



# PZTA44

NPN high-voltage transistor

1 October 2022

Product data sheet

## 1. General description

NPN high-voltage transistor in a SOT223 (SC73) Surface-Mounted Device plastic package.

## 2. Features and benefits

- Low current (max. 300 mA)
- High voltage (max. 400 V)

## 3. Applications

- Telecommunication

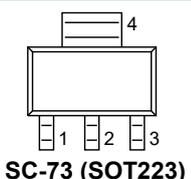
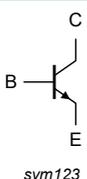
## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{CE0}$	collector-emitter voltage	open base	-	-	400	V
$I_C$	collector current		-	-	300	mA
$h_{FE}$	DC current gain	$V_{CE} = 10\text{ V}; I_C = 1\text{ mA}; T_{amb} = 25\text{ }^\circ\text{C}$	40	-	-	

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	B	base	 SC-73 (SOT223)	 sym123
2	C	collector		
3	E	emitter		
4	C	collector		

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
<a href="#">PZTA44</a>	SC-73	plastic, surface-mounted package with increased heatsink; 4 leads; 2.3 mm pitch; 6.5 mm x 3.5 mm x 1.65 mm body	<a href="#">SOT223</a>

## 7. Marking

Table 4. Marking codes

Type number	Marking code
PZTA44	PZTA44

## 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	-	500	V
$V_{CEO}$	collector-emitter voltage	open base	-	400	V
$V_{EBO}$	emitter-base voltage	open collector	-	6	V
$I_C$	collector current		-	300	mA
$I_{CM}$	peak collector current	single pulse; $t_p \leq 1$ ms	-	300	mA
$I_{BM}$	peak base current		-	100	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25$ °C	[1] [2]	1.35	W
$T_j$	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, mounting pad for collector 1 cm<sup>2</sup>.

[2] For other mounting conditions, see "Thermal considerations for SOT223 in the General Part of associated Handbook".

## 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] [2]	-	91	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		-	-	10	K/W

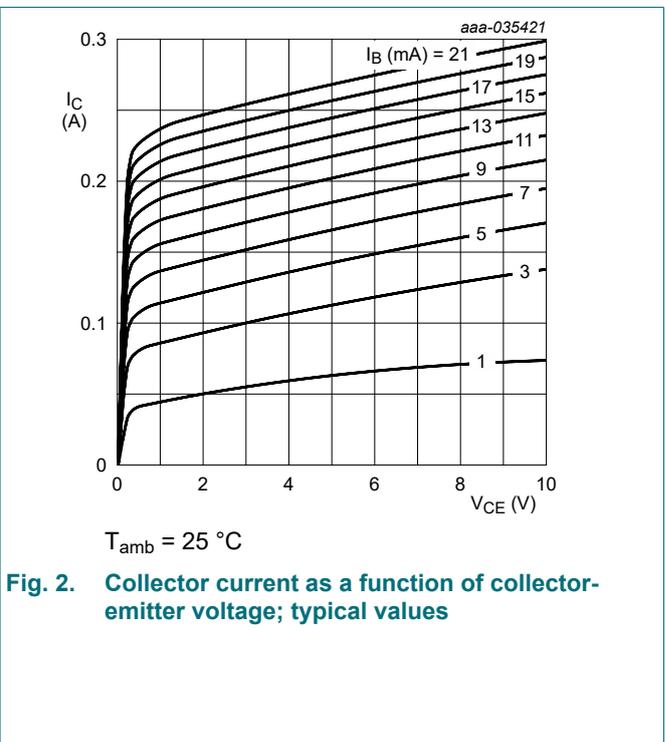
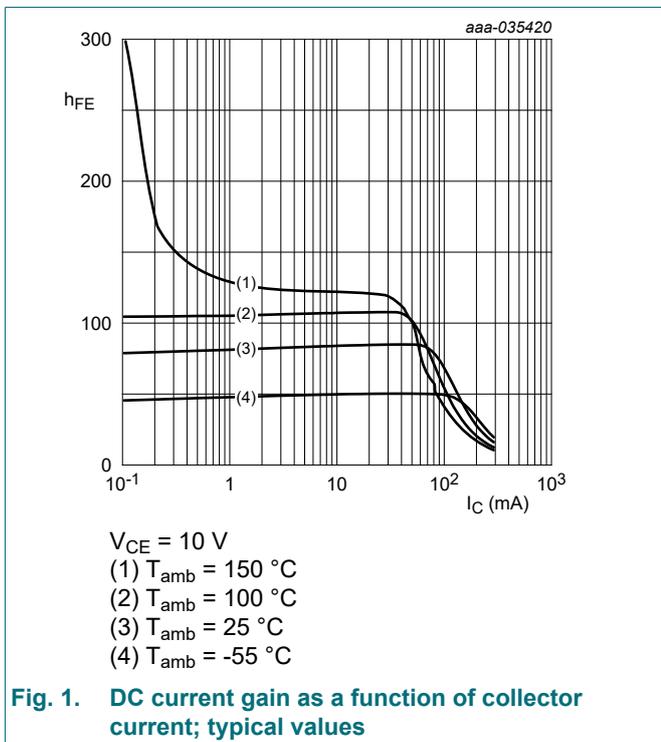
[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 1 cm<sup>2</sup>.

