BCP53H series

80 V, 1 A PNP medium power transistors

Rev. 2 — 12 August 2026 Product data sheet

1. General description

PNP medium power transistors in a SOT223 (SC-73) Surface-Mounted Device (SMD) plastic package.

Table 1. Product overview

Type number	Package		NPN complement
	Nexperia	JEITA	
BCP53H	SOT223	SC73	BCP56H
BCP53-10H			BCP56-10H
BCP53-16H			BCP56-16H

2. Features and benefits

- High collector current capability I_C and I_{CM}
- Three current gain selections
- High power dissipation capability
- High-temperature applications up to 175 °C

3. Applications

- Linear voltage regulators
- MOSFET drivers
- High-side switches
- Power management
- Amplifiers

4. Quick reference data

Table 2. Quick reference data

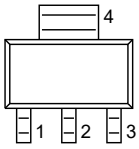
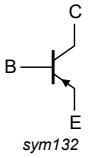
T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{CEO}	collector-emitter voltage	open base		-	-	-80	V
I_C	collector current			-	-	-1	A
I_{CM}	peak collector current	single pulse; $t_p \leq 1$ ms		-	-	-2	A
h_{FE}	DC current gain						
	BCP53H	V_{CE} = -2 V; I_C = 150 mA	[1]	63	-	250	
	BCP53-10H		[1]	63	-	160	
	BCP53-16H		[1]	100	-	250	

[1] pulsed; $t_p \leq 300$ µs; $\delta \leq 0.02$

5. Pinning information

Table 3. Pinning

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	B	base		 sym132
2	C	collector		
3	E	emitter		
4	C	collector		

6. Ordering information

Table 4. Ordering information

Type number	Package		
	Name	Description	Version
BCP53H	SC-73	plastic, surface-mounted package with increased heatsink; 4 leads	SOT223
BCP53-10H			
BCP53-16H			

7. Marking

Table 5. Marking

Type number	Marking code
BCP53H	BCP53H
BCP53-10H	P5310H
BCP53-16H	P5316H

8. Limiting values

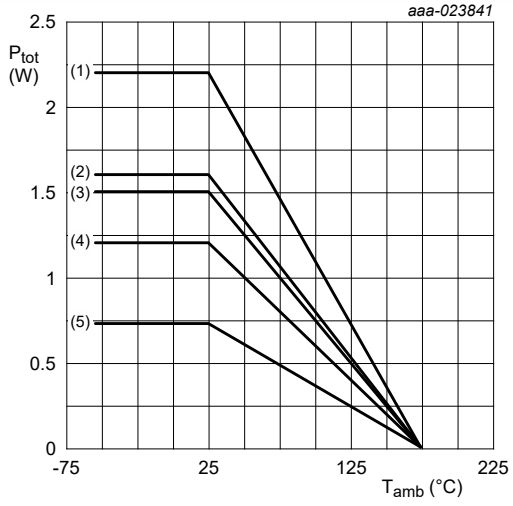
Table 6. Limiting values

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

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

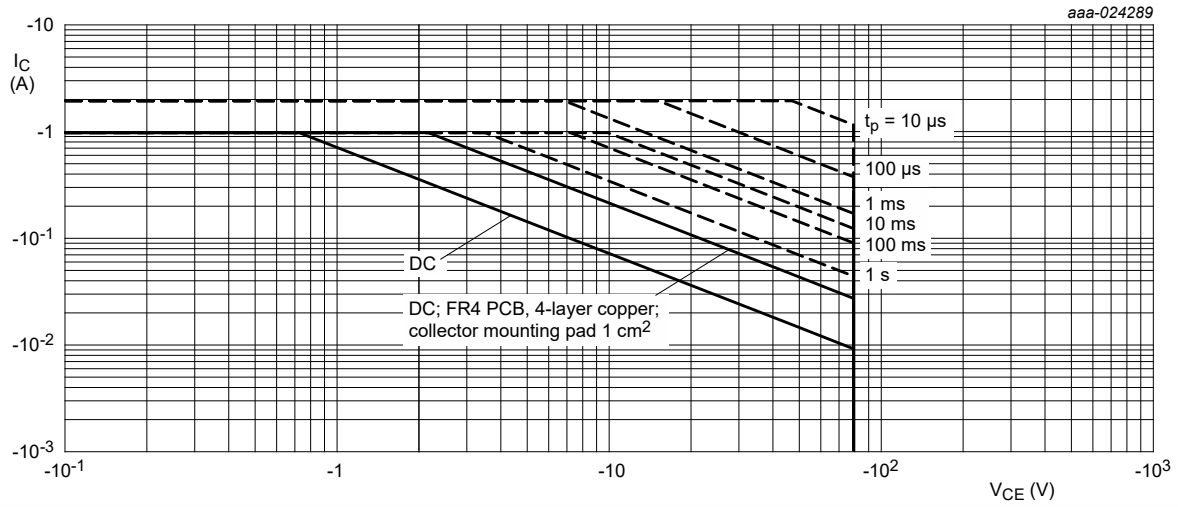
Symbol	Parameter	Conditions		Min	Max	Unit
V_{CBO}	collector-base voltage	open emitter		-	-100	V
V_{CEO}	collector-emitter voltage	open base		-	-80	V
V_{EBO}	emitter-base voltage	open collector		-	-7	V
I_C	collector current			-	-1	A
I_{CM}	peak collector current	single pulse; $t_p \leq 1$ ms		-	-2	A
I_B	base current			-	-0.2	A
I_{BM}	peak base current	single pulse; $t_p \leq 1$ ms		-	-0.3	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1]	-	725	mW
			[2]	-	1.2	W
			[3]	-	1.5	W
			[4]	-	1.6	W
			[5]	-	2.2	W
T_j	junction temperature			-	175	°C
T_{amb}	ambient temperature			-55	175	°C
T_{stg}	storage temperature			-65	175	°C

