



PBSS5250T

50 V; 2 A PNP low V_{CEsat} transistor

27 March 2026

Product data sheet

1. General description

PNP transistor in a SOT23 plastic package offering ultra low V_{CEsat} and R_{CEsat} parameters.

2. Features and benefits

- Low collector-emitter saturation voltage V_{CEsat}
- High collector current capability: I_C and I_{CM}
- Higher efficiency leading to less heat generation
- Reduced printed-circuit board requirements
- Cost effective alternative to MOSFETs in specific applications
- AEC-Q101 qualified

3. Applications

- Power management
 - DC/DC converters
 - Supply line switching
 - Battery charger
 - LCD backlighting
- Peripheral drivers
 - Driver in low supply voltage applications (e.g. lamps and LEDs)
 - Inductive load driver (e.g. relays, buzzers and motors)

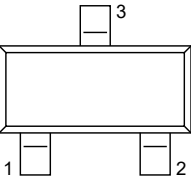
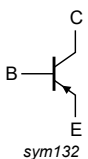
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V _{CEO}	collector-emitter voltage	open base	-	-	-50	V
I _C	collector current		-	-	-2	A
I _{CM}	peak collector current	single pulse; t _p ≤ 1 ms	-	-	-3	A
R _{CEsat}	collector-emitter saturation resistance	I _C = -2 A; I _B = -200 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _J = 25 °C	-	-	150	mΩ

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	B	base	 <p style="text-align: center;">SOT23</p>	 <p style="text-align: center;">sym132</p>
2	E	emitter		
3	C	collector		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PBSS5250T	SOT23	plastic, surface-mounted package; 3 terminals; 1.9 mm pitch; 2.9 mm x 1.3 mm x 1 mm body	SOT23

7. Marking

Table 4. Marking codes

Type number	Marking code[1]
PBSS5250T	%3H

[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	
V_{CBO}	collector-base voltage	open emitter	-	-50	V	
V_{CEO}	collector-emitter voltage	open base	-	-50	V	
V_{EBO}	emitter-base voltage	open collector	-	-5	V	
I_C	collector current		-	-2	A	
I_{CM}	peak collector current	single pulse; $t_p \leq 1$ ms	-	-3	A	
I_B	base current		-	-300	mA	
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1]	-	300	mW
			[2]	-	480	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] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 1 cm².

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	417	K/W
			[2]	-	-	260	K/W

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

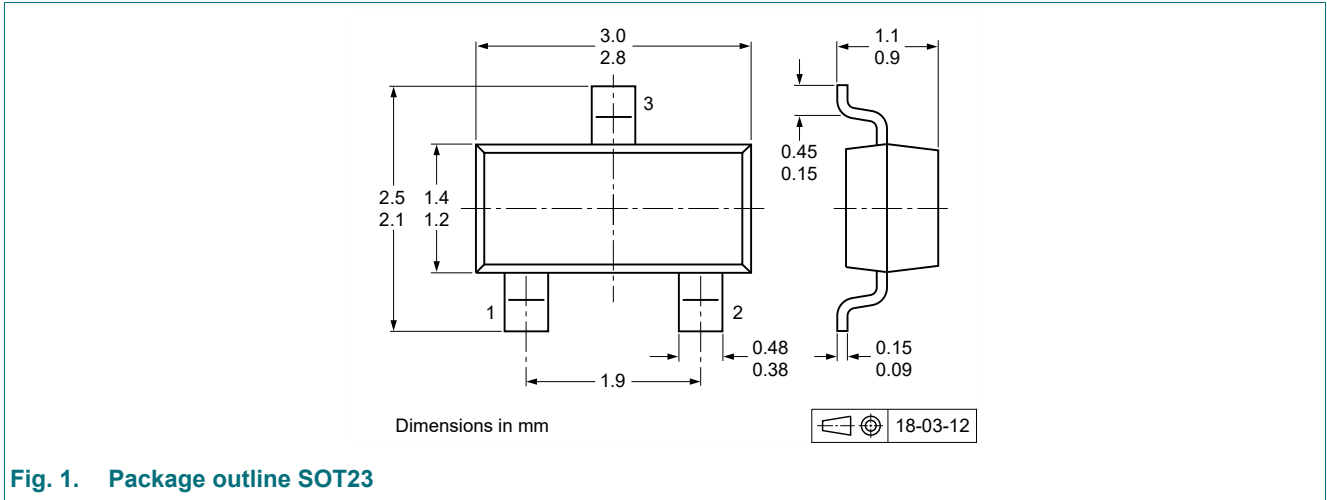
[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 1 cm².

