



BC846BS

65 V, 100 mA NPN/NPN general-purpose transistor

14 July 2026

Product data sheet

1. General description

NPN/NPN general-purpose transistor pair in a very small SOT363-3 (SC-88) Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Low collector capacitance
- Low collector-emitter saturation voltage
- Closely matched current gain
- Reduces number of components and board space
- No mutual interference between the transistors

3. Applications

- General-purpose switching and amplification

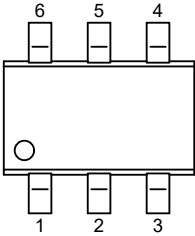
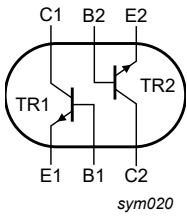
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per transistor						
V_{CE0}	collector-emitter voltage	open base	-	-	65	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	300	450	

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	E1	emitter TR1	 Transparent top view TSSOP6 (SOT363-3)	 sym020
2	B1	base TR1		
3	C2	collector TR2		
4	E2	emitter TR2		
5	B2	base TR2		
6	C1	collector TR1		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BC846BS	TSSOP6	Plastic surface-mounted package; 6 leads	SOT363-3

7. Marking

Table 4. Marking codes

Type number	Marking code[1]
BC846BS	%E5

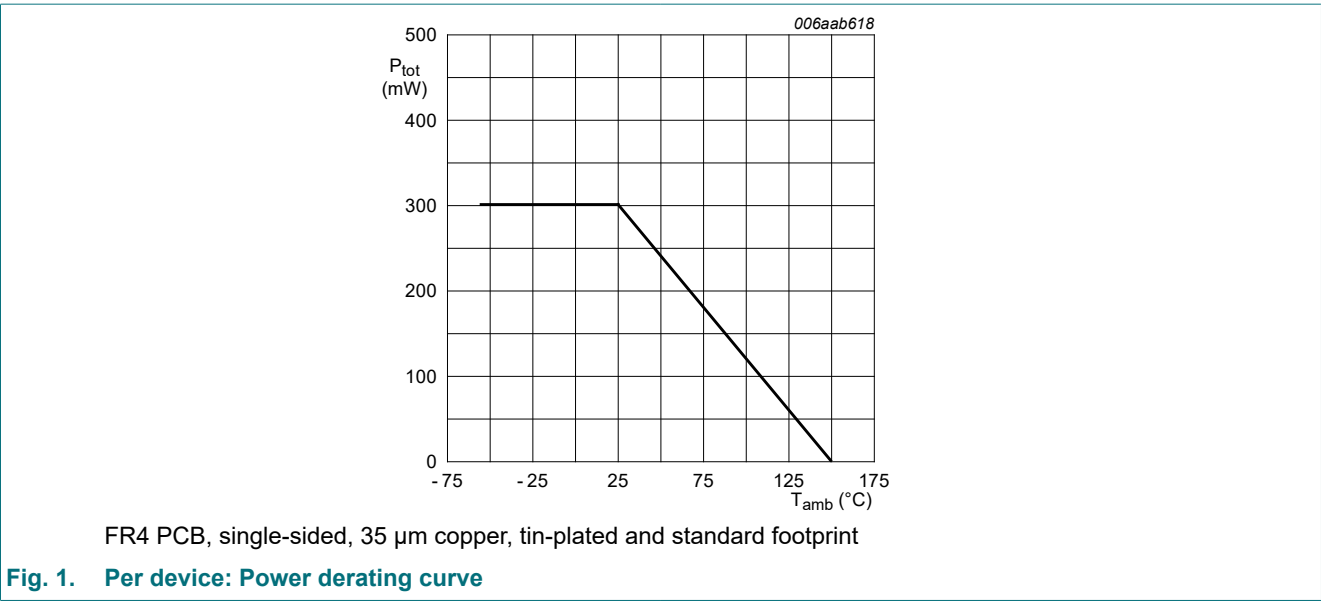
[1] % = placeholder for manufacturing site code

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		-	80	V
V _{CEO}	collector-emitter voltage	open base		-	65	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			-	200	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[1]	-	200	mW
Per device						
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[1]	-	300	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 PCB, single-sided, 35 µm copper, tin-plated and standard footprint.

