

BC857QAS

45 V, 100 mA PNP/PNP general-purpose transistor

16 April 2025

Product data sheet

1. General description

PNP/PNP general-purpose transistor in a leadless ultra small DFN1010B-6 (SOT1216) Surface-Mounted Device (SMD) plastic package.

NPN/NPN complement: BC847QAS.

NPN/PNP complement: BC847QAPN.

2. Features and benefits

- Reduces component count
- Reduces pick and place costs
- Low package height of 0.37 mm
- AEC-Q101 qualified

3. Applications

- General-purpose switching and amplification
- Mobile applications

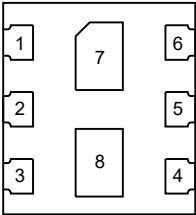
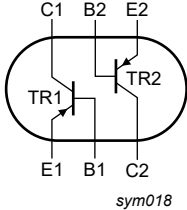
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per transistor						
V_{CEO}	collector-emitter voltage	open base	-	-	-45	V
I_C	collector current		-	-	-100	mA
h_{FE}	DC current gain	$V_{CE} = -5\text{ V}; I_C = -2\text{ mA}; T_{amb} = 25\text{ °C}$	200	-	450	

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	E1	emitter TR1	 <p>Transparent top view DFN1010B-6 (SOT1216)</p>	 <p>sym018</p>
2	B1	base TR1		
3	C2	collector TR2		
4	E2	emitter TR2		
5	B2	base TR2		
6	C1	collector TR1		
7	C1	collector TR1		
8	C2	collector TR2		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BC857QAS	DFN1010B-6	plastic, leadless thermal enhanced ultra thin small outline package; 6 terminals; 0.35 mm pitch; 1.1 mm x 1 mm x 0.37 mm body	SOT1216

