

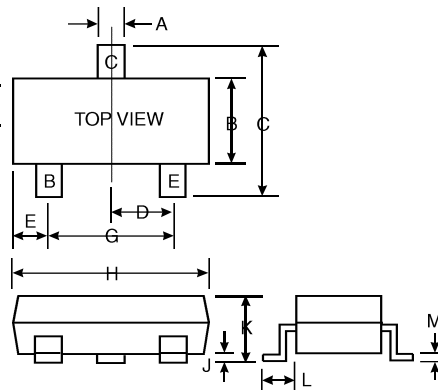
Features

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°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	BC846 BC847 BC848 V _{CB0}	80 50 30	V
Collector-Emitter Voltage	BC846 BC847 BC848 V _{CEO}	65 45 30	V
Emitter-Base Voltage	BC846, BC847 BC848 V _{EBO}	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°C (Note 1)	P _d	310	mW
Operating and Storage Temperature Range	T _J , T _{STG}	-65 to +150	°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 B C	h_{fe}	— 220 330	— — —	— — —	V _{CE} = 5.0V, I _C = 2.0mA, f = 1.0kHz	
Input Impedance	Current Gain Group A B C	h_{ie}	1.6 2.7 4.5	— 4.5 8.5	— k k		
Output Admittance	Current Gain Group A B C	h_{oe}	6.0 — —	8.7 18 30	— k μS		
Reverse Voltage Transfer Ratio	Current Gain Group A B C	h_{re}	— — —	60 110 —	— μS —		
			1.5x10 ⁻⁴	—	—		
			2x10 ⁻⁴	—	—		
			3x10 ⁻⁴	—	—		
DC Current Gain	Current Gain Group A B C	h_{FE}	— 90 150	— — —	—		V _{CE} = 5.0V, I _C = 10μA
	Current Gain Group A B C (Note 2)		110 200 420	180 290 520	220 450 800		V _{CE} = 5.0V, I _C = 2.0mA
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}	— 0.2 0.2 0.2 — — — — —	— 0.2 15 15 4.0 4.0 4.0 — 15 5.0	nA nA nA μA 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 _{CB0}	—	3.5	6.0	pF	V _{CB} = 10V, f = 1.0MHz	
Emitter-Base Capacitance	C _{EB0}	—	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.

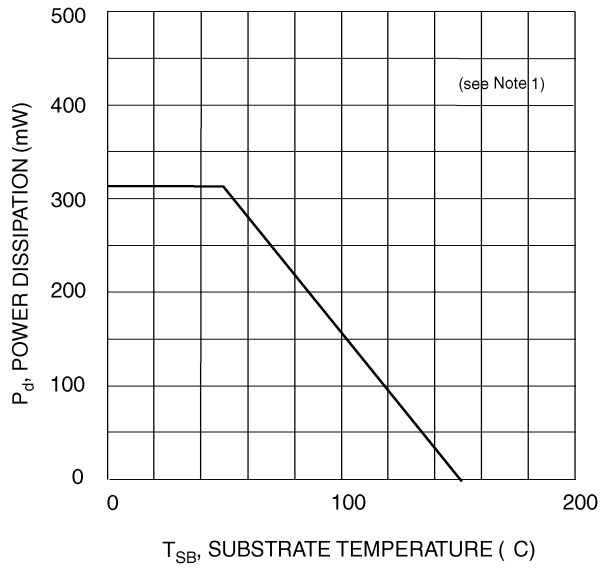


Fig. 1, Power Derating Curve

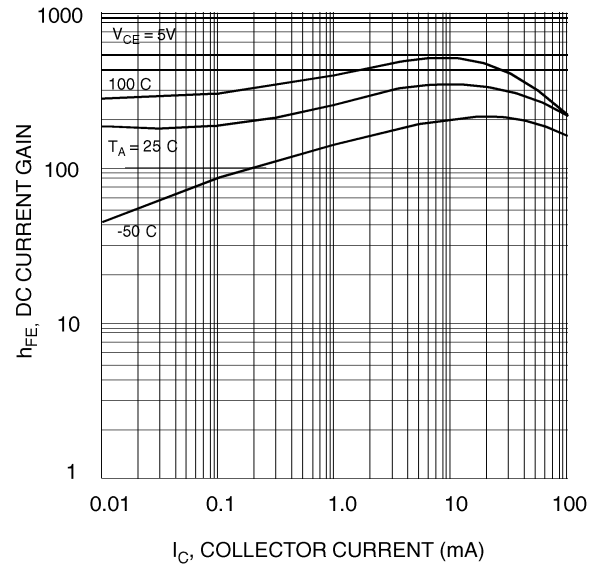


Fig. 2, DC Current Gain vs. Collector Current

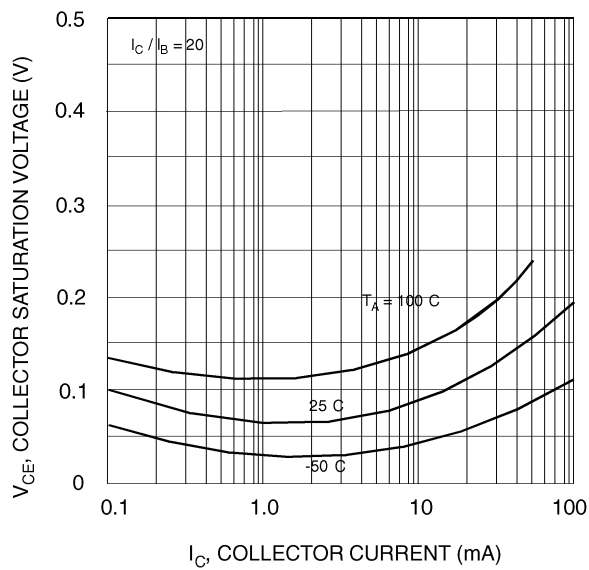


Fig. 3, Collector Saturation Voltage vs. Collector Current

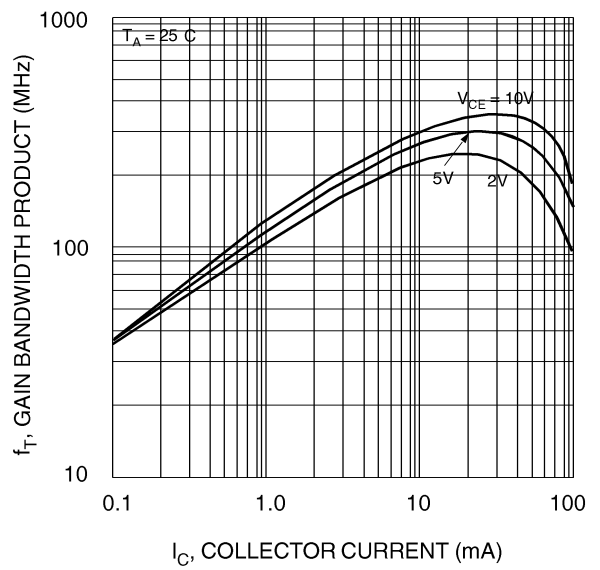


Fig. 4, Gain Bandwidth Product vs. Collector Current

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