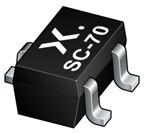


BC807W series

45 V, 500 mA PNP general-purpose transistors

Rev. 7 — 3 July 2018 Product data sheet

1 Product profile

1.1 General description

PNP general-purpose transistors in a very small SOT323 (SC-70) Surface-Mounted Device (SMD) plastic package.

Table 1. Product overview

Type number	Package			NPN complement
	Nexperia	JEDEC	JEITA	
BC807W	SOT323	-	SC-70	BC817W
BC807-16W				BC817-16W
BC807-25W				BC817-25W
BC807-40W				BC817-40W

1.2 Features and benefits

- High current
- Three current gain selections
- AEC-Q101 qualified

1.3 Applications

- General-purpose switching and amplification

nexperia

1.4 Quick reference data

Table 2. Quick reference data

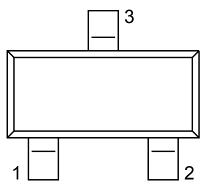
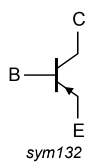
T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{CEO}	collector-emitter voltage	open base		-	-	-45	V
I_C	collector current			-	-	-500	mA
I_{CM}	peak collector current	single pulse; t_p ≤ 1 ms		-	-	-1	A
h_{FE}	DC current gain	V_{CE} = -1 V; I_C = -100 mA					
	BC807W		[1]	100	-	600	
	BC807-16W		[1]	100	-	250	
	BC807-25W		[1]	160	-	400	
	BC807-40W		[1]	250	-	600	

[1] pulsed; t_p ≤ 300 µs; δ ≤ 0.02

2 Pinning information

Table 3. Pinning

Pin	Symbol	Description	Simplified outline	Graphic symbol
SOT323				
1	B	base		
2	E	emitter		
3	C	collector		

3 Ordering information

Table 4. Ordering information

Type number	Package		
	Name	Description	Version
BC807W	SC-70	Plastic surface-mounted package; 3 leads	SOT323
BC807-16W			
BC807-25W			
BC807-40W			

4 Marking

Table 5. Marking

Type number		Marking code
BC807W	[1]	5D%
BC807-16W	[1]	5A%
BC807-25W	[1]	5B%
BC807-40W	[1]	5C%

[1] % = placeholder for manufacturing site code

5 Limiting values

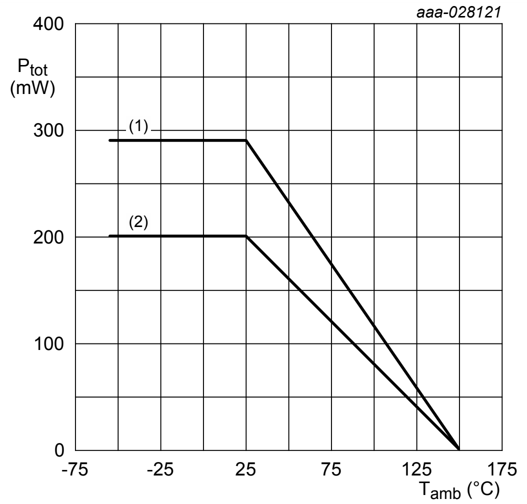
Table 6. Limiting values

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

T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Max	Unit
V_{CBO}	collector-base voltage	open emitter		-	-50	V
V_{CEO}	collector-emitter voltage	open base		-	-45	V
V_{EBO}	emitter-base voltage	open collector		-	-5	V
I_C	collector current			-	-500	mA
I_{CM}	peak collector current	single pulse; $t_p \leq 1$ ms		-	-1	A
I_{BM}	peak base current	single pulse; $t_p \leq 1$ ms		-	-200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1] [2]	-	200	mW
			[3] [2]	-	290	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.
[2] Valid for all available selection groups.
[3] Device mounted on an FR4 Printed-Circuit-Board (PCB); single-sided copper; tin-plated; mounting pad for collector 1 cm^2.



