

# PMBTA42

300 V, 100 mA NPN high-voltage transistor

Rev. 05 — 12 December 2008

Product data sheet

## 1. Product profile

### 1.1 General description

NPN high-voltage transistor in a small SOT23 (TO-236AB) Surface-Mounted Device (SMD) plastic package.

PNP complement: PMBTA92.

### 1.2 Features

- High voltage (max. 300 V)

### 1.3 Applications

- Telephony and professional communication equipment

### 1.4 Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{CE0}$	collector-emitter voltage	open base	-	-	300	V
$I_C$	collector current		-	-	100	mA
$h_{FE}$	DC current gain	$V_{CE} = 10\text{ V}$				
		$I_C = 1\text{ mA}$	25	-	-	
		$I_C = 10\text{ mA}$	40	-	-	
		$I_C = 30\text{ mA}$	40	-	-	

## 2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Graphic symbol
1	base		
2	emitter		
3	collector		

*sym021*

### 3. Ordering information

**Table 3. Ordering information**

Type number <sup>[1]</sup>	Package		
	Name	Description	Version
PMBTA42	-	plastic surface-mounted package; 3 leads	SOT23
PMBTA42/DG			

[1] /DG: halogen-free

### 4. Marking

**Table 4. Marking codes**

Type number <sup>[1]</sup>	Marking code <sup>[2]</sup>
PMBTA42	*1D
PMBTA42/DG	*BV

[1] /DG: halogen-free

[2] \* = -: made in Hong Kong  
 \* = p: made in Hong Kong  
 \* = t: made in Malaysia  
 \* = W: made in China

### 5. 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	-	300	V
$V_{CEO}$	collector-emitter voltage	open base	-	300	V
$V_{EBO}$	emitter-base voltage	open collector	-	6	V
$I_C$	collector current		-	100	mA
$I_{CM}$	peak collector current	single pulse; $t_p \leq 1$ ms	-	200	mA
$I_{BM}$	peak base current	single pulse; $t_p \leq 1$ ms	-	100	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25$ °C	<sup>[1]</sup> -	250	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 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

## 6. 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]	-	500	K/W

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

## 7. Characteristics

**Table 7. Characteristics**

$T_{amb} = 25\text{ °C}$  unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_{CBO}$	collector-base cut-off current	$V_{CB} = 200\text{ V}; I_E = 0\text{ A}$	-	-	100	nA
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = 6\text{ V}; I_C = 0\text{ A}$	-	-	100	nA
$h_{FE}$	DC current gain	$V_{CE} = 10\text{ V}$				
		$I_C = 1\text{ mA}$	25	-	-	
		$I_C = 10\text{ mA}$	40	-	-	
		$I_C = 30\text{ mA}$	40	-	-	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 20\text{ mA}; I_B = 2\text{ mA}$	-	-	500	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 20\text{ mA}; I_B = 2\text{ mA}$	-	-	900	mV
$C_{re}$	feedback capacitance	$V_{CB} = 20\text{ V}; I_C = i_c = 0\text{ A}; f = 1\text{ MHz}$	-	-	3	pF
$f_T$	transition frequency	$V_{CE} = 20\text{ V}; I_C = 10\text{ mA}; f = 100\text{ MHz}$	50	-	-	MHz

