

# PMSTA05; PMSTA06

500 mA NPN general-purpose transistors

Rev. 3 — 22 July 2010

Product data sheet

## 1. Product profile

### 1.1 General description

NPN general-purpose transistors in a SOT323 (SC-70) very small Surface-Mounted Device (SMD) plastic package.

Table 1. Product overview

Type number	Package		PNP complement
	NXP	JEITA	
PMSTA05	SOT323	SC-70	PMSTA55
PMSTA06			PMSTA56

### 1.2 Features and benefits

- High current (max. 500 mA)
- Collector-emitter voltage:
  - ◆ 60 V (PMSTA05)
  - ◆ 80 V (PMSTA06)
- AEC-Q101 qualified
- Very small SMD plastic package

### 1.3 Applications

- Primarily intended for telephony and professional communication equipment

### 1.4 Quick reference data

Table 2. Quick reference data

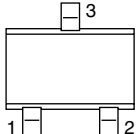
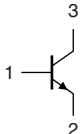
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{CE0}$	collector-emitter voltage	open base				
	PMSTA05		-	-	60	V
	PMSTA06		-	-	80	V
$I_C$	collector current		-	-	500	mA
$h_{FE}$	DC current gain	$V_{CE} = 2\text{ V};$ $I_C = 10\text{ mA}$	50	-	-	
		$V_{CE} = 1\text{ V};$ $I_C = 100\text{ mA}$	[1] 50	-	-	

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



## 2. Pinning information

Table 3. Pinning

Pin	Description	Simplified outline	Graphic symbol
1	base		 <small>sym021</small>
2	emitter		
3	collector		

## 3. Ordering information

Table 4. Ordering information

Type number	Package		
	Name	Description	Version
PMSTA05	SC-70	plastic surface-mounted package; 3 leads	SOT323
PMSTA06			

## 4. Marking

Table 5. Marking codes

Type number	Marking code <sup>[1]</sup>
PMSTA05	*1H
PMSTA06	*1G

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

## 5. Limiting values

**Table 6. 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			
	PMSTA05		-	60	V
	PMSTA06		-	80	V
$V_{CEO}$	collector-emitter voltage	open base			
	PMSTA05		-	60	V
	PMSTA06		-	80	V
$V_{EBO}$	emitter-base voltage	open collector	-	4	V
$I_C$	collector current		-	500	mA
$I_{CM}$	peak collector current		-	500	mA
$I_{BM}$	peak base current		-	500	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[1] -	200	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).

## 6. Thermal characteristics

**Table 7. Thermal characteristics**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] -	-	625	K/W

[1] Device mounted on an FR4 PCB.

## 7. Characteristics

**Table 8. Characteristics**

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_{CBO}$	collector-base cut-off current					
	PMSTA05	$V_{CB} = 60\text{ V}; I_E = 0\text{ A}$	-	-	100	nA
	PMSTA06	$V_{CB} = 80\text{ V}; I_E = 0\text{ A}$	-	-	100	nA
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = 3\text{ V}; I_C = 0\text{ A}$	-	-	500	nA
$h_{FE}$	DC current gain	$V_{CE} = 2\text{ V}; I_C = 10\text{ mA}$	50	-	-	
		$V_{CE} = 1\text{ V}; I_C = 100\text{ mA}$	[1] 50	-	-	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 100\text{ mA}; I_B = 10\text{ mA}$	[1] -	-	250	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 100\text{ mA}; I_B = 10\text{ mA}$	[1] -	-	900	mV
$V_{BE}$	base-emitter voltage	$I_C = 100\text{ mA}; V_{CE} = 1\text{ V}$	-	-	1.2	V
$f_T$	transition frequency	$V_{CE} = 2\text{ V}; I_C = 10\text{ mA}; f = 100\text{ MHz}$	100	-	-	MHz

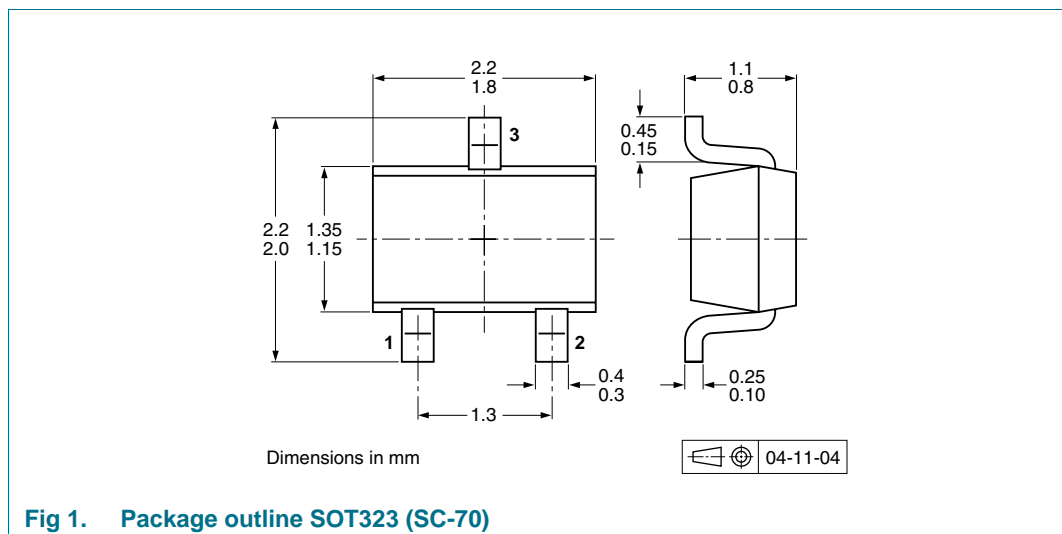
[1] Pulse test:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$ .