[2] For other mounting conditions, see "Thermal considerations for SOT223 in the General Part of associated Handbook".

## 10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_{CBO}$	collector-base cut-off current	$V_{CB} = 400\text{ V}; I_E = 0\text{ A}; T_{amb} = 25\text{ °C}$	-	-	100	nA
		$V_{CB} = 400\text{ V}; I_E = 0\text{ A}; T_j = 150\text{ °C}$	-	-	10	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = 4\text{ V}; I_C = 0\text{ A}; T_{amb} = 25\text{ °C}$	-	-	100	nA
$h_{FE}$	DC current gain	$V_{CE} = 10\text{ V}; I_C = 1\text{ mA}; T_{amb} = 25\text{ °C}$	40	-	-	
		$V_{CE} = 10\text{ V}; I_C = 10\text{ mA}; T_{amb} = 25\text{ °C}$	50	-	200	
		$V_{CE} = 10\text{ V}; I_C = 50\text{ mA}; \text{pulsed}; t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02; T_{amb} = 25\text{ °C}$	45	-	-	
		$V_{CE} = 10\text{ V}; I_C = 100\text{ mA}; \text{pulsed}; t_p \leq 300\text{ }\mu\text{s}; T_{amb} = 25\text{ °C}$	40	-	-	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 1\text{ mA}; I_B = 0.1\text{ mA}; T_{amb} = 25\text{ °C}$	-	-	400	mV
		$I_C = 10\text{ mA}; I_B = 1\text{ mA}; T_{amb} = 25\text{ °C}$	-	-	500	mV
		$I_C = 50\text{ mA}; I_B = 5\text{ mA}; \text{pulsed}; t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02; T_{amb} = 25\text{ °C}$	-	-	750	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 1\text{ mA}; T_{amb} = 25\text{ °C}$	-	-	850	mV
$f_T$	transition frequency	$V_{CE} = 10\text{ V}; I_C = 10\text{ mA}; f = 100\text{ MHz}; T_{amb} = 25\text{ °C}$	20	-	-	MHz
$C_c$	collector capacitance	$V_{CB} = 20\text{ V}; I_E = 0\text{ A}; i_e = 0\text{ A}; f = 1\text{ MHz}; T_{amb} = 25\text{ °C}$	-	-	7	pF
$C_e$	emitter capacitance	$V_{EB} = 500\text{ mV}; I_C = 0\text{ A}; i_c = 0\text{ A}; f = 1\text{ MHz}; T_{amb} = 25\text{ °C}$	-	-	180	pF