## 8. Package outline

Plastic surface-mounted package; 3 leads

SOT23

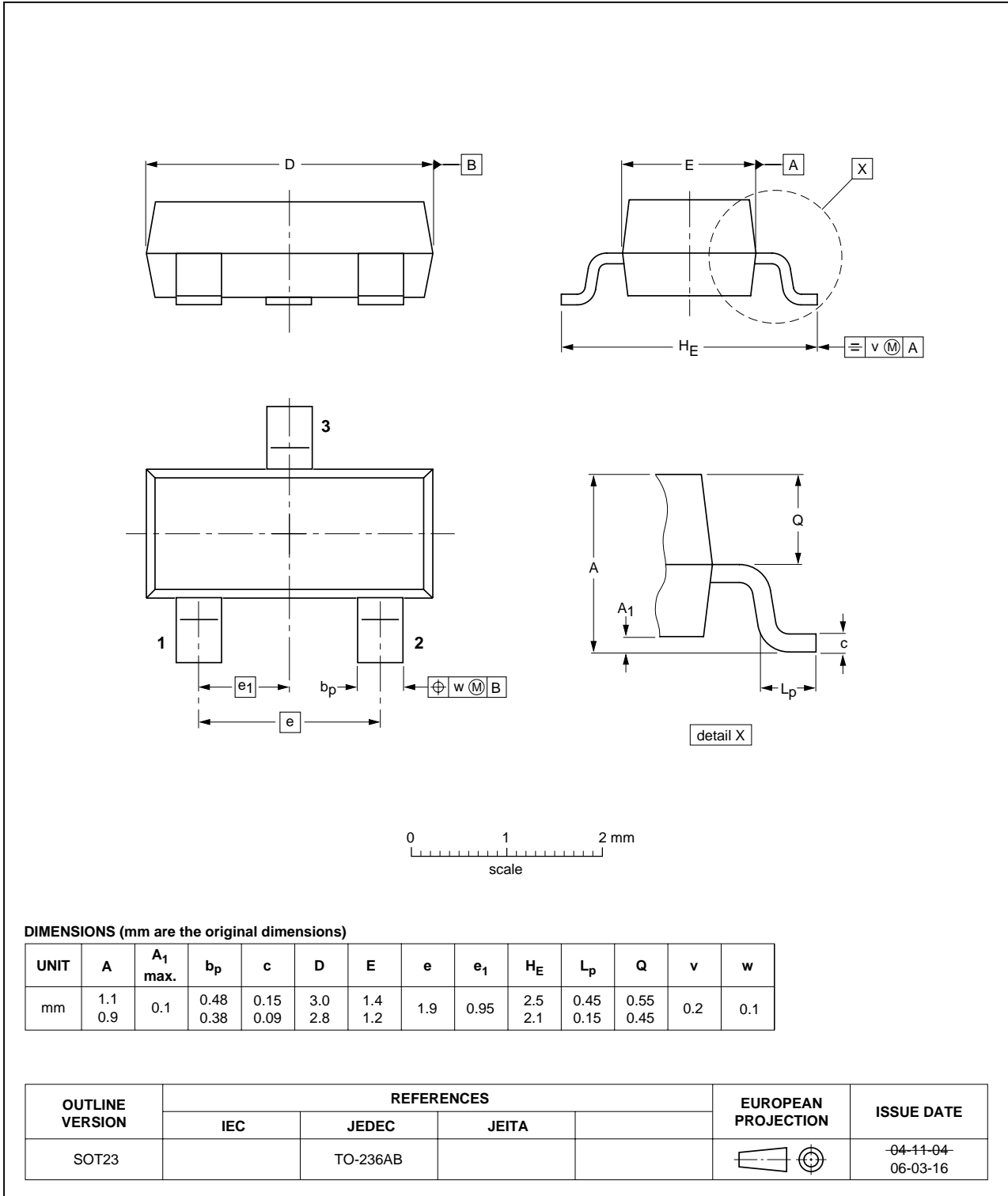


Fig 1. Package outline SOT23 (TO-236AB)

## 9. Packing information

**Table 8. Packing methods**

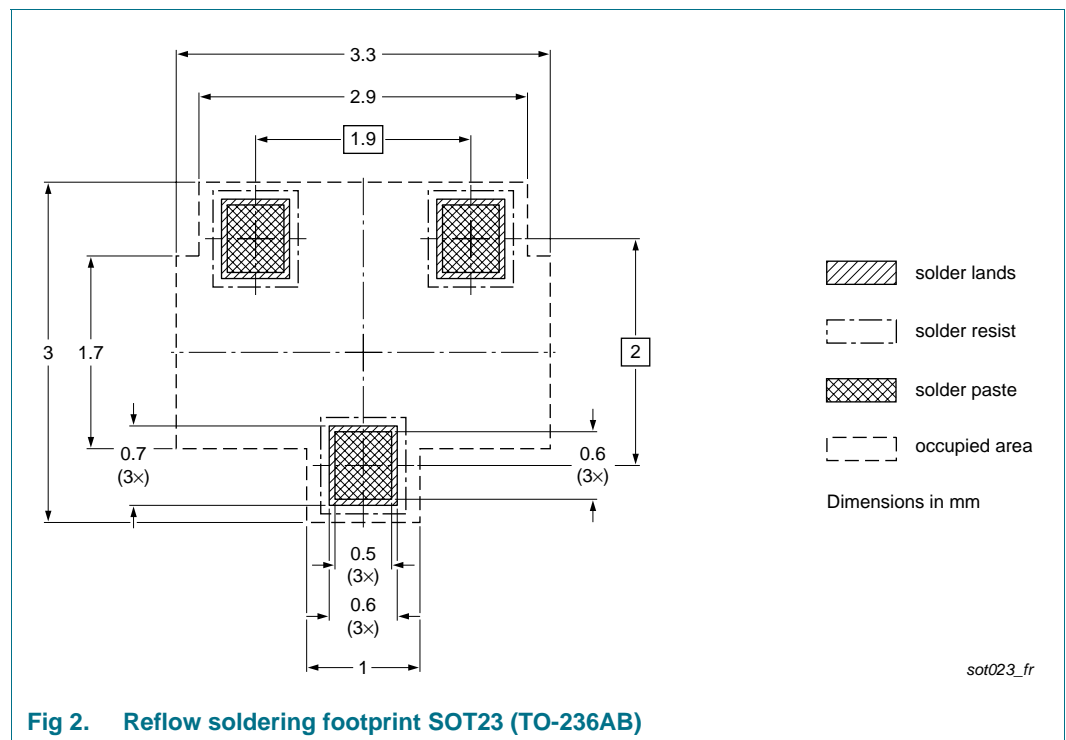
The indicated -xxx are the last three digits of the 12NC ordering code.<sup>[1]</sup>