[1] Device mounted on an FR4 Printed-Circuit-Board (PCB); single-sided copper; tin-plated and standard footprint.
[2] Device mounted on an FR4 Printed-Circuit-Board (PCB); single-sided copper; tin-plated; mounting pad for collector 1 cm^2.
[3] Device mounted on an FR4 Printed-Circuit-Board (PCB); single-sided copper; tin-plated; mounting pad for collector 6 cm^2.
[4] Device mounted on an FR4 PCB, 4-layer copper; tin-plated and standard footprint..
[5] Device mounted on an FR4 PCB, 4-layer copper; tin-plated; mounting pad for collector 1 cm^2.



(1) FR4 PCB, 4-layer copper, 1 cm^2
(2) FR4 PCB, 4-layer copper, standard footprint
(3) FR4 PCB, single-sided copper, 6 cm^2
(4) R4 PCB, single-sided copper, 1 cm^2
(5) FR4 PCB, single-sided copper, standard footprint

Fig. 1. Power derating curves SOT223



Unless otherwise specified:

T_{amb} = 25 °C

single pulse

FR4 PCB, single-sided copper; standard footprint

Fig. 2. Safe operating area; junction to ambient; continuous and peak collector currents as a function of collector-emitter voltage

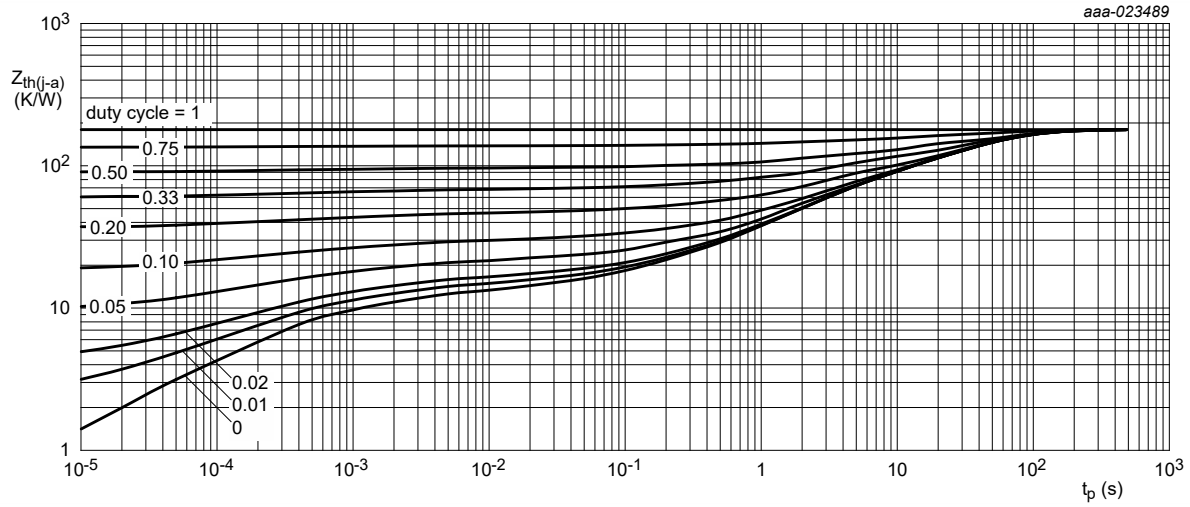
9. Thermal characteristics

Table 7. Thermal characteristics

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

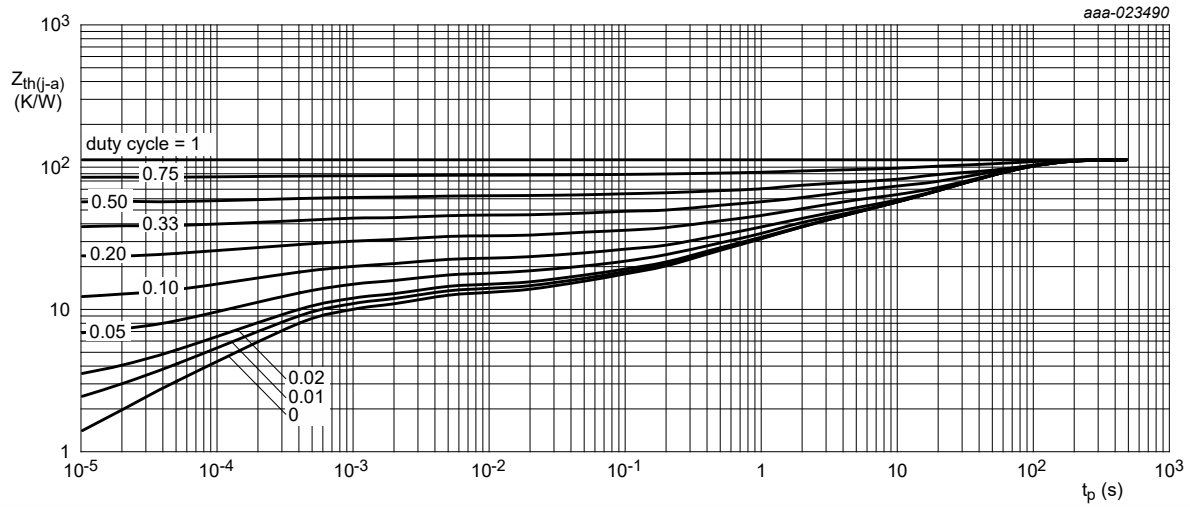
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	207	K/W
			[2]	-	-	125	K/W
			[3]	-	-	100	K/W
			[4]	-	-	94	K/W
			[5]	-	-	69	K/W
$R_{(j-sp)}$	thermal resistance from junction to solder point			-	-	18	K/W

[1] Device mounted on an FR4 PCB; single-sided copper; tin-plated and standard footprint.
[2] Device mounted on an FR4 PCB; single-sided copper; tin-plated; mounting pad for collector 1 cm^2.
[3] Device mounted on an FR4 PCB; single-sided copper; tin-plated; mounting pad for collector 6 cm^2.
[4] Device mounted on an FR4 PCB, 4-layer copper; tin-plated and standard footprint.
[5] Device mounted on an FR4 PCB, 4-layer copper; tin-plated; mounting pad for collector 1 cm^2.



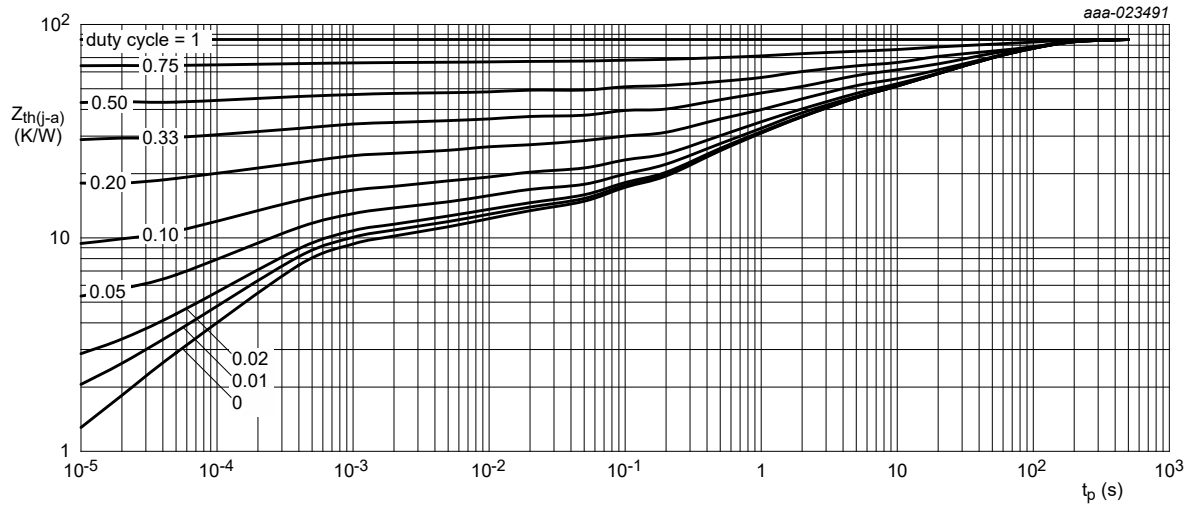
FR4 PCB; single-sided copper; tin-plated and standard footprint