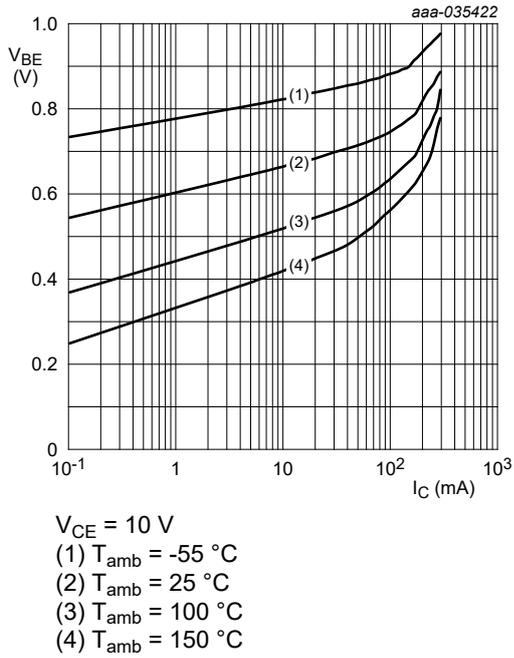


Fig. 3. Base-emitter voltage as a function of collector current; typical values

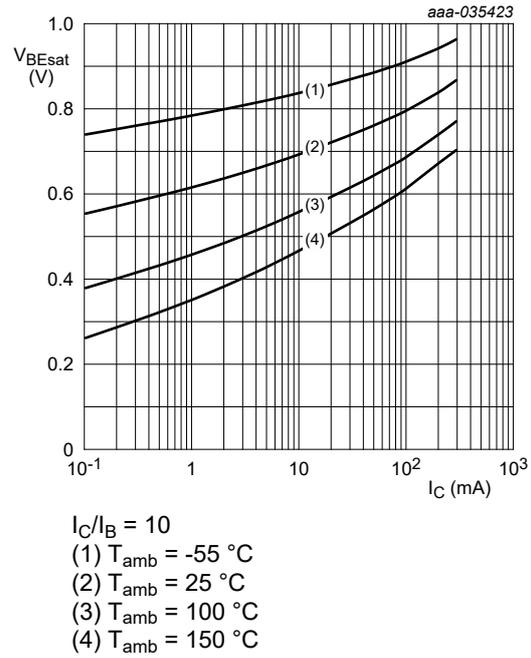


Fig. 4. Base-emitter saturation voltage as a function of collector current; typical values

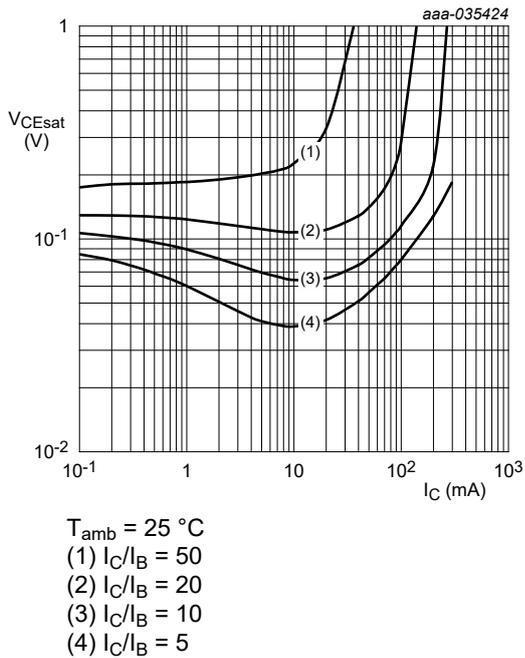


Fig. 5. Collector-emitter saturation voltage as a function of collector current; typical values

