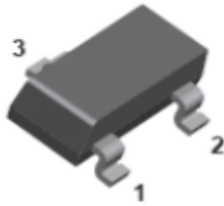
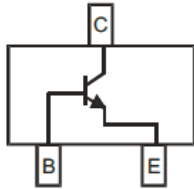


## NPN General Purpose Amplifier



**SOT-323S**

### Features

- Moisture sensitivity level 1
- Halogen free and RoHS compliant
- Surface mount package ideally suited for automatic insertion

### Application

- Signal amplification
- Switching circuit

### Mechanical data

- **Package:** SOT-323S
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102

### ■ Maximum Ratings ( $T_a=25^\circ\text{C}$ Unless otherwise specified)

Item	Symbol	Unit	Conditions	Value
Device marking code			BC817-16WS	6A
			BC817-25WS	6B
			BC817-40WS	6C
Collector-base voltage	$V_{CBO}$	V	$I_C=10\mu\text{A}, I_E=0$	50
Collector-emitter voltage	$V_{CEO}$	V	$I_C=10\text{mA}, I_B=0$	45
Emitter-base voltage	$V_{EBO}$	V	$I_E=1\mu\text{A}, I_C=0$	5
Collector current	$I_C$	mA		500
Power dissipation	$P_D$	mW		200
Junction temperature	$T_J$	$^\circ\text{C}$		-55 to +150
Storage temperature	$T_{STG}$	$^\circ\text{C}$		-55 to +150



# BC817-16WS THRU BC817-40WS

RoHS  
COMPLIANT

## ■ Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	V	I <sub>C</sub> =10μA, I <sub>E</sub> =0	50		
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	V	I <sub>C</sub> =10mA, I <sub>B</sub> =0	45		
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	V	I <sub>E</sub> =1μA, I <sub>C</sub> =0	5		
Collector-base cut-off current	I <sub>CBO</sub>	μA	V <sub>CB</sub> =45V			0.1
Emitter-base cut-off current	I <sub>EBO</sub>	μA	V <sub>EB</sub> =4V			0.1
DC current gain	h <sub>FE1</sub>		BC817-16WS	100		250
			BC817-25WS	160		400
			BC817-40WS	250		600
	h <sub>FE2</sub>		I <sub>C</sub> =500mA, V <sub>CE</sub> =1V	40		
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	V	I <sub>C</sub> =500mA, I <sub>B</sub> =50mA			0.7
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	V	I <sub>C</sub> =500mA, I <sub>B</sub> =50mA			1.2
Transition frequency	f <sub>T</sub>	MHz	I <sub>C</sub> =10mA, V <sub>CE</sub> =5.0V, f=100MHz	100		

## ■ Thermal Characteristics

Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	R <sub>θJ-A</sub> <sup>(1)</sup>	°C/W	625
Thermal resistance, junction-to-case	R <sub>θJ-C</sub> <sup>(1)</sup>	°C/W	500

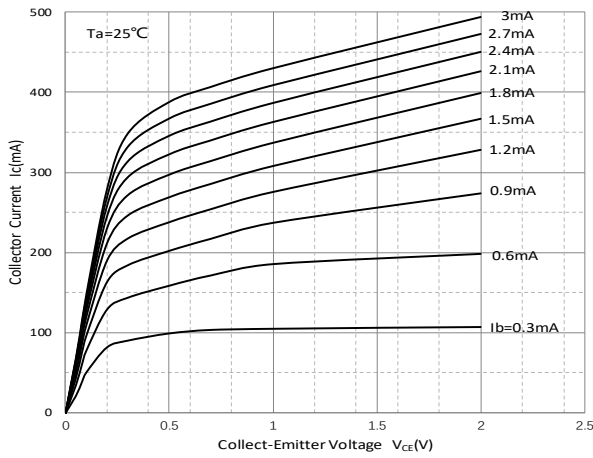
### Note:

(1) Device mounted on PCB, single-sided copper, with standard footprint

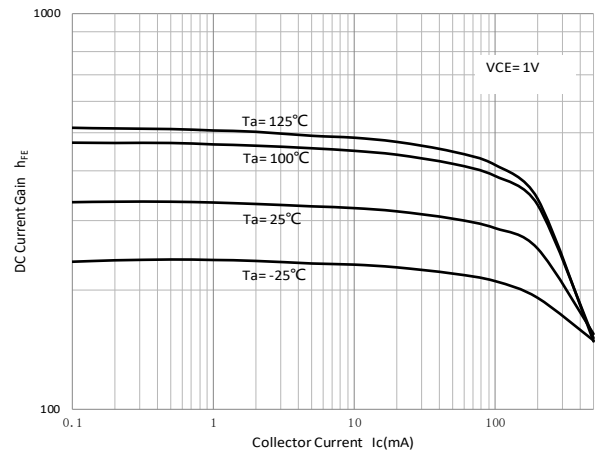


## ■ Characteristics

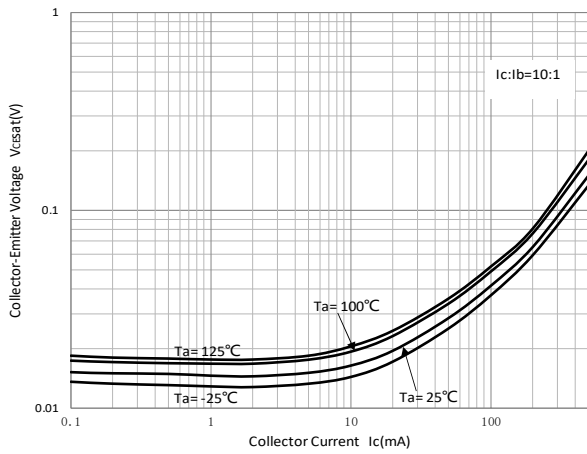
### Fig 1: Static Characteristics



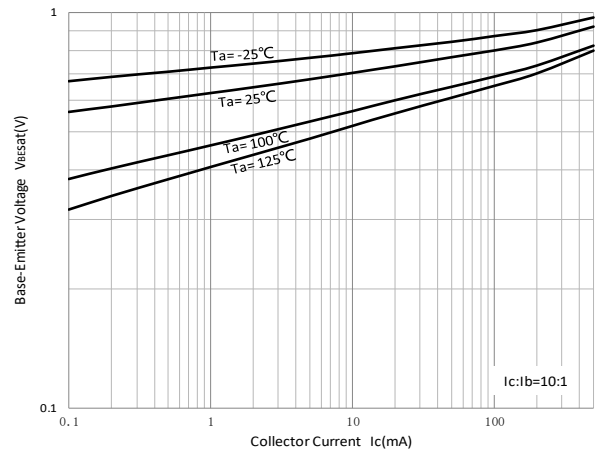
### Fig 2: DC Current Gain



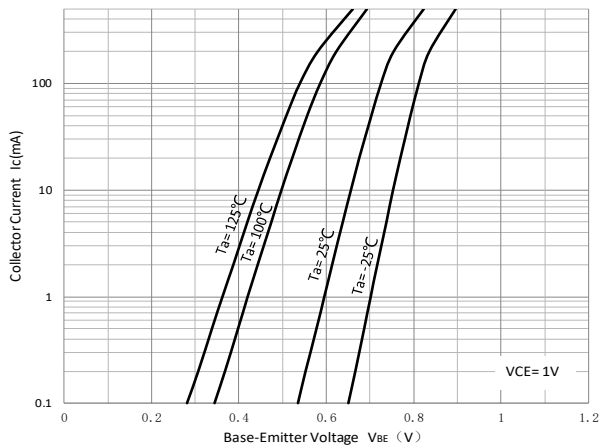
### Fig 3: Collector-Emitter Saturation Voltage