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



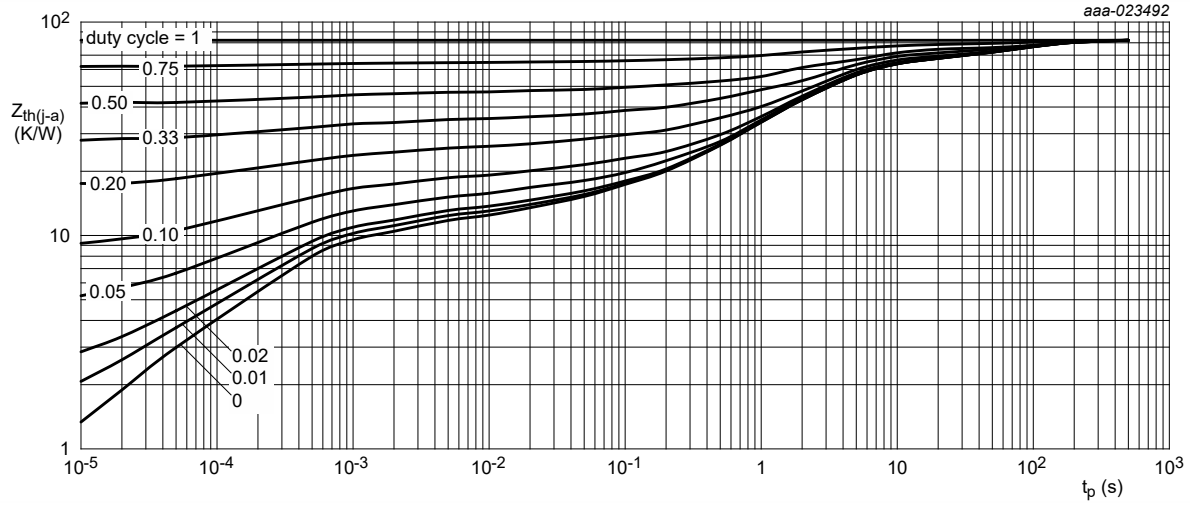
FR4 PCB; single-sided copper; tin-plated; mounting pad for collector 1 cm^2

Fig. 4. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values



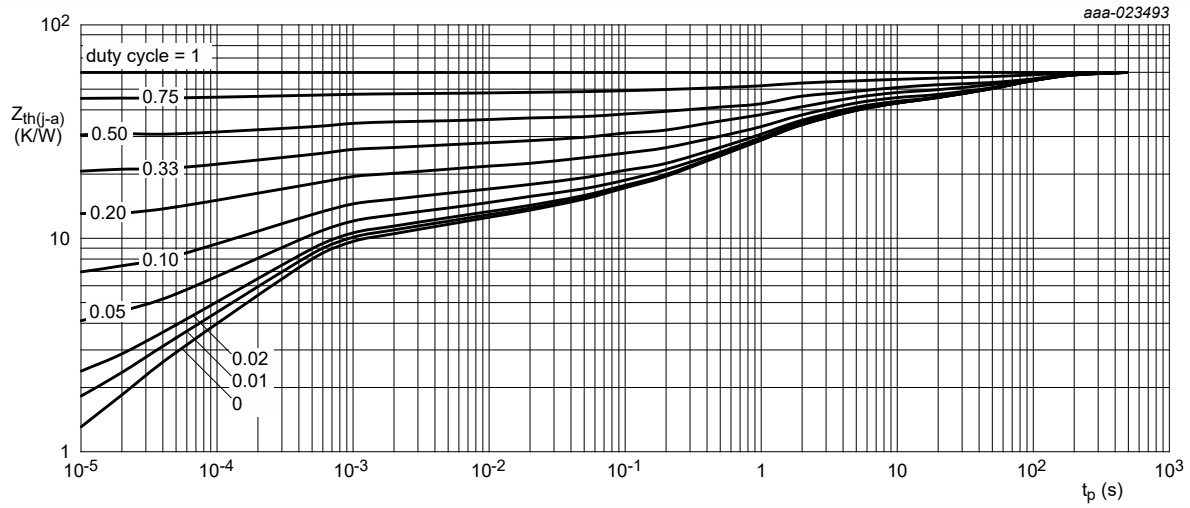
FR4 PCB; single-sided copper; tin-plated; mounting pad for collector 6 cm^2

Fig. 5. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values



FR4 PCB, 4-layer copper, tin-plated and standard footprint.

