



SEMICONDUCTOR
TECHNICAL DATA

BC846A-BC848C
NPN EPITAXIAL SILICON TRANSISTOR

SURFACE MOUNT SMALL SIGNAL TRANSISTORS

- * Epitaxial Die Construction
- * Ideally Suited Automatic Insertion
- * 310mW Power Dissipation
- * Complementary PNP types Available(BC856-BC858)
- * For Switching and AF Amplifier Applications

ABSOLUTE MAXIMUM RATINGS at Ta=25°C

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	BC846	80	V
	BC847	50	
	BC848	30	
Collector-Emitter Voltage	BC846	65	V
	BC847	45	
	BC848	30	
Emitter-Base Voltage	BC846	6.0	V
	BC847	6.0	
	BC848	5.0	
Collector Current	Ic	100	mA
Collector Dissipation Ta=25°C *	P _D	310	mW
Junction Temperature Range	T _j	-55-150	°C
Storage Temperature Range	T _{stg}	-55-150	°C

Package:SOT-23



PIN:	1	2	3
STYLE			
NO.1	B	E	C

ELECTRICAL CHARACTERISTICS at Ta=25°C

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector-Base Breakdown Voltage	BC846	80			V	Ic=10uA Ie=0
	BC847	50				
	BC848	30				
Collector-Emitter Breakdown Voltage	BC846	65			V	Ic= 10mA Ib=0
	BC847	45				
	BC848	30				
Collector-Emitter Saturation Voltage	Vce(sat)		90	250	mV	Ic=10mA Ib=0.5mA
			200	600		Ic=100mA Ib=5.0mA
Base-Emitter Saturation Voltage	Vbe(sat)		700		mV	Ic=10mA Ib=0.5mA
			900			Ic=100mA Ib=5.0mA
Base-Emitter Voltage	Vbe	580	660	700	mV	Vce=5.0V Ic=2.0mA
				770		Vce=5.0V Ic=10mA



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ELECTRICAL CHARACTERISTICS at Ta=25°C (CONTINUED)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
DC Current Gain						
A	H_{FE}	110		220		$V_{ce}=5.0V$ $I_c=2.0mA$
B		200		450		
C		420		800		
Collector-Emitter Cutoff Current	I_{CES}			0.1	μA	$V_{ce}=60V$ $V_{ce}=45V$ $V_{ce}=30V$
BC846						
BC847						
BC848						
	I_{CBO}			0.1	μA	$V_{cb}=70V$ $V_{cb}=50V$ $V_{cb}=30V$
BC846						
BC847						
BC848						
Collector-Base Capacitance	C_{cbo}		3.5	6.0	PF	$V_{cb}=10V$ $f=1MHz$
Emitter-Base Capacitance	C_{ebo}		9.0		PF	$V_{eb}=0.5V$ $f=1MHz$
Gain Bandwidth Product	f_T		300		MHz	$V_{ce}=5V$ $I_c=10mA$ $f=100MHz$
Noise Figure	NF		2.0	10	dB	$V_{ce}=5V$ $I_c=200\mu A$ $R_G=2K\Omega$ $f=1MHz$ $\Delta f=200Hz$

* Total Device Dissipation : FR=1x0.75x0.062in Board, Derate 25°C.

Pulse Test : Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$

DEVICE MARKING:

BC846A=1A

BC846B=1B

BC847A=1E

BC847B=1F

BC847C=1G

BC848A=1J

BC848B=1K

BC848C=1L



Fig.1 Grounded emitter propagation characteristics

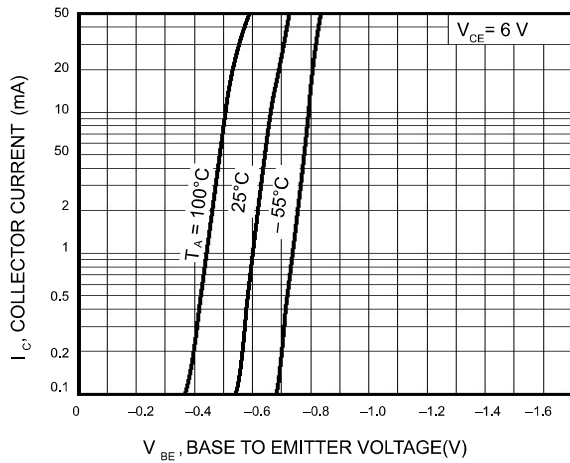


Fig.2 Grounded emitter output characteristics(I)

