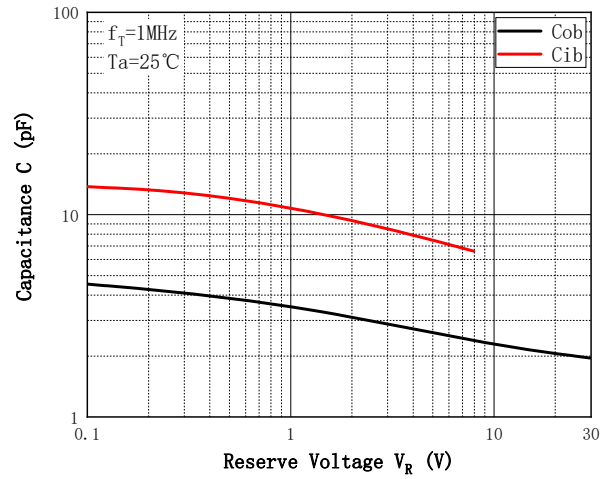
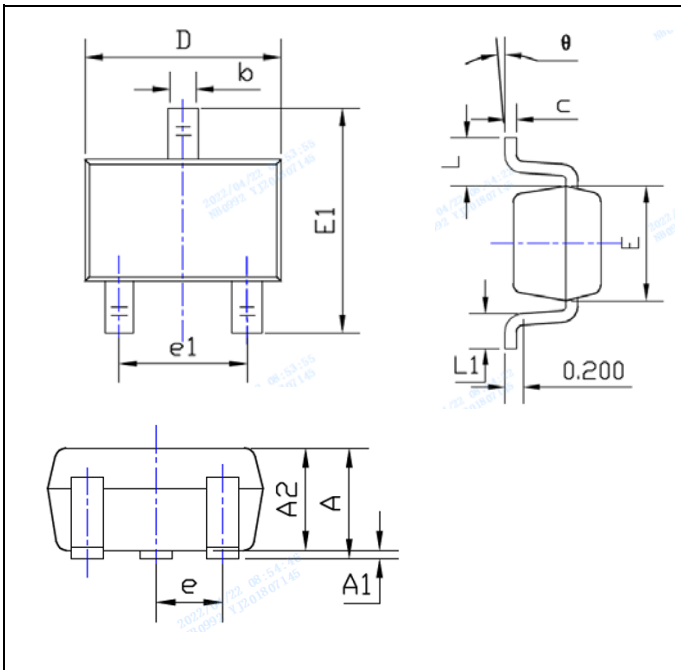


Fig. 8 - Cob/Cib— $V_{CB}/V_{EB}$

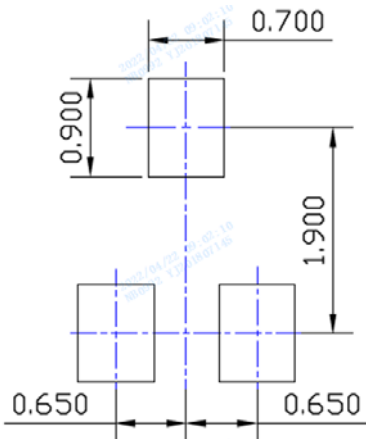


## ■SOT-323 Package Outline Dimensions



SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.035	0.043	0.900	1.100
A1	0.000	0.004	0.000	0.100
A2	0.035	0.039	0.900	1.000
b	0.006	0.016	0.150	0.400
c	0.004	0.010	0.100	0.250
D	0.071	0.087	1.800	2.200
E	0.045	0.053	1.150	1.350
E1	0.085	0.096	2.150	2.450
e	0.026TYP		0.650TYP	
e1	0.047	0.055	1.200	1.400
L	0.021REF		0.525REF	
L1	0.010	0.018	0.260	0.460
θ	0°	8°	0°	8°

## ■SOT-323 Suggested Pad Layout



Unit: mm



## BC846AWQ THRU BC848CWQ

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### Disclaimer

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