


Features

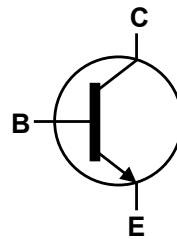
- Ideally Suited for Automatic Insertion
- Complementary PNP Types Available (BC856W – BC858W)
- For Switching and AF Amplifier Applications
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP capable (Note 4)**

Mechanical Data

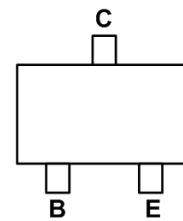
- Case: SOT323
- Case material: molded plastic, "Green" molding compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 
- Weight: 0.006 grams (Approximate)



Top View



Device Symbol



Top View
Pin-Out

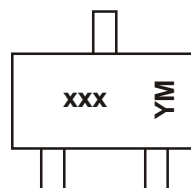
Ordering Information (Notes 4 & 5)

Product	Compliance	Marking	Reel Size (inches)	Quantity per Reel
BC846AW-7-F	AEC-Q101	K1Q	7	3,000
BC846BW-7-F	AEC-Q101	K1R	7	3,000
BC846BWQ-7-F	Automotive	K1R	7	3,000
BC846BW-13-F	AEC-Q101	K1R	13	10,000
BC847AW-7-F	AEC-Q101	K1Q	7	3,000
BC847BW-7-F	AEC-Q101	K1R	7	3,000
BC847BW-13-F	AEC-Q101	K1R	13	10,000

Product	Compliance	Marking	Reel Size (inches)	Quantity per Reel
BC847BWQ-7-F	Automotive	K1R	7	3,000
BC847CW-7-F	AEC-Q101	K1M	7	3,000
BC847CW-13-F	AEC-Q101	K1M	13	10,000
BC847CWQ-7-F	Automotive	K1M	7	3,000
BC848AW-7-F	AEC-Q101	K1Q	7	3,000
BC848BW-7-F	AEC-Q101	K1R	7	3,000
BC848CW-7-F	AEC-Q101	K1M	7	3,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
 5. Tape width is 8mm. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>

Marking Information



xxx = Product Type Marking Code
(Please see Ordering Information)
YM = Date Code Marking
Y = Year ex: X = 2010
M = Month ex: 9 = September

Date Code Key

Year	2010	2011	2012	2013	2014	2015	2016	2017
Code	X	Y	Z	A	B	C	D	E

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	80	V
		50	
		30	
Collector-Emitter Voltage	V _{CEO}	65	V
		45	
		30	
Emitter-Base Voltage	V _{EBO}	6	V
		5	
Continuous Collector Current	I _C	100	mA
Peak Collector Current	I _{CM}	200	mA
Peak Base Current	I _{BM}	200	mA

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	200	mW
Thermal Resistance, Junction to Ambient	R _{θJA}	625	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-65 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
Collector-Base Breakdown Voltage	BV _{CBO}	80	—	—	V	I _C = 100μA	
		50					
		30					
Collector-Emitter Breakdown Voltage (Note 7)	BV _{CEO}	65	—	—	V	I _C = 10mA	
		45					
		30					
Emitter-Base Breakdown Voltage	BV _{EBO}	6	—	—	V	I _E = 100μA	
		5					
DC Current Gain (Note 7)	h _{FE}	A	110	180	220	—	V _{CE} = 5.0V, I _C = 2.0mA
		B	200	290	450		
		C	420	520	800		
Collector Cutoff Current	I _{CBO}	—	—	20	nA	V _{CB} = 30V	
Collector-Emitter Saturation Voltage (Note 7)	V _{CE(sat)}	—	90	250	mV	I _C = 10mA, I _B = 0.5mA	
				200		600	I _C = 100mA, I _B = 5.0mA
Base-Emitter Turn-On Voltage (Note 7)	V _{BE(on)}	580	660	700	mV	I _C = 2mA, V _{CE} = 5V	
				—		770	I _C = 10mA, V _{CE} = 5V
Base-Emitter Saturation Voltage (Note 7)	V _{BE(sat)}	—	700	—	mV	I _C = 10mA, I _B = 0.5mA	
			900			I _C = 100mA, I _B = 5mA	
Output Capacitance	C _{obo}	—	3	4.5	pF	V _{CB} = 10V, f = 1.0MHz	
Transition Frequency	f _T	100	300	—	MHz	V _{CE} = 5V, I _C = 10mA, f = 100MHz	
Noise Figure	NF	—	—	10	dB	V _{CE} = 5V, I _C = 200μA R _S = 2kΩ, f = 1kHz Δf = 200Hz	

Notes: 6. For a device mounted on minimum recommended pad layout 1oz weight copper that is on a single-sided FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
7. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