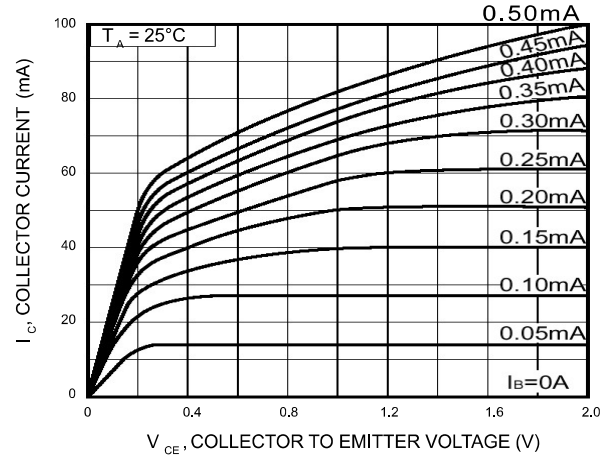


Fig.3 Grounded emitter output characteristics(II)

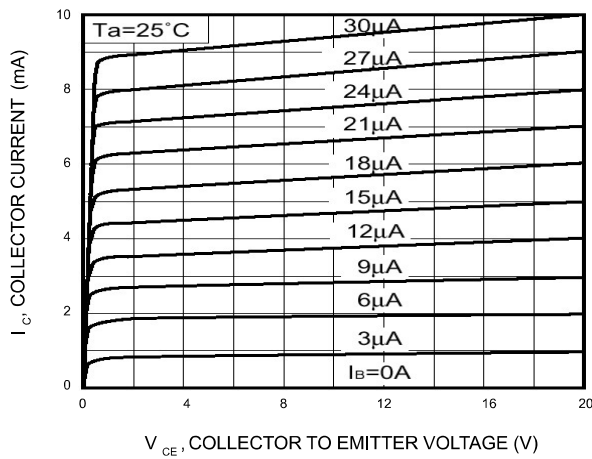


Fig.4 DC current gain vs. collector current (I)

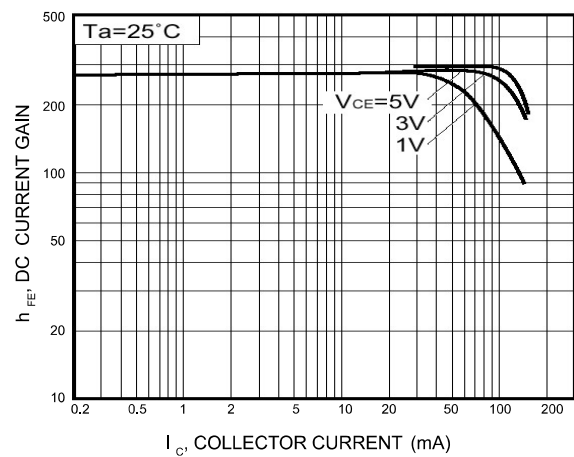


Fig.5 DC current gain vs. collector current (II)

