



# PBSS5350TH-Q

50 V, 3 A PNP low V<sub>CEsat</sub> transistor

16 January 2026

Product data sheet

## 1. General description

PNP low V<sub>CEsat</sub> transistor in a small SOT23 Surface-Mounted Device (SMD) plastic package.

## 2. Features and benefits

- Low collector-emitter saturation voltage V<sub>CEsat</sub>
- High collector current capability: I<sub>C</sub> and I<sub>CM</sub>
- High collector current gain (h<sub>FE</sub>) at high I<sub>C</sub>
- Higher efficiency leading to less heat generation
- High temperature applications up to 175 °C
- Qualified according to AEC-Q101 and recommended for use in automotive applications

## 3. Applications

- Power management
- DC-to-DC conversion
- Supply line switches
- Battery charger switches
- Peripheral drivers
- Driver in low supply voltage applications (e.g. lamps and LEDs)
- Inductive load driver

## 4. Quick reference data

Table 1. Quick reference data

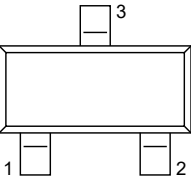
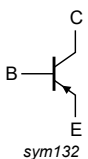
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V <sub>CEO</sub>	collector-emitter voltage	open base		-	-	-50	V
I <sub>C</sub>	collector current			-	-	-2	A
I <sub>CM</sub>	peak collector current	pulsed	[1]	-	-	-3	A
		single pulse; t <sub>p</sub> < 1 ms		-	-	-5	A
R <sub>CEsat</sub>	collector-emitter saturation resistance	I <sub>C</sub> = -2 A; I <sub>B</sub> = -200 mA; T <sub>amb</sub> = 25 °C	[2]	-	-	135	mΩ

[1] Pulse conditions: pulse width t<sub>p</sub> ≤ 100 ms; duty cycle δ ≤ 0.25

[2] Pulse test: t<sub>p</sub> ≤ 300 μs; δ ≤ 0.02

## 5. Pinning information

Table 2. Pinning information

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

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
<a href="#">PBSS5350TH-Q</a>	SOT23	plastic, surface-mounted package; 3 terminals; 1.9 mm pitch; 2.9 mm x 1.3 mm x 1 mm body	<a href="#">SOT23</a>