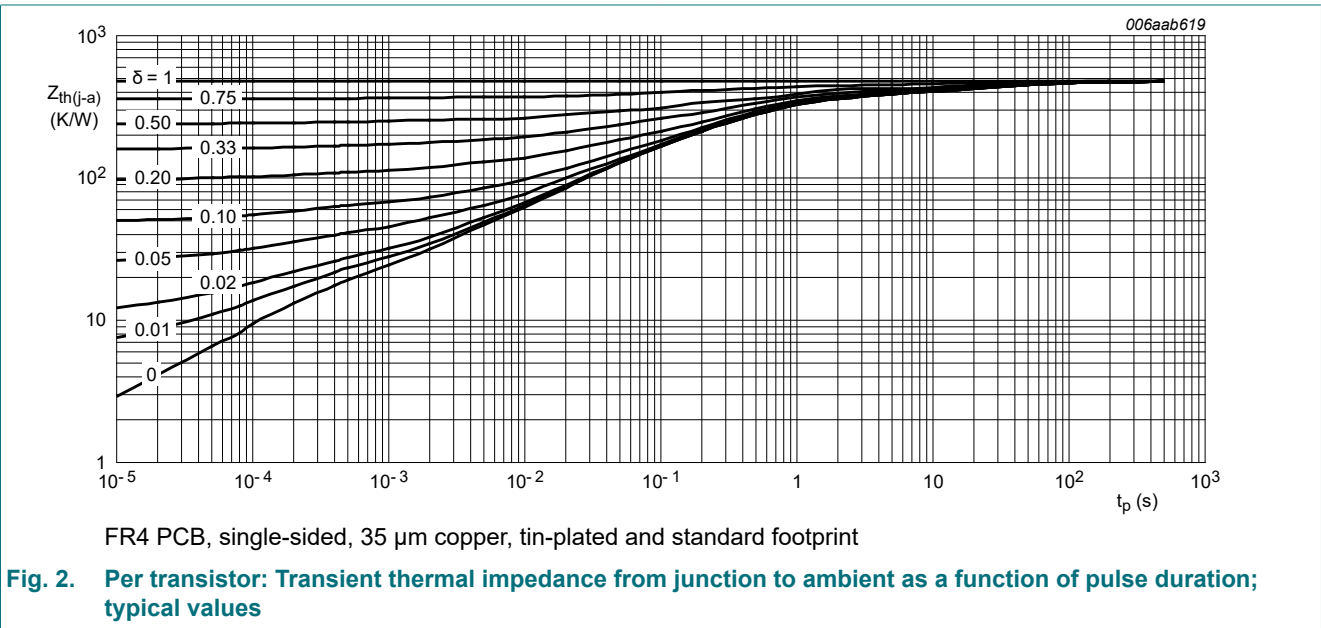


9. Thermal characteristics

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]	-	-	625	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point			-	-	230	K/W
Per device							
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	416	K/W

[1] Device mounted on an FR4 PCB, single-sided, 35 μ m copper, tin-plated and standard footprint.