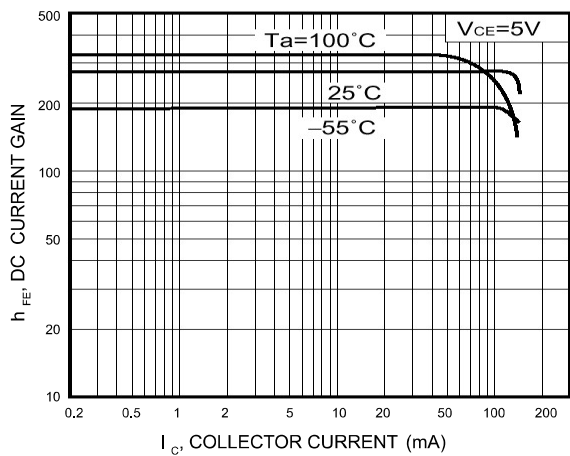


Fig.6 Collector-emitter saturation voltage vs. collector current

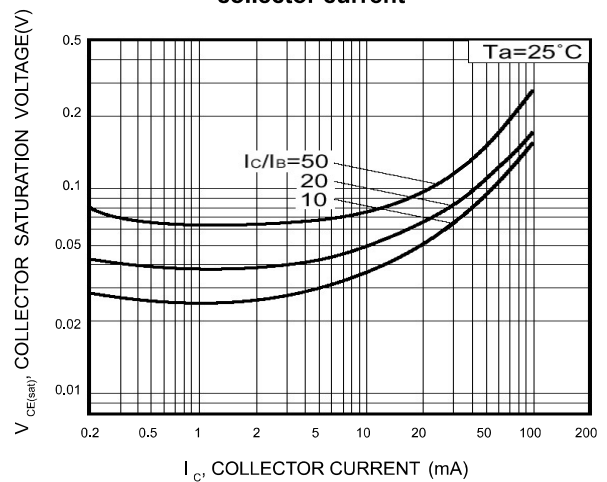




Fig.7 Collector-emitter saturation voltage vs. collector current (I)

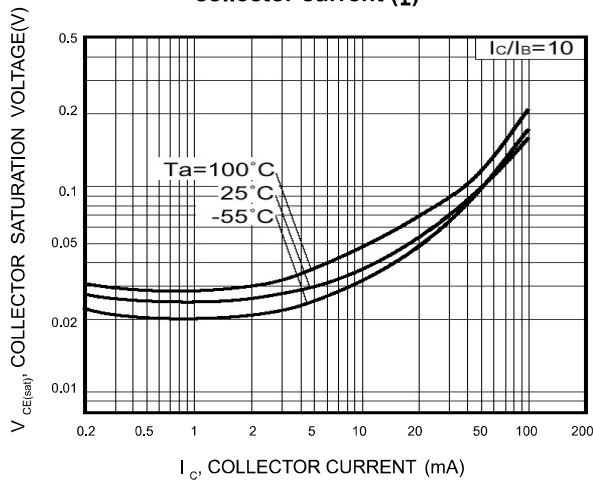


Fig.8 Collector-emitter saturation voltage vs. collector current (I)

