

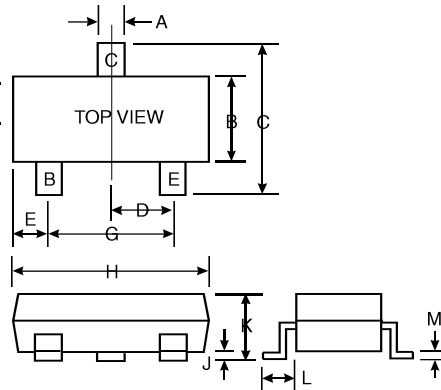
Features

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

Mechanical Data

Case: SOT-23, Molded Plastic
Terminals: Solderable per MIL-STD-202,
Method 208
Pin Connections and Marking Codes
(See Table & Diagram)
Approx. Weight: 0.008 grams
Mounting Position: Any

Marking Code			
Type	Marking	Type	Marking
BC846A	1A	BC847C	1G
BC846B	1B	BC848A	1J
BC847A	1E	BC848B	1K
BC847B	1F	BC848C	1L



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.19	1.40
C	2.10	2.50
D	0.89	1.05
E	0.45	0.61
G	1.78	2.05
H	2.65	3.05
J	0.013	0.15
K	0.89	1.10
L	0.45	0.61
M	0.076	0.178
All Dimensions in mm		

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

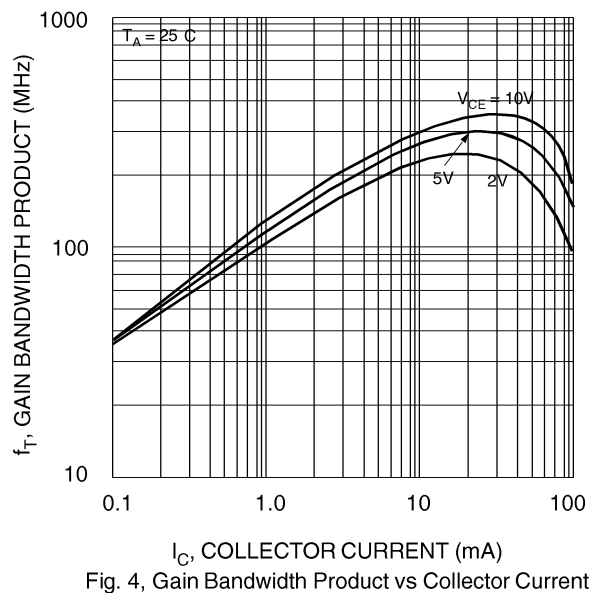
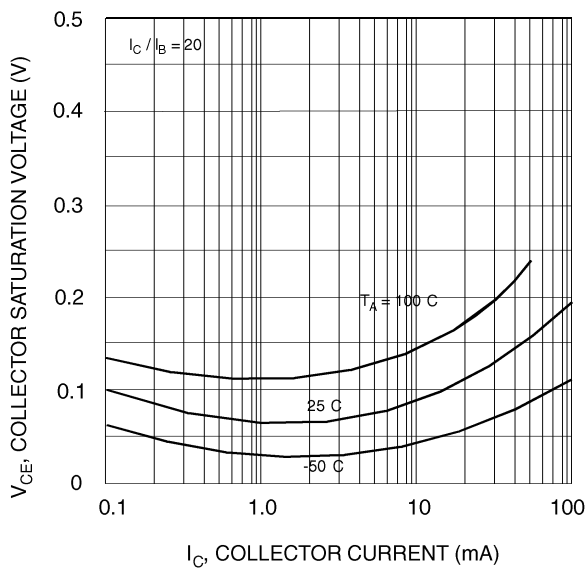
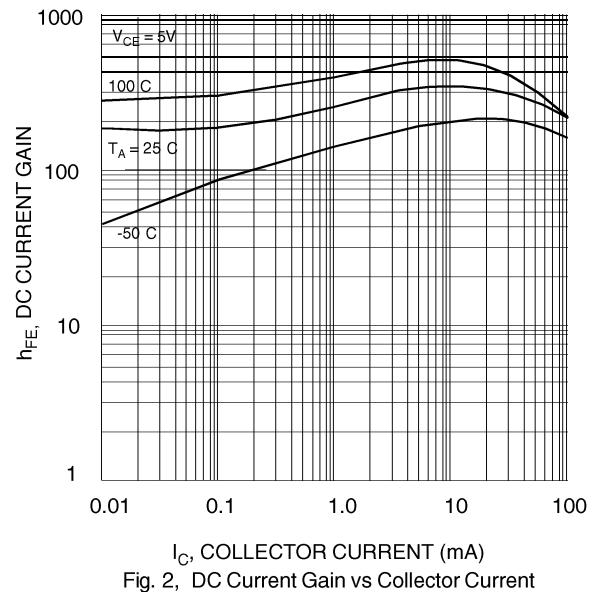
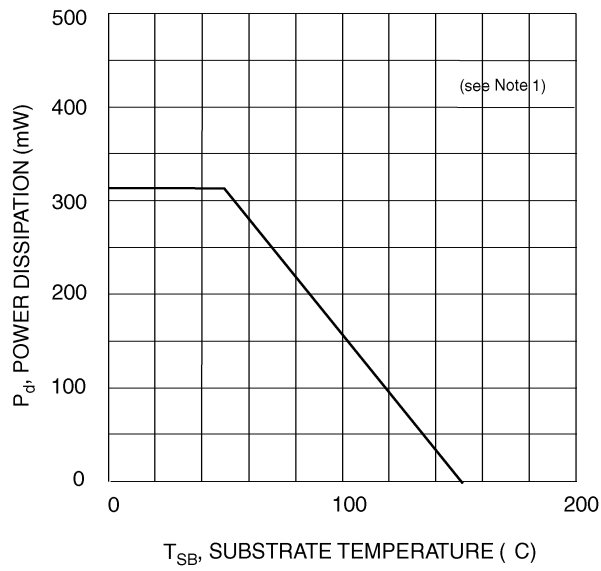
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	80 50 30	V
Collector-Emitter Voltage	V_{CE0}	65 45 30	V
Emitter-Base Voltage	V_{EB0}	6.0 5.0	V
Collector Current	I_C	100	mA
Peak Collector Current	I_{CM}	200	mA
Peak Emitter Current	I_{EM}	200	mA
Power Dissipation at $T_{SB} = 50^\circ\text{C}$ (Note 1)	P_d	310	mW
Operating and Storage Temperature Range	T_j, T_{STG}	-65 to +150	$^\circ\text{C}$

