

# BC807; BC807W; BC327

45 V, 500 mA PNP general-purpose transistors

Rev. 06 — 17 November 2009

Product data sheet

## 1. Product profile

### 1.1 General description

PNP general-purpose transistors.

Table 1. Product overview

Type number	Package		NPN complement
	NXP	JEITA	
BC807	SOT23	-	BC817
BC807W	SOT323	SC-70	BC817W
BC327 <sup>[1]</sup>	SOT54 (TO-92)	SC-43A	BC337

[1] Also available in SOT54A and SOT54 variant packages (see [Section 2](#)).

### 1.2 Features

- High current
- Low voltage

### 1.3 Applications

- General-purpose switching and amplification

### 1.4 Quick reference data

Table 2. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{CEO}$	collector-emitter voltage	open base; $I_C = 10 \text{ mA}$	-	-	-45	V
$I_C$	collector current (DC)		-	-	-500	mA
$I_{CM}$	peak collector current		-	-	-1	A
$h_{FE}$	DC current gain	$I_C = -100 \text{ mA}$ ; <sup>[1]</sup> $V_{CE} = -1 \text{ V}$				
	BC807; BC807W; BC327		100	-	600	
	BC807-16; BC807-16W; BC327-16		100	-	250	
	BC807-25; BC807-25W; BC327-25		160	-	400	
	BC807-40; BC807-40W; BC327-40		250	-	600	

[1] Pulse test:  $t_p \leq 300 \mu\text{s}$ ;  $\delta \leq 0.02$ .

## 2. Pinning information

**Table 3. Pinning**

Pin	Description	Simplified outline	Symbol
<b>SOT23</b>			
1	base		 sym013
2	emitter		
3	collector		
<b>SOT323</b>			
1	base		 sym013
2	emitter		
3	collector		
<b>SOT54</b>			
1	emitter		 006aaa149
2	base		
3	collector		
<b>SOT54A</b>			
1	emitter		 006aaa149
2	base		
3	collector		
<b>SOT54 variant</b>			
1	emitter		 006aaa149
2	base		
3	collector		

### 3. Ordering information

**Table 4. Ordering information**

Type number <sup>[1]</sup>	Package		
	Name	Description	Version
BC807	-	plastic surface mounted package; 3 leads	SOT23
BC807W	SC-70	plastic surface mounted package; 3 leads	SOT323
BC327 <sup>[2]</sup>	SC-43A	plastic single-ended leaded (through hole) package; 3 leads	SOT54

[1] Valid for all available selection groups.

[2] Also available in SOT54A and SOT54 variant packages (see [Section 2](#) and [Section 9](#)).

### 4. Marking

**Table 5. Marking codes**

Type number	Marking code <sup>[1]</sup>
BC807	5D*
BC807-16	5A*
BC807-25	5B*
BC807-40	5C*
BC807W	5D*
BC807-16W	5A*
BC807-25W	5B*
BC807-40W	5C*
BC327	C327
BC327-16	C32716
BC327-25	C32725
BC327-40	C32740

[1] \* = -: made in Hong Kong  
 \* = p: made in Hong Kong  
 \* = t: made in Malaysia  
 \* = W: made in China

## 5. 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	-	-50	V	
$V_{CEO}$	collector-emitter voltage	open base; $I_C = 10 \text{ mA}$	-	-45	V	
$V_{EBO}$	emitter-base voltage	open collector	-	-5	V	
$I_C$	collector current (DC)		-	-500	mA	
$I_{CM}$	peak collector current		-	-1	A	
$I_{BM}$	peak base current		-	-200	mA	
$P_{tot}$	total power dissipation					
	BC807	$T_{amb} \leq 25 \text{ }^\circ\text{C}$	[1][2]	-	250	mW
	BC807W	$T_{amb} \leq 25 \text{ }^\circ\text{C}$	[1][2]	-	200	mW
	BC327	$T_{amb} \leq 25 \text{ }^\circ\text{C}$	[1][2]	-	625	mW
$T_{stg}$	storage temperature		-65	+150	$^\circ\text{C}$	
$T_j$	junction temperature		-	150	$^\circ\text{C}$	
$T_{amb}$	ambient temperature		-65	+150	$^\circ\text{C}$	

[1] Transistor mounted on an FR4 printed-circuit board, single-sided copper, tin-plated and standard footprint.