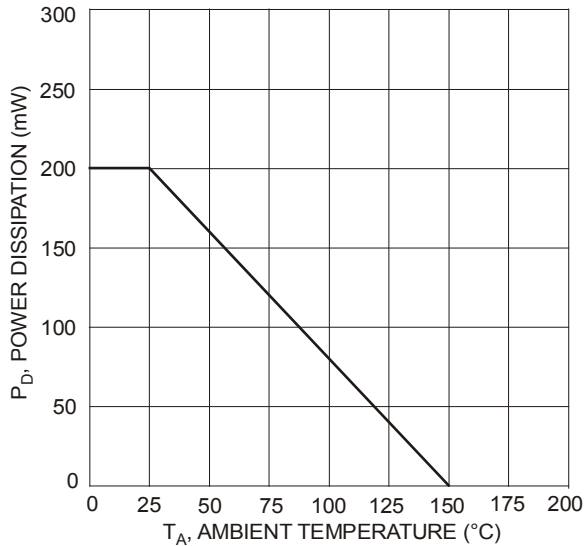


Figure 1 Power Dissipation vs. Ambient Temperature

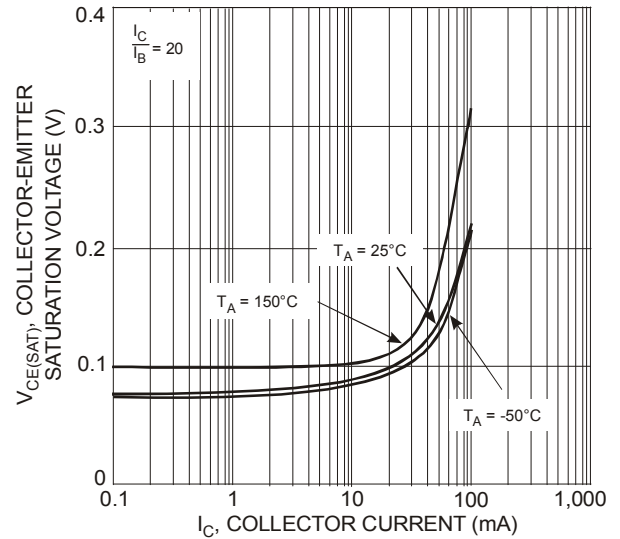


Figure 2 Typical Collector-Emitter Saturation Voltage vs. Collector Current

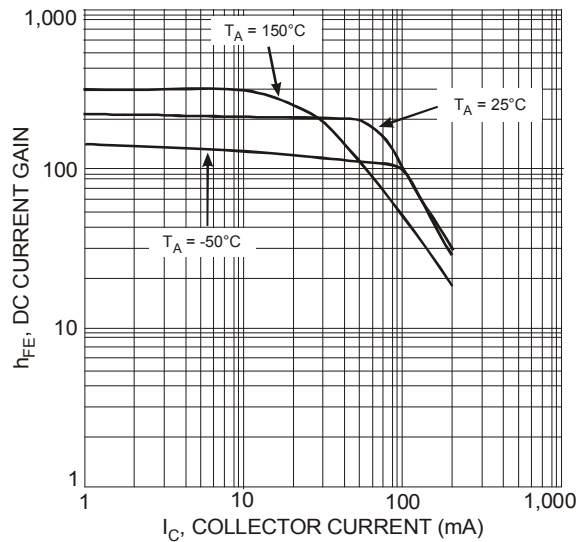


Figure 3 Typical DC Current Gain vs. Collector Current

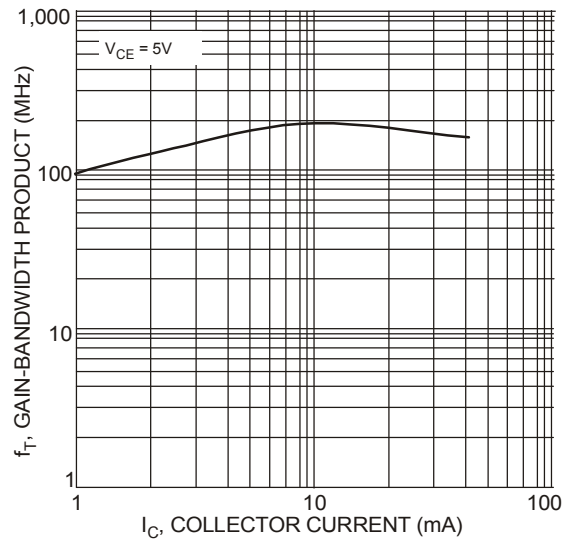
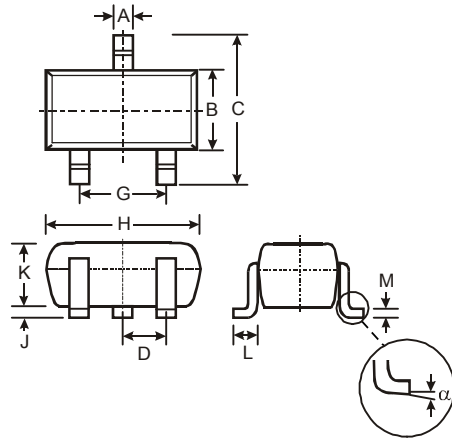


Figure 4 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

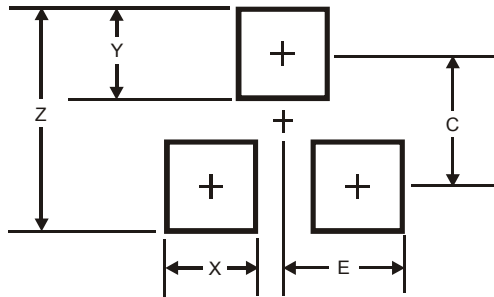
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SOT323			
Dim	Min	Max	Typ
A	0.25	0.40	0.30
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	-	-	0.65
G	1.20	1.40	1.30
H	1.80	2.20	2.15
J	0.0	0.10	0.05
K	0.90	1.00	1.00
L	0.25	0.40	0.30
M	0.10	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
Z	2.8
X	0.7
Y	0.9
C	1.9
E	1.0

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