BC848AW-7-F Datasheet

https://www.DiGi-Electronics.com

DiGi Electronics Part Number	BC848AW-7-F-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	BC848AW-7-F
Description	TRANS NPN 30V 0.1A SOT323
Detailed Description	Bipolar (BJT) Transistor NPN 30 V 100 mA 300MHz 200 mW Surface Mount SOT-323

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
BC848AW-7-F	Diodes Incorporated
Series:	Product Status:
-	Active
Transistor Type:	Current - Collector (Ic) (Max):
NPN	100 mA
Voltage - Collector Emitter Breakdown (Max):	Vce Saturation (Max) @ Ib, Ic:
30 V	600mV @ 5mA, 100mA
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ Ic, Vce:
20nA (ICBO)	110 @ 2mA, 5V
Power - Max:	Frequency - Transition:
200 mW	300MHz
Operating Temperature:	Mounting Type:
-65°C ~ 150°C (TJ)	Surface Mount
Package / Case:	Supplier Device Package:
SC-70, SOT-323	SOT-323
Base Product Number:	
BC848	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.21.0075	

Lead-free Green

BC846AW–BC848CW

NPN SMALL SIGNAL TRANSISTOR IN SOT323

Features

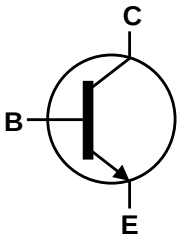
- Ideally Suited for Automatic Insertion
- Complementary PNP Types: BC856W–BC858W
- For Switching and AF Amplifier Applications
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

Mechanical Data

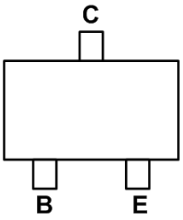
- Package: SOT323
- Package Material: Molded Plastic, "Green" Molding Compound UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish—Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.006 grams (Approximate)

SOT323

Top View



Device Symbol



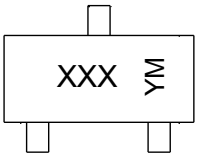
Top View
Pin-Out

Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Packing	
				Qty.	Carrier
BC846AW-7-F	SOT323	K1Q	7	3,000	Reel
BC846BW-7-F	SOT323	K1R	7	3,000	Reel
BC846BW-13-F	SOT323	K1R	13	10,000	Reel
BC847AW-7-F	SOT323	K1Q	7	3,000	Reel
BC847BW-7-F	SOT323	K1R	7	3,000	Reel
BC847BW-13-F	SOT323	K1R	13	10,000	Reel
BC847CW-7-F	SOT323	K1M	7	3,000	Reel
BC847CW-13-F	SOT323	K1M	13	10,000	Reel
BC848AW-7-F	SOT323	K1Q	7	3,000	Reel
BC848BW-7-F	SOT323	K1R	7	3,000	Reel
BC848CW-7-F	SOT323	K1M	7	3,000	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



XXX = Product Type Marking Code
(Please See *Ordering Information*)
YM = Date Code Marking
Y or $\overline{Y}$ = Year (ex: L = 2024)
M or $\overline{M}$ = Month (ex: 2 = February)

Date Code Key

Year	2001	-	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Code	M	-	L	M	N	P	R	S	T	U	V	W

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	BC846AW/BW	V_{CBO}	80	V
	BC847AW/BW/CW		50	
	BC848AW/BW/CW		30	
Collector-Emitter Voltage	BC846AW/BW	V_{CEO}	65	V
	BC847AW/BW/CW		45	
	BC848AW/BW/CW		30	
Emitter-Base Voltage	BC846AW/BW BC847AW/BW/CW	V_{EBO}	6	V
	BC848AW/BW/CW		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	(Note 5)	P_D	200	mW
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	625	°C/W
Thermal Resistance, Junction to Case	(Note 5)	$R_{\theta JC}$	115	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-65 to +150	°C

ESD Ratings (Note 6)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Charged Device Model	ESD CDM	1,000	V	C3
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

Notes: 5. 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.
6. Refer to JEDEC specification JESD22-A114, JESD22-C101 and JESD22-A115.