## 7. Marking

Table 4. Marking codes

Type number	Marking code <sup>[1]</sup>
PBSS5350TH-Q	FJ%

[1] % = placeholder for manufacturing site code

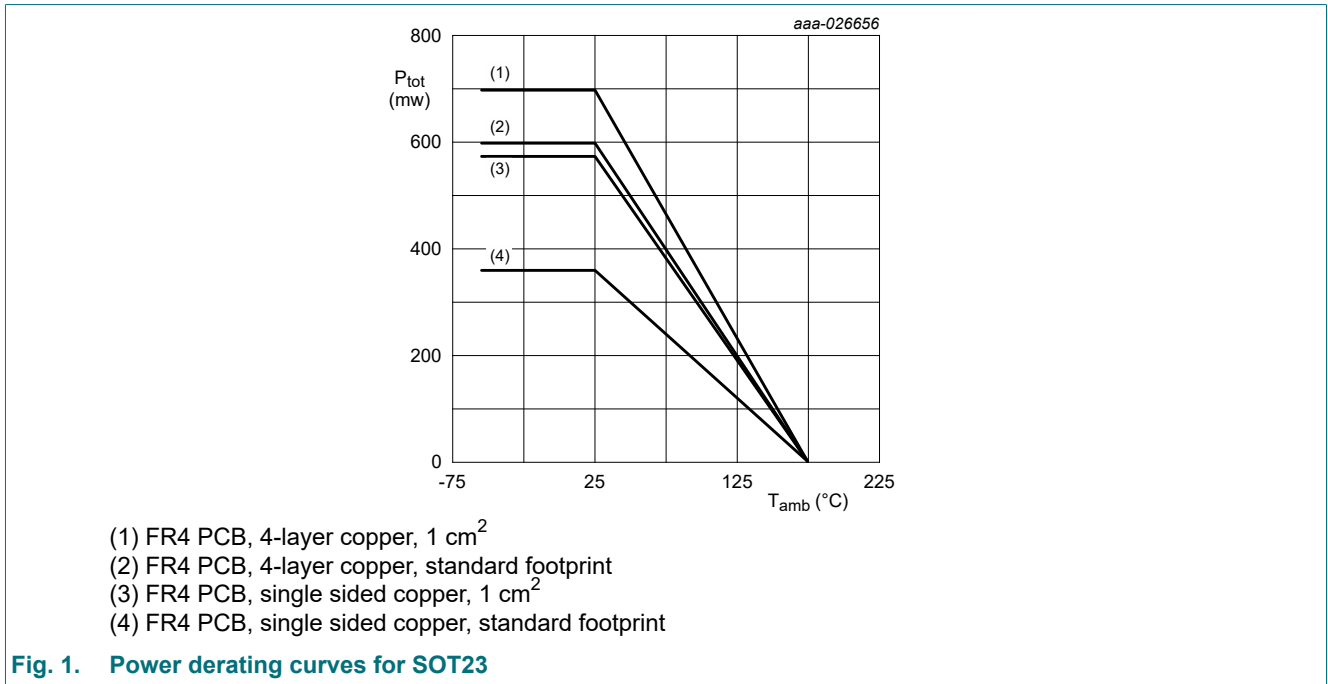
## 8. Limiting values

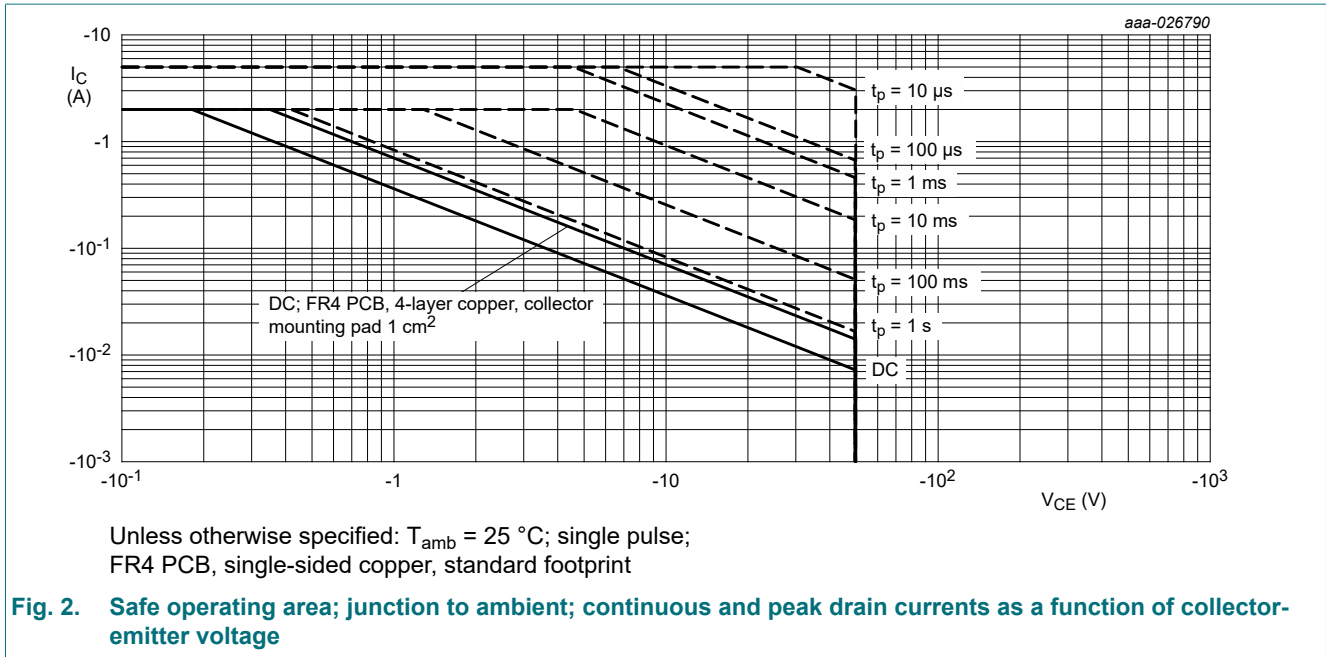
**Table 5. Limiting values**

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

Symbol	Parameter	Conditions		Min	Max	Unit
V <sub>CBO</sub>	collector-base voltage	open emitter		-	-50	V
V <sub>CEO</sub>	collector-emitter voltage	open base		-	-50	V
V <sub>EBO</sub>	emitter-base voltage	open collector		-	-7	V
I <sub>C</sub>	collector current			-	-2	A
I <sub>CM</sub>	peak collector current	pulsed	[1]	-	-3	A
		single pulse; t <sub>p</sub> < 1 ms		-	-5	A
I <sub>B</sub>	base current			-	-500	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	[2]	-	360	mW
			[3]	-	575	mW
			[4]	-	600	mW
			[5]	-	700	mW
			[1] [2]	-	1.44	W
T <sub>j</sub>	junction temperature			-	175	°C
T <sub>amb</sub>	ambient temperature			-55	175	°C
T <sub>stg</sub>	storage temperature			-65	175	°C

- [1] Pulse conditions: pulse width t<sub>p</sub> ≤ 100 ms; duty cycle δ ≤ 0.25
- [2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.
- [3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 1 cm<sup>2</sup>.
- [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<sup>2</sup>.





