

Description

The BC856BFHWQ bipolar junction transistor (BJT) is designed to meet the stringent requirements of automotive applications.

Features

- $BV_{CEO} > 65V$
- $I_C = 100mA$ High Continuous Collector Current
- Low-Profile, 0.6mm-High Package for Thin Applications
- Sidewall Tin Plating for Wettable Flanks in AOI
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The BC856BFHWQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

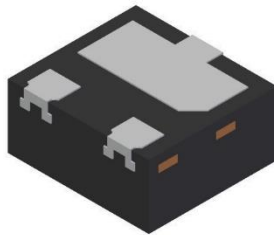
Mechanical Data

- Package: U-DFN1110-3/SWP
- Package Material: Molded Plastic. "Green" Molding Compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.001714 grams (Approximate)

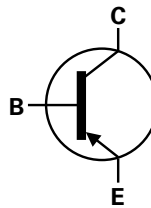
Application

- Switching and amplification

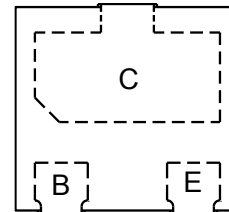
U-DFN1110-3/SWP (Type A)



Bottom View



Device Symbol



Top View
Pin-Out

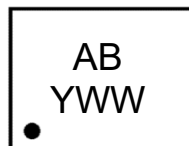
Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
BC856BFHWQ-7	U-DFN1110-3/SWP (Type A)	4F	7	8	5,000	Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> 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. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information

U-DFN1110-3/SWP (Type A)



AB = Product type Marking Code
YWW = Date Code Marking
Y = Last Digit of Year (ex: 5 = 2025)
WW = Week Code 01 to 53

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	-80	V
Collector-Emitter Voltage	V _{CEO}	-65	V
Emitter-Base Voltage	V _{EB0}	-6	V
Continuous Collector Current	I _C	-100	mA
Peak Pulse Collector Current	I _{CM}	-200	mA
Peak Base Current	I _{BM}	-100	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	420	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	298	°C/W
Thermal Resistance, Junction to Case (Note 6)	R _{θJC}	109	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

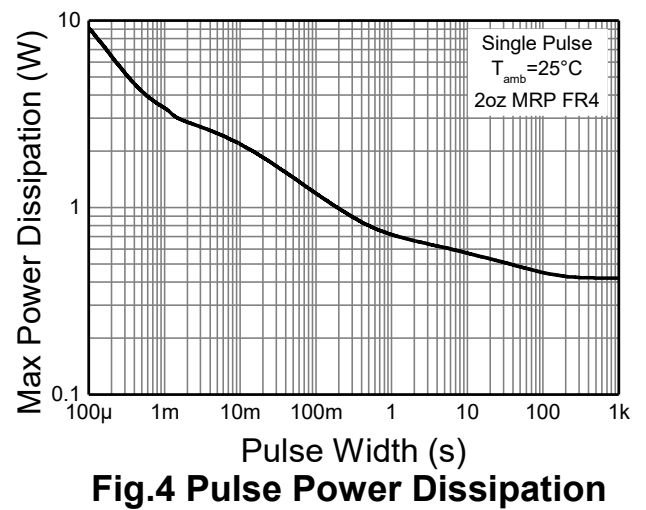
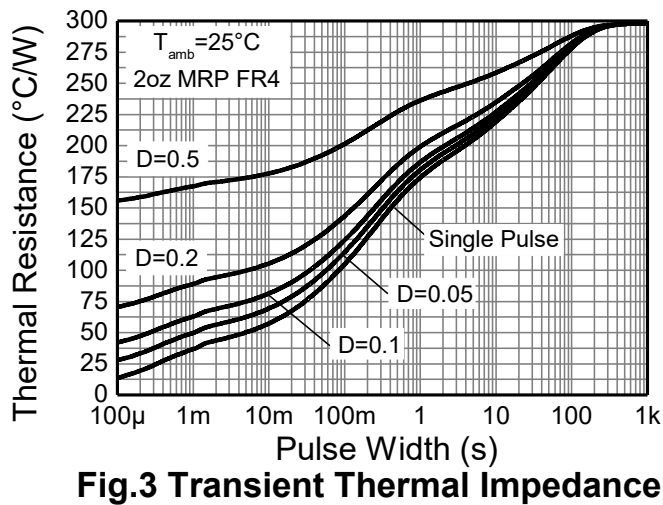
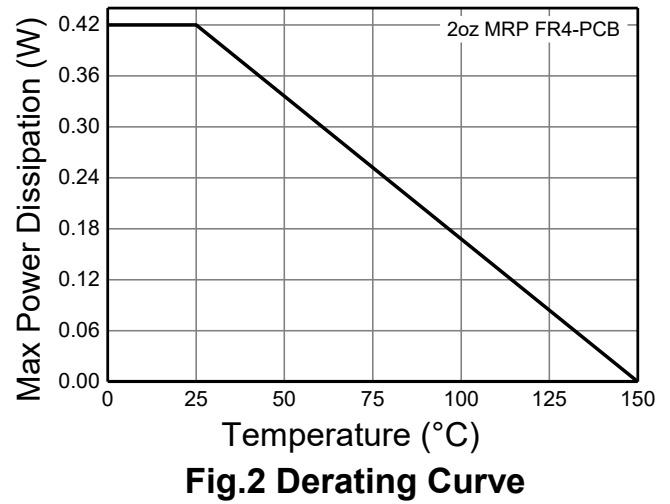
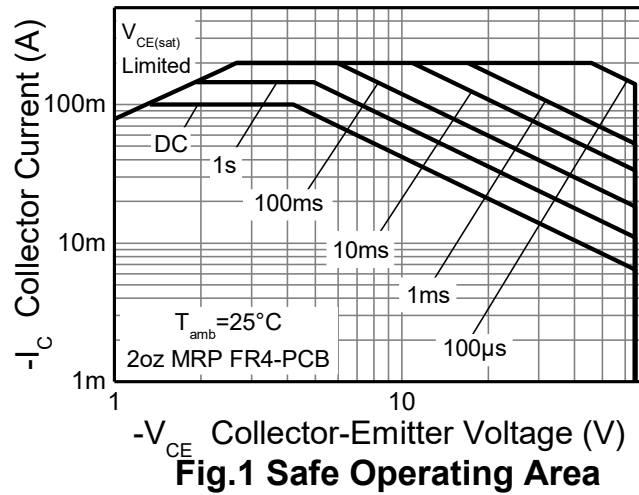
ESD Ratings (Note 7)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge – Human Body Model	ESD HBM	4000	V	3A
Electrostatic Discharge – Charged Device Model	ESD CDM	1000	V	C3