Thermal Characteristic and Derating Information

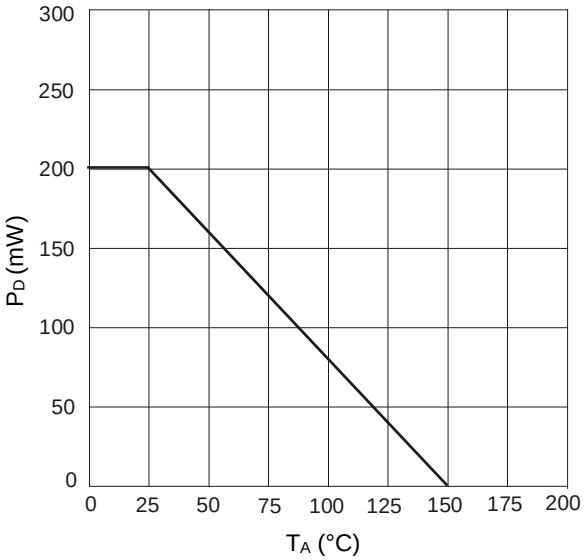


Figure 1. P_D v T_A

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

Characteristic			Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BC846AW/BW	BV_{CBO}	80	—	—	V	I_C = 100µA
		BC847AW/BW/CW		50				
		BC848AW/BW/CW		30				
Collector-Emitter Breakdown Voltage (Note 7)		BC846AW/BW	BV_{CEO}	65	—	—	V	I_C = 10mA
		BC847AW/BW/CW		45				
		BC848AW/BW/CW		30				
Emitter-Base Breakdown Voltage		BC846AW/BW BC847AW/BW/CW	BV_{EBO}	6	—	—	V	I_E = 100µA
		BC848AW/BW/CW		5				
DC Current Gain (Note 7)	Current Gain Group	BC846AW/BC847AW/BC848AW	h_{FE}	110	180	220	—	V_{CE} = 5.0V, I_C = 2.0mA
		BC846BW/BC847BW/BC848BW		200	290	450		
		BC847CW/BC848CW		420	520	800		
Collector Cutoff Current			I_{CBO}	—	—	20	nA	V_{CB} = 30V
						5	µA	V_{CB} = 30V, T_A = +150°C
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

Note: 7. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

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

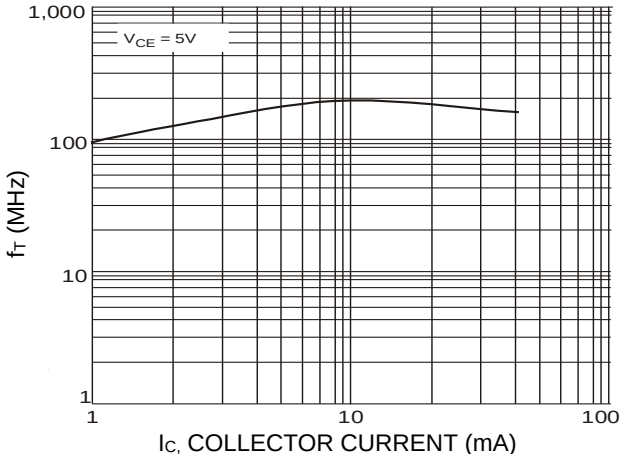


Figure 2. f_T v I_C

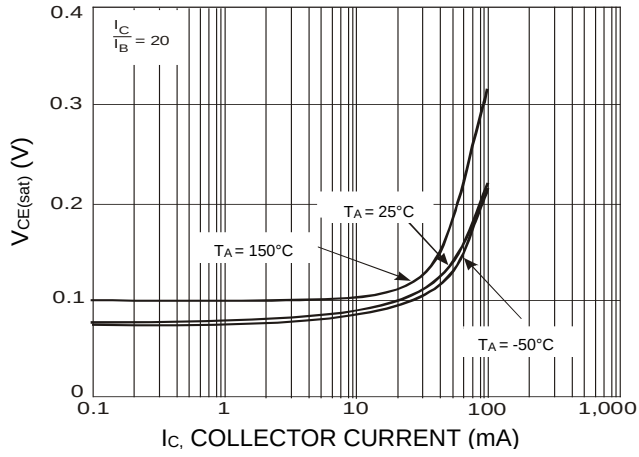


Figure 3. $V_{CE(sat)}$ v I_C

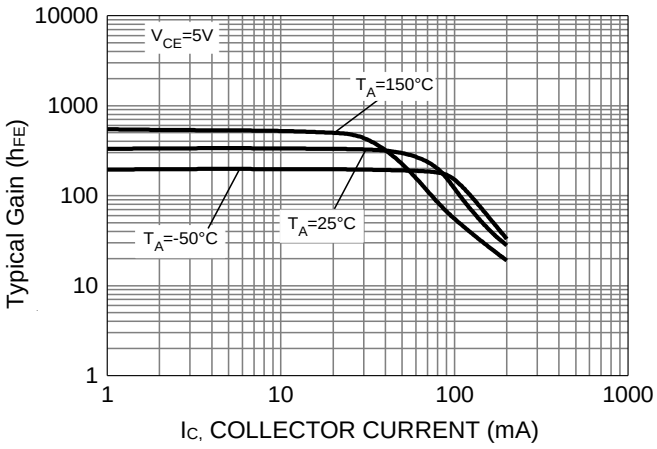


Figure 4. h_{FE} v I_C
(Band B Group Gain)