(1) FR4 PCB, single-sided copper; 1 cm^2

(2) FR4 PCB, single-sided copper; standard footprint

Figure 1. Power derating curves

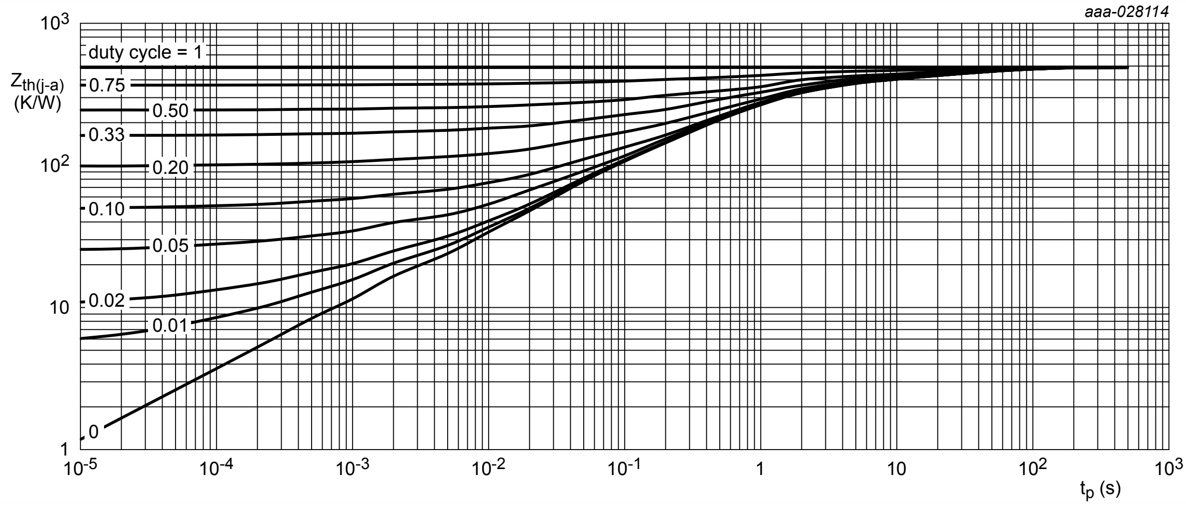
6 Thermal characteristics

Table 7. Thermal characteristics

T_{amb} = 25 °C unless otherwise specified.

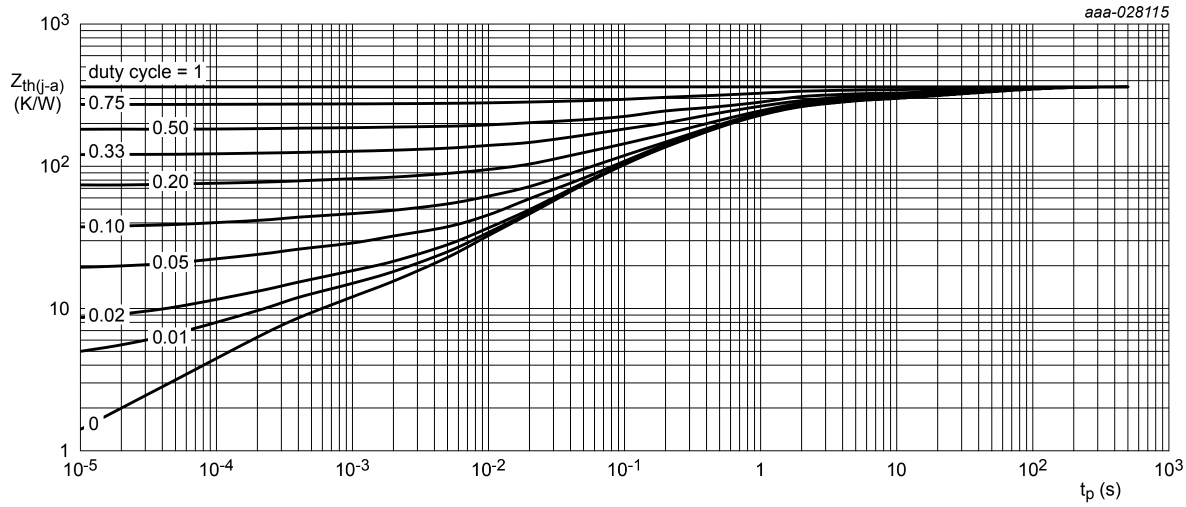
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	625	K/W
			[3] [2]	-	-	431	K/W

[1] Device mounted on an FR4 Printed-Circuit-Board (PCB); single-sided copper; tin-plated and standard footprint.
[2] Valid for all available selection groups.
[3] Device mounted on an FR4 Printed-Circuit-Board (PCB); single-sided copper; tin-plated; mounting pad for collector 1 cm^2 .