Fig. 6. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values



FR4 PCB, 4-layer copper, tin-plated; mounting pad for collector 1 cm^2

Fig. 7. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

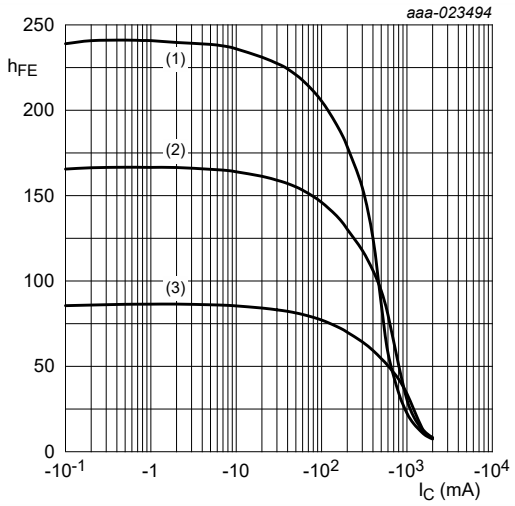
10. Characteristics

Table 8. Characteristics

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

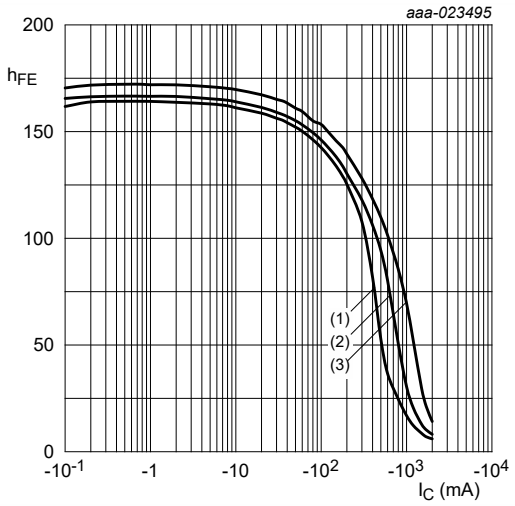
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_{CBO}	collector-base cut-off current	V_{CB} = -30 V; I_E = 0 A		-	-	-100	nA
		V_{CB} = -30 V; I_E = 0 A; T_j = 150 °C		-	-	-10	µA
I_{EBO}	emitter-base cut-off current	V_{EB} = -5 V; I_C = 0 A		-	-	-100	nA
h_{FE}	DC current gain						
	BCP53H	V_{CE} = -2 V; I_C = -5 mA	[1]	63	-	-	
		V_{CE} = -2 V; I_C = -150 mA		63	-	250	
		V_{CE} = -2 V; I_C = -500 mA		40	-	-	
	BCP53-10H	V_{CE} = -2 V; I_C = -5 mA	[1]	63	-	-	
		V_{CE} = -2 V; I_C =- 150 mA		63	-	160	
		V_{CE} = -2 V; I_C = -500 mA		40	-	-	
	BCP53-16H	V_{CE} = -2 V; I_C = -5 mA	[1]	63	-	-	
		V_{CE} = -2 V; I_C = -150 mA		100	-	250	
		V_{CE} = -2 V; I_C = -500 mA		40	-	-	
V_{CEsat}	collector-emitter saturation voltage	I_C = -500 mA; I_B = -50 mA	[1]	-	-	-500	mV
V_{BE}	base-emitter voltage	V_{CE} = -2 V; I_C = -500 mA	[1]	-	-	-1	V
f_T	transition frequency	V_{CE} = -5 V; I_C = -50 mA; f = 100 MHz		100	140	-	MHz
C_c	collector capacitance	V_{CB} = -10 V; I_E = i_e = 0 A; f = 1 MHz		-	7	-	pF

[1] pulsed; $t_p \leq 300$ µs; $\delta \leq 0.02$



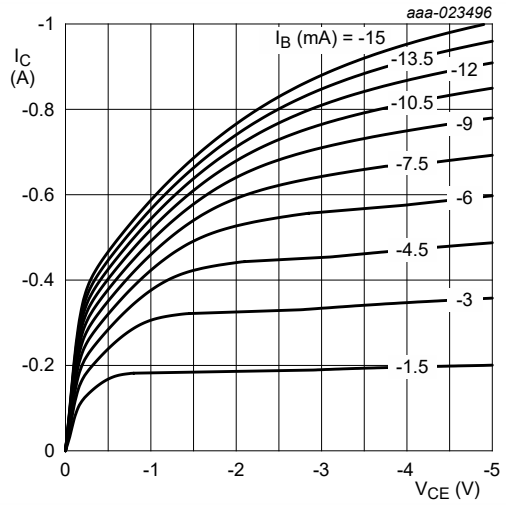
V_{CE} = -2 V
(1) T_{amb} = 100 °C
(2) T_{amb} = 25 °C
(3) T_{amb} = -55 °C