[2] Valid for all available selection groups.

## 6. Thermal characteristics

**Table 7. Thermal characteristics**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
$R_{th(j-a)}$	thermal resistance from junction to ambient						
	BC807	$T_{amb} \leq 25 \text{ }^\circ\text{C}$	[1][2]	-	-	500	K/W
	BC807W	$T_{amb} \leq 25 \text{ }^\circ\text{C}$	[1][2]	-	-	625	K/W
	BC327	$T_{amb} \leq 25 \text{ }^\circ\text{C}$	[1][2]	-	-	200	K/W

[1] Transistor mounted on an FR4 printed-circuit board, single-sided copper, tin-plated and standard footprint.

[2] Valid for all available selection groups.

## 7. Characteristics

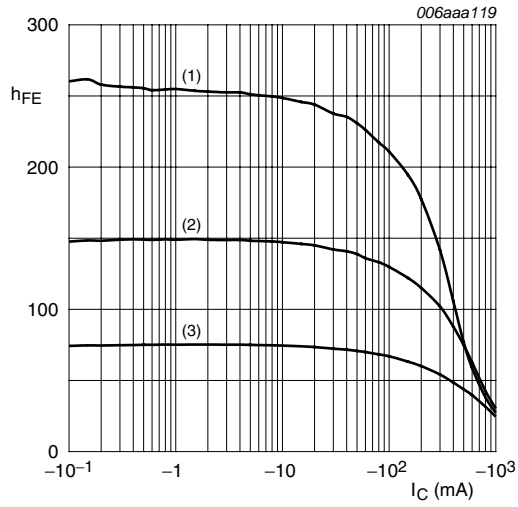
**Table 8. Characteristics**

$T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_{CBO}$	collector-base cut-off current	$I_E = 0\text{ A}; V_{CB} = -20\text{ V}$	-	-	-100	nA
		$I_E = 0\text{ A}; V_{CB} = -20\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$	-	-	-5	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$I_C = 0\text{ A}; V_{EB} = -5\text{ V}$	-	-	-100	nA
$h_{FE}$	DC current gain	$I_C = -100\text{ mA}; V_{CE} = -1\text{ V}$	[1]			
		BC807; BC807W; BC327	100	-	600	
		BC807-16; BC807-16W; BC327-16	100	-	250	
		BC807-25; BC807-25W; BC327-25	160	-	400	
	BC807-40; BC807-40W; BC327-40	250	-	600		
$h_{FE}$	DC current gain	$I_C = -500\text{ mA}; V_{CE} = -1\text{ V}$	[1] 40	-	-	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	[1] -	-	-700	mV
$V_{BE}$	base-emitter voltage	$I_C = -500\text{ mA}; V_{CE} = -1\text{ V}$	[2] -	-	-1.2	V
$C_c$	collector capacitance	$I_E = i_e = 0\text{ A}; V_{CB} = -10\text{ V}; f = 1\text{ MHz}$	-	5	-	pF
$f_T$	transition frequency	$I_C = -10\text{ mA}; V_{CE} = -5\text{ V}; f = 100\text{ MHz}$	80	-	-	MHz

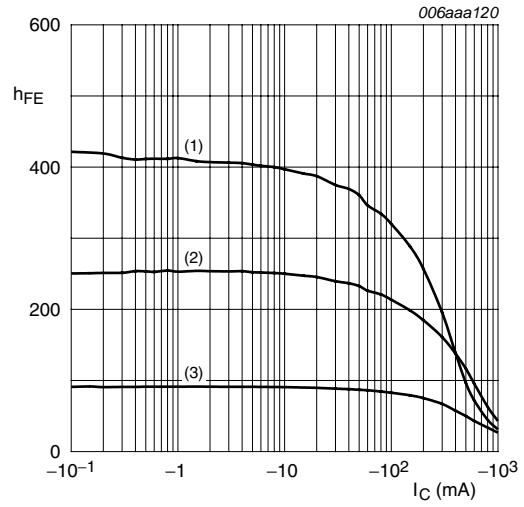
[1] Pulse test:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$ .