## 9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	in free air	[1]	-	-	417	K/W
			[2]	-	-	261	K/W
			[3]	-	-	250	K/W
			[4]	-	-	215	K/W
			[1] [5]	-	-	104	K/W
R <sub>th(j-sp)</sub>	thermal resistance from junction to solder point			75	-	K/W	

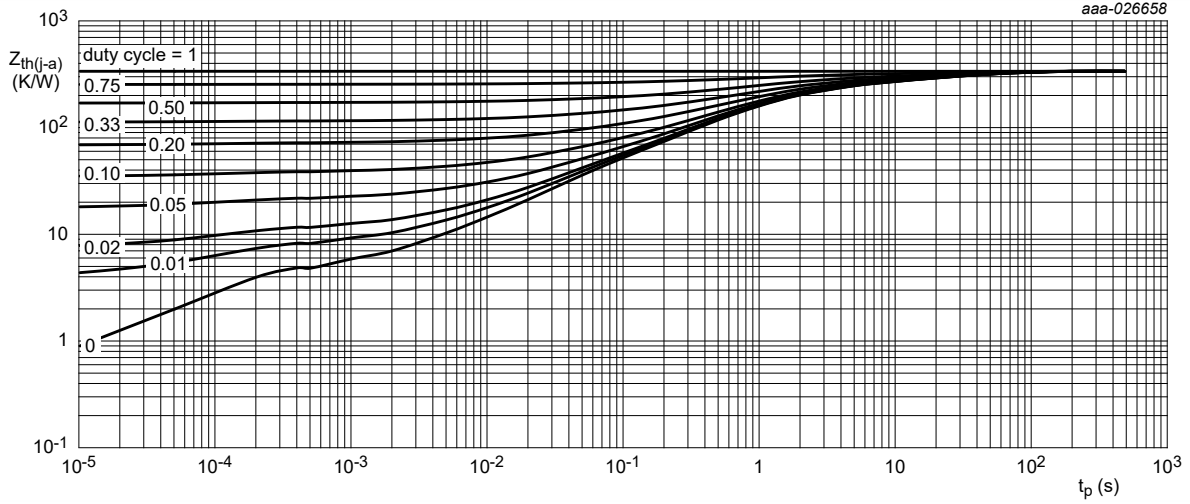
[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 1 cm<sup>2</sup>.

[3] Device mounted on an FR4 PCB, 4-layer copper, tin-plated and standard footprint.

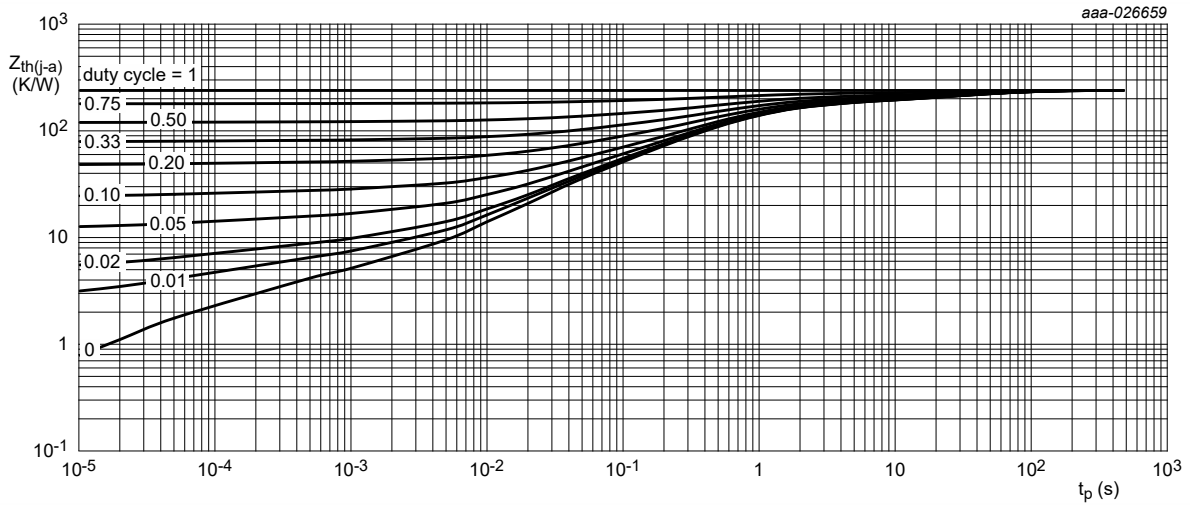
[4] Device mounted on an FR4 PCB, 4-layer copper, tin-plated, mounting pad for collector 1 cm<sup>2</sup>.

[5] Operated under pulse conditions: pulse width t<sub>p</sub> ≤ 100 ms; duty cycle δ ≤ 0.25