Notes:

5. For a device mounted with the exposed collector pads on minimum recommended pad layout that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Thermal resistance from junction to the top of the case
7. Refer to JEDEC specification JESD22-A114 and JESD22-C101.

Thermal Characteristics and Derating Information

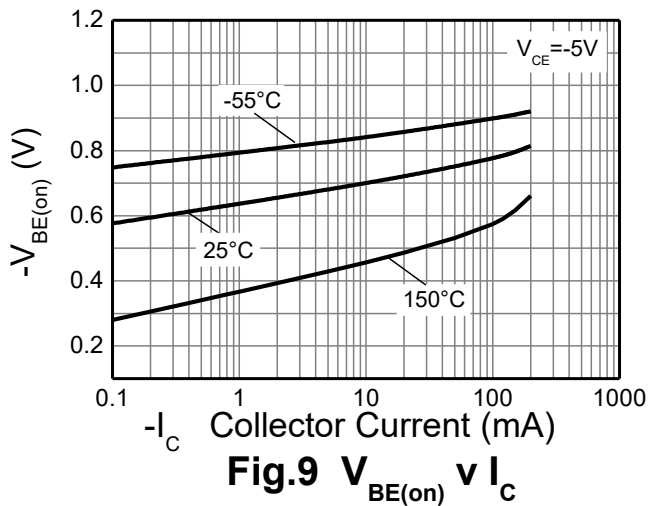
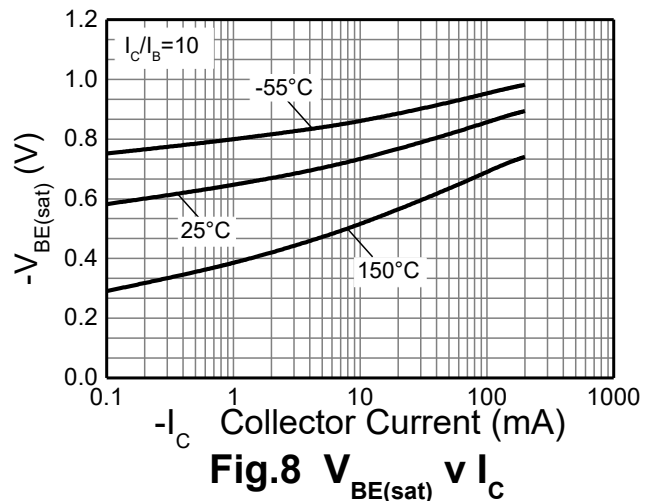
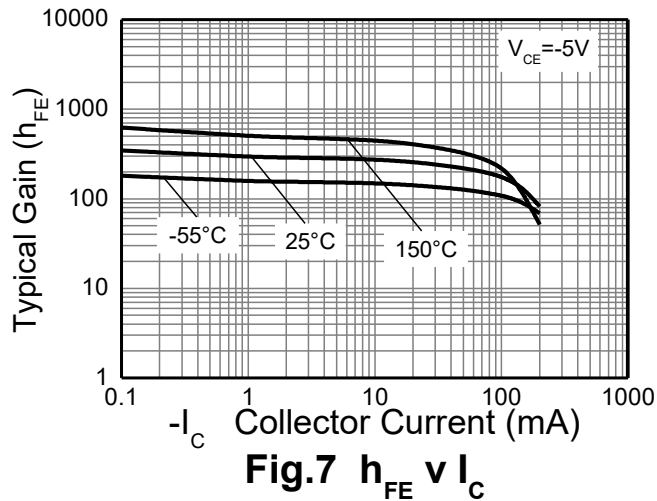
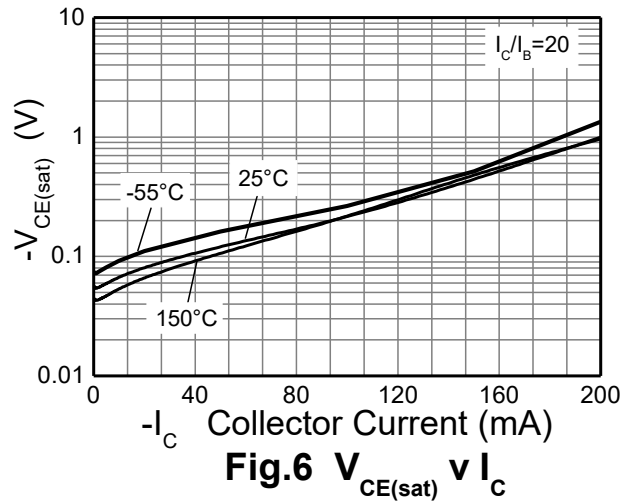
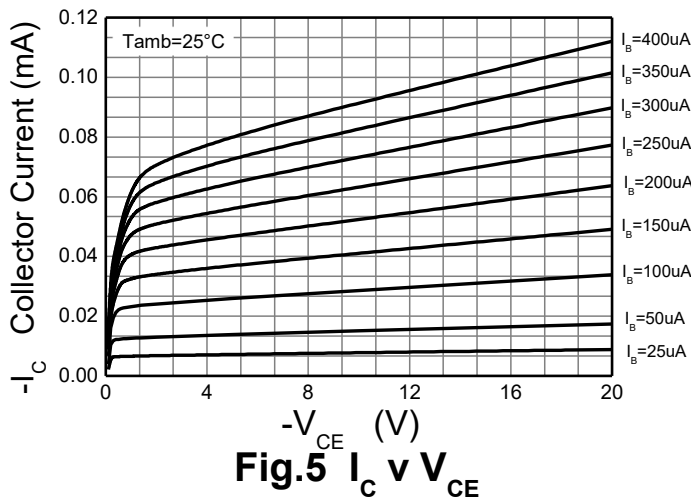


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector-Base Breakdown Voltage	BV _{CBO}	-80	—	—	V	I _C = -100μA
Collector-Emitter Breakdown Voltage (Note 8)	BV _{CEO}	-65	—	—	V	I _C = -10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	-7	—	—	V	I _E = -100μA
Collector-Base Cutoff Current	I _{CBO}	—	—	-15	nA	V _{CB} = -30V, I _E = 0