FR4 PCB; single-sided copper; tin-plated and standard footprint

Figure 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values



FR4 PCB; single-sided copper; tin-plated; mounting pad for collector 1 cm^2

Figure 3. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

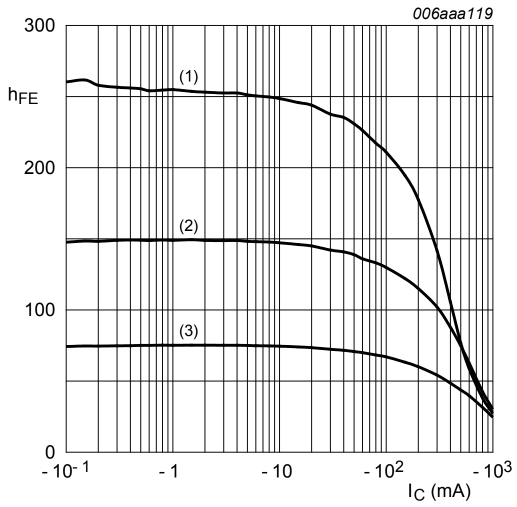
7 Characteristics

Table 8. Characteristics

T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$V_{(BR)CBO}$	collector-base breakdown voltage	I_C = -100 µA; I_E = 0 A		-50	-	-	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	I_C = -10 mA; I_B = 0 A		-45	-	-	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	I_E = -100 µA; I_C = 0 A		-5	-	-	V
I_{CBO}	collector-base cut-off current	V_{CB} = -20 V; I_E = 0 A		-	-	-100	nA
		V_{CB} = -20 V; I_E = 0 A; T_j = 150 °C		-	-	-5	µA
I_{EBO}	emitter-base cut-off current	V_{EB} = -5 V; I_C = 0 A		-	-	-100	nA
h_{FE}	DC current gain						
	BC807W	V_{CE} = -1 V; I_C = -100 mA	[1]	100	-	600	
	BC807-16W	V_{CE} = -1 V; I_C = -100 mA	[1]	100	-	250	
	BC807-25W	V_{CE} = -1 V; I_C = -100 mA	[1]	160	-	400	
	BC807-40W	V_{CE} = -1 V; I_C = -100 mA	[1]	250	-	600	
h_{FE}	DC current gain	V_{CE} = -1 V; I_C = -500 mA	[1]	40	-	-	
V_{CEsat}	collector-emitter saturation voltage	I_C = -500 mA; I_B = -50 mA	[1]	-	-	-700	mV
V_{BE}	base-emitter voltage	V_{CE} = -1 V; I_C = -500 mA	[1] [2]	-	-	-1.2	V
f_T	transition frequency	V_{CE} = -5 V; I_C = -10 mA; f = 100 MHz		80	-	-	MHz
C_c	collector capacitance	V_{CB} = -10 V; I_E = i_e = 0 A; f = 1 MHz		-	5	-	pF

[1] pulsed; $t_p \leq 300$ µs; $\delta \leq 0.02$
[2] V_{BE} decreases by approxymately 2 mV/K with increasing temperature.



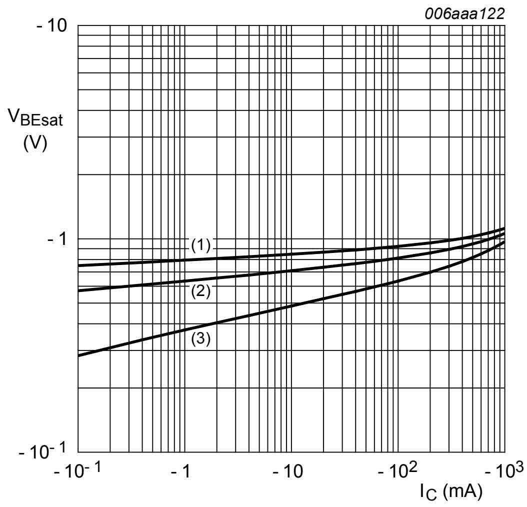
V_{CE} = -1 V

(1) T_{amb} = 150 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = -55 °C

Figure 4. BC807-16W: DC current gain as a function of collector current; typical values