7. Marking

Table 4. Marking codes

Type number	Marking code
BC857QAS	10 01 00

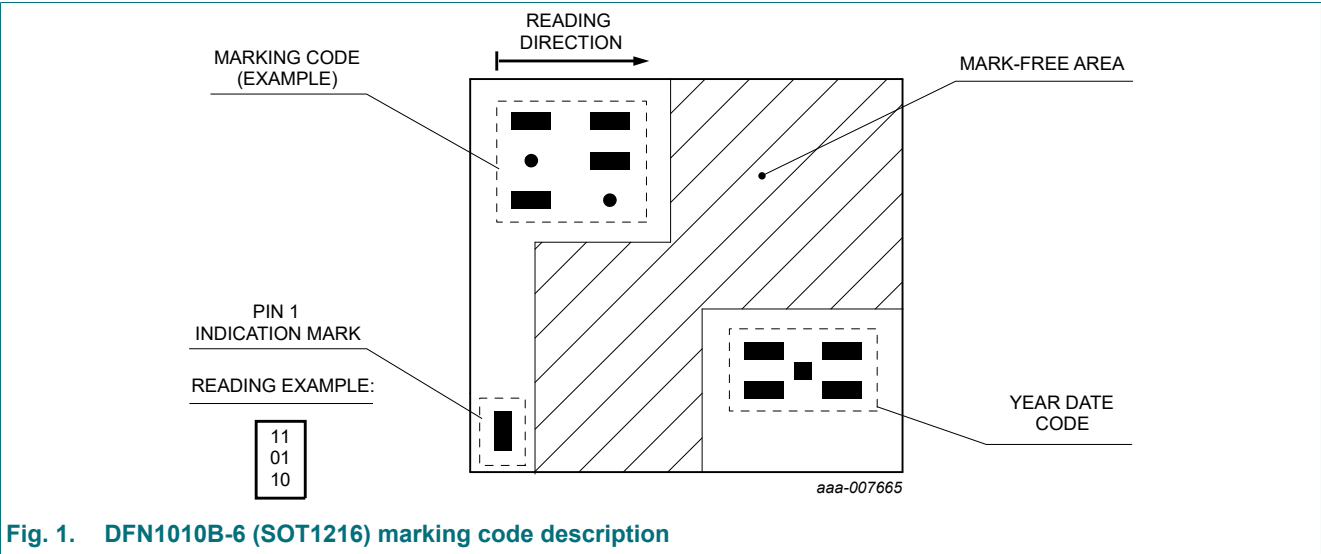


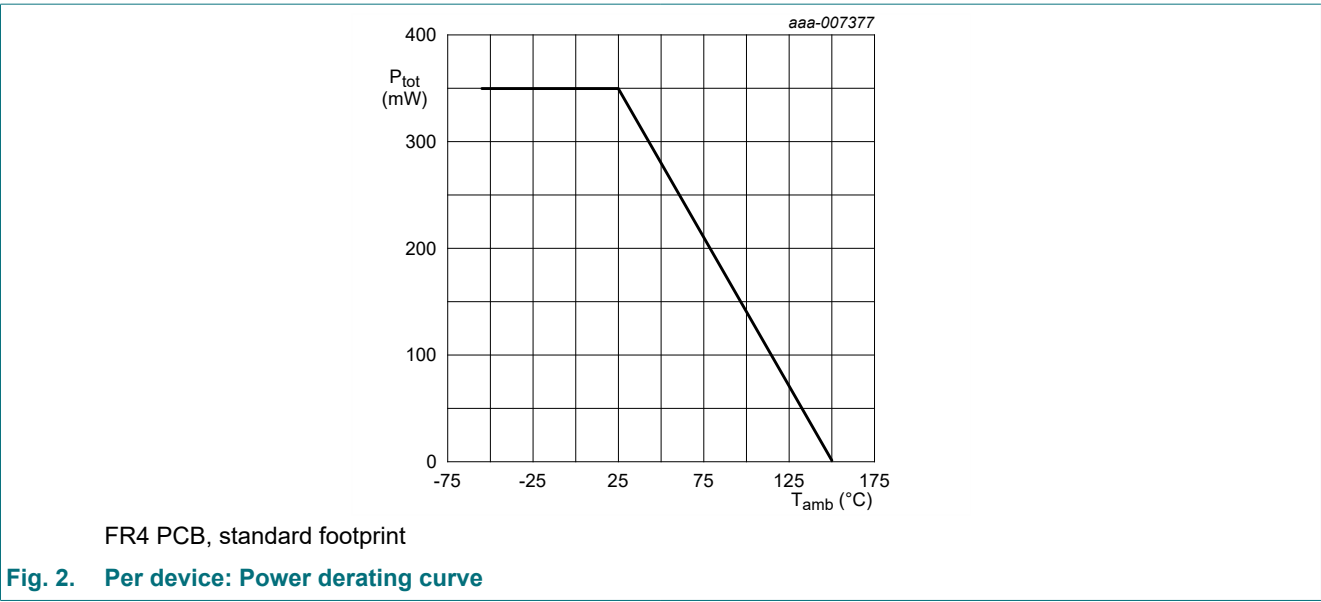
Fig. 1. DFN1010B-6 (SOT1216) marking code description

8. Limiting values

Table 5. Limiting values
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
Per transistor						
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		-	-6	V
I _C	collector current			-	-100	mA
I _{CM}	peak collector current	single pulse; t _p ≤ 1 ms		-	-200	mA
I _{BM}	peak base current			-	-100	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[1]	-	230	mW
Per device						
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[1]	-	350	mW
T _j	junction temperature			-	150	°C
T _{amb}	ambient temperature			-55	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.

