



BC807 series

45 V, 500 mA PNP general-purpose transistors

Rev. 8 — 1 July 2022

Product data sheet

1. General description

PNP general-purpose transistor in a small SOT23 (TO-236AB) Surface-Mounted Device (SMD) plastic package.

Table 1. Product overview

Type number	Package			NPN complement
	Nexperia	JEDEC	JEITA	
BC807	SOT23	TO-236AB	-	BC817
BC807-16				BC817-16
BC807-25				BC817-25
BC807-40				BC817-40

2. Features and benefits

- High current
- Three current gain selections

3. Applications

- General-purpose switching and amplification

4. Quick reference data

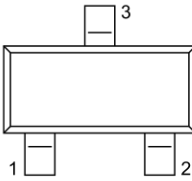
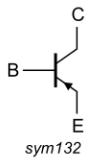
Table 2. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{CE0}	collector-emitter voltage	open base; $T_{amb} = 25\text{ °C}$		-	-	-45	V
I_C	collector current	$T_{amb} = 25\text{ °C}$		-	-	-500	mA
I_{CM}	peak collector current	single pulse; $t_p \leq 1\text{ ms}$; $T_{amb} = 25\text{ °C}$		-	-	-1	A
h_{FE}	DC current gain						
	BC807	$V_{CE} = -1\text{ V}$; $I_C = -100\text{ mA}$ $T_{amb} = 25\text{ °C}$	[1]	100	-	600	
	BC807-16		[1]	100	-	250	
	BC807-25		[1]	160	-	400	
	BC807-40		[1]	250	-	600	

[1] pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$

5. Pinning information

Table 3. Pinning

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

6. Ordering information

Table 4. Ordering information

Type number	Package		Version
	Name	Description	
BC807	TO-236AB	Plastic surface-mounted package; 3 leads	SOT23
BC807-16			
BC807-25			
BC807-40			

7. Marking

Table 5. Marking

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

[1] % = placeholder for manufacturing site code

8. Limiting values

Table 6. Limiting values

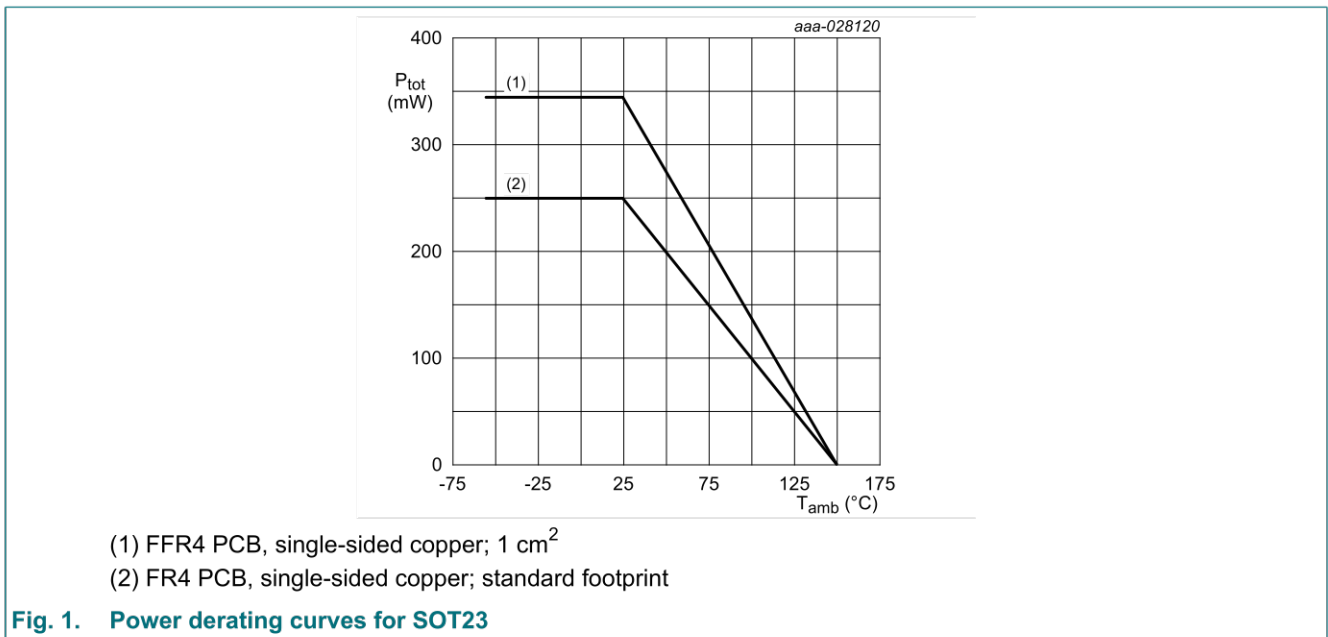
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
V_{CBO}	collector-base voltage	open emitter; $T_{amb} = 25\text{ °C}$	-	-50	V
V_{CEO}	collector-emitter voltage	open base; $T_{amb} = 25\text{ °C}$	-	-45	V
V_{EBO}	emitter-base voltage	open collector; $T_{amb} = 25\text{ °C}$	-	-5	V
I_C	collector current	$T_{amb} = 25\text{ °C}$	-	-500	mA
I_{CM}	peak collector current	single pulse; $t_p \leq 1\text{ ms}$; $T_{amb} = 25\text{ °C}$	-	-1	A
I_{BM}	peak base current	single pulse; $t_p \leq 1\text{ ms}$; $T_{amb} = 25\text{ °C}$	-	-200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[1]	250	mW
			[2]	-	-
			[3] [2]	345	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 PCB, single-sided copper, tin-plated and standard footprint.