10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per transistor							
$V_{(BR)CBO}$	collector-base breakdown voltage	$I_C = 100\ \mu\text{A}$; $I_E = 0\ \text{A}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		80	-	-	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	$I_C = 2\ \text{mA}$; $I_B = 0\ \text{A}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		65	-	-	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	$I_C = 0\ \text{A}$; $I_E = 100\ \mu\text{A}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		6	-	-	V
I_{CBO}	collector-base cut-off current	$V_{CB} = 50\ \text{V}$; $I_E = 0\ \text{A}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		-	-	15	nA
		$V_{CB} = 30\ \text{V}$; $I_E = 0\ \text{A}$; $T_j = 150\ ^\circ\text{C}$		-	-	5	μA
I_{EBO}	emitter-base cut-off current	$V_{EB} = 6\ \text{V}$; $I_C = 0\ \text{A}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		-	-	100	nA
h_{FE}	DC current gain	$V_{CE} = 5\ \text{V}$; $I_C = 10\ \mu\text{A}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		-	280	-	
		$V_{CE} = 5\ \text{V}$; $I_C = 2\ \text{mA}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		200	300	450	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 10\ \text{mA}$; $I_B = 0.5\ \text{mA}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		-	55	100	mV
		$I_C = 100\ \text{mA}$; $I_B = 5\ \text{mA}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		-	200	300	mV
V_{BEsat}	base-emitter saturation voltage	$I_C = 10\ \text{mA}$; $I_B = 0.5\ \text{mA}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		-	755	850	mV
		$I_C = 100\ \text{mA}$; $I_B = 5\ \text{mA}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		-	1000	-	mV
V_{BE}	base-emitter voltage	$V_{CE} = 5\ \text{V}$; $I_C = 2\ \text{mA}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		580	650	700	mV
		$V_{CE} = 5\ \text{V}$; $I_C = 10\ \text{mA}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		-	-	770	mV
C_c	collector capacitance	$V_{CB} = 10\ \text{V}$; $I_E = 0\ \text{A}$; $i_e = 0\ \text{A}$; $f = 1\ \text{MHz}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		-	1.9	-	pF
C_e	emitter capacitance	$V_{EB} = 0.5\ \text{V}$; $I_C = 0\ \text{A}$; $i_c = 0\ \text{A}$; $f = 1\ \text{MHz}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		-	11	-	pF
f_T	transition frequency	$V_{CE} = 5\ \text{V}$; $I_C = 10\ \text{mA}$; $f = 100\ \text{MHz}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		100	-	-	MHz
NF	noise figure	$V_{CE} = 5\ \text{V}$; $I_C = 0.2\ \text{mA}$; $R_S = 2\ \text{k}\Omega$; $10\ \text{Hz} \leq f \leq 15700\ \text{Hz}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		-	1.9	-	dB
		$V_{CE} = 5\ \text{V}$; $I_C = 0.2\ \text{mA}$; $R_S = 2\ \text{k}\Omega$; $f = 1\ \text{kHz}$; $B = 200\ \text{Hz}$; $T_{\text{amb}} = 25\ ^\circ\text{C}$		-	3.1	-	dB

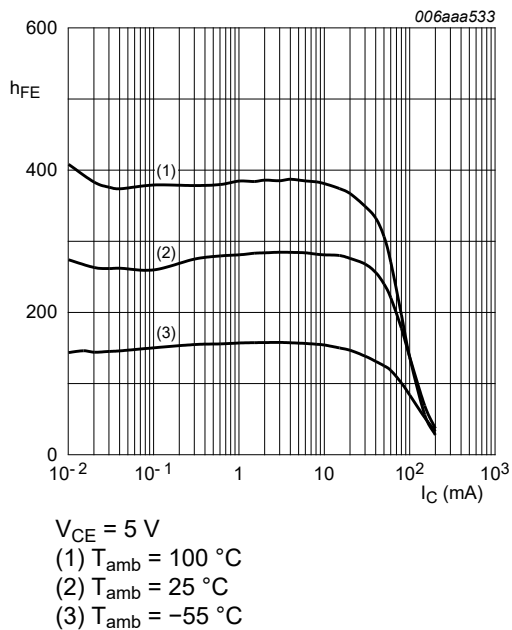


Fig. 3. Per transistor: DC current gain as a function of collector current; typical values

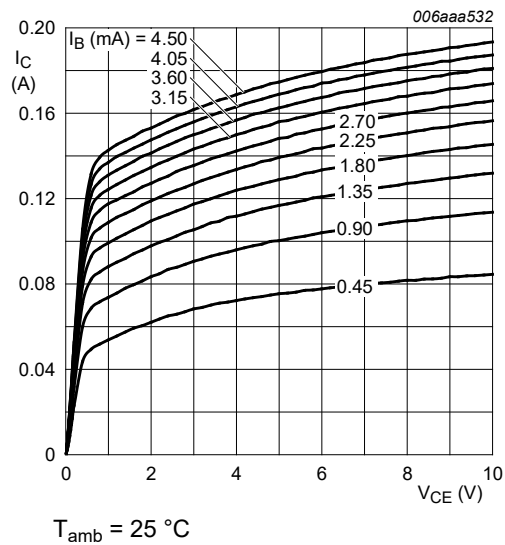


Fig. 4. Per transistor: Collector current as a function of collector-emitter voltage; typical values