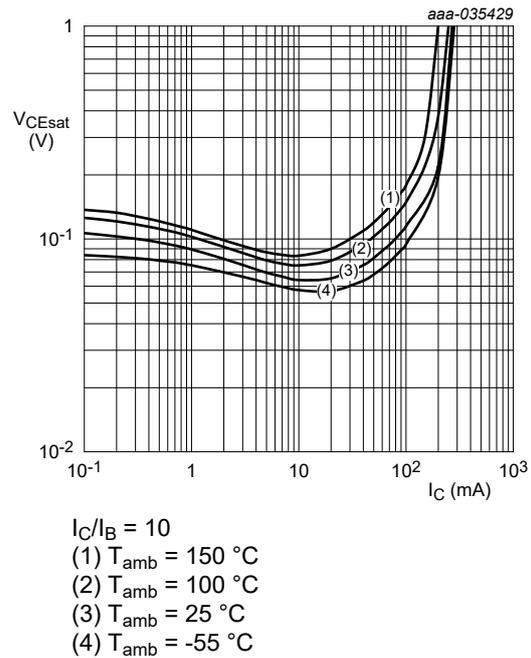


Fig. 6. Collector-emitter saturation voltage as a function of collector current; typical values

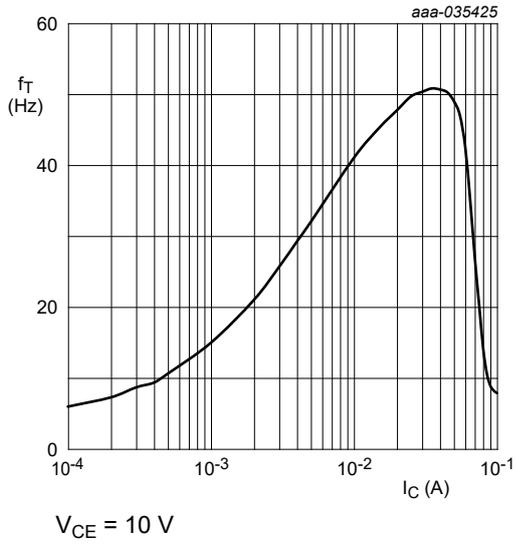


Fig. 7. Transition frequency as a function of collector current; typical values

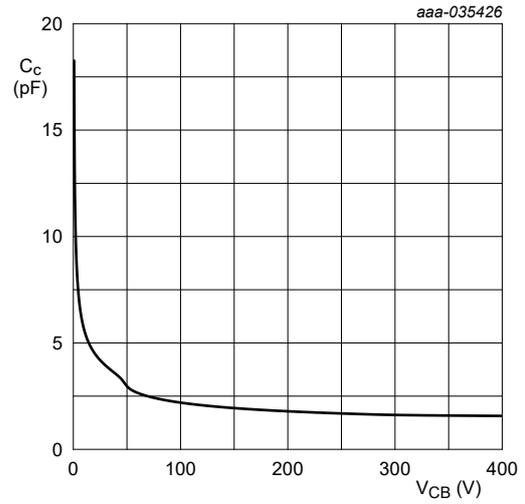


Fig. 8. Collector capacitance as a function of collector-base voltage; typical values

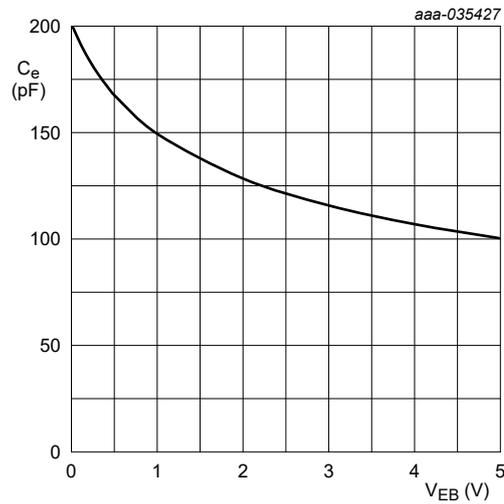


Fig. 9. Emitter capacitance as a function of emitter-base voltage; typical values

## 11. Package outline

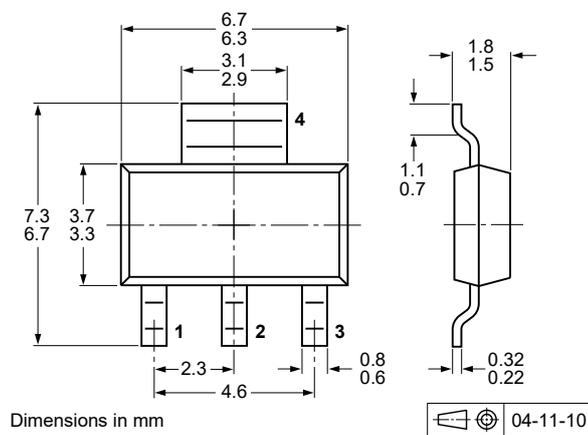


Fig. 10. Package outline SC-73 (SOT223)