[2]  $V_{BE}$  decreases by approximately 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 1. Selection -16: DC current gain as a function of collector current; 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 2. Selection -25: DC current gain as a function of collector current; typical values**



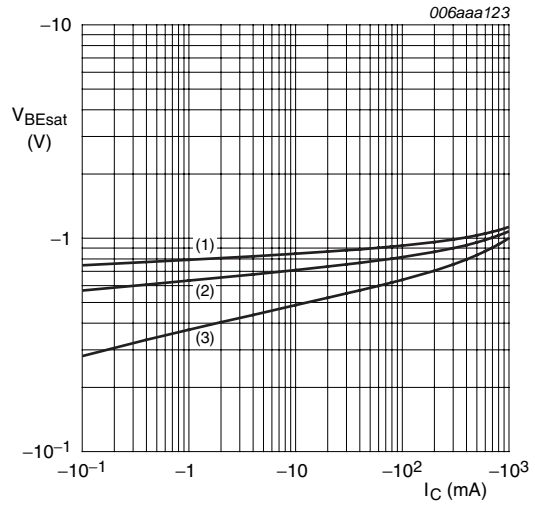
- $V_{CE} = -1\text{ V}$
- (1)  $T_{amb} = 150\text{ °C}$
  - (2)  $T_{amb} = 25\text{ °C}$
  - (3)  $T_{amb} = -55\text{ °C}$

**Fig 3. Selection -40: DC current gain as a function of collector current; typical values**



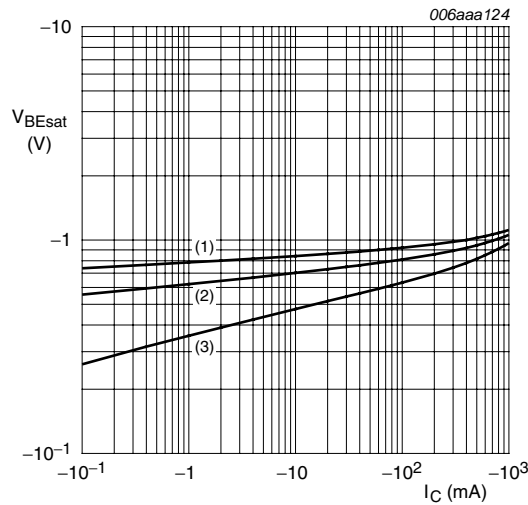
- $I_C/I_B = 10$
- (1)  $T_{amb} = -55\text{ °C}$
  - (2)  $T_{amb} = 25\text{ °C}$
  - (3)  $T_{amb} = 150\text{ °C}$

**Fig 4. Selection -16: Base-emitter saturation voltage as a function of collector current; typical values**



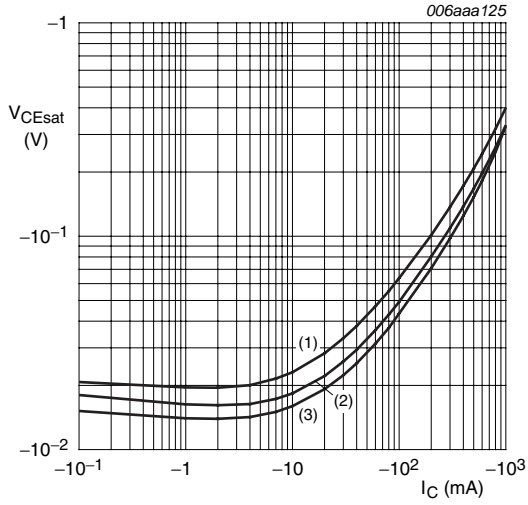
- $I_C/I_B = 10$
- (1)  $T_{amb} = -55\text{ °C}$
  - (2)  $T_{amb} = 25\text{ °C}$
  - (3)  $T_{amb} = 150\text{ °C}$