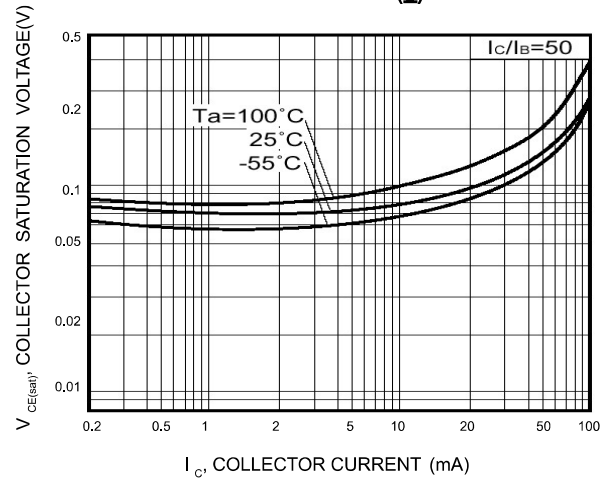


Fig.9 Gain bandwidth product vs. emitter current

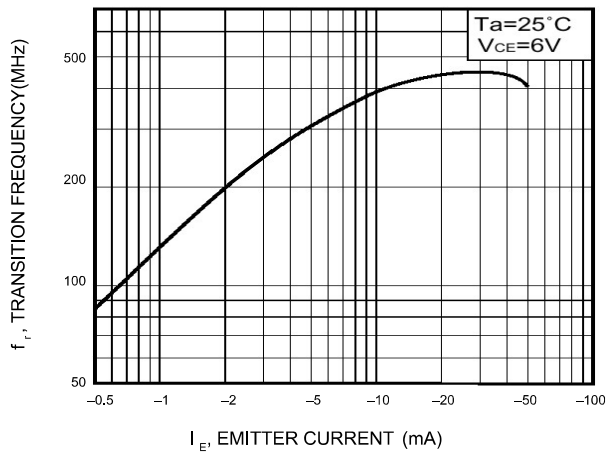


Fig.10 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

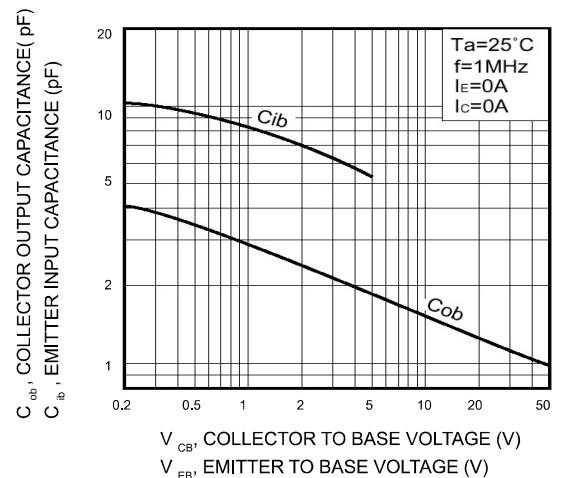
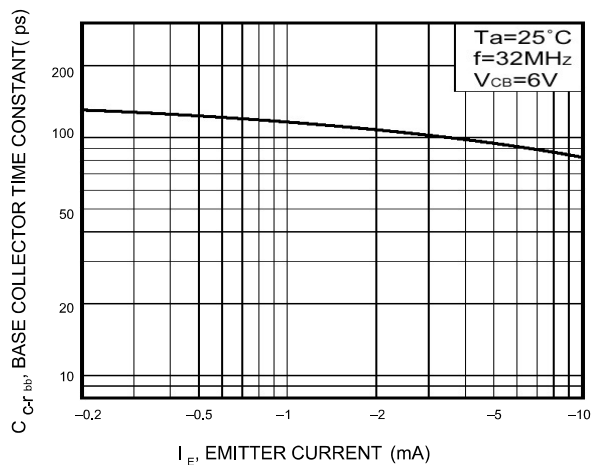
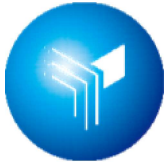