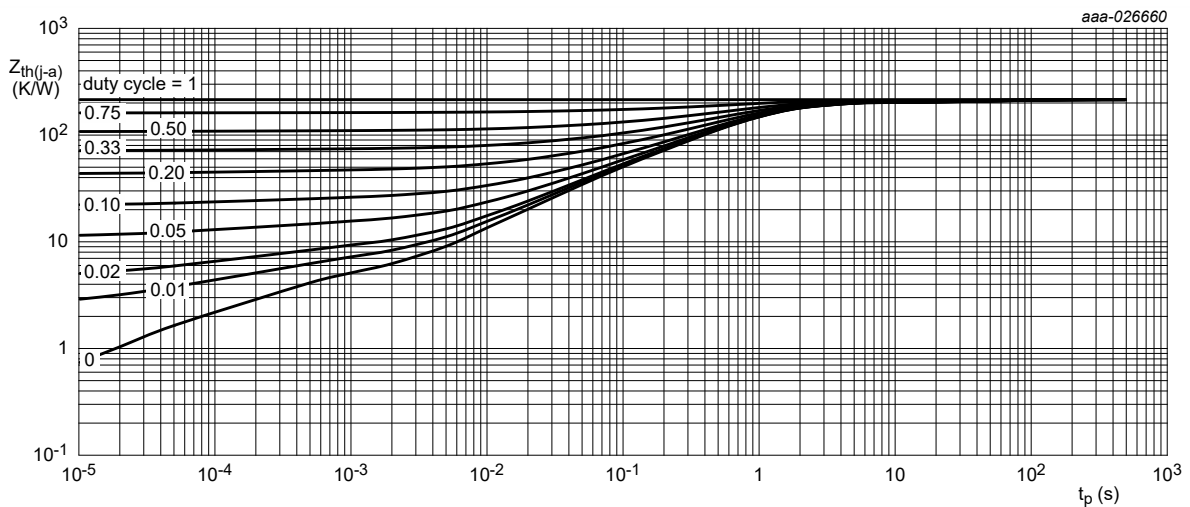
FR4 PCB, single sided copper, standard footprint

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



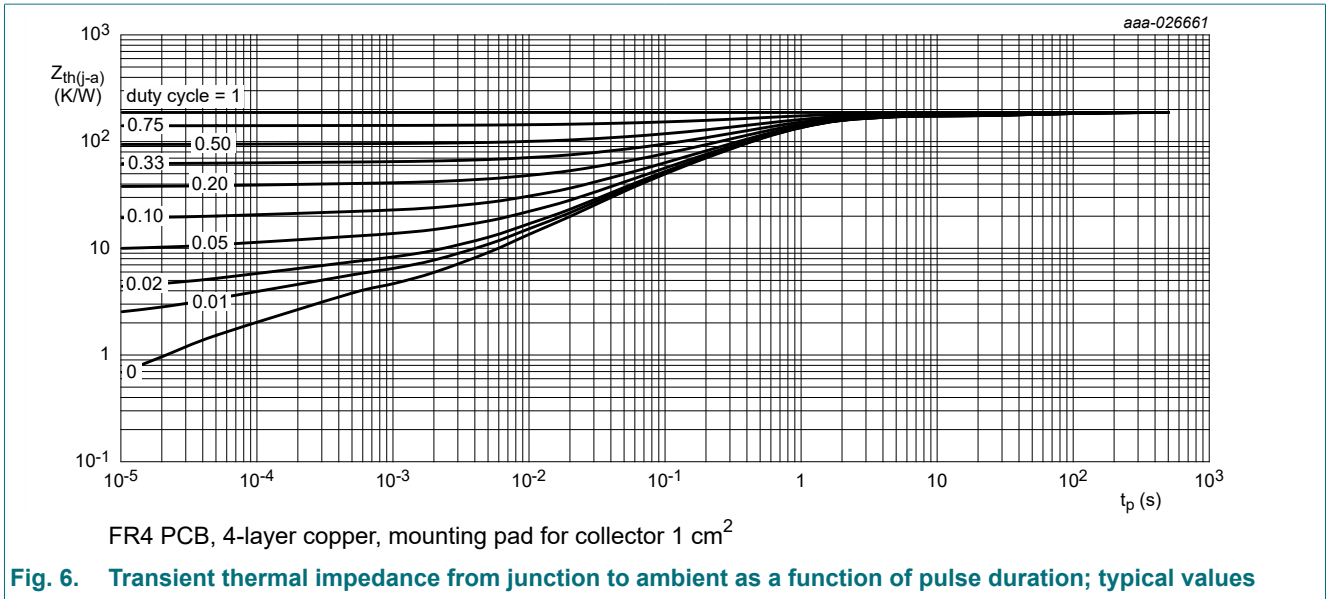
FR4 PCB, single sided copper, mounting pad for drain  $1\text{ cm}^2$