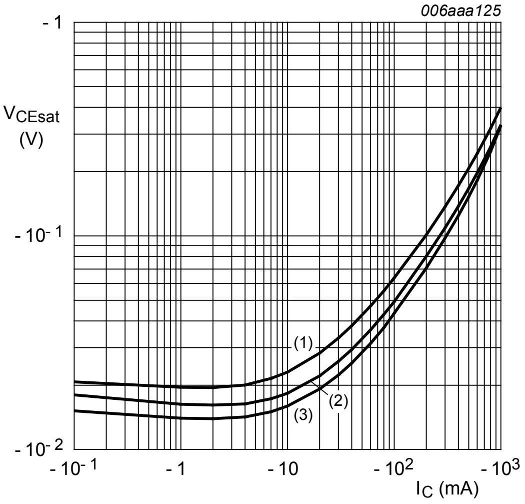
I_C/I_B = 10

(1) T_{amb} = -55 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = 150 °C

Figure 5. BC807-16W: Base-emitter saturation voltage as a function of collector current; typical values



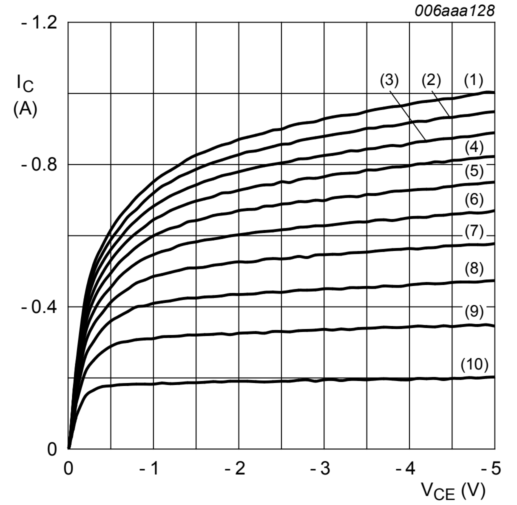
I_C/I_B = 10

(1) T_{amb} = 150 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = -55 °C

Figure 6. BC807-16W: Collector-emitter saturation voltage as a function of collector current; typical values



T_{amb} = 25 °C

(1) I_B = -16.0 mA

(2) I_B = -14.4 mA

(3) I_B = -12.8 mA

(4) I_B = -11.2 mA

(5) I_B = -9.6 mA

(6) I_B = -8.0 mA

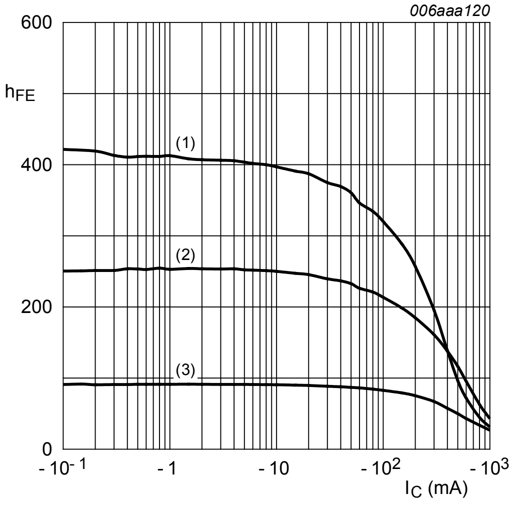
(7) I_B = -6.4 mA

(8) I_B = -4.8 mA

(9) I_B = -3.2 mA

(10) I_B = -1.6 mA

Figure 7. BC807-16W: Collector current as a function of collector-emitter voltage; typical values



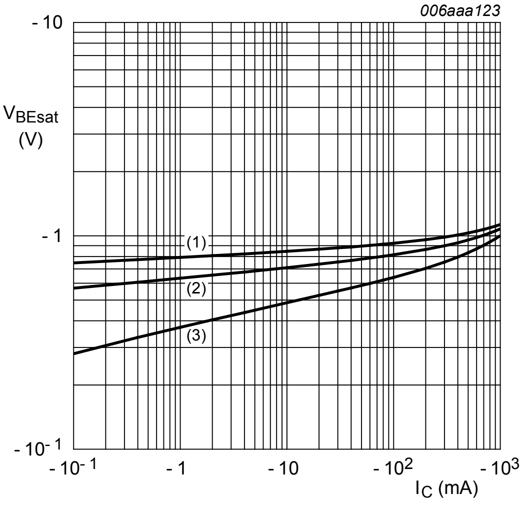
V_{CE} = -1 V

(1) T_{amb} = 150 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = -55 °C

Figure 8. BC807-25W: DC current gain as a function of collector current; typical values