Fig. 8. DC current gain as a function of collector current; typical values



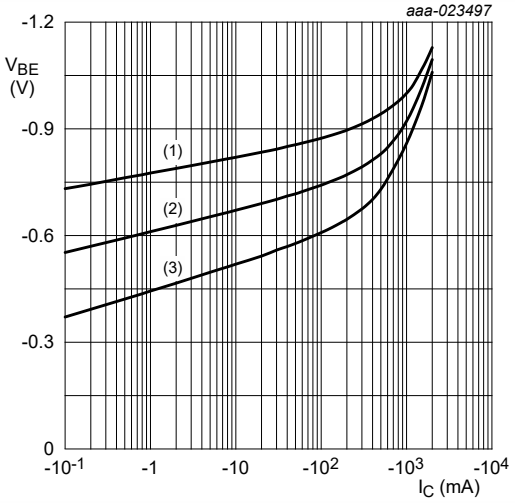
T_{amb} = 25 °C
(1) V_{CE} = -1 V
(2) V_{CE} = -2 V
(3) V_{CE} = -5 V

Fig. 9. DC current gain as a function of collector current; typical values



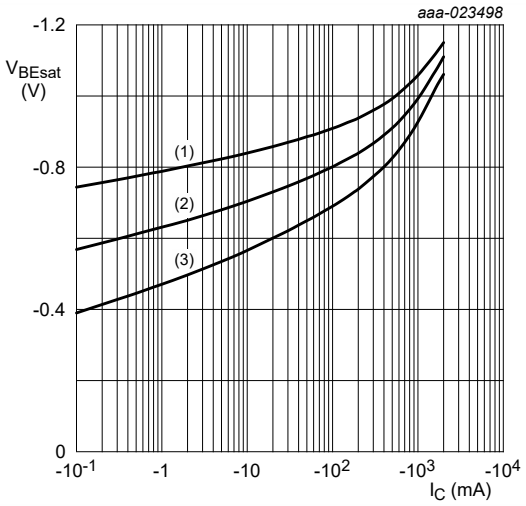
T_{amb} = 25 °C

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



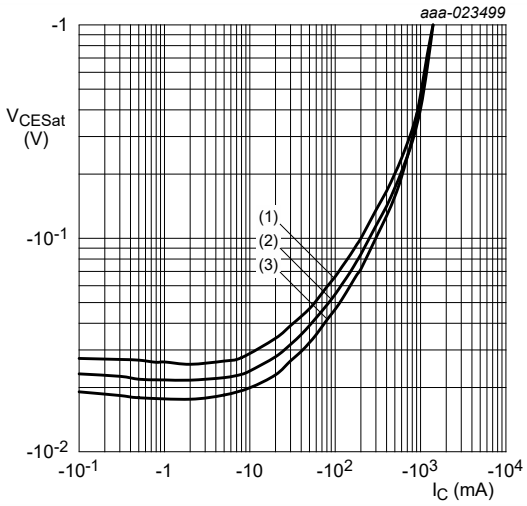
V_{CE} = -2 V
(1) T_{amb} = -55 °C
(2) T_{amb} = 25 °C
(3) T_{amb} = 100 °C

Fig. 11. Base-emitter voltage as a function of collector current; typical values



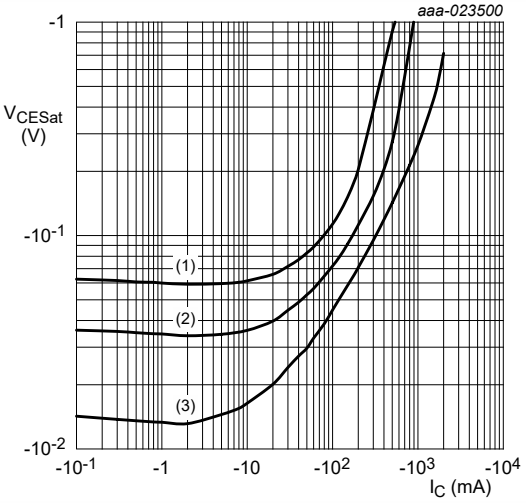
I_C/I_B = 10
(1) T_{amb} = -55 °C
(2) T_{amb} = 25 °C
(3) T_{amb} = 100 °C

Fig. 12. Base-emitter saturation voltage as a function of collector current; typical values