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



FR4 PCB, 4-layer copper, standard footprint

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

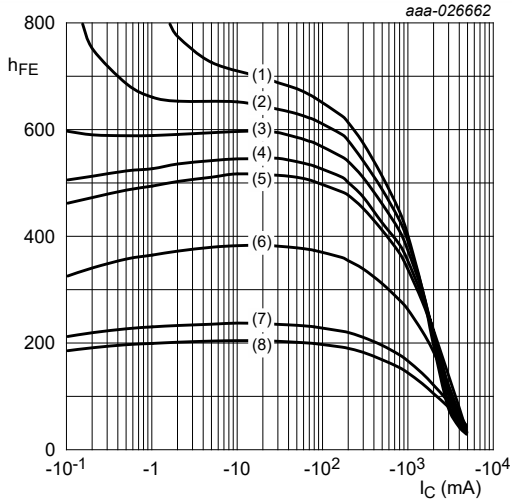


## 10. Characteristics

Table 7. Characteristics

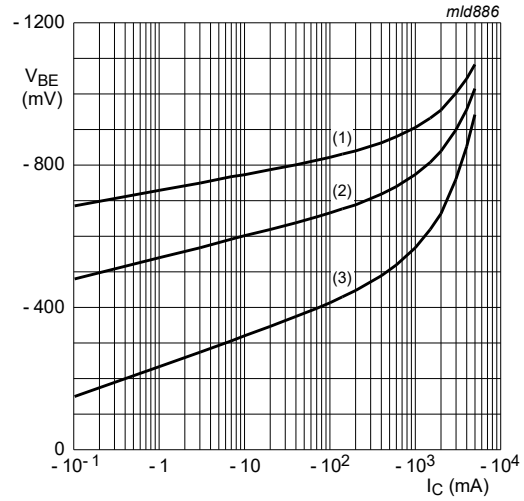
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{(BR)CBO}$	collector-base breakdown voltage	$I_C = -100 \mu\text{A}; I_E = 0 \text{ A}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-50	-	-	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	$I_C = -10 \text{ mA}; I_B = 0 \text{ A}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-50	-	-	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	$I_C = 0 \text{ A}; I_E = -100 \mu\text{A}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-7	-	-	V
$I_{CBO}$	collector-base cut-off current	$V_{CB} = -50 \text{ V}; I_E = 0 \text{ A}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	-100	nA
		$V_{CB} = -50 \text{ V}; I_E = 0 \text{ A}; T_j = 150 \text{ }^\circ\text{C}$	-	-	-5	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = -5 \text{ V}; I_C = 0 \text{ A}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	-100	nA
$h_{FE}$	DC current gain	$V_{CE} = -2 \text{ V}; I_C = -100 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ [1]	200	-	-	
		$V_{CE} = -2 \text{ V}; I_C = -500 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ [1]	200	-	-	
		$V_{CE} = -2 \text{ V}; I_C = -1 \text{ A}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ [1]	200	-	-	
		$V_{CE} = -2 \text{ V}; I_C = -2 \text{ A}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ [1]	130	-	-	
		$V_{CE} = -2 \text{ V}; I_C = -3 \text{ A}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ [1]	80	-	-	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -500 \text{ mA}; I_B = -50 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ [1]	-	-	-90	mV
		$I_C = -1 \text{ A}; I_B = -50 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ [1]	-	-	-180	mV
		$I_C = -2 \text{ A}; I_B = -100 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ [1]	-	-	-320	mV
		$I_C = -2 \text{ A}; I_B = -200 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ [1]	-	-	-270	mV
		$I_C = -3 \text{ A}; I_B = -300 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ [1]	-	-	-390	mV
$R_{CEsat}$	collector-emitter saturation resistance	$I_C = -2 \text{ A}; I_B = -200 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ [1]	-	-	135	m $\Omega$
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -2 \text{ A}; I_B = -100 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ [1]	-	-	-1.1	V
		$I_C = -3 \text{ A}; I_B = -300 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ [1]	-	-	-1.2	V
$V_{BE}$	base-emitter voltage	$V_{CE} = -2 \text{ V}; I_C = -1 \text{ A}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$ [1]	-	-	-1.2	V
$f_T$	transition frequency	$V_{CE} = -5 \text{ V}; I_C = -100 \text{ mA}; f = 100 \text{ MHz}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	100	-	-	MHz
$C_c$	collector capacitance	$V_{CB} = -10 \text{ V}; I_E = 0 \text{ A}; i_e = 0 \text{ A}; f = 1 \text{ MHz}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	35	pF

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



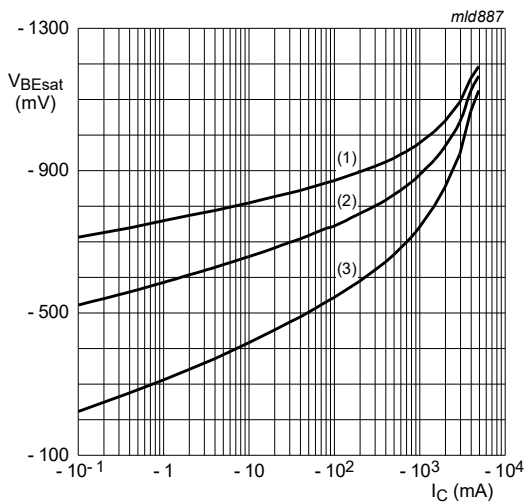
$V_{CE} = -2\text{ V}$   
 (1)  $T_{amb} = 175\text{ }^{\circ}\text{C}$   
 (2)  $T_{amb} = 150\text{ }^{\circ}\text{C}$   
 (3)  $T_{amb} = 125\text{ }^{\circ}\text{C}$   
 (4)  $T_{amb} = 100\text{ }^{\circ}\text{C}$   
 (5)  $T_{amb} = 85\text{ }^{\circ}\text{C}$   
 (6)  $T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (7)  $T_{amb} = -40\text{ }^{\circ}\text{C}$   
 (8)  $T_{amb} = -55\text{ }^{\circ}\text{C}$