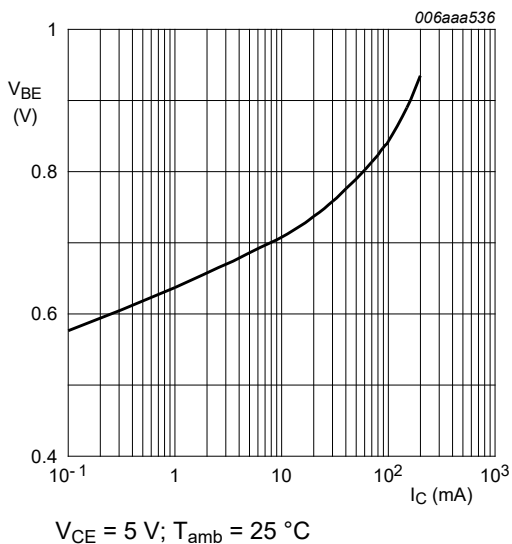


Fig. 5. Per transistor: Base-emitter voltage as a function of collector current; typical values

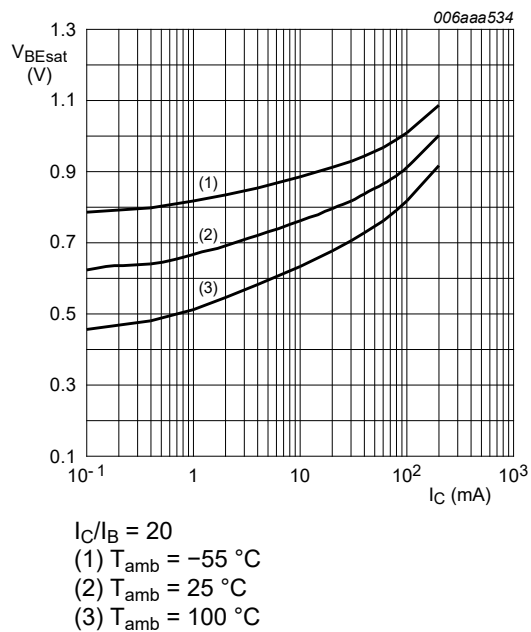


Fig. 6. Per transistor: Base-emitter saturation voltage as a function of collector current; typical values

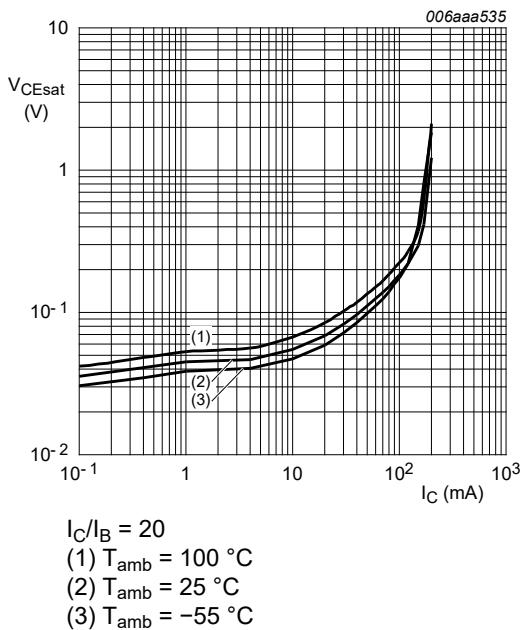


Fig. 7. Per transistor: Collector-emitter saturation voltage as a function of collector current; typical values

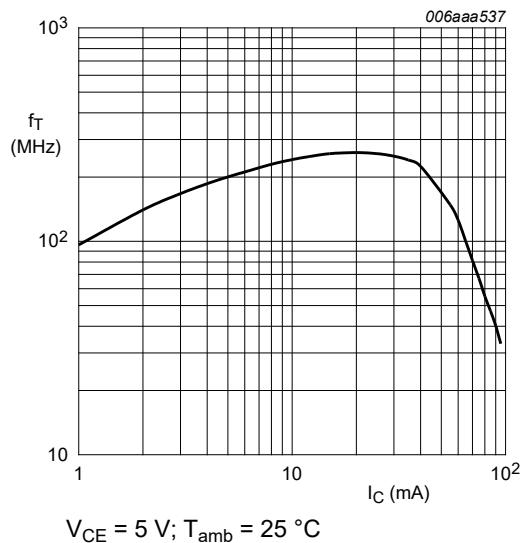


Fig. 8. Per transistor: Transition frequency as a function of collector current; typical values

