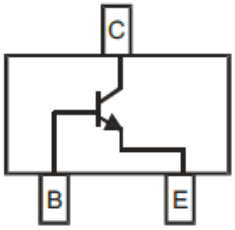
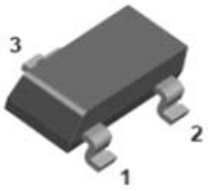
NPN Small Signal Transistor





SOT-23

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

■ **Maximum Ratings** (T_a=25℃ Unless otherwise specified)

Item	Symbol	Unit	Conditions		Value
Device marking code			BC846A		1A
			BC846B		1B
			BC847A		1E
			BC847B		1F
			BC847C		1G
			BC848A		1J
			BC848B		1K
			BC848C		1L
Collector-base voltage	V_{CBO}	V	BC846	I_C= 10μA, I_E=0	80
			BC847		50
			BC848		30
Collector-emitter voltage	V_{CEO}	V	BC846	I_C=10mA, I_B=0	65
			BC847		45
			BC848		30
Emitter-base voltage	V_{EBO}	V	I_E= 10μA, I_C=0		6
Collector current	I_C	A			0.1
Power dissipation	P_D	mW			200
Junction temperature	T_J	℃			-55 to +150
Storage temperature	T_{STG}	℃			-55 to +150

■ Electrical Characteristics (Ta=25℃ Unless otherwise specified)

Item	Symbol	Unit	Conditions		Min	Typ	Max
Collector-base breakdown voltage	$V_{(BR)CBO}$	V	BC846	I_C=10μA,I_E=0	80		
			BC847		50		
			BC848		30		
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	V	BC846	I_C =10mA,I_B=0	65		
			BC847		45		
			BC848		30		
Emitter-base breakdown voltage	$V_{(BR)EBO}$	V	I_E=10μA,I_C=0		6		
Collector-base cut-off current	I_{CBO}	uA	BC846	V_{CB}=70 V			0.1
			BC847	V_{CB}=50 V			0.1
			BC848	V_{CB}=30 V			0.1
Collector-emitter cut-off current	I_{CEO}	uA	BC846	V_{CE}=60 V			0.1
			BC847	V_{CE}=45 V			0.1
			BC848	V_{CE}=30 V			0.1
Emitter-base cut-off current	I_{EBO}	uA	V_{EB}=5V				0.1
DC current gain	h_{FE}		BC846A,847A,848A	V_{CE}= 5V, I_C= 2mA	110		220
			BC846B,847B,848B		200		450
			BC847C,BC848C		420		800
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	fT	MHz	V_{CE}=5V, I_C= 10mA f=100MHz		100		
Collector-base output capacitance	Cob	pF	V_{CB}=10V,f=1MHz				4.5

■ Thermal Characteristics

Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	$R_{\theta J-A}$(1)	℃/W	625
Thermal resistance, junction-to-case	$R_{\theta J-C}$(1)	℃/W	500

Note:

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

■Characteristics

Fig 1：Static Characteristics

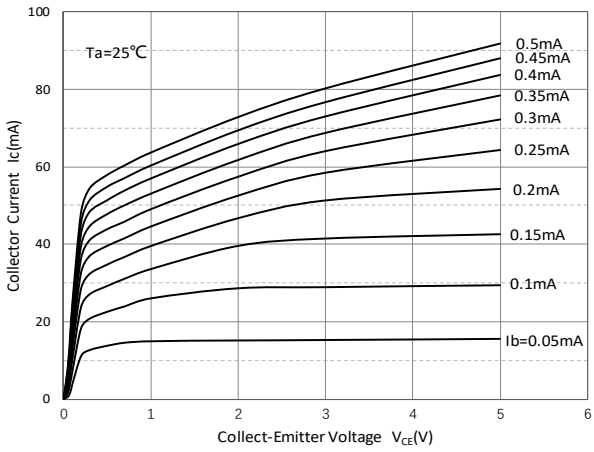


Fig 2：DC Current Gain

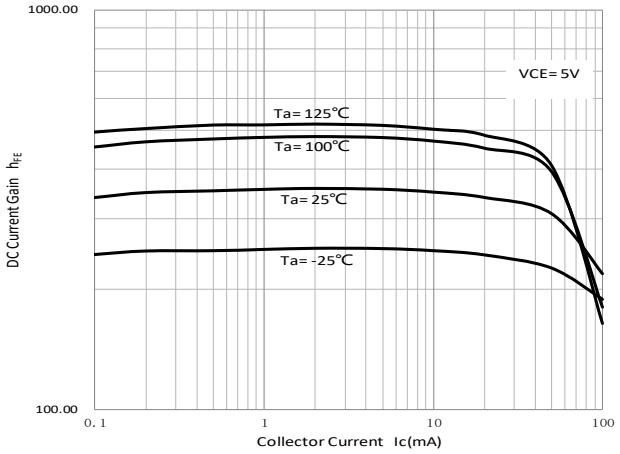


Fig 3：Collector-Emitter Saturation Voltage

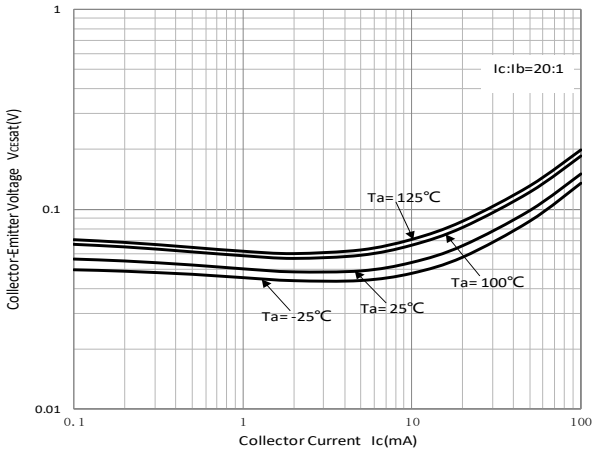


Fig 4：Base-Emitter Saturation Voltage

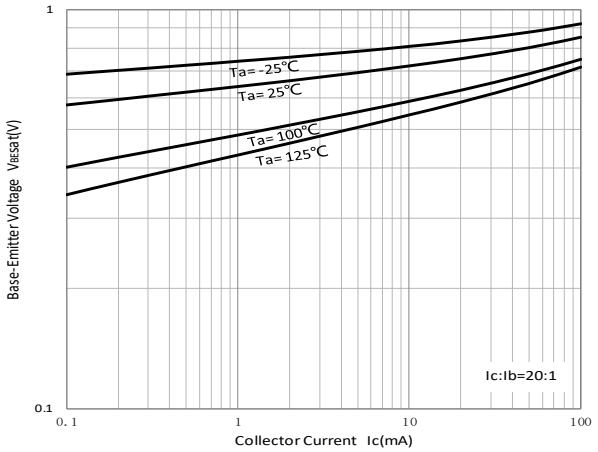


Fig 5：Base-Emitter On Voltage

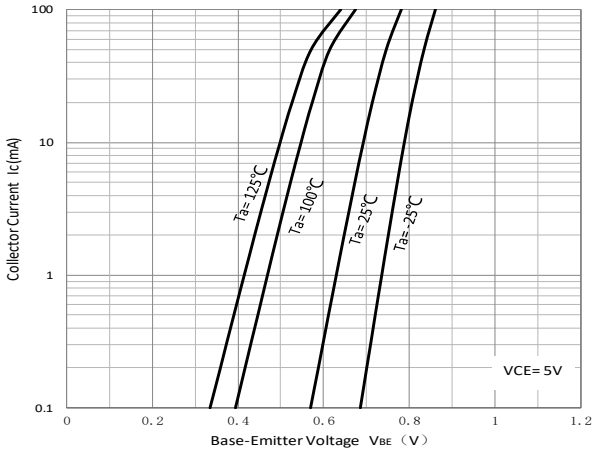


Fig 6：Cob/Cib-V_{CB}/V_{EB}

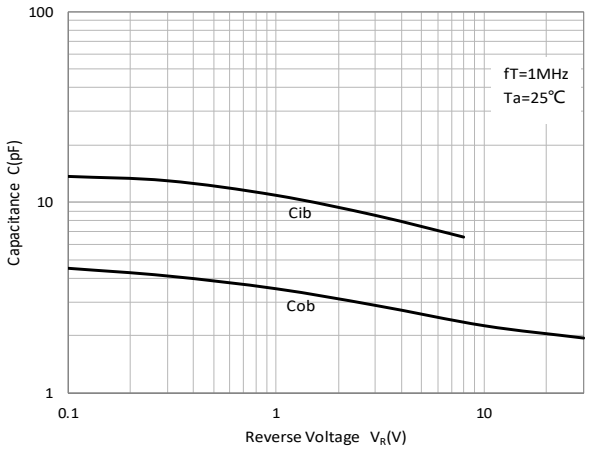
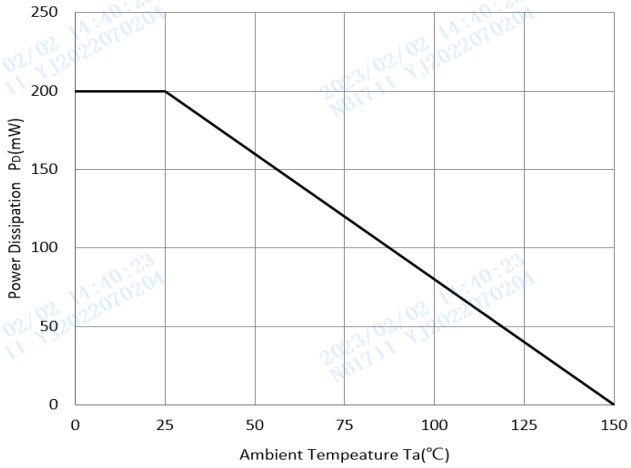


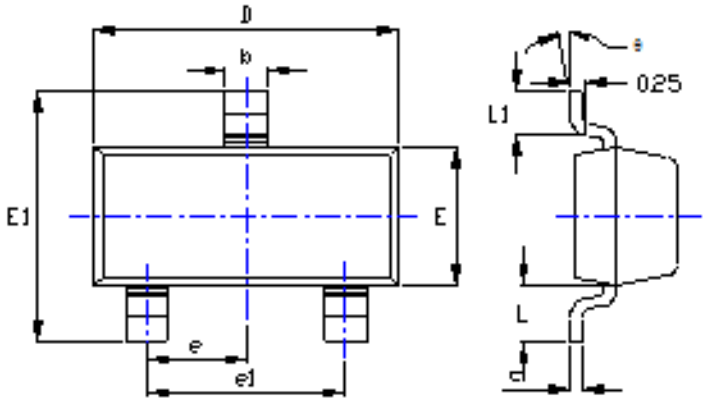
Fig 7：P_D-Ta Curve



■Ordering Information

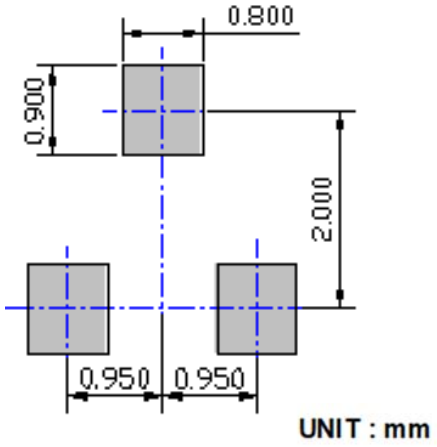
Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity (pcs)	Delivery mode
BC846/BC847/BC848	F2	Approximate 0.008	3000	30000	120000	7" reel
BC846/BC847/BC848	F4	Approximate 0.008	10000	/	210000	

■ Outline Dimensions



SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.035	0.045	0.900	1.150
A1	0.000	0.004	0.000	0.100
A2	0.035	0.041	0.900	1.050
b	0.012	0.020	0.300	0.500
c	0.004	0.008	0.100	0.200
D	0.110	0.118	2.800	3.000
E	0.047	0.055	1.200	1.400
E1	0.089	0.100	2.250	2.550
e	0.037TYP		0.950TYP	
e1	0.071	0.079	1.800	2.000
L	0.022REF		0.550REF	
L1	0.012	0.020	0.300	0.500
θ	0°	8°	0°	8°

■ Suggested Pad Layout



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