Notes: 1. Device mounted on ceramic substrate 0.7mm x 2.5cm² area.
2. Current gain subgroup "C" is not available for BC846.

Electrical Characteristics @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
h-Parameters (Note 2)						
Small Signal Current Gain	Current Gain Group A	h _{fe}	—	220	—	V _{CE} = 5.0V, I _C = 2.0mA, f = 1.0kHz
	B	h _{fe}	—	330	—	
	C	h _{fe}	—	600	—	
Input Impedance	Current Gain Group A	h _{ie}	1.6	2.7	4.5	
	B	h _{ie}	—	4.5	8.5	
	C	h _{ie}	3.2	8.7	15	
Output Admittance	Current Gain Group A	h _{oe}	—	18	30	
	B	h _{oe}	—	30	60	
	C	h _{oe}	—	60	110	
Reverse Voltage Transfer Ratio	Current Gain Group A	h _{re}	—	1.5x10 ⁻⁴	—	
	B	h _{re}	—	2x10 ⁻⁴	—	
	C	h _{re}	—	3x10 ⁻⁴	—	
DC Current Gain	Current Gain Group A	h _{FE}	—	90	—	V _{CE} = 5.0V, I _C = 10μA
	B	h _{FE}	—	150	—	V _{CE} = 5.0V, I _C = 2.0mA
	C	h _{FE}	—	270	—	
	Current Gain Group A	h _{FE}	110	180	220	
	B	h _{FE}	200	290	450	
	(Note 2) C	h _{FE}	420	520	800	
Thermal Resistance, Junction to Substrate Backside	R _{SB}	—	—	320	K/W	Note 1
Thermal Resistance, Junction to Ambient Air	R _{JA}	—	—	400	K/W	Note 1
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	—	90 200	250 600	mV	I _C = 10mA, I _B = 0.5mA I _C = 100mA, I _B = 5.0mA
Base-Emitter Saturation Voltage	V _{BE(SAT)}	—	700 900	—	mV	I _C = 10mA, I _B = 0.5mA I _C = 100mA, I _B = 5.0mA
Base-Emitter Voltage	V _{BE}	580 —	660 —	700 720	mV	V _{CE} = 5.0V, I _C = 2.0mA V _{CE} = 5.0V, I _C = 10mA
Collector-Emitter Cutoff Current	BC846 BC847 BC848 BC846 BC847 BC848	I _{CES} I _{CES} I _{CES} I _{CES} I _{CES} I _{CES} I _{CBO} I _{CBO}	— — — — — — — —	0.2 0.2 0.2 4.0 4.0 4.0 15 5.0	nA nA nA μA μA μA nA μA	V _{CE} = 80V V _{CE} = 50V V _{CE} = 30V V _{CE} = 80V, T _j = 125°C V _{CE} = 50V, T _j = 125°C V _{CE} = 30V, T _j = 125°C V _{CB} = 30V V _{CB} = 30V, T _j = 125°C
Gain Bandwidth Product	f _T	—	300	—	MHz	V _{CE} = 5.0V, I _C = 10mA, f = 100MHz
Collector-Base Capacitance	C _{CBO}	—	3.5	6.0	pF	V _{CB} = 10V, f = 1.0MHz
Emitter-Base Capacitance	C _{EBO}	—	9.0	—	pF	V _{EB} = 0.5V, f = 1.0MHz
Noise Figure	NF	—	2.0	10	dB	V _{CE} = 5V, I _C = 200μA, R _G = 2.0k f = 1.0kHz, f = 200Hz

- Notes: 1. Device mounted on ceramic substrate 0.7mm x 2.5cm² area.
2. Current gain subgroup "C" is not available for BC846.



Notes: 1. Device mounted on ceramic substrate 0.7mm x 2.5cm² area