		—	—	-5	μA	V _{CB} = -30V, I _E = 0, T _A = +150°C
Emitter-Base Cutoff Current	I _{EBO}	—	—	-100	nA	V _{EB} = -5.6V, I _C = 0
DC Current Gain	h _{FE}	220	—	475	—	V _{CE} = -5V, I _C = -2mA
Collector-Emitter Saturation Voltage (Note 8)	V _{CE(sat)}	—	—	-300	mV	I _C = -10mA, I _B = -0.5mA
		—	—	-650		I _C = -100mA, I _B = -5mA
Base-Emitter Turn-on Voltage (Note 8)	V _{BE(on)}	-600	—	-750	mV	V _{CE} = -5V, I _C = -2mA
		—	—	-820		V _{CE} = -5V, I _C = -10mA
Base-Emitter Saturation Voltage (Note 8)	V _{BE(sat)}	—	-700	—	V	I _C = -10mA, I _B = -0.5mA
		—	-850	—		I _C = -100mA, I _B = -5mA
Transition Frequency	f _T	100	—	—	MHz	V _{CE} = -5V, I _C = -10mA, f = 100MHz
Output (Collector) Capacitance	C _{obc}	—	2	—	pF	V _{CB} = -10V, f = 1MHz
Output (Emitter) Capacitance	C _{oec}	—	10	—	pF	V _{EB} = -0.5V, f = 1MHz
Noise Figure	NF	—	—	10	dB	V _{CE} = -5V, I _C = -200μA, R _S = 2kΩ, f = 1kHz BW=200Hz

