



BC848W

30 V, 100 mA NPN general-purpose transistor

6 May 2025

Product data sheet

1. General description

NPN general-purpose transistor in a small SOT323 (SC-70) Surface-Mounted Device (SMD) plastic package.

PNP complement: BC858W

2. Features and benefits

- General-purpose transistor
- SMD plastic package
- AEC-Q101 qualified

3. Applications

- General-purpose switching and amplification

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CE0}	collector-emitter voltage	open base	-	-	30	V
I_C	collector current		-	-	100	mA
h_{FE}	DC current gain	$V_{CE} = 5\text{ V}$; $I_C = 2\text{ mA}$; $T_{amb} = 25\text{ °C}$	110	-	800	

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	B	base	 SC-70 (SOT323)	 sym021
2	E	emitter		
3	C	collector		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BC848W	SC-70	plastic, surface-mounted package; 3 leads; 1.3 mm pitch; 2 mm x 1.25 mm x 0.95 mm body	SOT323

7. Marking

Table 4. Marking codes

Type number	Marking code[1]
BC848W	1M%

[1] % = placeholder for manufacturing site code

8. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
V _{CBO}	collector-base voltage	open emitter		-	30	V
V _{CEO}	collector-emitter voltage	open base		-	30	V
V _{EBO}	emitter-base voltage	open collector		-	5	V
I _C	collector current	single pulse; t _p ≤ 1 ms		-	100	mA
I _{CM}	peak collector current			-	200	mA
I _{BM}	peak base current			-	200	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[1]	-	200	mW
T _j	junction temperature			-	150	°C
T _{amb}	ambient temperature			-65	150	°C
T _{stg}	storage temperature			-65	150	°C

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
R _{th(j-a)}	thermal resistance from junction to ambient		[1]	-	-	625	K/W

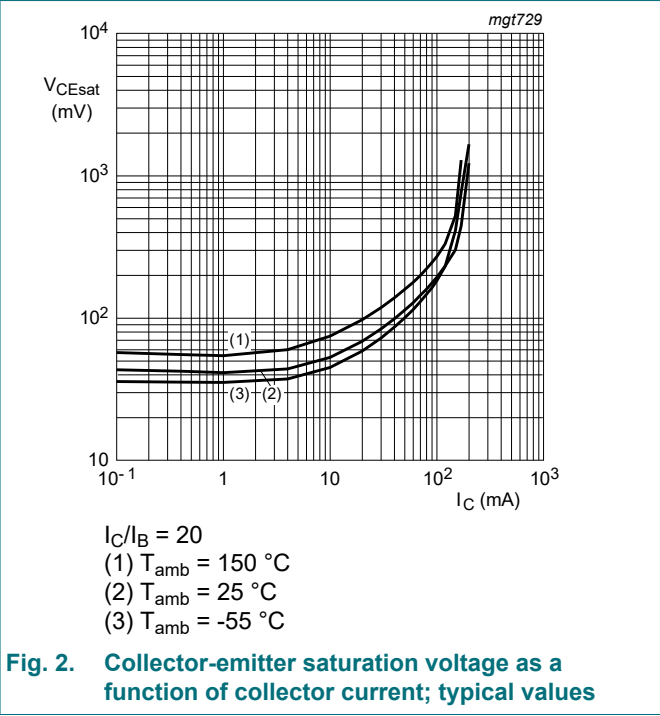
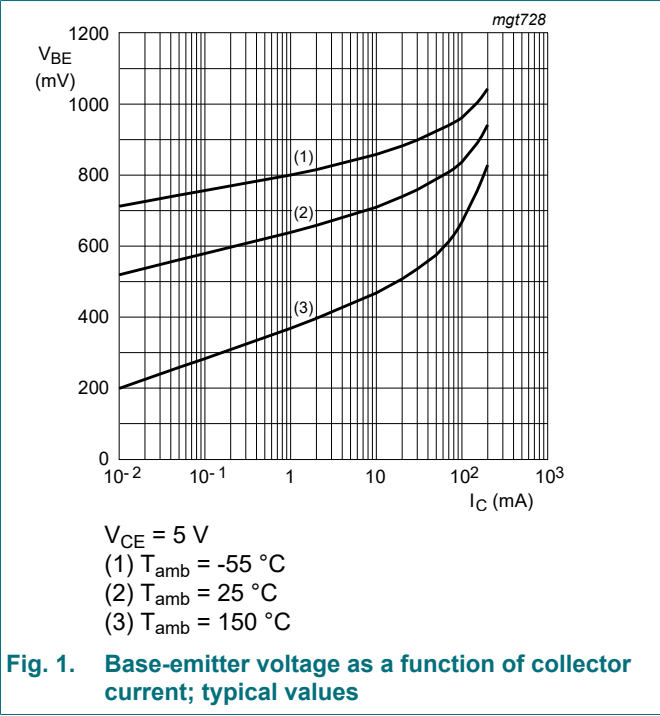
[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