Type number	Package	Description	Packing quantity	
			3000	10000
PMBTA42	SOT23	4 mm pitch, 8 mm tape and reel	-215	-235
PMBTA42/DG				

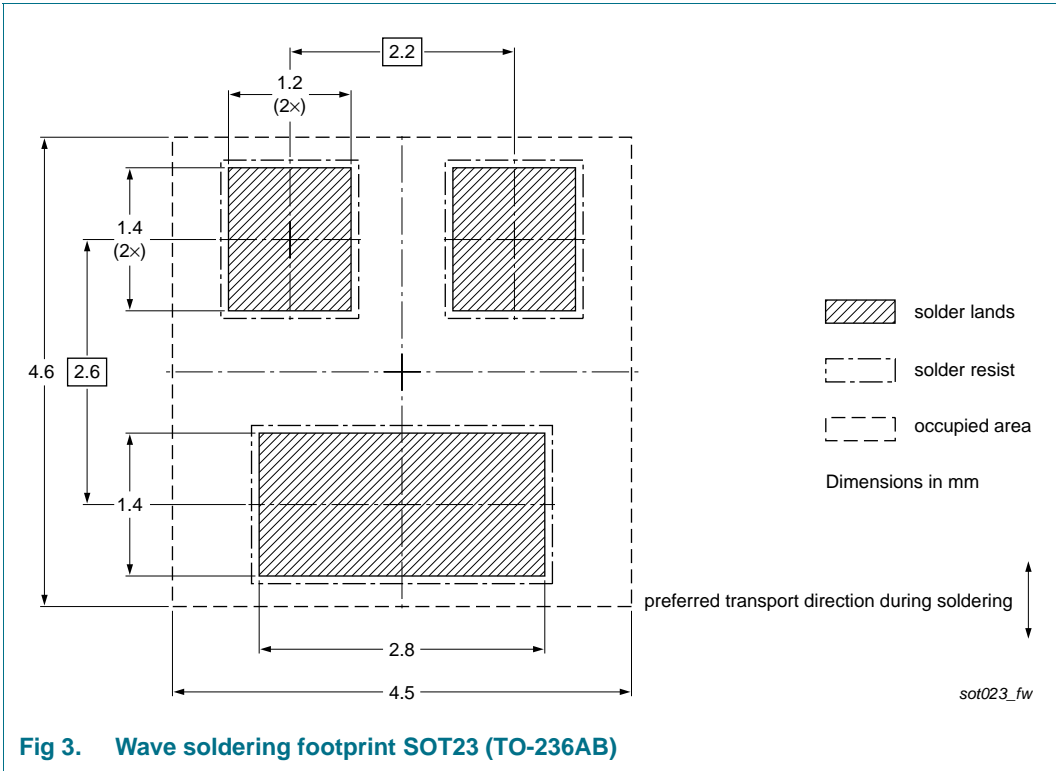
[1] For further information and the availability of packing methods, see [Section 13](#).

[2] /DG: halogen-free

## 10. Soldering



**Fig 2. Reflow soldering footprint SOT23 (TO-236AB)**



## 11. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PMBTA42_5	20081212	Product data sheet	-	PMBTA42_4
Modifications:		<ul style="list-style-type: none"><li>• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.</li><li>• Legal texts have been adapted to the new company name where appropriate.</li><li>• Type number PMBTA42/DG added</li><li>• <a href="#">Table 4 “Marking codes”</a>: enhanced</li><li>• <a href="#">Section 12 “Legal information”</a>: updated</li></ul>		
PMBTA42_4	20040122	Product specification	-	PMBTA42_3
PMBTA42_3	19990422	Product specification	-	PMBTA42_43_CNV_2

## 12. Legal information

### 12.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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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