**Fig 5. Selection -25: Base-emitter saturation voltage as a function of collector current; typical values**



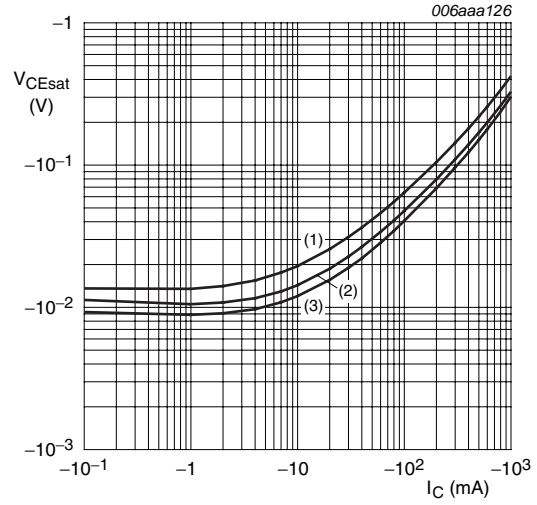
- $I_C/I_B = 10$
- (1)  $T_{amb} = -55\text{ °C}$
  - (2)  $T_{amb} = 25\text{ °C}$
  - (3)  $T_{amb} = 150\text{ °C}$

**Fig 6. Selection -40: Base-emitter saturation voltage as a function of collector current; typical values**



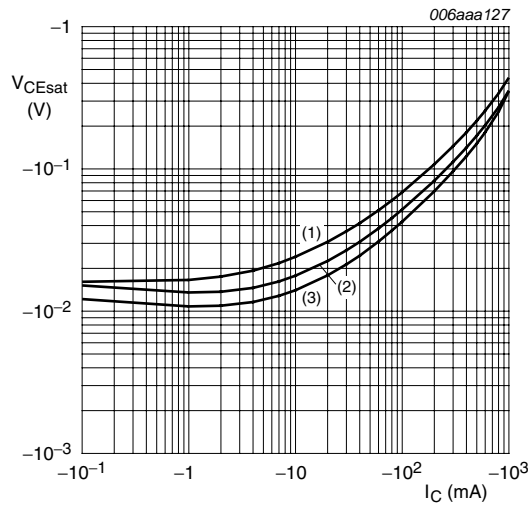
- $I_C/I_B = 10$
- (1)  $T_{amb} = 150\text{ °C}$
  - (2)  $T_{amb} = 25\text{ °C}$
  - (3)  $T_{amb} = -55\text{ °C}$

**Fig 7. Selection -16: Collector-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)  $T_{amb} = -55\text{ °C}$

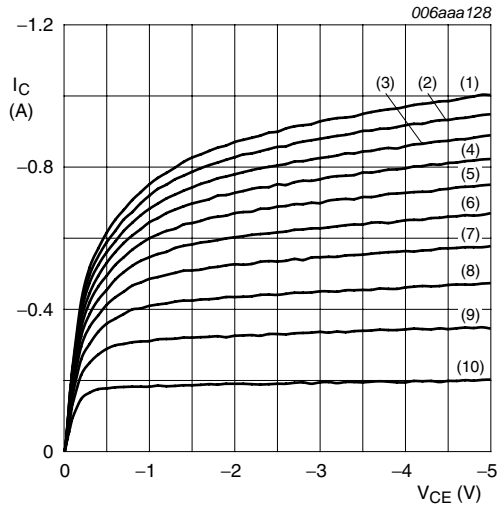
**Fig 8. Selection -25: Collector-emitter saturation voltage as a function of collector current; typical values**



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

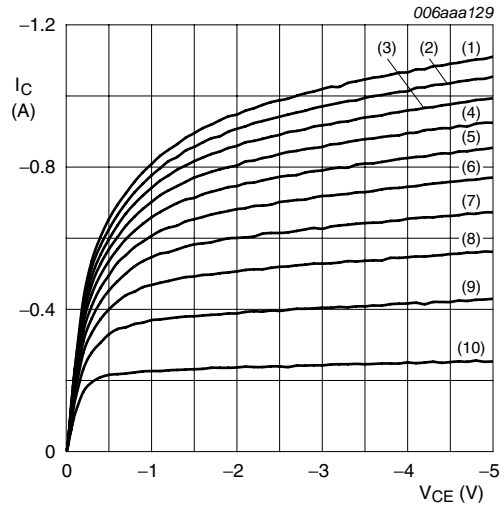
**Fig 9. Selection -40: Collector-emitter saturation voltage as a function of collector current; typical values**