## 12. Soldering

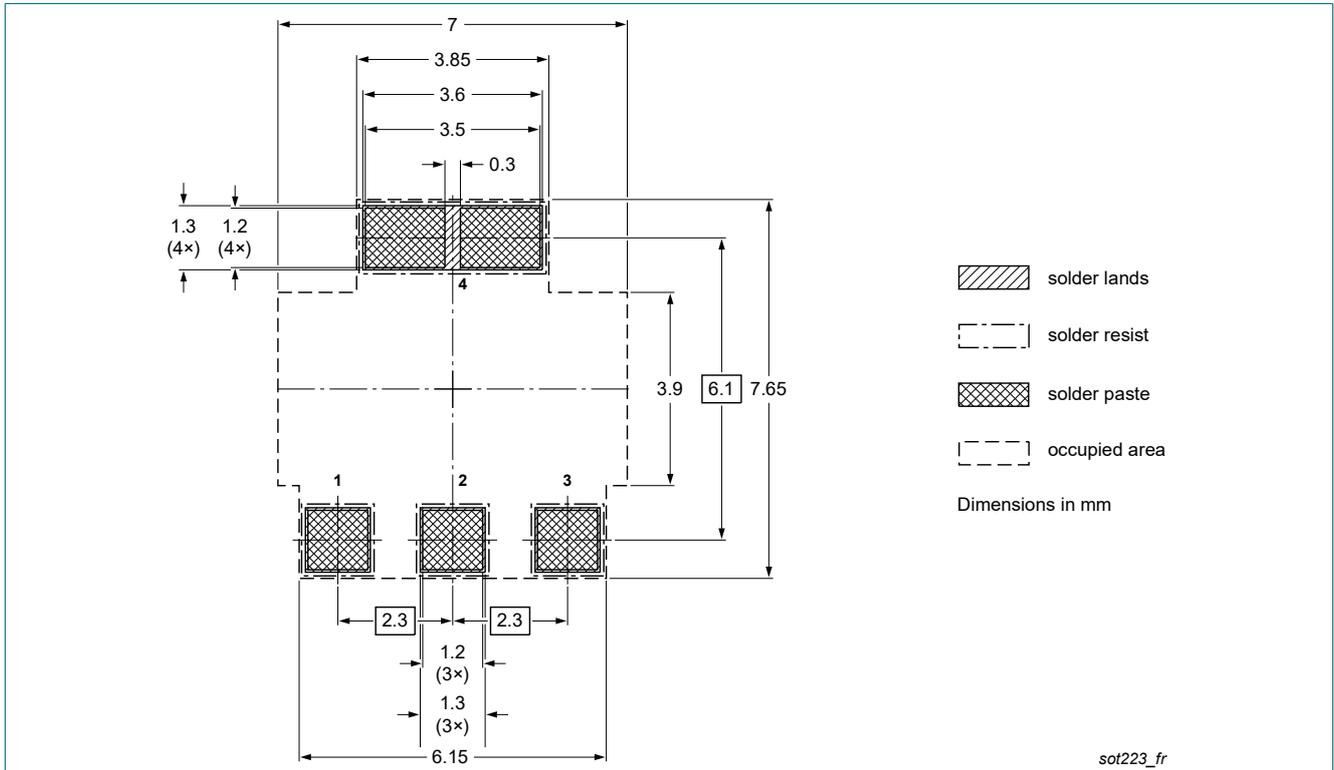


Fig. 11. Reflow soldering footprint for SC-73 (SOT223)