**Fig. 7. DC current gain as a function of collector current; typical values**



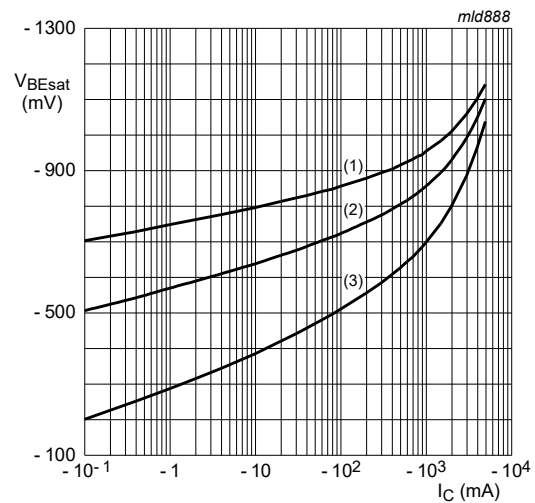
$V_{CE} = -2\text{ V}$   
 (1)  $T_{amb} = -55\text{ }^{\circ}\text{C}$   
 (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (3)  $T_{amb} = 150\text{ }^{\circ}\text{C}$

**Fig. 8. Base-emitter voltage as a function of collector current; typical values**



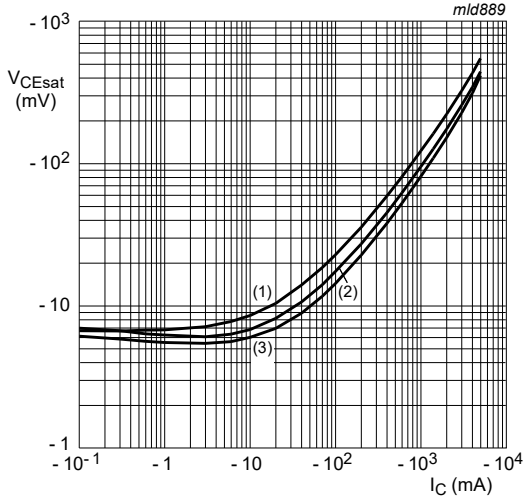
$I_C/I_B = 10$   
 (1)  $T_{amb} = -55\text{ }^{\circ}\text{C}$   
 (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (3)  $T_{amb} = 150\text{ }^{\circ}\text{C}$

**Fig. 9. Base-emitter saturation voltage as a function of collector current; typical values**



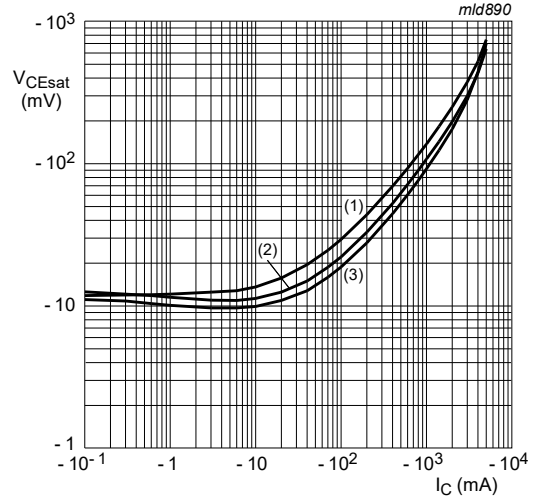
$I_C/I_B = 20$   
 (1)  $T_{amb} = -55\text{ }^{\circ}\text{C}$   
 (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$   
 (3)  $T_{amb} = 150\text{ }^{\circ}\text{C}$

**Fig. 10. Base-emitter saturation voltage as a function of collector current; typical values**



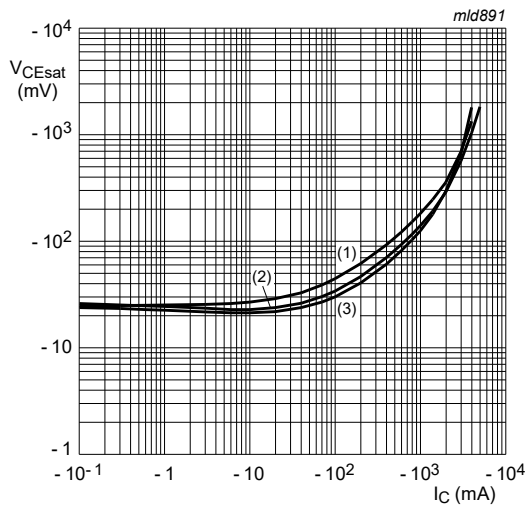
$I_C/I_B = 10$   
 (1)  $T_{amb} = 150\text{ °C}$   
 (2)  $T_{amb} = 25\text{ °C}$   
 (3)  $T_{amb} = -55\text{ °C}$