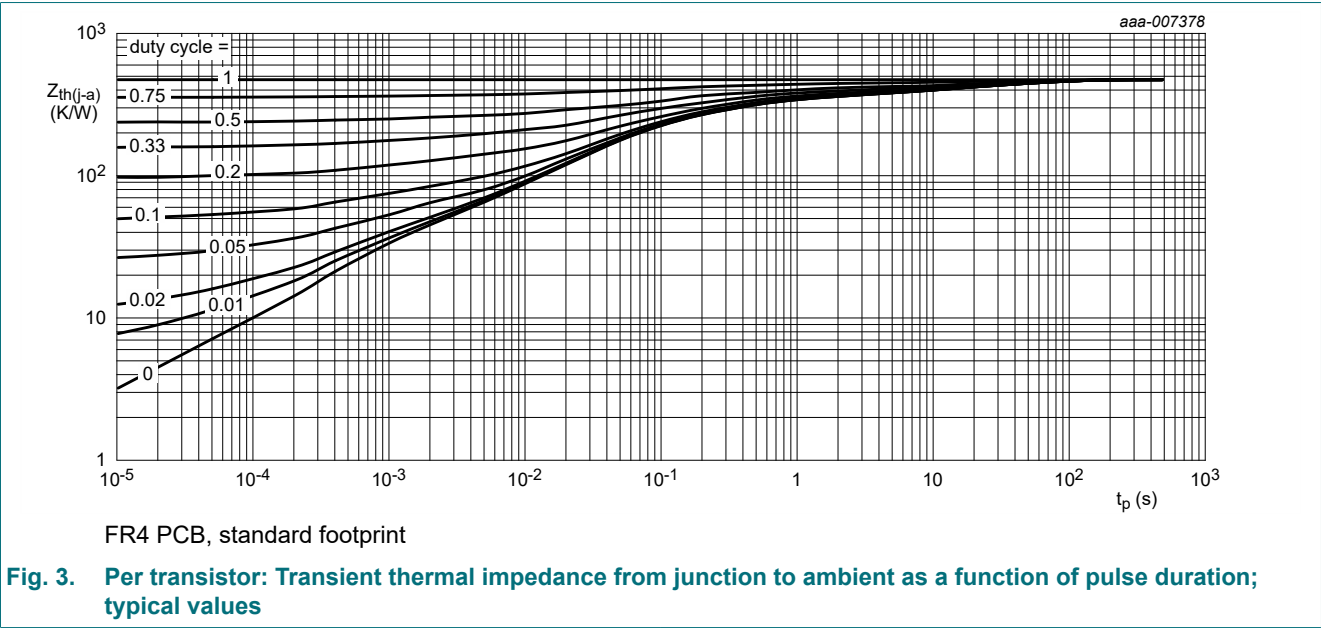


9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per transistor							
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	543	K/W
Per device							
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	357	K/W