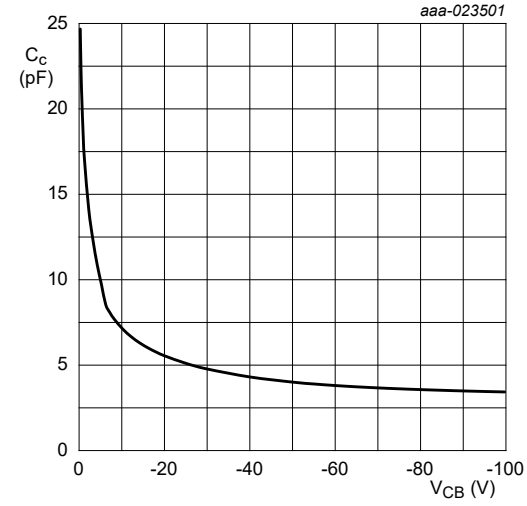
I_C/I_B = 10
(1) T_{amb} = 100 °C
(2) T_{amb} = 25 °C
(3) T_{amb} = -55 °C

Fig. 13. Collector-emitter saturation voltage as a function of collector current; typical values



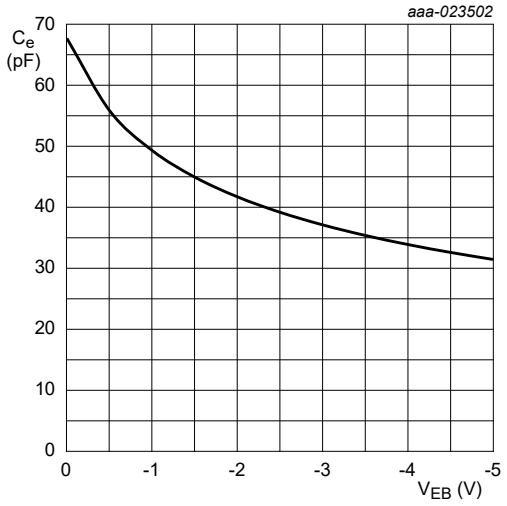
T_{amb} = 25 °C
(1) I_C/I_B = 50
(2) I_C/I_B = 20
(3) I_C/I_B = 5

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



f = 1 MHz
T_{amb} = 25 °C

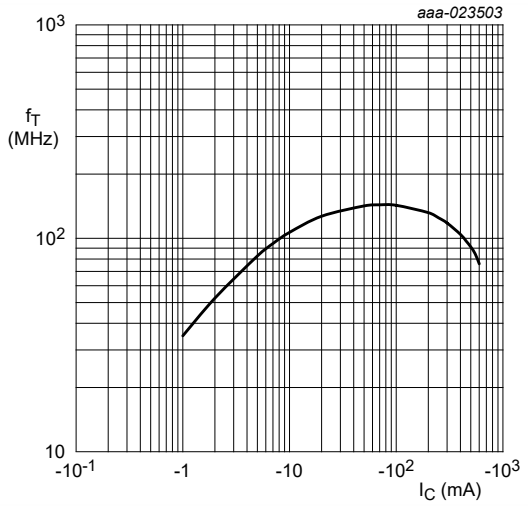
Fig. 15. Collector capacitance as a function of collector-base voltage; typical values



f = 1 MHz

T_{amb} = 25 °C

Fig. 16. Emitter capacitance as a function of emitter-base voltage; typical values



V_{CE} = -5 V

f = 100 MHz

T_{amb} = 25 °C

Fig. 17. Transition frequency as a function of collector current; typical values

11. Package outline

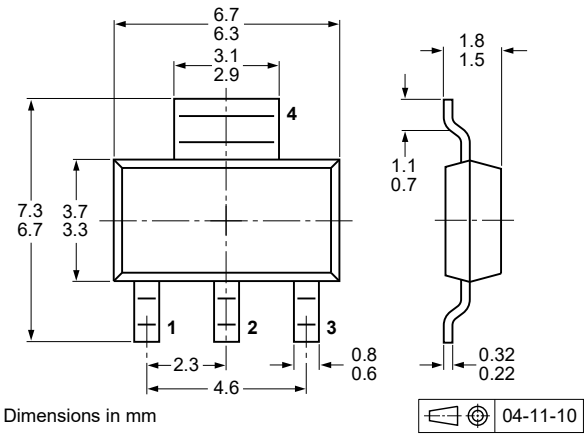


Fig. 18. Package outline SOT223 (SC-73)