[2] Valid for all available selection groups.

[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated; mounting pad for collector 1 cm².

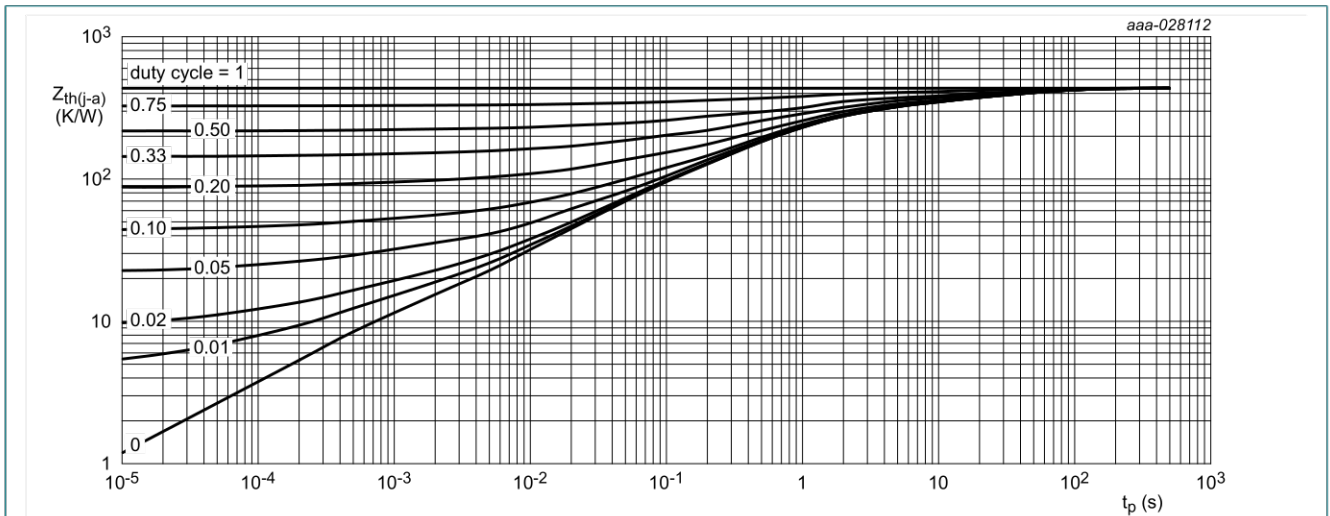


9. Thermal characteristics

Table 7. Thermal characteristics

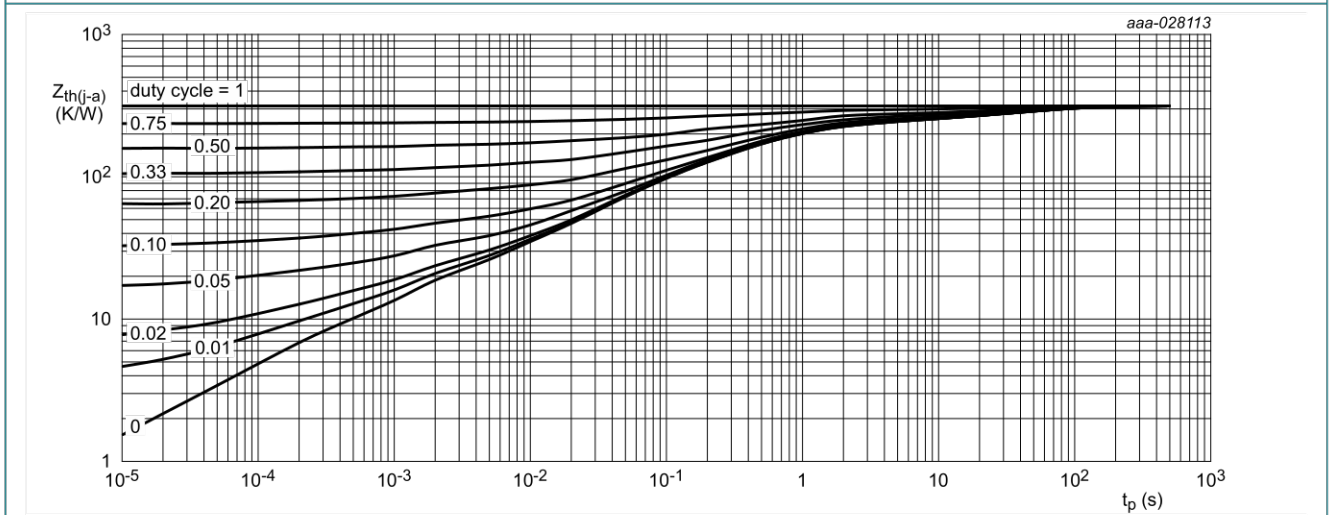
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	500	K/W
			[2]	-	-	362	K/W
			[3]	-	-	362	K/W

- [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 PCB, single-sided copper, tin-plated; mounting pad for collector 1 cm².