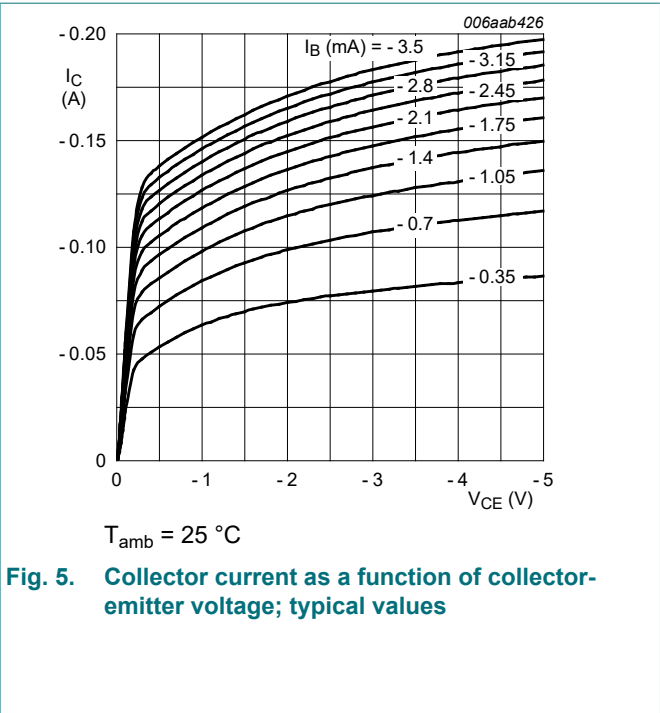
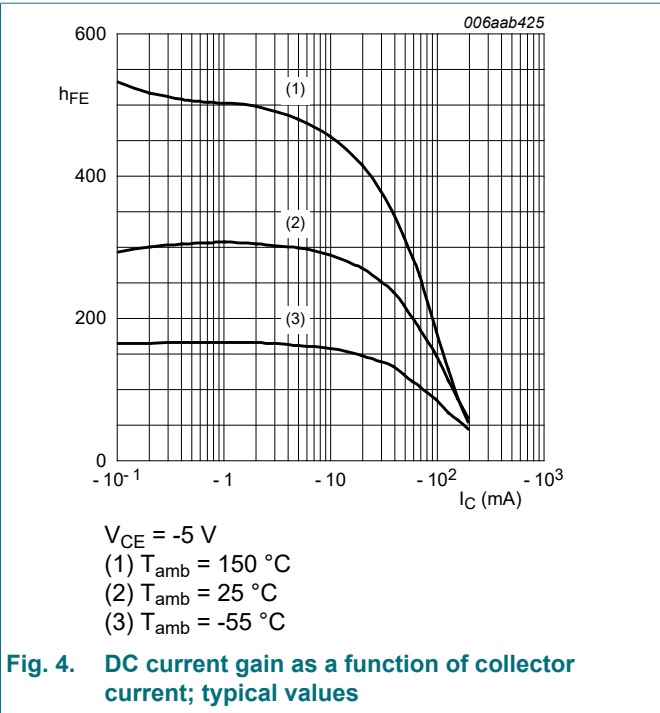
[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.



10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per transistor						
I _{CBO}	collector-base cut-off current	V _{CB} = -30 V; I _E = 0 A; T _j = 150 °C	-	-	-5	µA
		V _{CB} = -30 V; I _E = 0 A; T _{amb} = 25 °C	-	-	-15	nA
I _{EBO}	emitter-base cut-off current	V _{EB} = -5 V; I _C = 0 A; T _{amb} = 25 °C	-	-	-100	nA
h _{FE}	DC current gain	V _{CE} = -5 V; I _C = -2 mA; T _{amb} = 25 °C	200	-	450	
V _{CEsat}	collector-emitter saturation voltage	I _C = -10 mA; I _B = -0.5 mA; T _{amb} = 25 °C	-	-	-100	mV
		I _C = -100 mA; I _B = -5 mA; pulsed; t _p ≤ 300 µs; δ ≤ 0.02; T _{amb} = 25 °C	-	-	-300	mV
V _{BEsat}	base-emitter saturation voltage	I _C = -10 mA; I _B = -0.5 mA; T _{amb} = 25 °C	-	-760	-	mV
		I _C = -100 mA; I _B = -5 mA; pulsed; t _p ≤ 300 µs; δ ≤ 0.02; T _{amb} = 25 °C	-	-900	-	mV
V _{BE}	base-emitter voltage	V _{CE} = -5 V; I _C = -2 mA; T _{amb} = 25 °C	-600	-660	-725	mV
		V _{CE} = -5 V; I _C = -10 mA; T _{amb} = 25 °C	-	-710	-820	mV
C _c	collector capacitance	V _{CB} = -10 V; I _E = 0 A; i _e = 0 A; f = 1 MHz; T _{amb} = 25 °C	-	-	4	pF
C _e	emitter capacitance	V _{EB} = -0.5 V; I _C = 0 A; f = 1 MHz; T _{amb} = 25 °C	-	10	-	pF
f _T	transition frequency	V _{CE} = -5 V; I _C = -10 mA; f = 100 MHz; T _{amb} = 25 °C	100	-	-	MHz
NF	noise figure	V _{CE} = -5 V; I _C = 0.2 mA; R _S = 2 kΩ; f = 1 MHz; B = 200 Hz; T _{amb} = 25 °C	-	-	10	dB