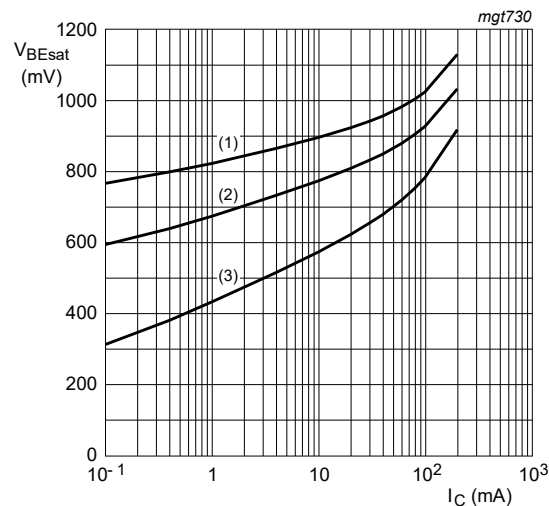
10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_{CBO}	collector-base cut-off current	$V_{CB} = 30\text{ V}; I_E = 0\text{ A}; T_{amb} = 25\text{ }^{\circ}\text{C}$		-	-	15	nA
		$V_{CB} = 30\text{ V}; I_E = 0\text{ A}; T_J = 150\text{ }^{\circ}\text{C}$		-	-	5	μA
I_{EBO}	emitter-base cut-off current	$V_{EB} = 5\text{ V}; I_C = 0\text{ }\mu\text{A}; T_{amb} = 25\text{ }^{\circ}\text{C}$		-	-	100	nA
h_{FE}	DC current gain	$V_{CE} = 5\text{ V}; I_C = 2\text{ mA}; T_{amb} = 25\text{ }^{\circ}\text{C}$		110	-	800	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}; T_{amb} = 25\text{ }^{\circ}\text{C}$		-	90	250	mV
		$I_C = 100\text{ mA}; I_B = 5\text{ mA}; \text{pulsed}; t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02; T_{amb} = 25\text{ }^{\circ}\text{C}$		-	200	600	mV
V_{BEsat}	base-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}; T_{amb} = 25\text{ }^{\circ}\text{C}$	[1]	-	700	-	mV
		$I_C = 100\text{ mA}; I_B = 5\text{ mA}; T_{amb} = 25\text{ }^{\circ}\text{C}$	[1]	-	900	-	mV
V_{BE}	base-emitter voltage	$V_{CE} = 5\text{ V}; I_C = 2\text{ mA}; T_{amb} = 25\text{ }^{\circ}\text{C}$	[2]	580	660	700	mV
		$V_{CE} = 5\text{ V}; I_C = 10\text{ mA}; T_{amb} = 25\text{ }^{\circ}\text{C}$	[2]	-	-	770	mV
C_c	collector capacitance	$V_{CB} = 10\text{ V}; I_E = 0\text{ A}; i_e = 0\text{ A}; f = 1\text{ MHz}; T_{amb} = 25\text{ }^{\circ}\text{C}$		-	2.5	3	pF
f_T	transition frequency	$V_{CE} = 5\text{ V}; I_C = 10\text{ mA}; f = 100\text{ MHz}; T_{amb} = 25\text{ }^{\circ}\text{C}$		100	-	-	MHz
NF	noise figure	$V_{CE} = 5\text{ V}; I_C = 200\text{ }\mu\text{A}; R_S = 2\text{ k}\Omega; f = 1\text{ kHz}; B = 200\text{ Hz}; T_{amb} = 25\text{ }^{\circ}\text{C}$		-	2	10	dB

[1] V_{BEsat} decreases by about 1.7 mV/K with increasing temperature.
[2] V_{BE} decreases by about 2 mV/K with increasing temperature.