FR4 PCB, single-sided, tin-plated and standard footprint

Fig. 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 cm².

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

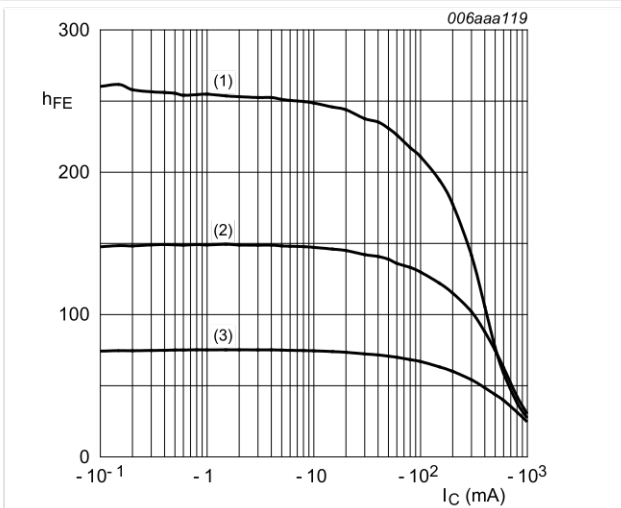
10. Characteristics

Table 8. Characteristics

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

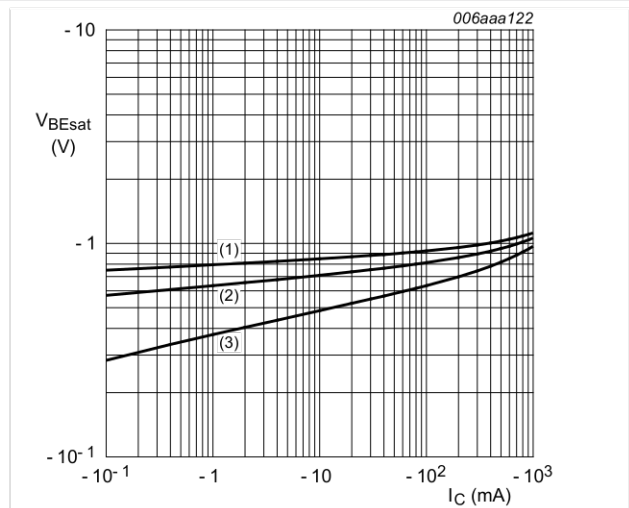
[1] pulsed; $t_p \leq 300 \mu\text{s}$; $\delta \leq 0.02$