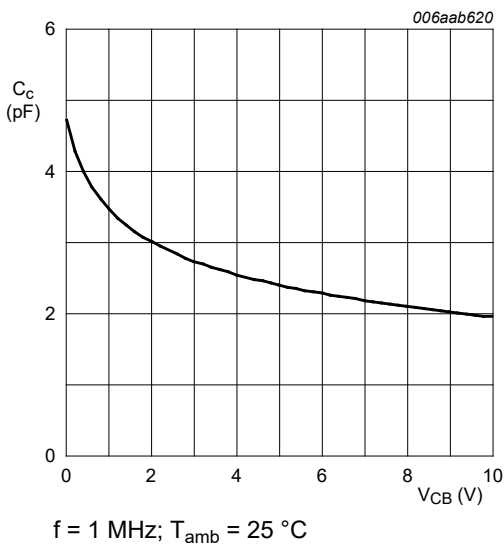


Fig. 9. Per transistor: Collector capacitance as a function of collector-base voltage; typical values

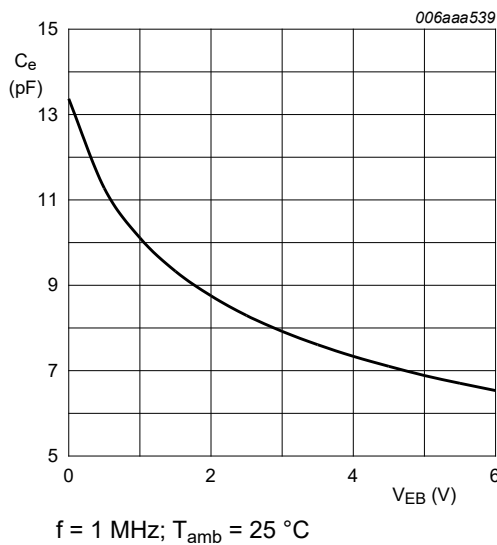
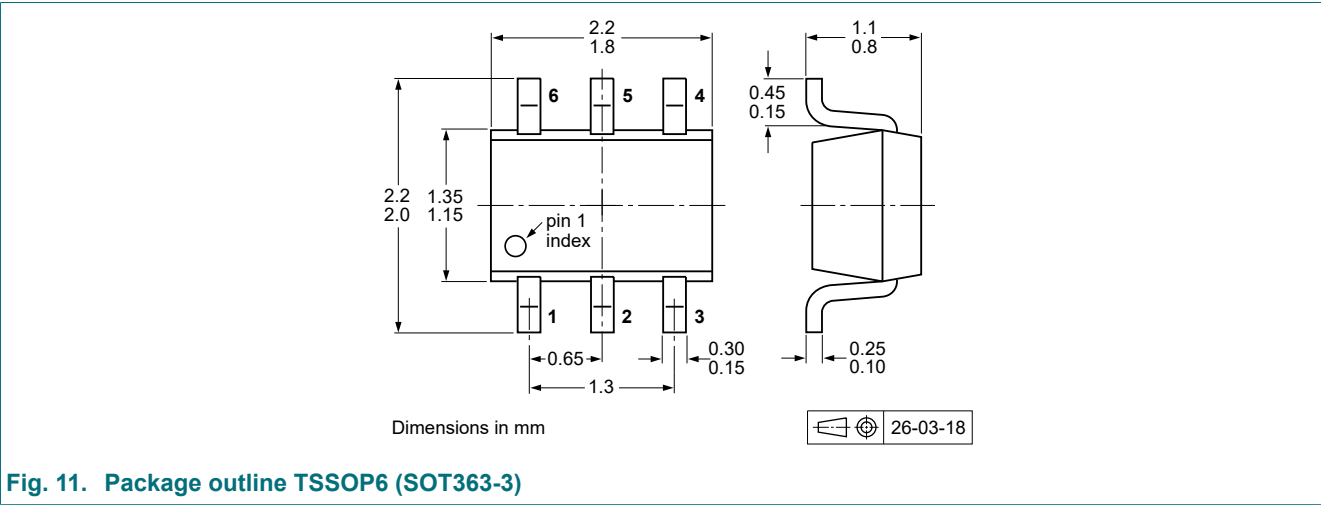


Fig. 10. Per transistor: Emitter capacitance as a function of emitter-base voltage; typical values