$I_C/I_B = 10$
(1) $T_{amb} = -55\text{ }^{\circ}\text{C}$
(2) $T_{amb} = 25\text{ }^{\circ}\text{C}$
(3) $T_{amb} = 150\text{ }^{\circ}\text{C}$

Fig. 3. Base-emitter saturation voltage as a function of collector current; typical values

11. Test information

Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard *Q101 - Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

12. Package outline

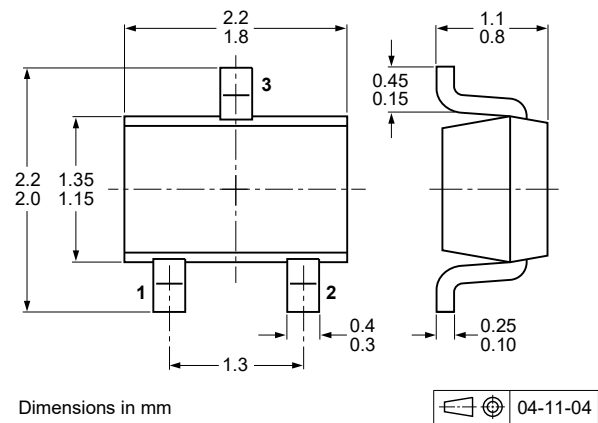


Fig. 4. Package outline SC-70 (SOT323)

13. Soldering

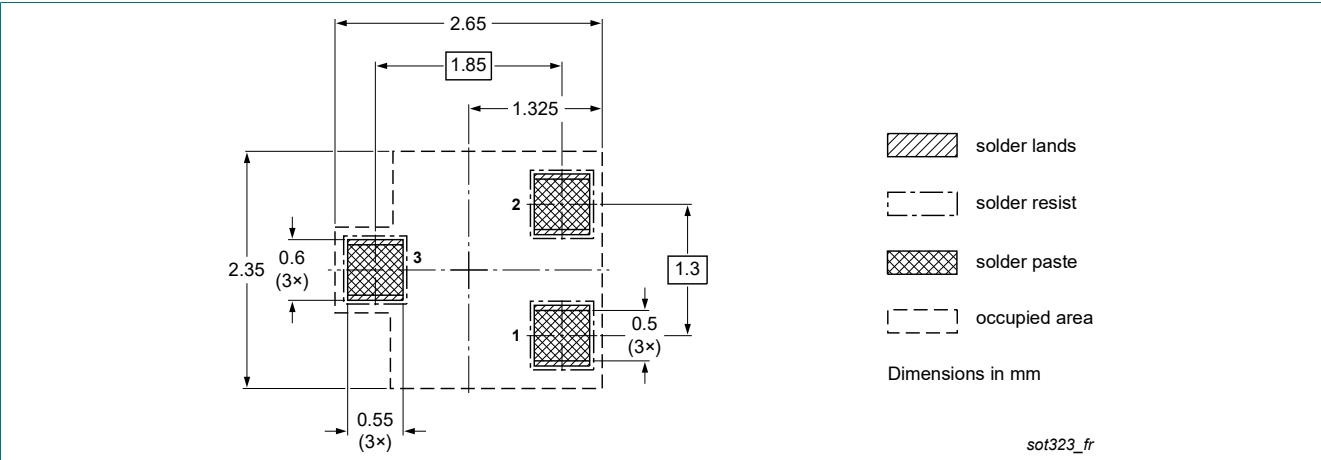


Fig. 5. Reflow soldering footprint for SC-70 (SOT323)