12. Soldering

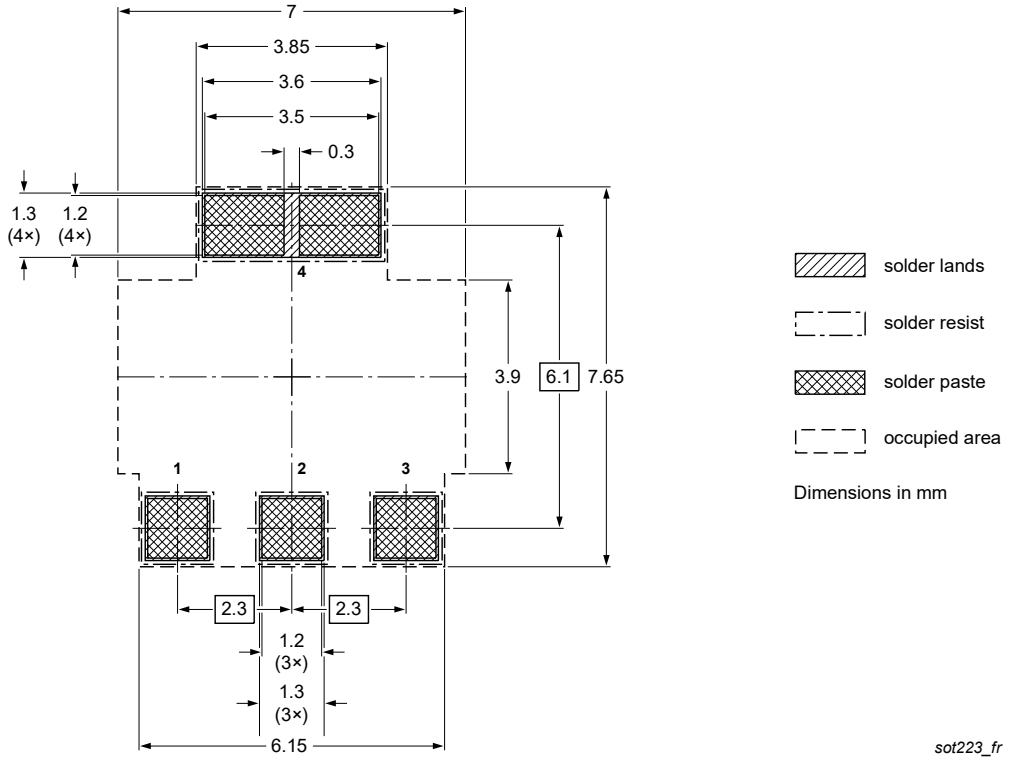


Fig. 19. Reflow soldering footprint for SOT223 (SC-73)

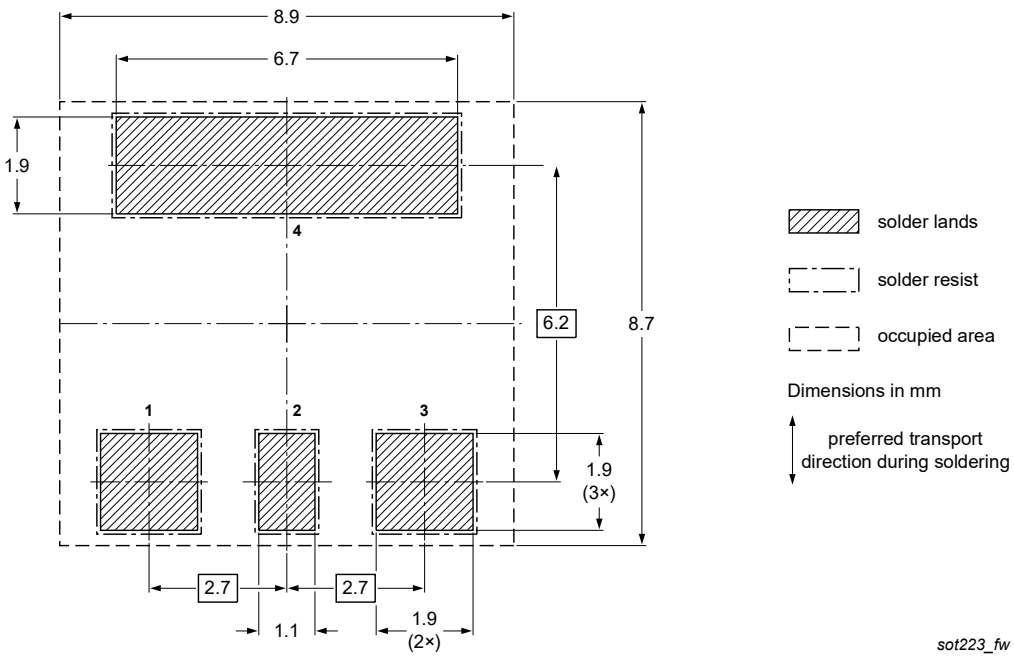


Fig. 20. Wave soldering footprint for SOT223 (SC-73)

13. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BCP53H_SER v.2	20260812	Product data sheet	-	BCP53H_SER v.1
Modifications:	• Product(s) changed to non-automotive qualification. Please refer to nexperia.com for automotive (-Q) product alternative(s).			
BCP53H_SER v.1	20170721	Product data sheet	-	-

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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Date of release: 12 August 2026