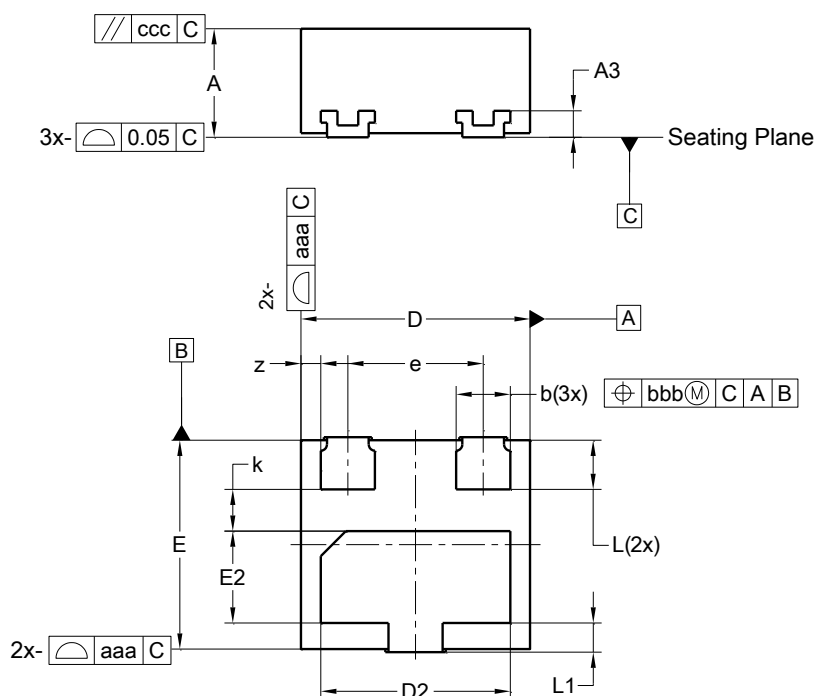
Note: 8. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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



Please see <http://www.diodes.com/package-outlines.html> for the latest version.

U-DFN1110-3/SWP (Type A)

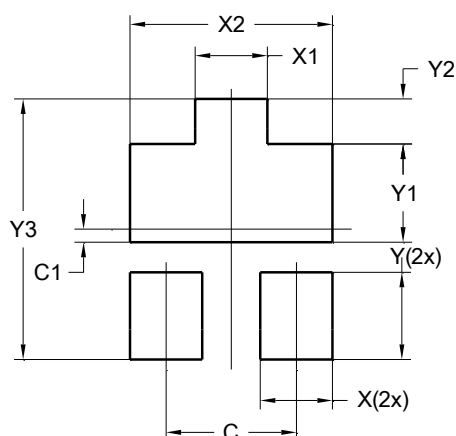


Note: Side wall tin plated package for wettable flanks in AOI.

U-DFN1110-3/SWP (Type A)			
Dim	Min	Max	Typ
A	0.47	0.57	0.52
A1	0.00	0.05	0.03
A3	—	—	0.127
b	0.22	0.30	0.26
D	1.05	1.15	1.10
D2	0.87	0.95	0.91
e	0.65 BSC		
E	0.95	1.05	1.00
E2	0.40	0.48	0.44
k	—	—	0.20
L	0.20	0.27	0.23
L1	0.09	0.19	0.14
z	—	—	0.095
aaa	0.25		
bbb	0.10		
ccc	0.10		
All Dimensions in mm			

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

U-DFN1110-3/SWP (Type A)



Dimensions	Value (in mm)
C	0.650
C1	0.065
X	0.360
X1	0.360
X2	1.010
Y	0.435
Y1	0.490
Y2	0.225
Y3	1.300

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