11. Package outline



12. Soldering

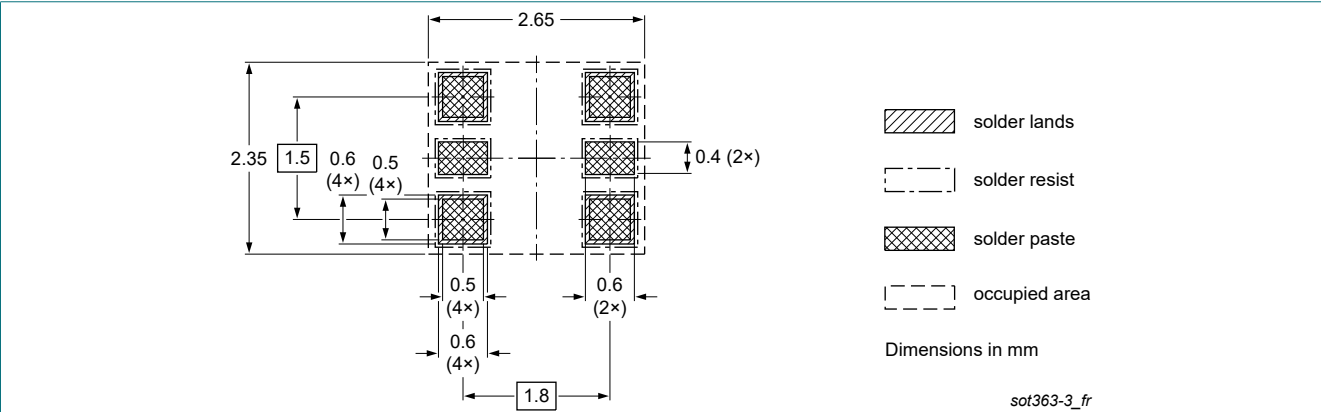


Fig. 12. Reflow soldering footprint for TSSOP6 (SOT363-3)

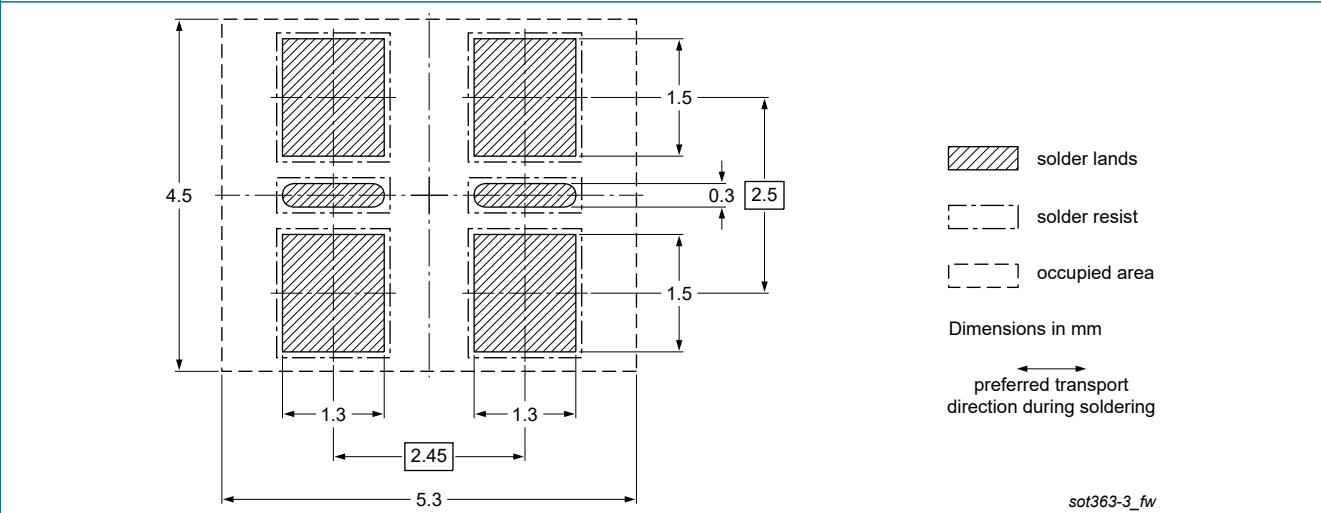


Fig. 13. Wave soldering footprint for TSSOP6 (SOT363-3)

13. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BC846BS v.3	20260714	Product data sheet	-	BC846BS v.2
Modification:	• Package changed from SOT363 to SOT363-3			
BC846BS v.2	20220701	Product data sheet	-	BC846BS v.1
BC846BS v.1	20090824	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.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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