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_{CBO}	collector-base cut-off current	$V_{CB} = -50\text{ V}; I_E = 0\text{ A}; T_j = 25\text{ °C}$		-	-	-100	nA
		$V_{CB} = -50\text{ V}; I_E = 0\text{ A}; T_j = 150\text{ °C}$		-	-	-50	μA
I_{EBO}	emitter-base cut-off current	$V_{EB} = -5\text{ V}; I_C = 0\text{ A}; T_j = 25\text{ °C}$		-	-	-100	nA
h_{FE}	DC current gain	$V_{CE} = -2\text{ V}; I_C = 0.5\text{ A}; T_j = 25\text{ °C}$		200	-	-	
		$V_{CE} = -2\text{ V}; I_C = 1\text{ A}; \text{pulsed}; t_p \leq 300\text{ μs}; \delta \leq 0.02; T_j = 25\text{ °C}$		200	-	-	
		$V_{CE} = -2\text{ V}; I_C = 2\text{ A}; \text{pulsed}; t_p \leq 300\text{ μs}; \delta \leq 0.02; T_j = 25\text{ °C}$		130	-	-	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -0.5\text{ A}; I_B = -50\text{ mA}; T_j = 25\text{ °C}$		-	-	-90	mV
		$I_C = -1\text{ A}; I_B = -50\text{ mA}; T_j = 25\text{ °C}$		-	-	-180	mV
		$I_C = -2\text{ A}; I_B = -100\text{ mA}; T_j = 25\text{ °C}$		-	-	-300	mV
R_{CEsat}	collector-emitter saturation resistance	$I_C = -2\text{ A}; I_B = -200\text{ mA}; \text{pulsed}; t_p \leq 300\text{ μs}; \delta \leq 0.02; T_j = 25\text{ °C}$		-	-	150	mΩ
V_{BEsat}	base-emitter saturation voltage	$I_C = -2\text{ A}; I_B = -100\text{ mA}; \text{pulsed}; t_p \leq 300\text{ μs}; \delta \leq 0.02; T_j = 25\text{ °C}$		-	-	-1.1	V
V_{BEon}	base-emitter turn-on voltage	$V_{CE} = -2\text{ V}; I_C = -1\text{ A}; \text{pulsed}; t_p \leq 300\text{ μs}; T_j = 25\text{ °C}; \delta \leq 0.02$		-1.2	-	-	V
f_T	transition frequency	$V_{CE} = -5\text{ V}; I_C = -100\text{ mA}; f = 100\text{ MHz}; T_j = 25\text{ °C}$		100	-	-	MHz
C_c	collector capacitance	$V_{CB} = -10\text{ V}; I_E = 0\text{ A}; i_e = 0\text{ A}; f = 1\text{ MHz}$		-	-	35	pF