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



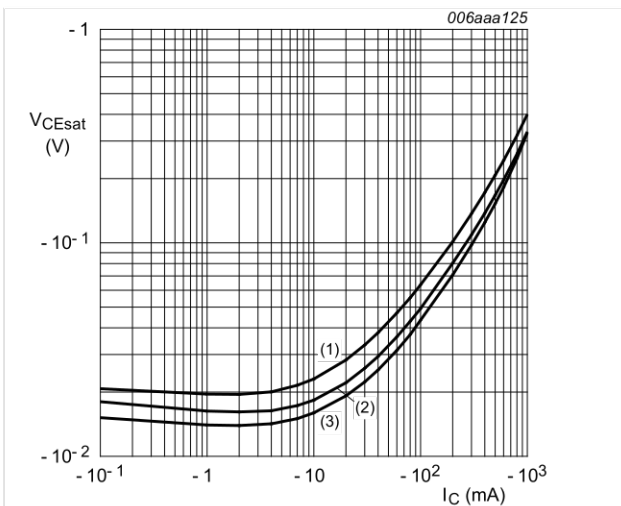
$V_{CE} = -1\text{ V}$
 (1) $T_{amb} = 150\text{ °C}$
 (2) $T_{amb} = 25\text{ °C}$
 (3) $T_{amb} = -55\text{ °C}$

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



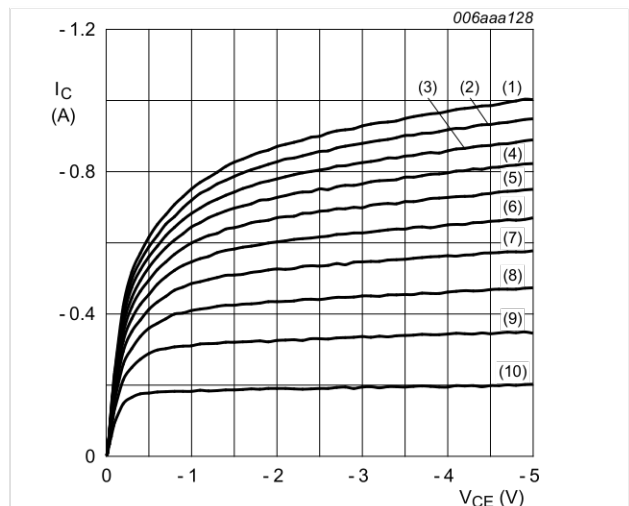
$I_C/I_B = 10$
 (1) $T_{amb} = -55\text{ °C}$
 (2) $T_{amb} = 25\text{ °C}$
 (3) $T_{amb} = 150\text{ °C}$

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



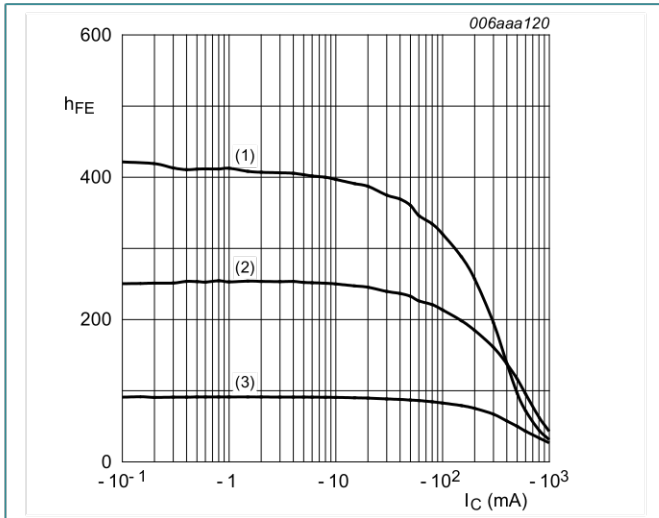
$I_C/I_B = 10$
 (1) $T_{amb} = 150\text{ °C}$
 (2) $T_{amb} = 25\text{ °C}$
 (3) $T_{amb} = -55\text{ °C}$

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



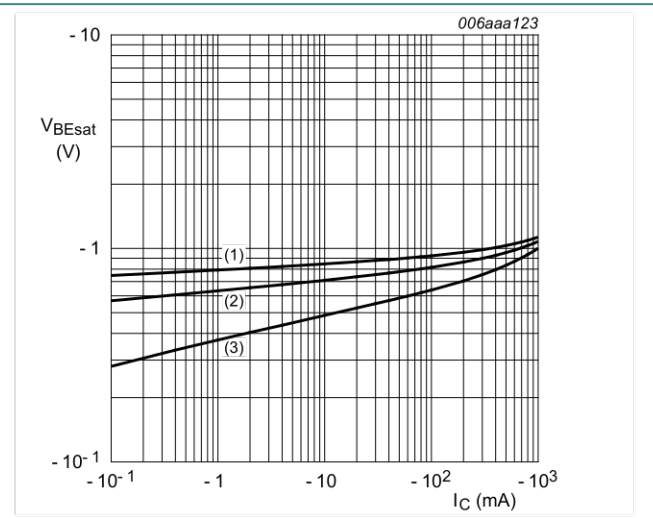
$T_{amb} = 25\text{ °C}$
 (1) $I_B = -16.0\text{ mA}$
 (2) $I_B = -14.4\text{ mA}$
 (3) $I_B = -12.8\text{ mA}$
 (4) $I_B = -11.2\text{ mA}$
 (5) $I_B = -9.6\text{ mA}$
 (6) $I_B = -8.0\text{ mA}$
 (7) $I_B = -6.4\text{ mA}$
 (8) $I_B = -4.8\text{ mA}$
 (9) $I_B = -3.2\text{ mA}$
 (10) $I_B = -1.6\text{ mA}$