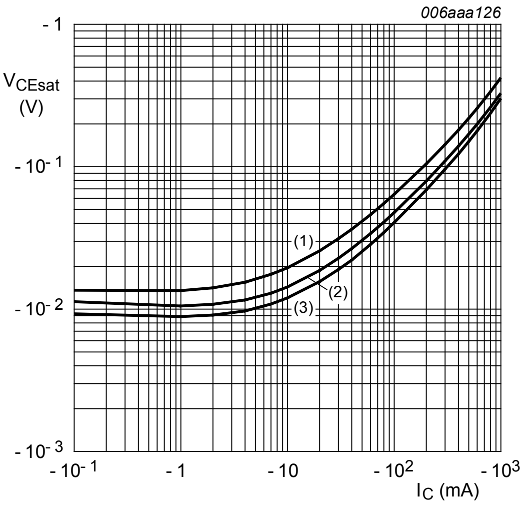
I_C/I_B = 10

(1) T_{amb} = -55 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = 150 °C

Figure 9. BC807-25W: Base-emitter saturation voltage as a function of collector current; typical values



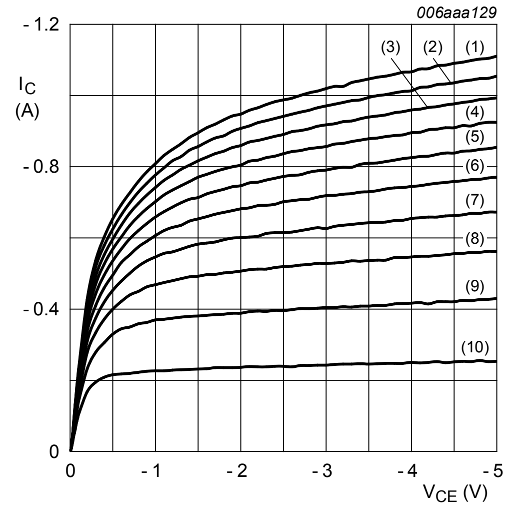
I_C/I_B = 10

(1) T_{amb} = 150 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = -55 °C

Figure 10. BC807-25W: Collector-emitter saturation voltage as a function of collector current; typical values



T_{amb} = 25 °C

(1) I_B = -13.0 mA

(2) I_B = -11.7 mA

(3) I_B = -10.4 mA

(4) I_B = -9.1 mA

(5) I_B = -7.8 mA

(6) I_B = -6.5 mA

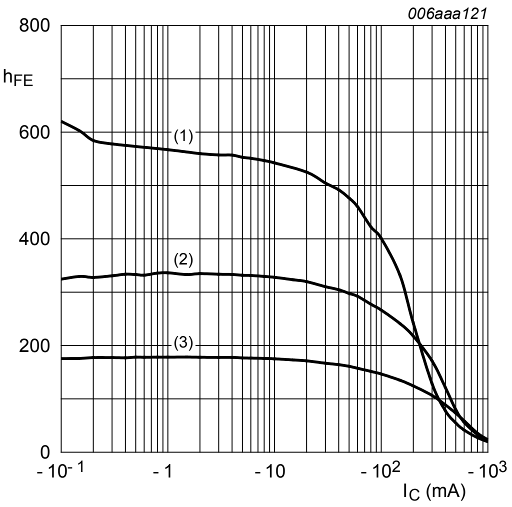
(7) I_B = -5.2 mA

(8) I_B = -3.9 mA

(9) I_B = -2.6 mA

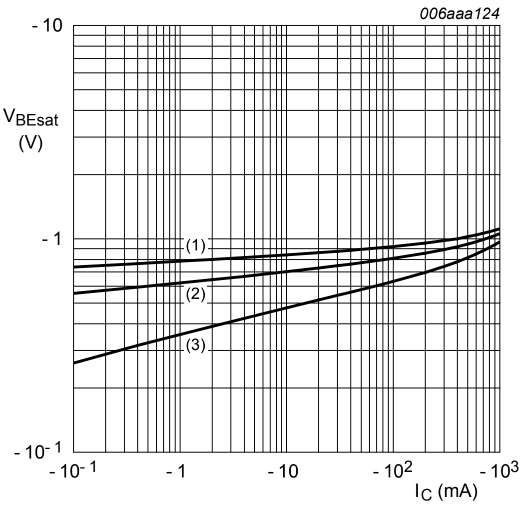
(10) I_B = -1.3 mA

Figure 11. BC807-25W: Collector current as a function of collector-emitter voltage; typical values