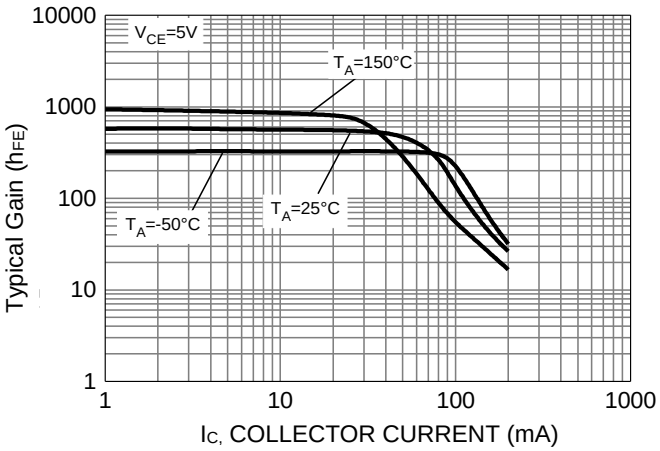


Figure 5. h_{FE} v I_C
(Band C Group Gain)

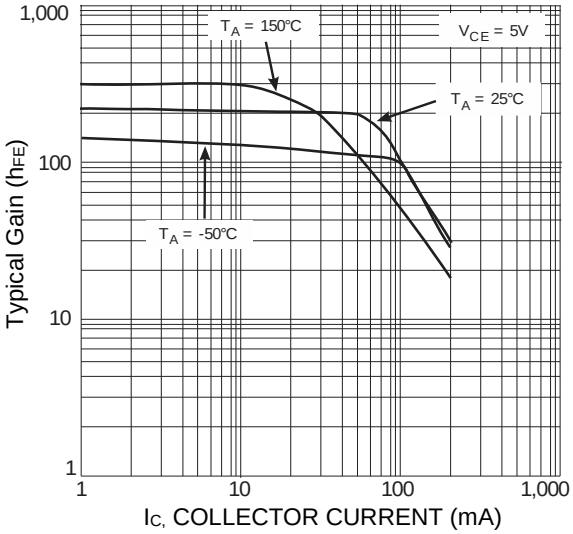
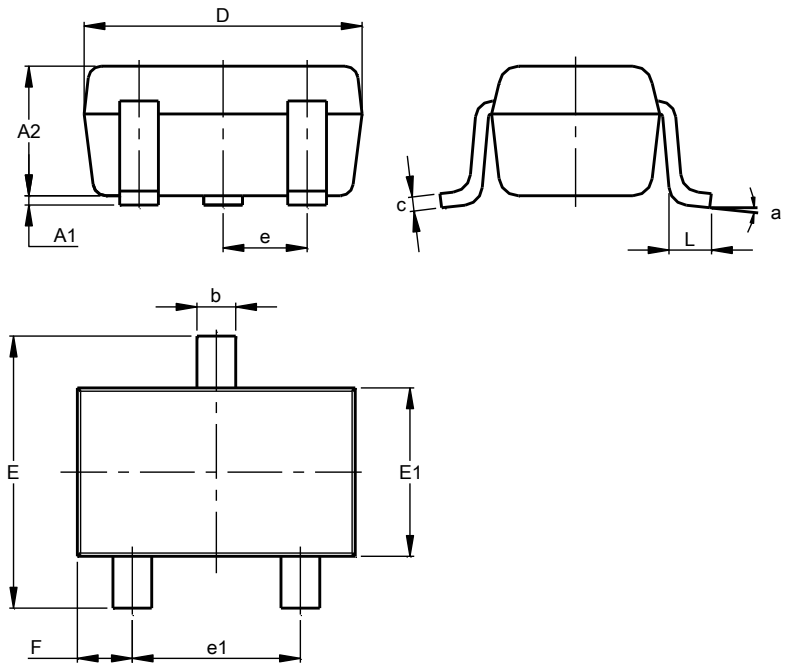


Figure 6. h_{FE} v I_C
(Band A Group Gain)

Package Outline Dimensions

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

SOT323

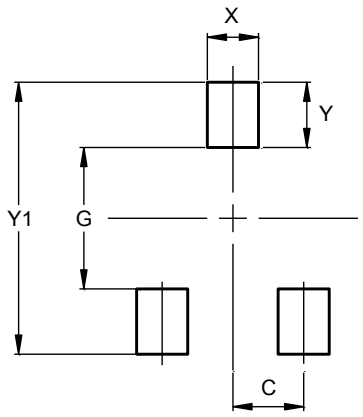


SOT323			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT323



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.470
Y	0.600
Y1	2.500

IMPORTANT NOTICE

1. DIODES INCORPORATED (Diodes) AND ITS SUBSIDIARIES MAKE NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO ANY INFORMATION CONTAINED IN THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

2. The Information contained herein is for informational purpose only and is provided only to illustrate the operation of Diodes' products described herein and application examples. Diodes does not assume any liability arising out of the application or use of this document or any product described herein. This document is intended for skilled and technically trained engineering customers and users who design with Diodes' products. Diodes' products may be used to facilitate safety-related applications; however, in all instances customers and users are responsible for (a) selecting the appropriate Diodes products for their applications, (b) evaluating the suitability of Diodes' products for their intended applications, (c) ensuring their applications, which incorporate Diodes' products, comply the applicable legal and regulatory requirements as well as safety and functional-safety related standards, and (d) ensuring they design with appropriate safeguards (including testing, validation, quality control techniques, redundancy, malfunction prevention, and appropriate treatment for aging degradation) to minimize the risks associated with their applications.