**Fig. 11. Collector-emitter saturation voltage as a function of collector current; typical values**



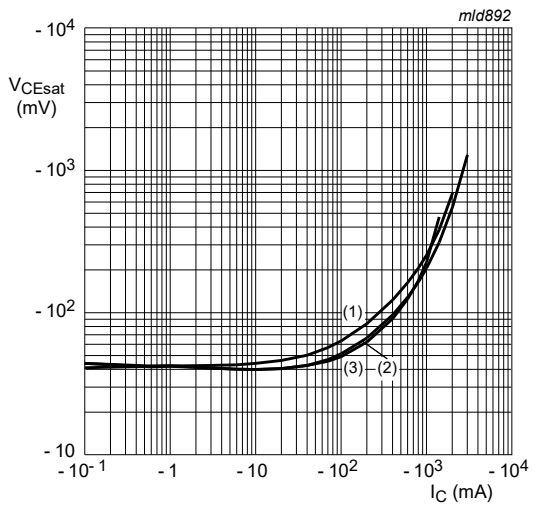
$I_C/I_B = 20$   
 (1)  $T_{amb} = 150\text{ °C}$   
 (2)  $T_{amb} = 25\text{ °C}$   
 (3)  $T_{amb} = -55\text{ °C}$

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



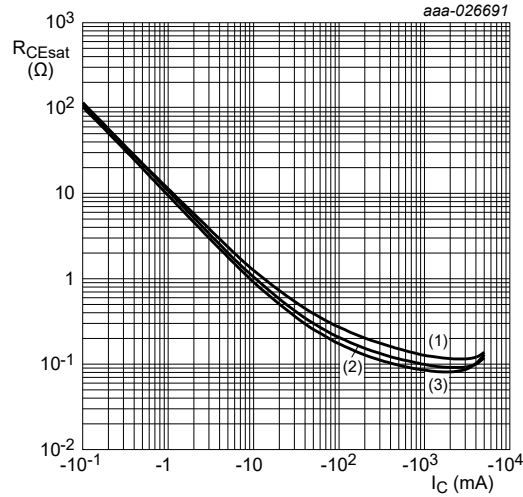
$I_C/I_B = 50$   
 (1)  $T_{amb} = 150\text{ °C}$   
 (2)  $T_{amb} = 25\text{ °C}$   
 (3)  $T_{amb} = -55\text{ °C}$

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



$I_C/I_B = 100$   
 (1)  $T_{amb} = 150\text{ °C}$   
 (2)  $T_{amb} = 25\text{ °C}$   
 (3)  $T_{amb} = -55\text{ °C}$

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



$I_C/I_B = 20$   
 (1)  $T_{amb} = 150\text{ }^\circ\text{C}$   
 (2)  $T_{amb} = 25\text{ }^\circ\text{C}$   
 (3)  $T_{amb} = -55\text{ }^\circ\text{C}$

Fig. 15. Collector-emitter saturation resistance 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