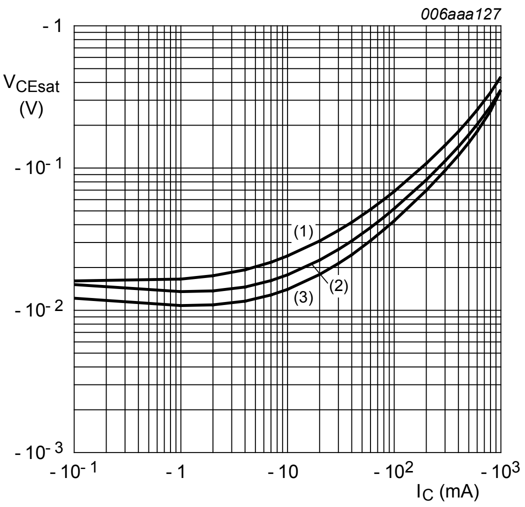
V_{CE} = -1 V
(1) T_{amb} = 150 °C
(2) T_{amb} = 25 °C
(3) T_{amb} = -55 °C

Figure 12. BC807-40W: DC current gain as a function of collector current; typical values



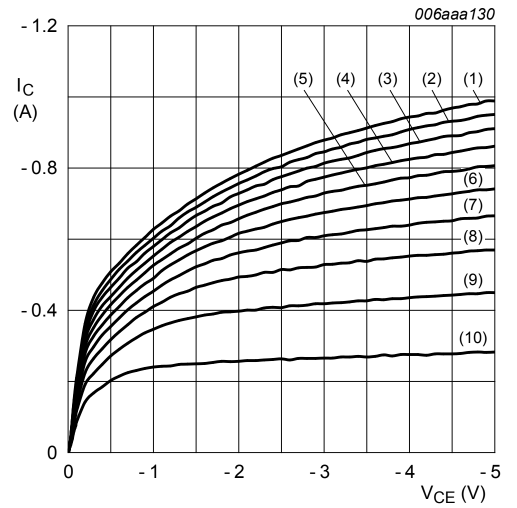
I_C/I_B = 10
(1) T_{amb} = -55 °C
(2) T_{amb} = 25 °C
(3) T_{amb} = 150 °C

Figure 13. BC807-40W: Base-emitter saturation voltage as a function of collector current; typical values



I_C/I_B = 10
(1) T_{amb} = 150 °C
(2) T_{amb} = 25 °C
(3) T_{amb} = -55 °C

Figure 14. BC807-40W: Collector-emitter saturation voltage as a function of collector current; typical values



T_{amb} = 25 °C
(1) I_B = -12.0 mA
(2) I_B = -10.8 mA
(3) I_B = -9.6 mA
(4) I_B = -8.4 mA
(5) I_B = -7.2 mA
(6) I_B = -6.0 mA
(7) I_B = -4.8 mA
(8) I_B = -3.6 mA
(9) I_B = -2.4 mA
(10) I_B = -1.2 mA

Figure 15. BC807-40W: Collector current as a function of collector-emitter voltage; typical values