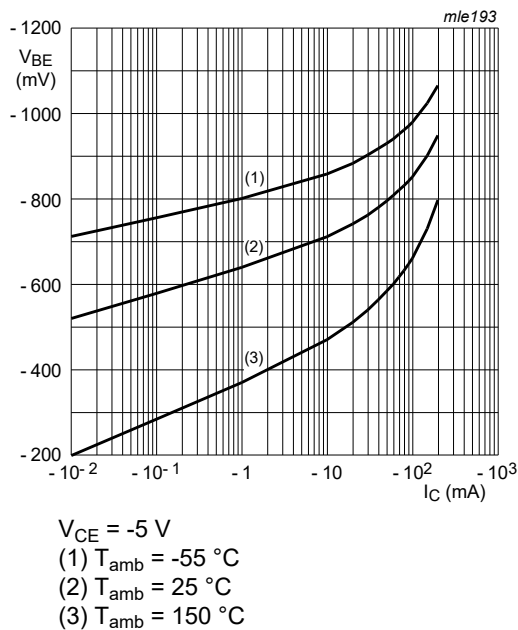


Fig. 6. Base-emitter voltage as a function of collector current; typical values

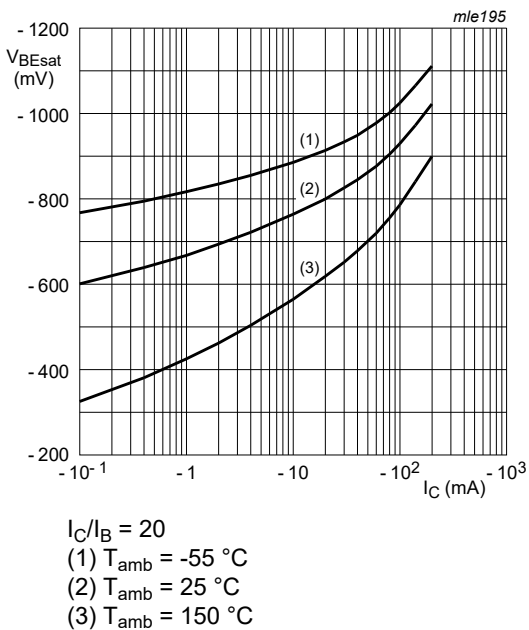


Fig. 7. Base-emitter saturation voltage as a function of collector current; typical values

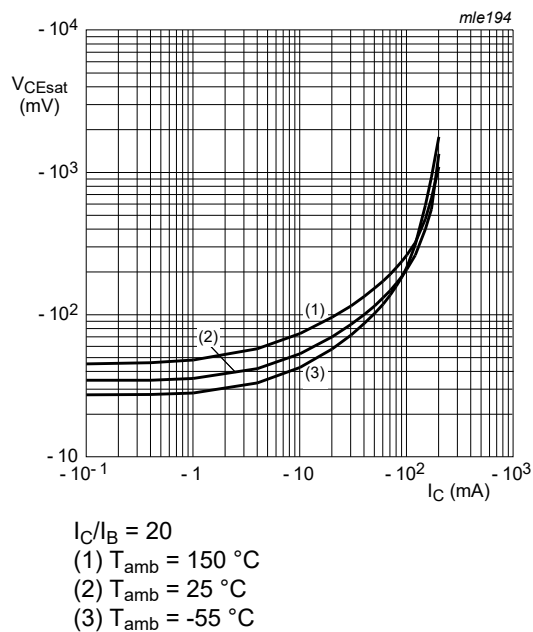


Fig. 8. Collector-emitter saturation voltage as a function of collector current; typical values