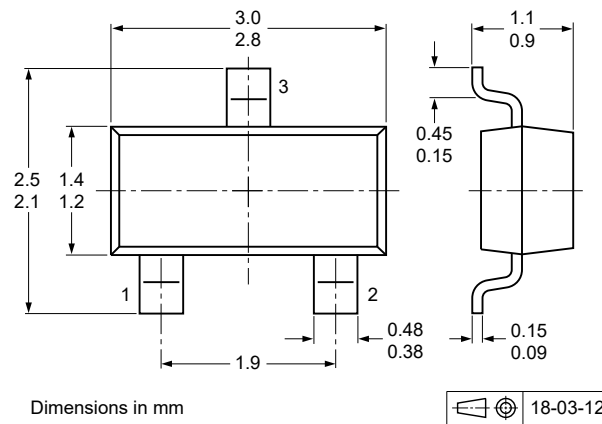


Fig. 16. Package outline SOT23

### 13. Soldering

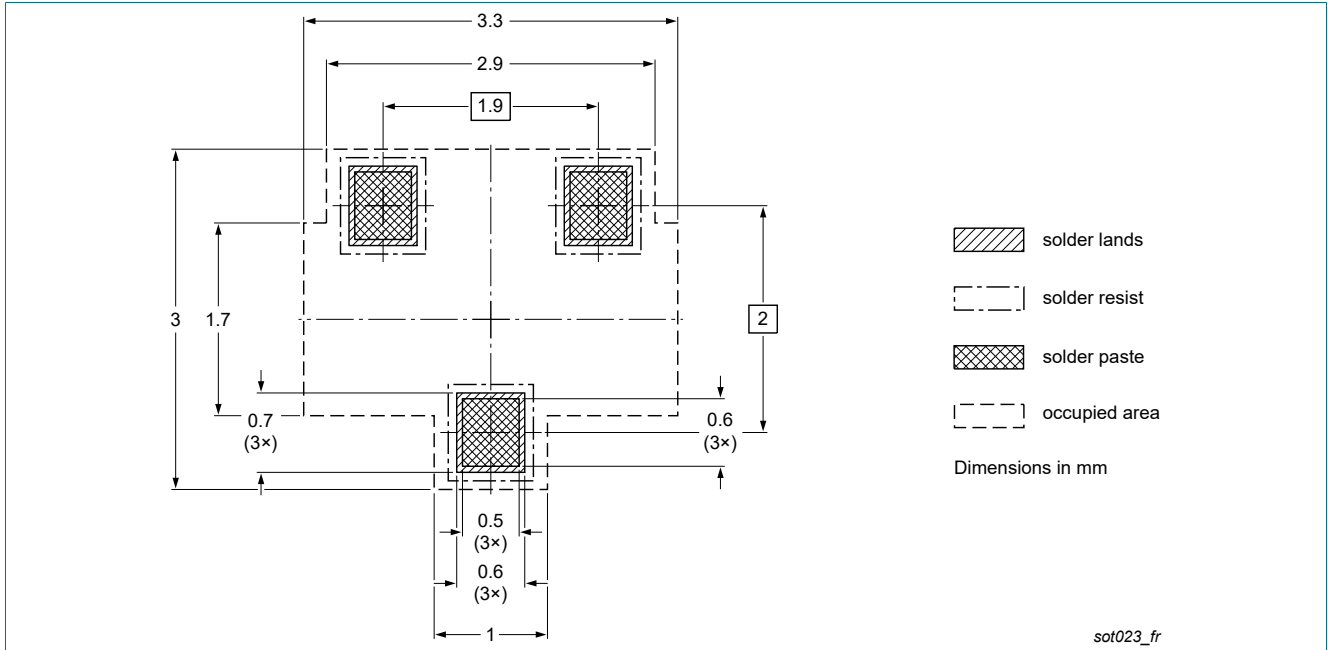


Fig. 17. Reflow soldering footprint for SOT23

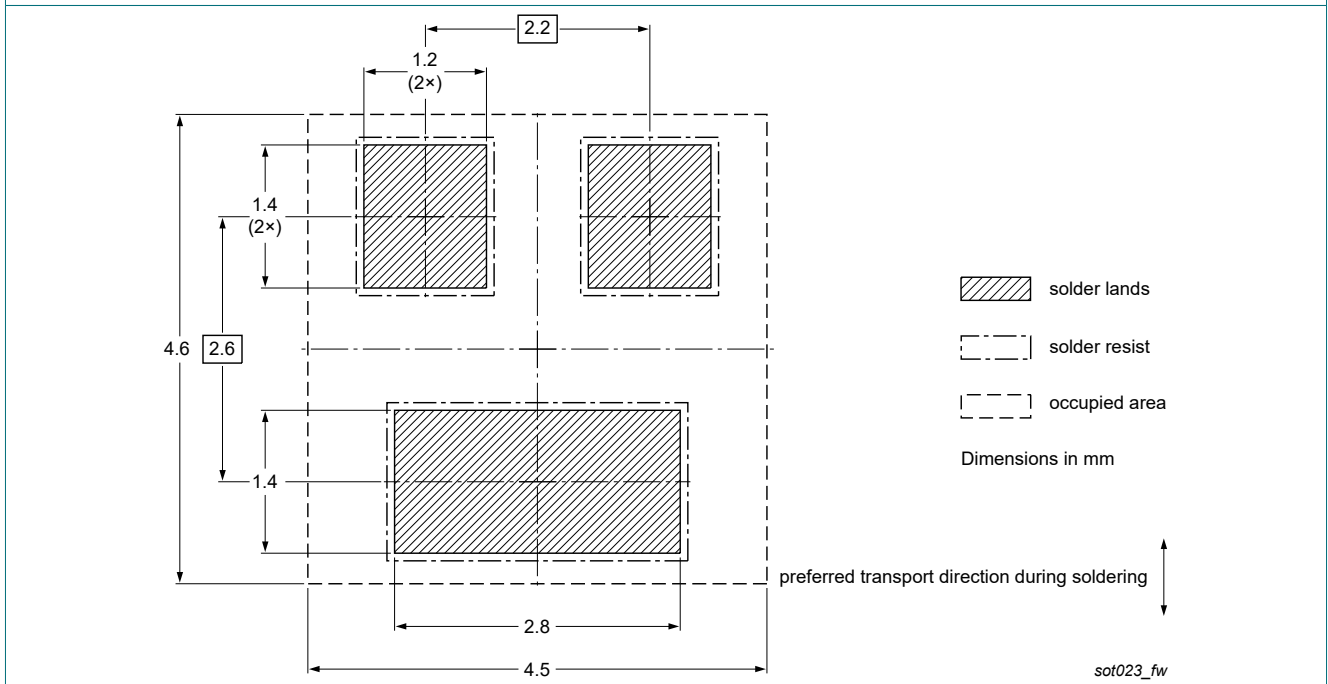


Fig. 18. Wave soldering footprint for SOT23

## 14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PBSS5350TH-Q v.1	20260116	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".
- [3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the internet at <https://www.nexperia.com>.

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