8 Test information

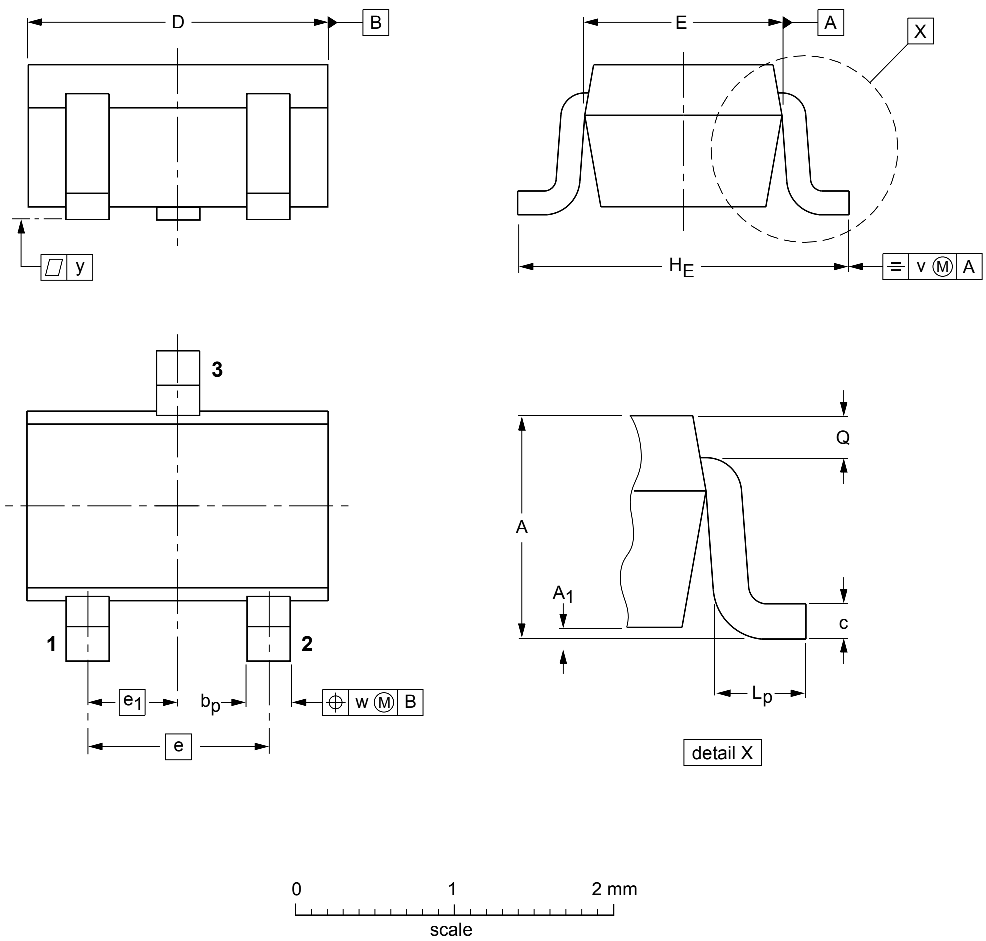
8.1 Quality information

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.

9 Package outline

Table 9. Package outline

Plastic surface-mounted package; 3 leads **SOT323**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.8	0.1	0.4 0.3	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.23 0.13	0.2	0.2

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT323			SC-70			~~04-11-04~~ 06-03-16

Figure 16. Package outline SOT323 (SC-70)

10 Soldering

Table 10. Soldering

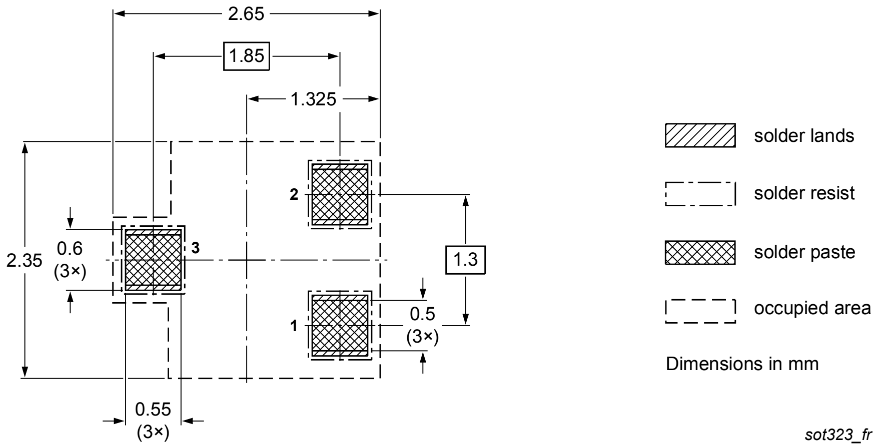


Figure 17. Reflow soldering footprint for SOT323 (SC70)