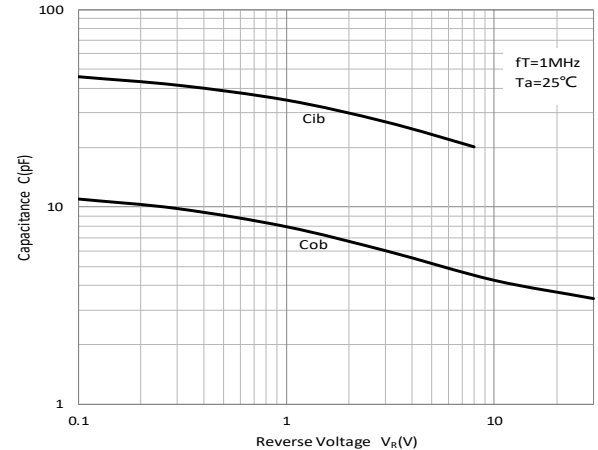
### Fig 4: Base-Emitter Saturation Voltage



### Fig 5: Base-Emitter On Voltage



### Fig 6: Cob/Cib-Vcb/Veb

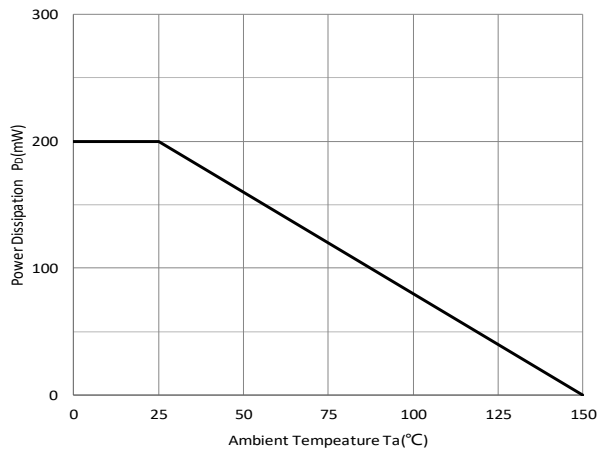




# BC817-16WS THRU BC817-40WS

RoHS  
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Fig 7:  $P_D$ - $T_a$  Curve





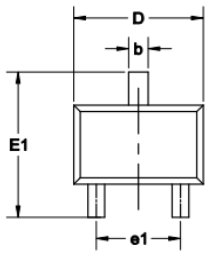
# BC817-16WS THRU BC817-40WS

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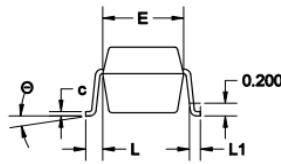
## Ordering Information

Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
BC817-16WS THRU BC817-40WS	F2	Approximate 0.005	3000	30000	120000	7" reel

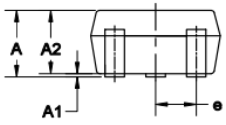
## Outline Dimensions



TOP VIEW



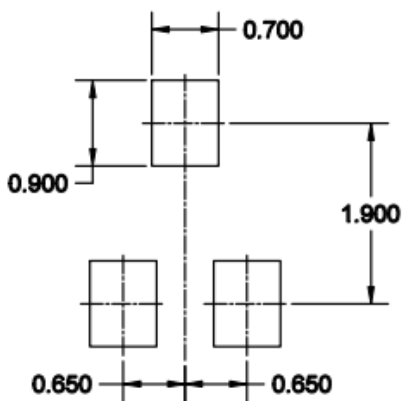
SIDE VIEW



SIDE VIEW

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	0.078	0.087	2.000	2.200
e	0.026 TYP		0.650 TYP	
e1	0.047	0.055	1.200	1.400
L	0.021 REF		0.525 REF	
L1	0.010	0.018	0.260	0.460
θ	0°	8°	0°	8°

## Suggested Pad Layout



UNIT:mm



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