Fig.11 Base-collector time constant vs. emitter current

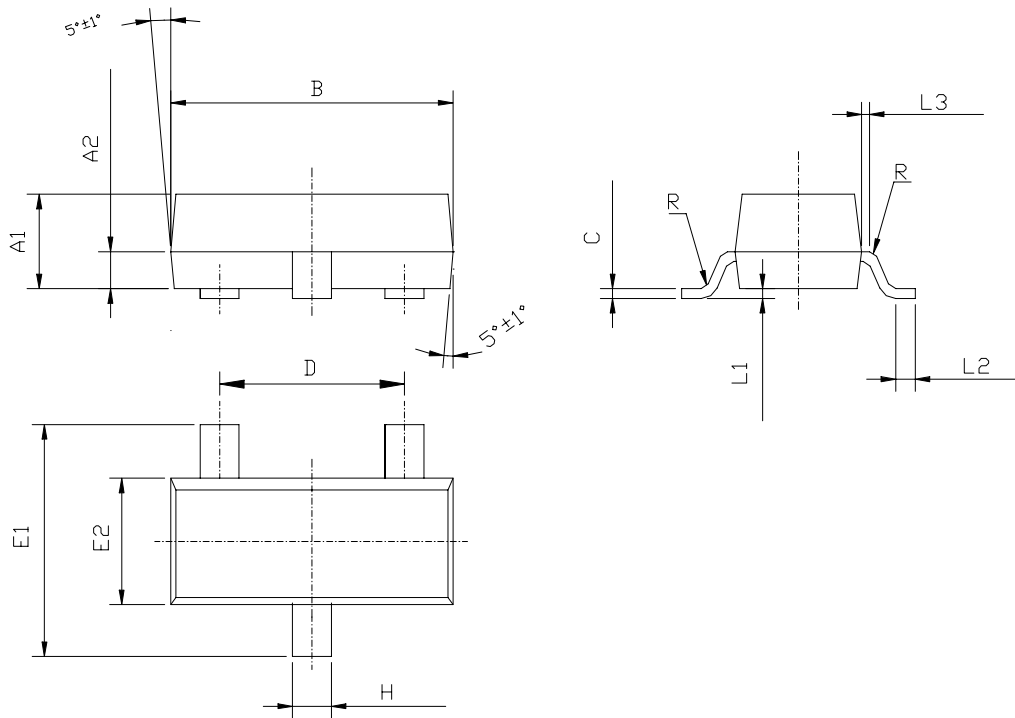




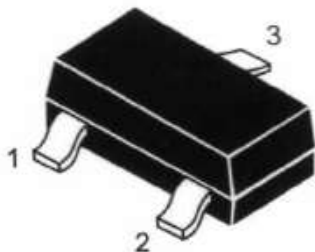
SEMICONDUCTOR
TECHNICAL DATA

外型尺寸及内部结构图

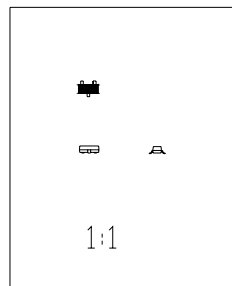
OUTSIDE DEMENSION AND INTERNAL CONFIGURATION (SOT-23)



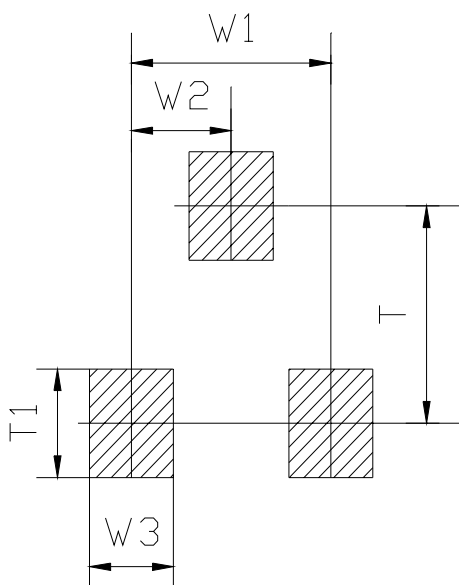
Symbol	Dimensions in Millimeters			内部结构 STYLS	管脚 PIN		
	Min	Nominal	Max		1 脚	2 脚	3 脚
A1	0.900	0.970	1.000	6	基极 BASE	发射极 EMITTER	集电极 COLLCTOR
A2	0.350	0.380	0.410				
B	2.800	2.900	3.000	8	阳极 ANODE	不连接 NO- CONNECTION	阴极 CATHODE
C	0.085	0.100	0.150				
D	1.800	1.900	2.000	9	阳极 ANODE	阳极 ANODE	阴极 CATHODE
E1	2.200	2.400	2.600				
E2	1.200	1.300	1.400	11	阳极 ANODE	阴极 CATHODE	阳极-阴极 ANODE-CATHODE
H	0.300	0.400	0.500				
L1	0.000		0.100	12	阴极 CATHODE	阴极 CATHODE	阳极 ANODE
L2	0.200						
L3	0.030	0.080	0.130	18	不连接 NO- CONNECTION	阴极 CATHODE	阳极 ANODE
R	0.080TYP						
				19	阴极 CATHODE	阳极 ANODE	阴极-阳极 CATHODE-ANODE