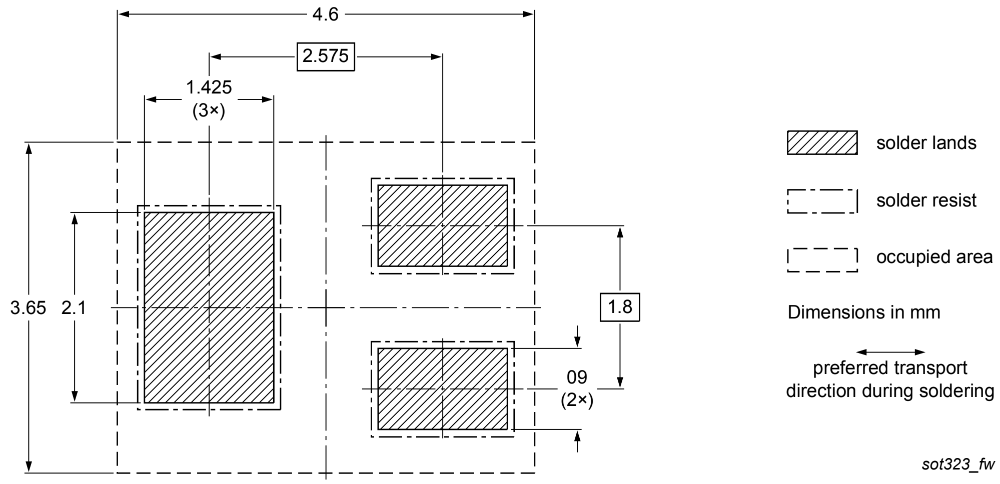


Figure 18. Wave soldering footprint for SOT323 (SC-70)

11 Revision history

Table 11. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BC807W v.7	20180703	Product data sheet	-	BC807_BC807W_BC327 v.6
Modifications:	• The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia. • Legal texts have been adapted to the new company name where appropriate. • Removed basic types BC327 and BC807 • Added Fig 1. Power derating curves in section "Limiting values" and the thermal graphs as Fig 2. and Fig 3. in section "Thermal characteristics".Added Sections 8 "Test information" and 9 "Soldering" • Removed Section "Packing information" • AEC-Q101 qualified			
BC807_BC807W_BC327 v.6	20091117	Product data sheet	-	BC807_BC807W_BC327 v.5
BC807_BC807W_BC327 v.5	20050221	Product data sheet	CPCN200302007F CPCN200405006F	BC807 v.4; BC807W v.3; BC327 v.3
BC807 v.4	20040116	Product Specification	-	BC807 v.3
BC807W v.3	19990518	Product Specification	-	BC807W_808W_CNV v.2
BC327 v.3	19990415	Product Specification	-	BC327 v.2

12 Legal information

12.1 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.

[1] Please consult the most recently issued document before initiating or completing a design.
[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 URL http://www.nexperia.com.

12.2 Definitions

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Short data sheet — A short data sheet is an extract from a full data sheet with the same product type number(s) and title. A short data sheet is intended for quick reference only and should not be relied upon to contain detailed and full information. For detailed and full information see the relevant full data sheet, which is available on request via the local Nexperia sales office. In case of any inconsistency or conflict with the short data sheet, the full data sheet shall prevail.

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Limiting values — Stress above one or more limiting values (as defined in the Absolute Maximum Ratings System of IEC 60134) will cause permanent damage to the device. Limiting values are stress ratings only and (proper) operation of the device at these or any other conditions above those given in the Recommended operating conditions section (if present) or the Characteristics sections of this document is not warranted. Constant or repeated exposure to limiting values will permanently and irreversibly affect the quality and reliability of the device.

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Quick reference data — The Quick reference data is an extract of the product data given in the Limiting values and Characteristics sections of this document, and as such is not complete, exhaustive or legally binding.

Export control — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from competent authorities.

Translations — A non-English (translated) version of a document is for reference only. The English version shall prevail in case of any discrepancy between the translated and English versions.

12.4 Trademarks

Notice: All referenced brands, product names, service names and trademarks are the property of their respective owners.

Contents

Date of release: 3 July 2018
Document identifier: BC807W_SER

OCEAN CHIPS

Океан Электроники

Поставка электронных компонентов

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения **«JONHON»**, а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов **«FORSTAR»**.

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).

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