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



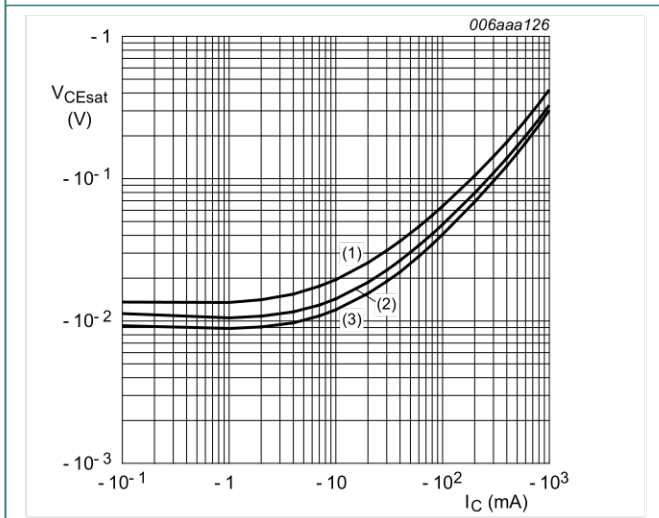
$V_{CE} = -1\text{ V}$
 (1) $T_{amb} = 150\text{ °C}$
 (2) $T_{amb} = 25\text{ °C}$
 (3) $T_{amb} = -55\text{ °C}$

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



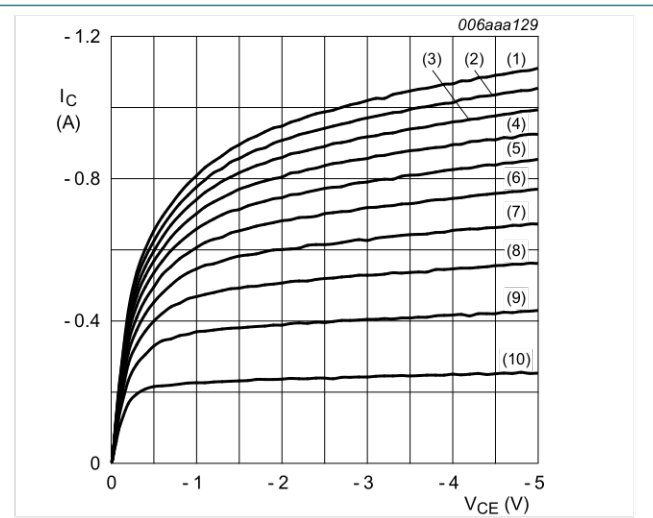
$I_C/I_B = 10$
 (1) $T_{amb} = -55\text{ °C}$
 (2) $T_{amb} = 25\text{ °C}$
 (3) $T_{amb} = 150\text{ °C}$

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



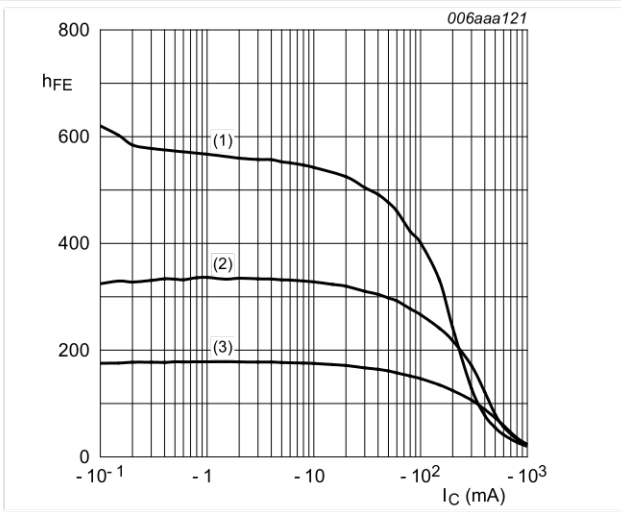
$I_C/I_B = 10$
 (1) $T_{amb} = 150\text{ °C}$
 (2) $T_{amb} = 25\text{ °C}$
 (3) $T_{amb} = -55\text{ °C}$