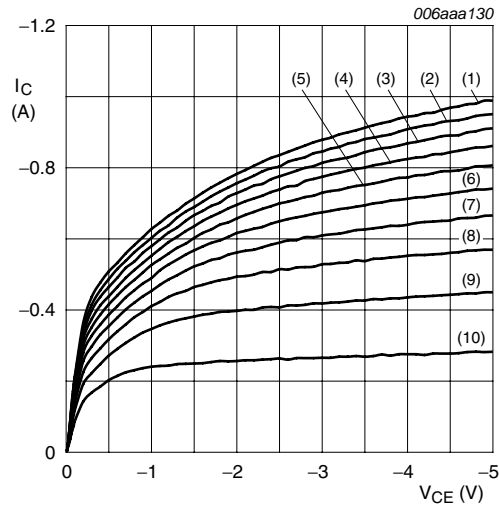
- $T_{amb} = 25\text{ }^{\circ}\text{C}$
- (1)  $I_B = -16.0\text{ mA}$
  - (2)  $I_B = -14.4\text{ mA}$
  - (3)  $I_B = -12.8\text{ mA}$
  - (4)  $I_B = -11.2\text{ mA}$
  - (5)  $I_B = -9.6\text{ mA}$
  - (6)  $I_B = -8.0\text{ mA}$
  - (7)  $I_B = -6.4\text{ mA}$
  - (8)  $I_B = -4.8\text{ mA}$
 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

**Fig 10. Selection -16: Collector current as a function of collector-emitter voltage; typical values**



- $T_{amb} = 25\text{ }^{\circ}\text{C}$
- (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. Selection -25: Collector current as a function of collector-emitter voltage; typical values**



$T_{amb} = 25\text{ }^{\circ}\text{C}$

- (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 12. Selection -40: Collector current as a function of collector-emitter voltage; typical values**

**8. Package outline**

Plastic surface-mounted package; 3 leads

SOT23



Fig 13. Package outline SOT23 (TO-236AB)

Plastic surface-mounted package; 3 leads

SOT323



Fig 14. Package outline SOT323 (SC-70)

Plastic single-ended leaded (through hole) package; 3 leads

SOT54



Fig 15. Package outline SOT54 (SC-43A/TO-92)

Plastic single-ended leaded (through hole) package; 3 leads (wide pitch)

SOT54A



Fig 16. Package outline SOT54A

Plastic single-ended leaded (through hole) package; 3 leads (on-circle)

SOT54 variant



Fig 17. Package outline SOT54 variant

## 9. Packing information

**Table 9. Packing methods**

The indicated -xxx are the last three digits of the 12NC ordering code.<sup>[1]</sup>

Type number	Package	Description	Packing quantity		
			3000	5000	10000
BC807	SOT23	4 mm pitch, 8 mm tape and reel	-215	-	-235
BC807W	SOT323	4 mm pitch, 8 mm tape and reel	-115	-	-135
BC327	SOT54	bulk, straight leads	-	-412	-
BC327	SOT54A	tape and reel, wide pitch	-	-	-116
BC327	SOT54A	tape ammopack, wide pitch	-	-	-126
BC327	SOT 54 variant	bulk, delta pinning (on-circle)	-	-112	-

[1] For further information and the availability of packing methods, see [Section 12](#).



## 10. Revision history

**Table 10. Revision history**

Document ID	Release date	Data sheet status	Change notice	Supersedes
BC807_BC807W_ BC327_6	20091117	Product data sheet	-	BC807_BC807W_ BC327_5
Modifications:		<ul style="list-style-type: none"> <li>This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content.</li> <li><a href="#">Table 3 "Pinning"</a>: updated</li> <li><a href="#">Figure 13 "Package outline SOT23 (TO-236AB)"</a>: updated</li> <li><a href="#">Figure 14 "Package outline SOT323 (SC-70)"</a>: updated</li> </ul>		
BC807_BC807W_ BC327_5	20050221	Product data sheet	CPCN200302007F CPCN200405006F	BC807_4; BC807W_3; BC327_3
BC807_4	20040116	Product specification	-	BC807_3
BC807W_3	19990518	Product specification	-	BC807W_808W_CNV_2
BC327_3	19990415	Product specification	-	BC327_2

## 11. Legal information

### 11.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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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## 12. Contact information

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Please be aware that important notices concerning this document and the product(s) described herein, have been included in section 'Legal information'.



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