## 8. Test information

### 8.1 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.

## 9. Package outline



**Fig 1. Package outline SOT323 (SC-70)**

### 10. Packing information

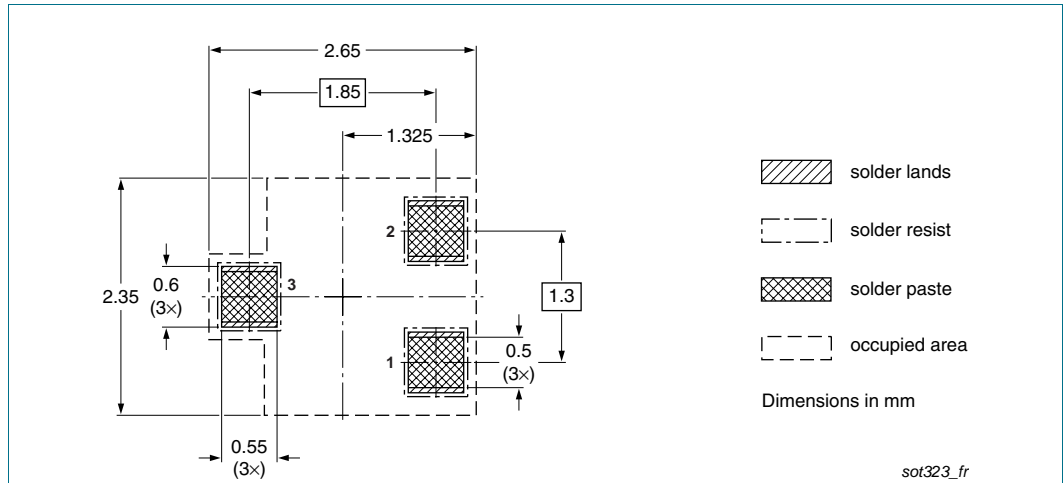
**Table 9. Packing methods**

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

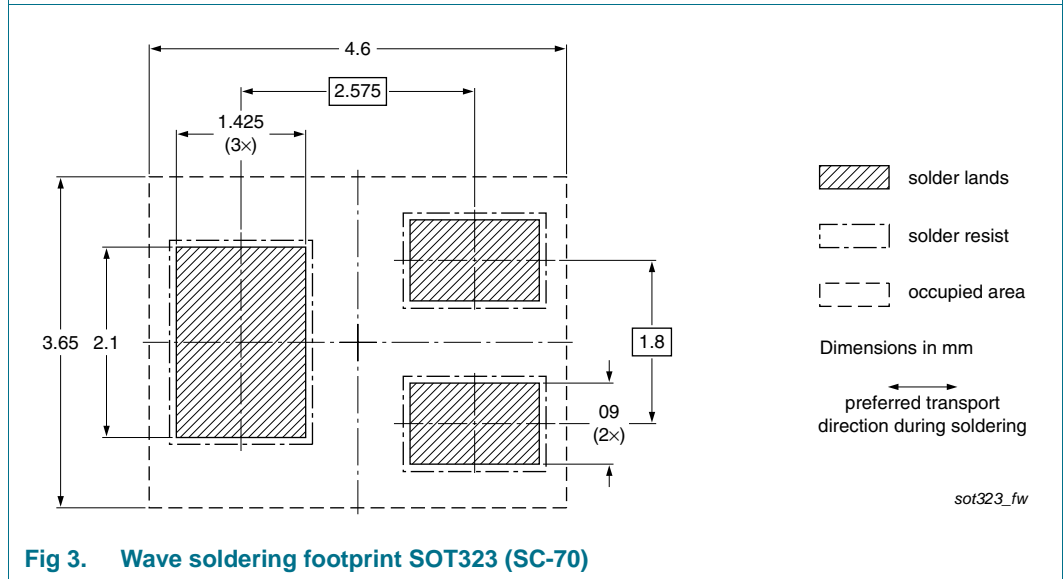
Type number	Package	Description	Packing quantity	
			3000	10000
PMSTA05	SOT323	4 mm pitch, 8 mm tape and reel	-115	-135
PMSTA06				

[1] For further information and the availability of packing methods, see [Section 14](#).

### 11. Soldering



**Fig 2. Reflow soldering footprint SOT323 (SC-70)**



**Fig 3. Wave soldering footprint SOT323 (SC-70)**

## 12. Revision history

Table 10. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PMSTA05_06 v.3	20100722	Product data sheet	-	PMSTA05_06_2
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>• <a href="#">Section 1 "Product profile"</a>: amended</li> <li>• <a href="#">Section 3 "Ordering information"</a>: added</li> <li>• <a href="#">Section 4 "Marking"</a>: updated</li> <li>• <a href="#">Section 8 "Test information"</a>: added</li> <li>• <a href="#">Figure 1</a>: superseded by minimized package outline drawing</li> <li>• <a href="#">Section 10 "Packing information"</a>: added</li> <li>• <a href="#">Section 11 "Soldering"</a>: added</li> <li>• <a href="#">Section 13 "Legal information"</a>: updated</li> </ul>			
PMSTA05_06_2	19990429	Product specification	-	PMSTA05_06_1
PMSTA05_06_1	19970616	Product specification	-	-

## 13. Legal information

### 13.1 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".

[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 URL <http://www.nxp.com>.

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