3. Diodes assumes no liability for any application-related information, support, assistance or feedback that may be provided by Diodes from time to time. Any customer or user of this document or products described herein will assume all risks and liabilities associated with such use, and will hold Diodes and all companies whose products are represented herein or on Diodes' websites, harmless against all damages and liabilities.

4. Products described herein may be covered by one or more United States, international or foreign patents and pending patent applications. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks and trademark applications. Diodes does not convey any license under any of its intellectual property rights or the rights of any third parties (including third parties whose products and services may be described in this document or on Diodes' website) under this document.

5. Diodes' products are provided subject to Diodes' Standard Terms and Conditions of Sale (https://www.diodes.com/about/company/terms-and-conditions/terms-and-conditions-of-sales/) or other applicable terms. This document does not alter or expand the applicable warranties provided by Diodes. Diodes does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel.

6. Diodes' products and technology may not be used for or incorporated into any products or systems whose manufacture, use or sale is prohibited under any applicable laws and regulations. Should customers or users use Diodes' products in contravention of any applicable laws or regulations, or for any unintended or unauthorized application, customers and users will (a) be solely responsible for any damages, losses or penalties arising in connection therewith or as a result thereof, and (b) indemnify and hold Diodes and its representatives and agents harmless against any and all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim relating to any noncompliance with the applicable laws and regulations, as well as any unintended or unauthorized application.

7. While efforts have been made to ensure the information contained in this document is accurate, complete and current, it may contain technical inaccuracies, omissions and typographical errors. Diodes does not warrant that information contained in this document is error-free and Diodes is under no obligation to update or otherwise correct this information. Notwithstanding the foregoing, Diodes reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes.

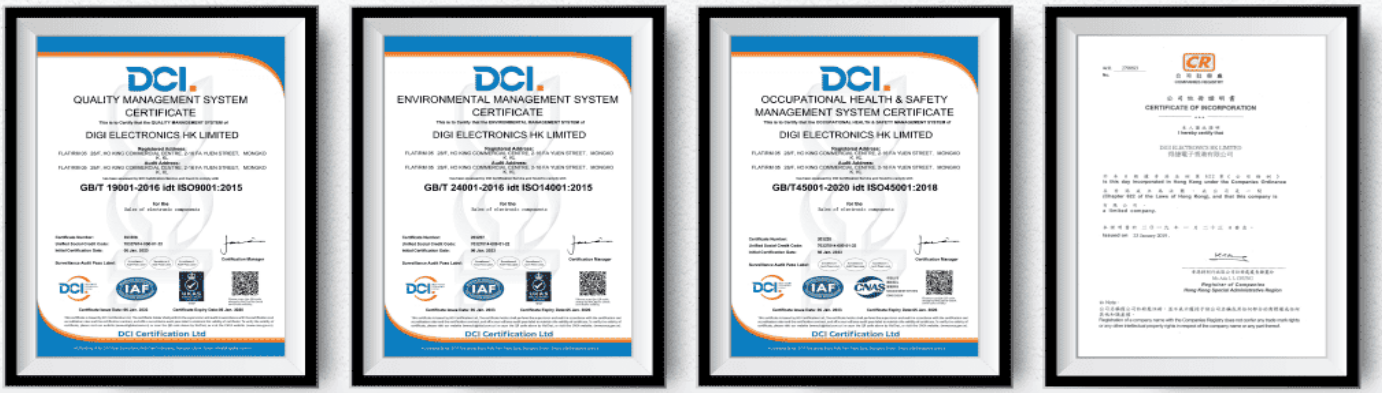
8. Any unauthorized copying, modification, distribution, transmission, display or other use of this document (or any portion hereof) is prohibited. Diodes assumes no responsibility for any losses incurred by the customers or users or any third parties arising from any such unauthorized use.

9. This Notice may be periodically updated with the most recent version available at https://www.diodes.com/about/company/terms-and-conditions/important-notice

www.diodes.com

OUR CERTIFICATE

DiGi provide top-quality products and perfect service for customer worldwide through standardization, technological innovation and continuous improvement. DiGi through third-party certification, we striciy control the quality of products and services. Welcome your RFQ to Email: Info@DiGi-Electronics.com



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.