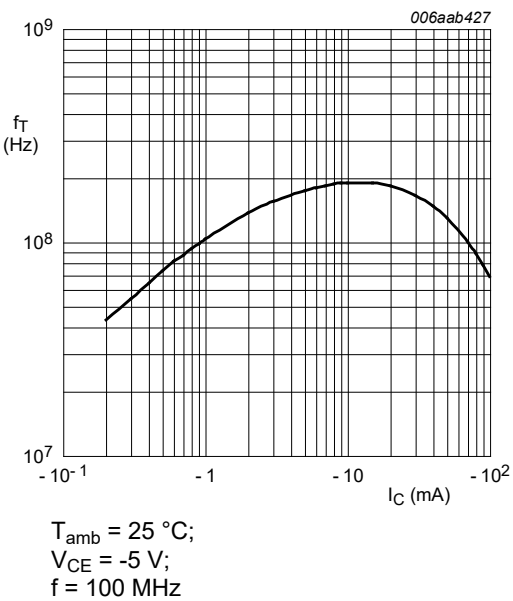


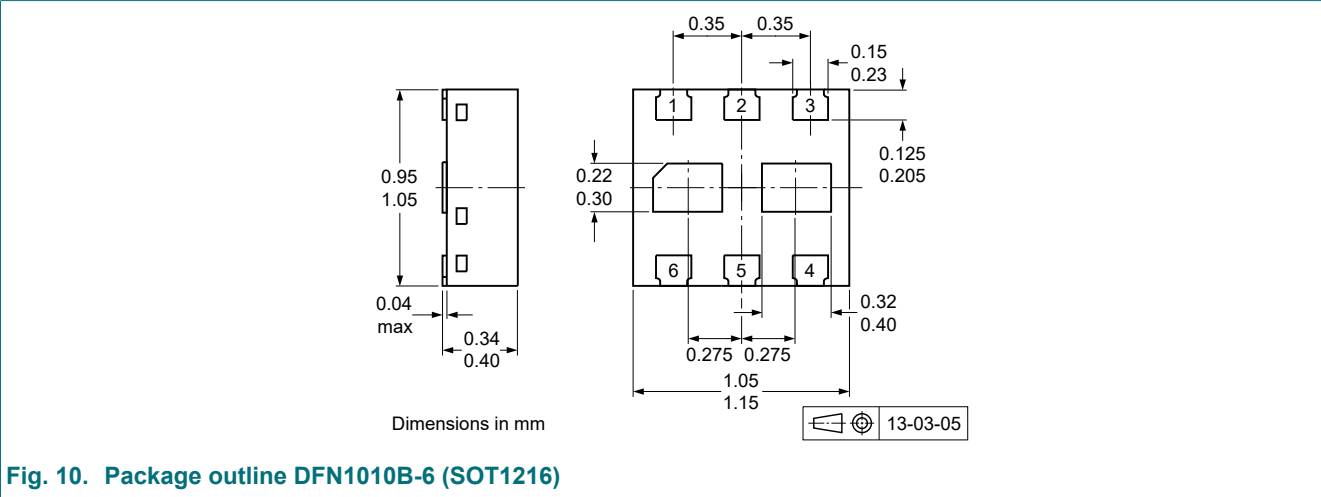
Fig. 9. Transition frequency as a function of collector current; typical values