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



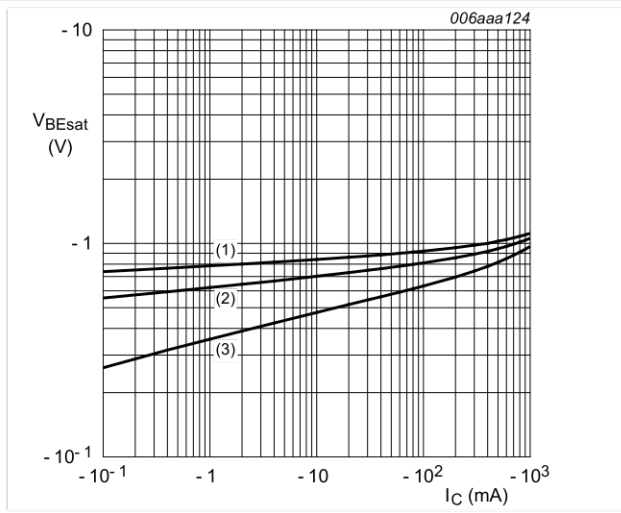
$T_{amb} = 25\text{ °C}$
 (1) $I_B = -13.0\text{ mA}$
 (2) $I_B = -11.7\text{ mA}$
 (3) $I_B = -10.4\text{ mA}$
 (4) $I_B = -9.1\text{ mA}$
 (5) $I_B = -7.8\text{ mA}$
 (6) $I_B = -6.5\text{ mA}$
 (7) $I_B = -5.2\text{ mA}$
 (8) $I_B = -3.9\text{ mA}$
 (9) $I_B = -2.6\text{ mA}$
 (10) $I_B = -1.3\text{ mA}$

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



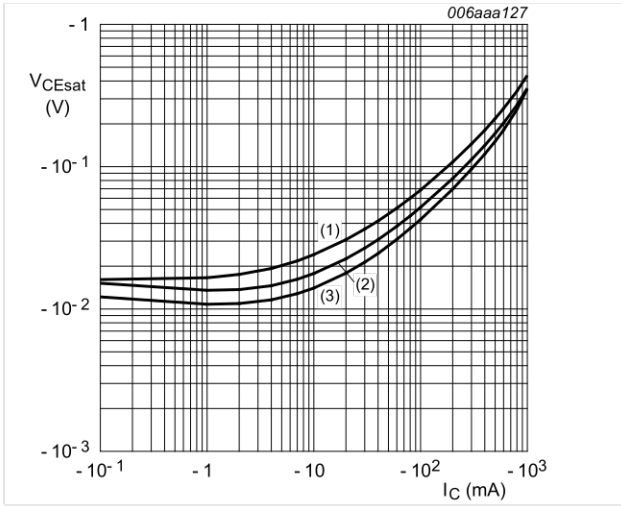
$V_{CE} = -1\text{ V}$
 (1) $T_{amb} = 150\text{ °C}$
 (2) $T_{amb} = 25\text{ °C}$
 (3) $T_{amb} = -55\text{ °C}$

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



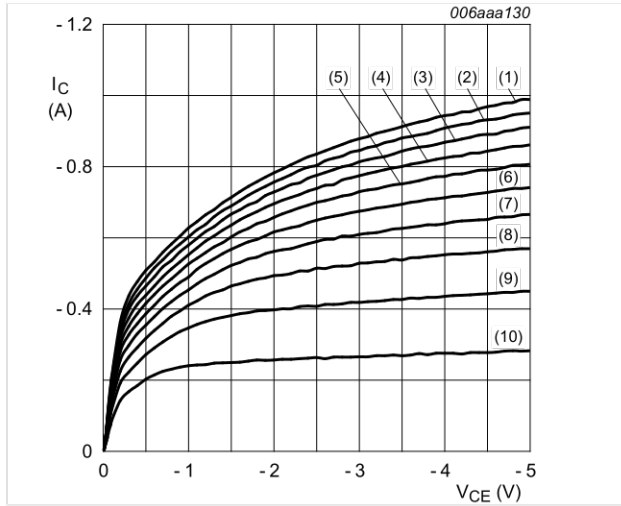
$I_C/I_B = 10$
 (1) $T_{amb} = -55\text{ °C}$
 (2) $T_{amb} = 25\text{ °C}$
 (3) $T_{amb} = 150\text{ °C}$