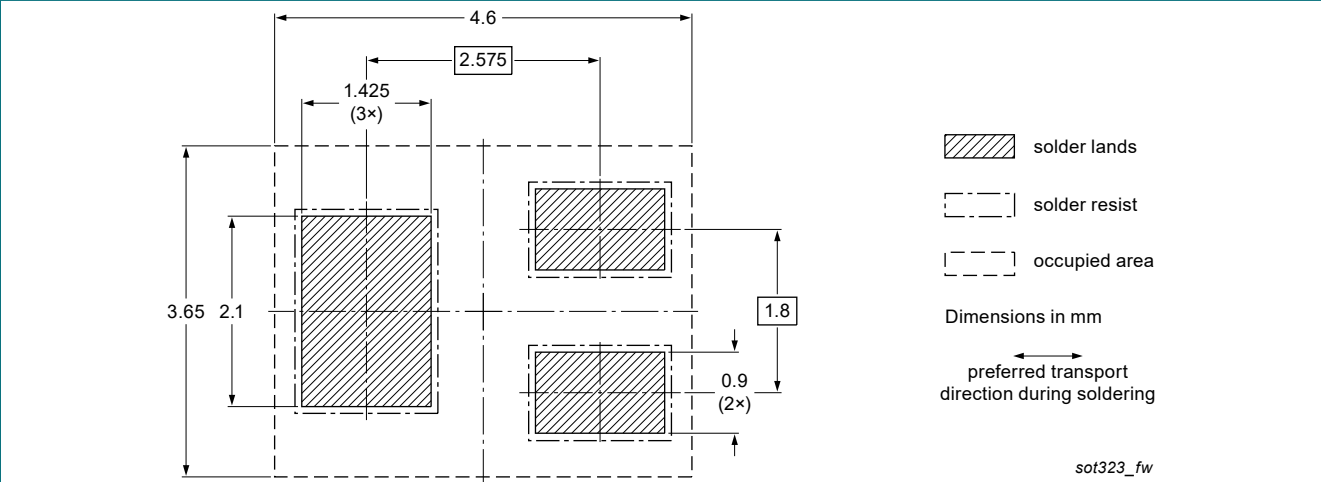


Fig. 6. Wave soldering footprint for SC-70 (SOT323)

14. Mounting

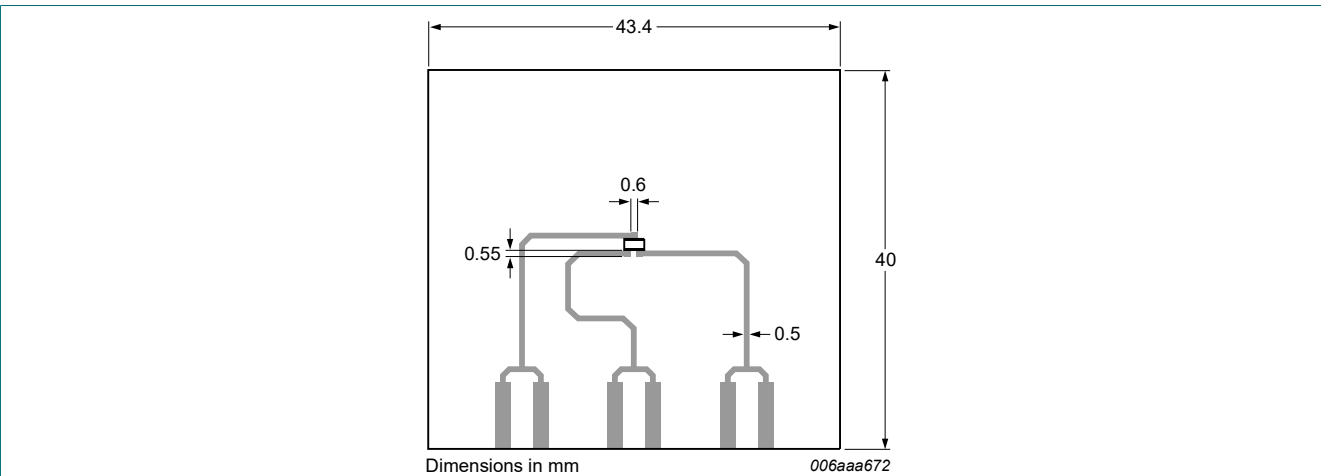


Fig. 7. FR4 PCB, standard footprint SOT323 (SC-70)

15. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BC848W v.8	20250506	Product data sheet	-	BC848_SER_7
Modifications:	<ul style="list-style-type: none">Family data sheet split to single type data sheetsSection "Packing information" removedCharacteristics at conditions for I_{EBO}: typo correctedCharacteristics: h_{FE} value at I_C = 10 µA and Fig. 1 removed			
BC848_SER_7	20091117	Product data sheet	-	BC848_SER_6
BC848_SER_6	20060203	Product data sheet	-	BC846_BC847_BC848_5 BC846W_BC84BC848W_4
BC846_BC847_BC848_5	20040206	Product specification	-	BC846W_BC847W_BC848W_4
BC846W_BC847W_BC848W_4	20020204	Product specification	-	BC846W_847W_3

16. Legal information

Data sheet status

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

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- [2] The term 'short data sheet' is explained in section "Definitions".
- [3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the internet at <https://www.nexperia.com>.

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