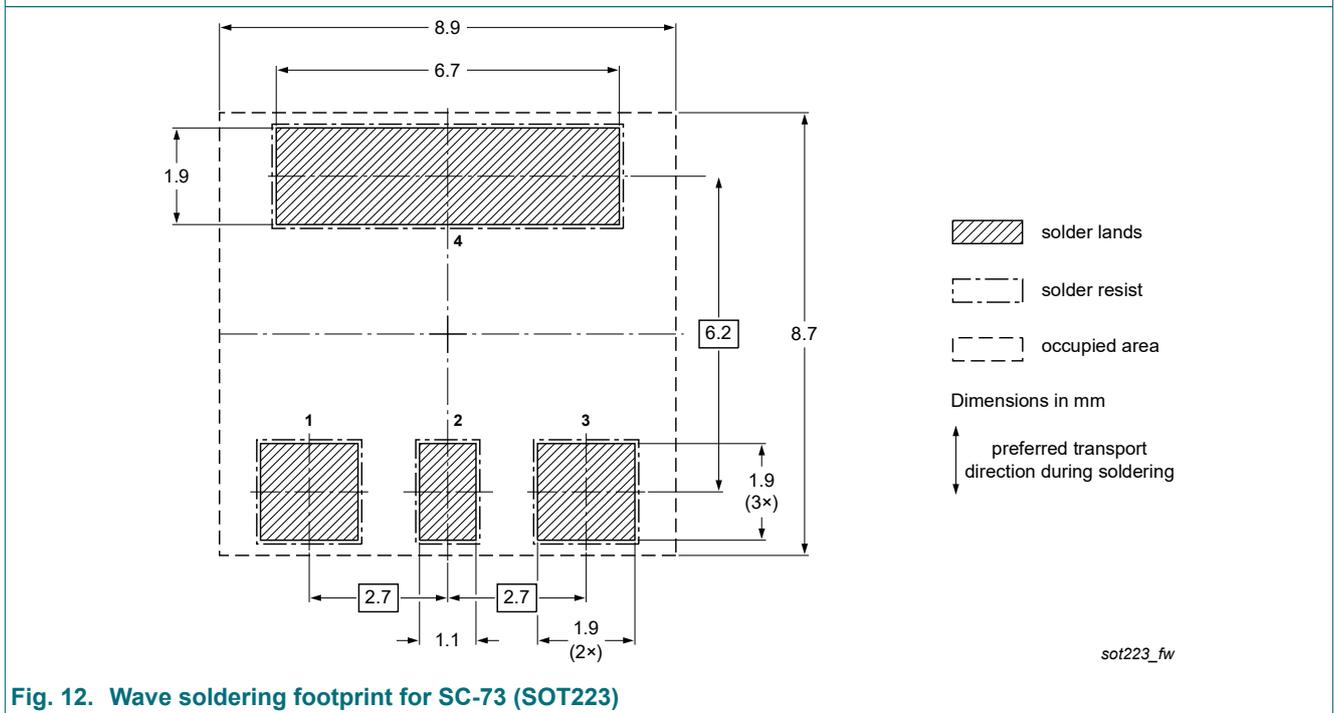


Fig. 12. Wave soldering footprint for SC-73 (SOT223)

## 13. Revision history

**Table 8. Revision history**

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PZTA44 v.3	20221001	Product data sheet	-	PZTA44 v.2
Modifications:	<ul style="list-style-type: none"><li>• The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.</li><li>• Legal texts have been adapted to the new company name where appropriate.</li><li>• Product changed to non-automotive qualification. Please refer to <a href="http://nexperia.com">nexperia.com</a> for automotive (-Q) product alternative(s).</li></ul>			
PZTA44 v.2	19990521	Product data sheet	-	PZTA44 v.1
PZTA44 v.1	19981126	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".
- [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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## Contents

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1. General description.....	1
2. Features and benefits.....	1
3. Applications.....	1
4. Quick reference data.....	1
5. Pinning information.....	1
6. Ordering information.....	1
7. Marking.....	2
8. Limiting values.....	2
9. Thermal characteristics.....	2
10. Characteristics.....	3
11. Package outline.....	5
12. Soldering.....	6
13. Revision history.....	7
14. Legal information.....	8

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