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



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

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



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

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

11. Package outline

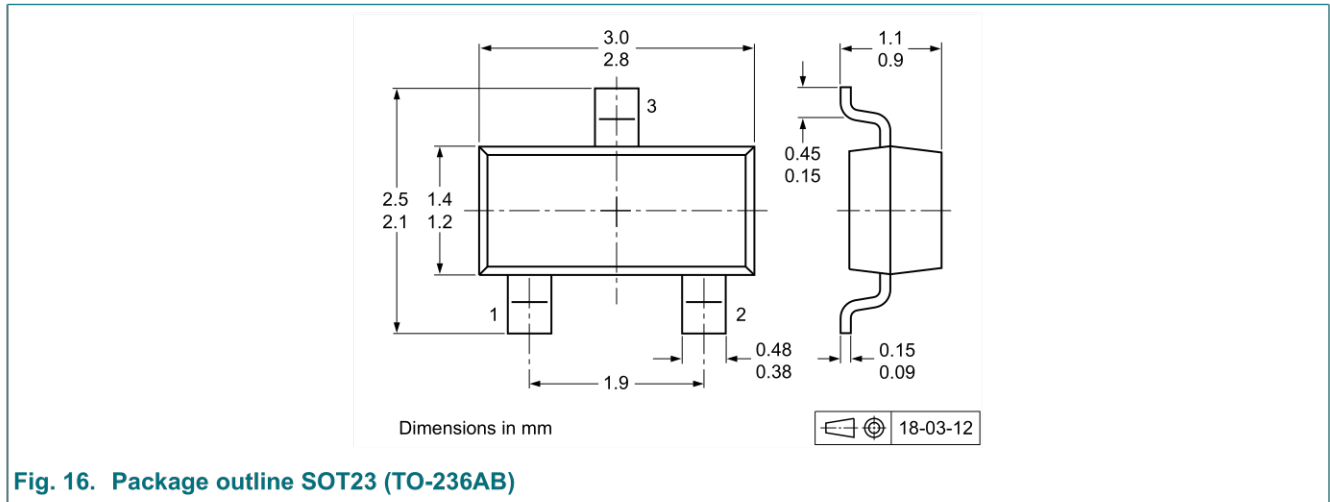
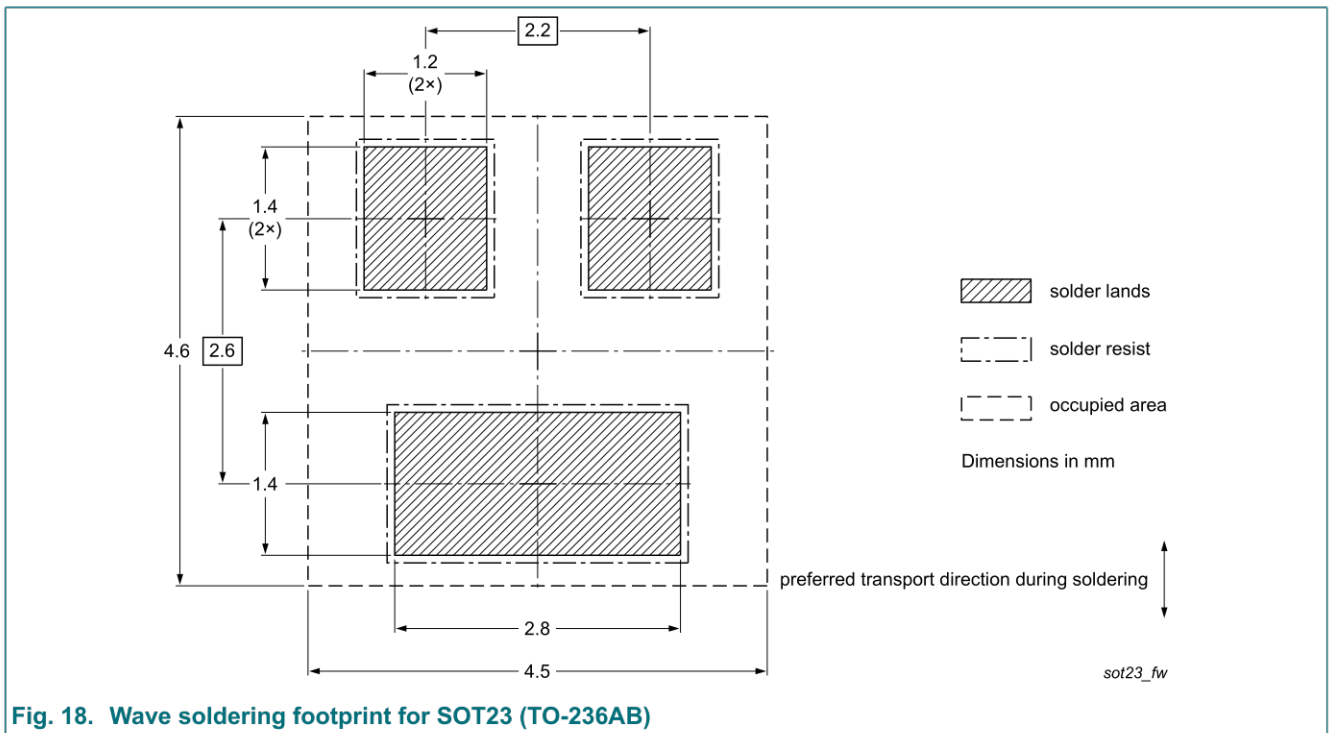
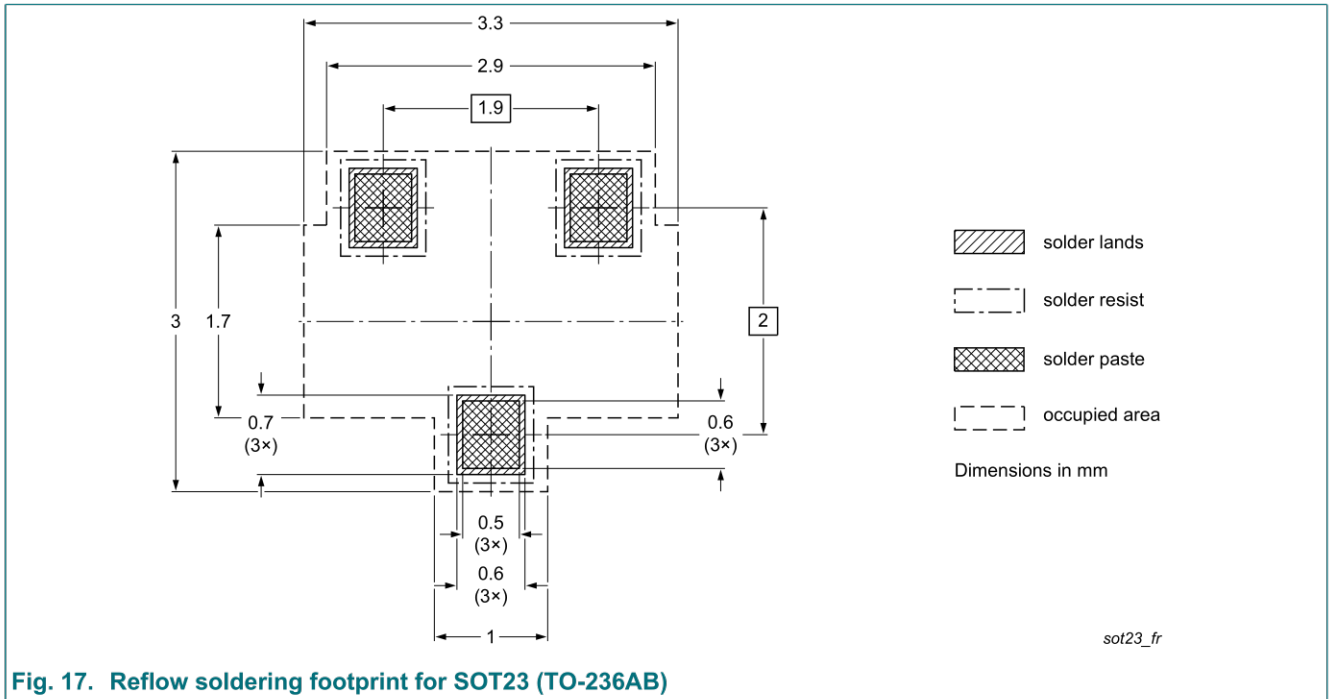


Fig. 16. Package outline SOT23 (TO-236AB)

12. Soldering



13. Revision history

Table 9. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BC807_SER v.8	20220701	Product data sheet	-	BC807_SER v.7
Modifications:	<ul style="list-style-type: none"> Product(s) changed to non-automotive qualification. Please refer to nexperia.com for automotive (-Q) product alternative(s). 			
BC807_SER v.7	20180615	Product data sheet	-	BC807_BC807W_BC327 v.6
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

14. 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.

- [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".
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