11. Package outline



12. Soldering

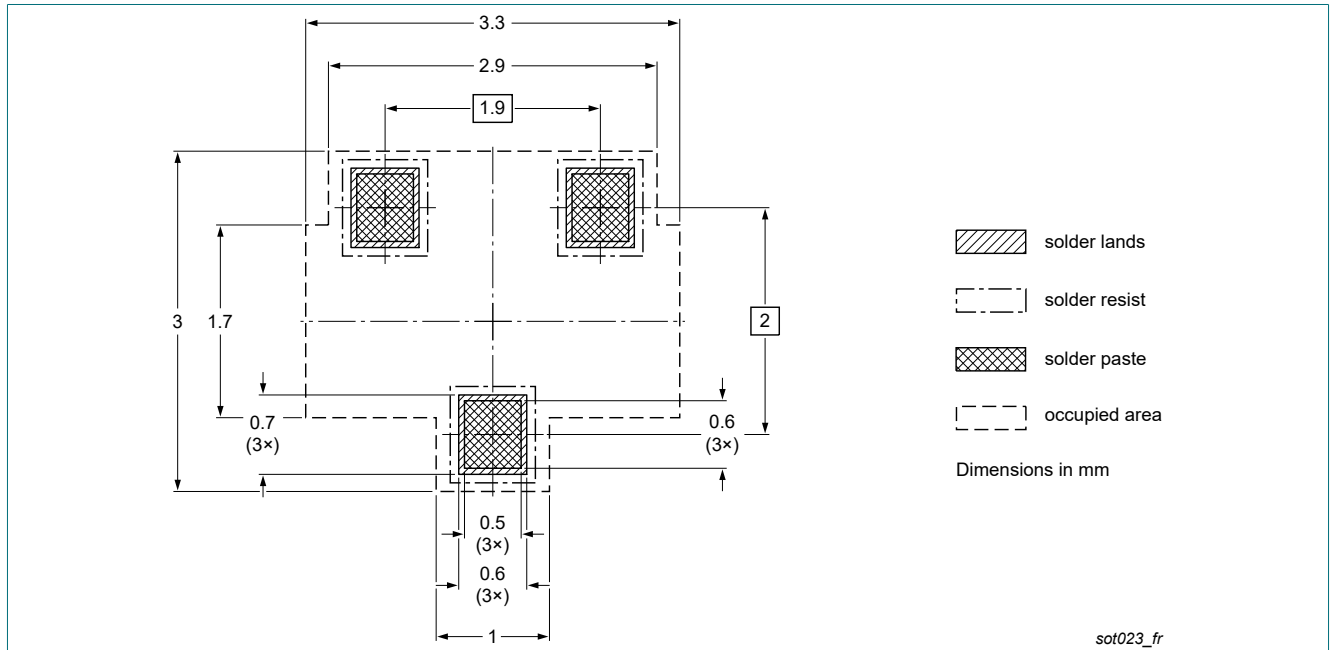


Fig. 2. Reflow soldering footprint for SOT23

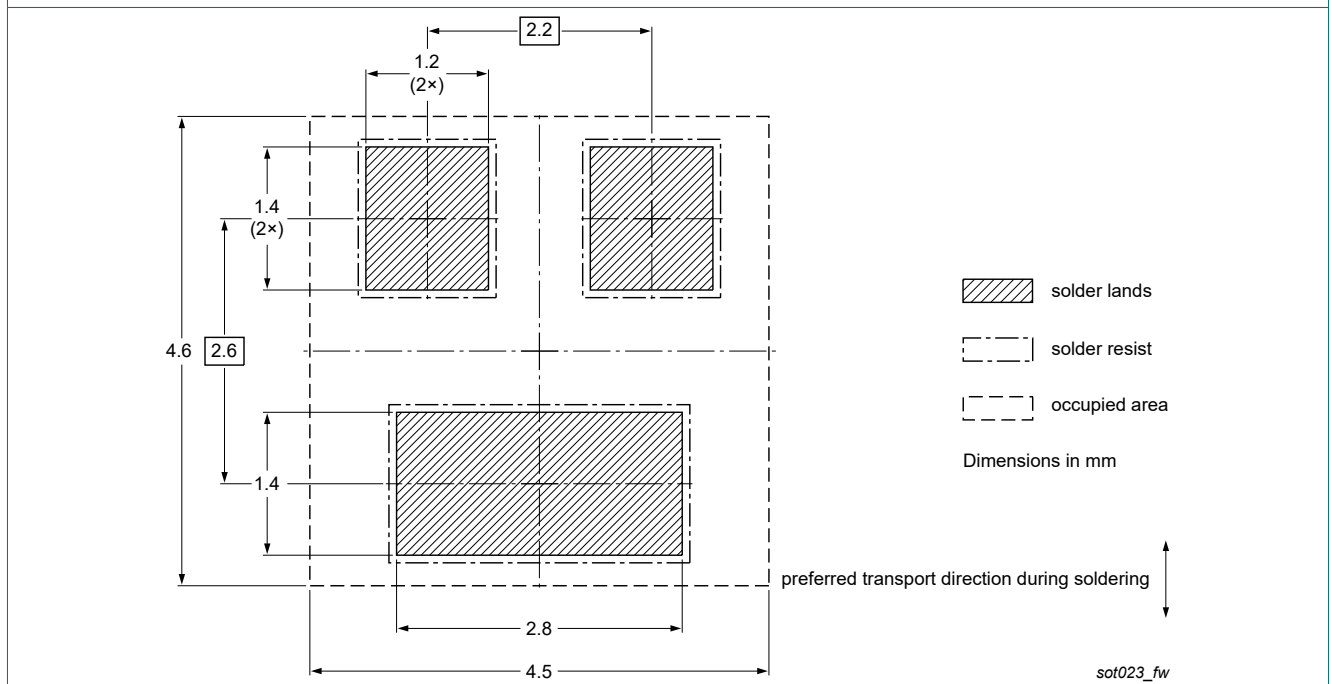


Fig. 3. Wave soldering footprint for SOT23

13. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PBSS5250T v.2	20260327	Product data sheet	-	PBSS5250T v.1
Modifications:	<ul style="list-style-type: none">The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.Legal texts have been adapted to the new company name where appropriate.			
PBSS5250T v.1	20031009	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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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.....	2
9. Thermal characteristics.....	3
10. Characteristics.....	3
11. Package outline.....	4
12. Soldering.....	5
13. Revision history.....	6
14. Legal information.....	7

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