OUTSIDE



Scale 1:1 on letter size paper

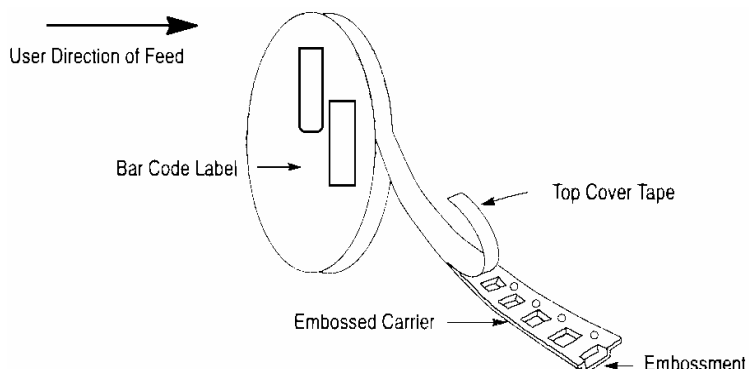


FOOTPRINTS FOR SOLDERING

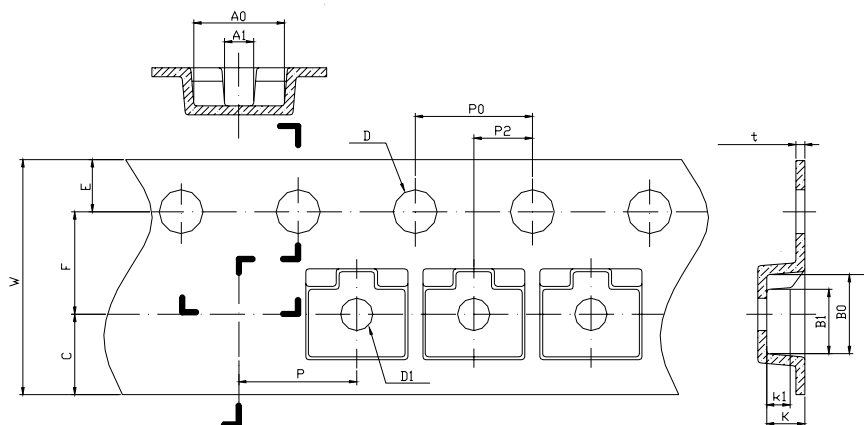
Symbol	Dimensions in Millimeters	Dimensions in Inches
	Nominal	Nominal
W1	1.900	0.0748
W2	0.950	0.0374
W3	0.800	0.0315
T	2.000	0.0787
T1	1.000	0.0394



SOT-23 PACKAGING:



SOT-23 EMBOSSED CARRIER TAPE:



Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum
A0	3.050	3.150	3.250	0.1201	0.1240	0.1280
A1	0.900	1.000	1.100	0.0354	0.0394	0.0433
B0	2.669	2.769	2.869	0.1051	0.1090	0.1130
B1	2.100	2.200	2.300	0.0827	0.0866	0.0906
C	2.750TYP			0.1083TYP		
D	1.500	1.500	1.600	0.0591	0.0591	0.0630
D1	0.900	1.000	1.100	0.0354	0.0394	0.0433
E	1.650	1.750	1.850	0.0650	0.0689	0.0728
F	3.450	3.500	3.550	0.1358	0.1378	0.1398
K	1.119	1.219	1.319	0.0441	0.0480	0.0519
K1	0.850TYP			0.03346TYP		
P	3.900	4.000	4.100	0.1535	0.1575	0.1614
P0	3.900	4.000	4.100	0.1535	0.1575	0.1614
P010	39.800	40.000	40.200	1.5669	1.5748	1.5827
P2	1.950	2.000	2.050	0.0768	0.0787	0.0807
t	0.216	0.229	0.242	0.0085	0.0090	0.0095
W	7.900	8.000	8.300	0.3110	0.3150	0.3268