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



13. Soldering

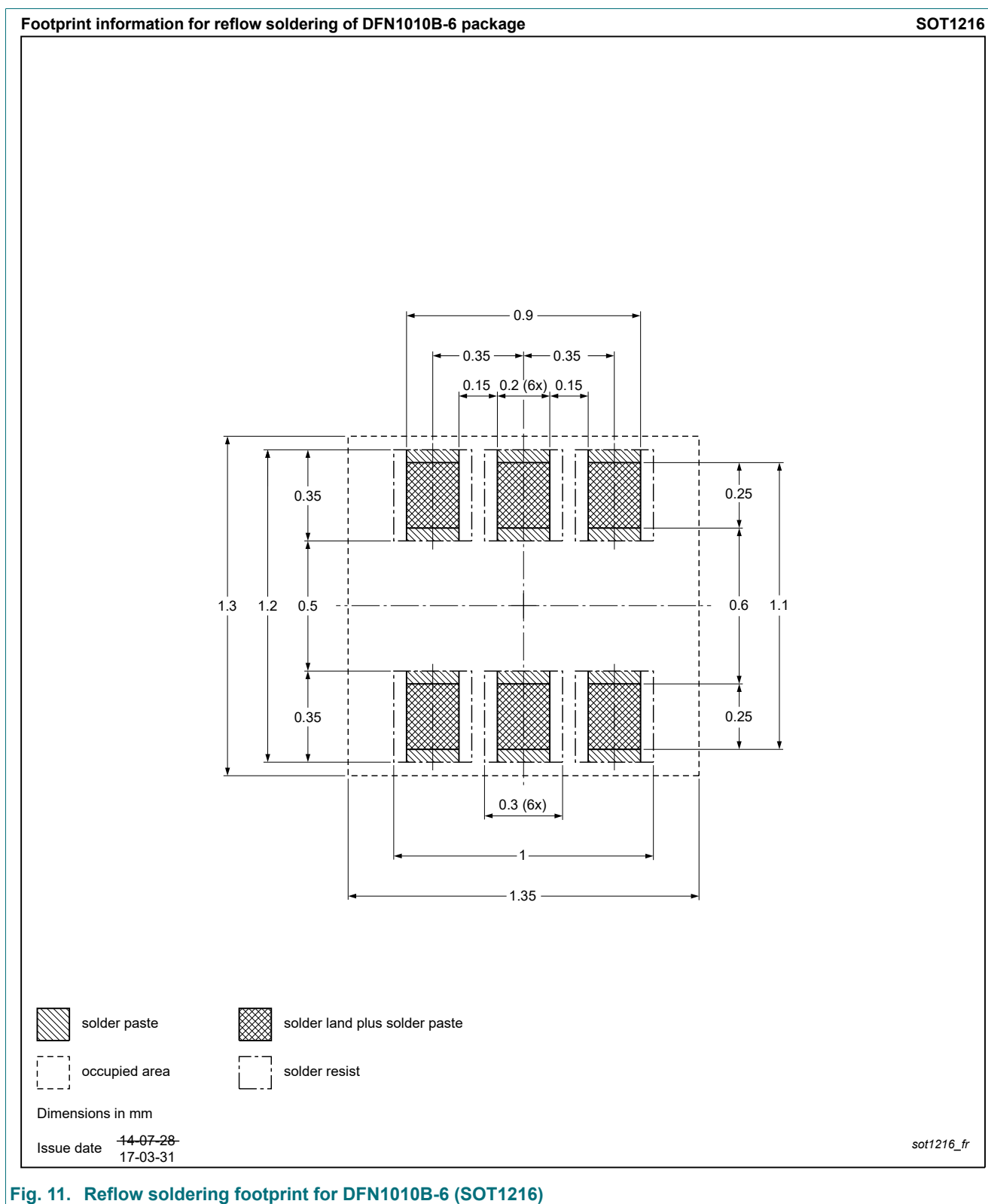


Fig. 11. Reflow soldering footprint for DFN1010B-6 (SOT1216)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BC857QAS v.3	20250416	Product data sheet	-	BC857QAS v.2
Modification:	<ul style="list-style-type: none">Soldering changed.			
BC857QAS v.2	20150708	Product data sheet	-	BC857QAS v.1
BC857QAS v.1	20140725	Product data sheet	-	-

15. 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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Contents

1. General description..... 1

2. Features and benefits..... 1

3. Applications..... 1

4. Quick reference data..... 1

5. Pinning information.....2

6. Ordering information.....2

7. Marking.....2

8. Limiting values..... 3

9. Thermal characteristics..... 4

10. Characteristics..... 5

11. Test information..... 7

12. Package outline..... 7

13. Soldering..... 8

14. Revision history.....9

15. Legal information.....10

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