

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

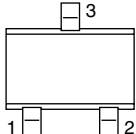
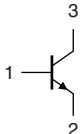
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CE0}	collector-emitter voltage	open base				
	PMSTA05		-	-	60	V
	PMSTA06		-	-	80	V
I_C	collector current		-	-	500	mA
h_{FE}	DC current gain	$V_{CE} = 2\text{ V};$ $I_C = 10\text{ mA}$	50	-	-	
		$V_{CE} = 1\text{ V};$ $I_C = 100\text{ mA}$	[1] 50	-	-	

[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		
2	emitter		
3	collector		

sym021

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 ^[1]
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

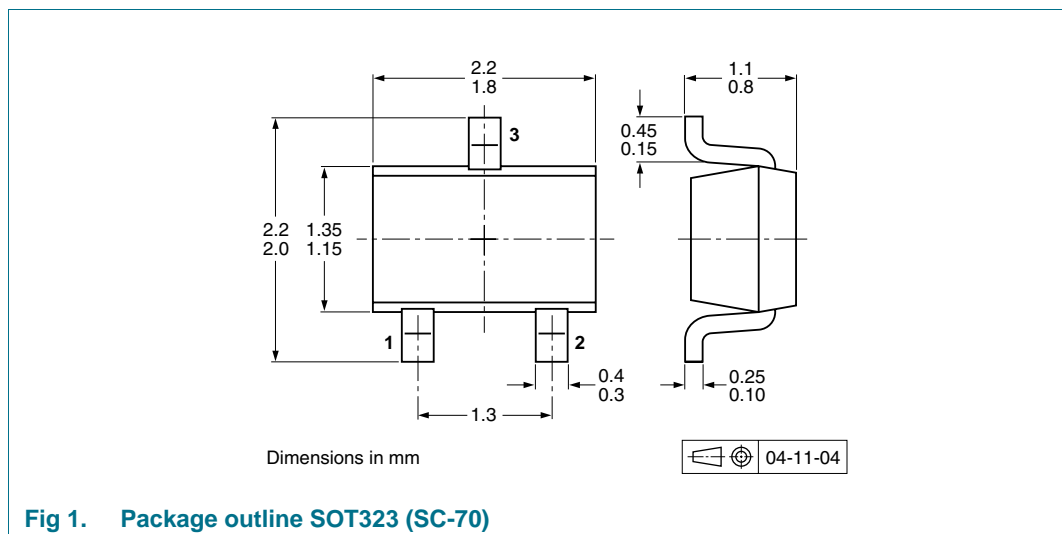


Fig 1. Package outline SOT323 (SC-70)

10. Packing information

Table 9. Packing methods

The indicated -xxx are the last three digits of the 12NC ordering code.^[1]

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

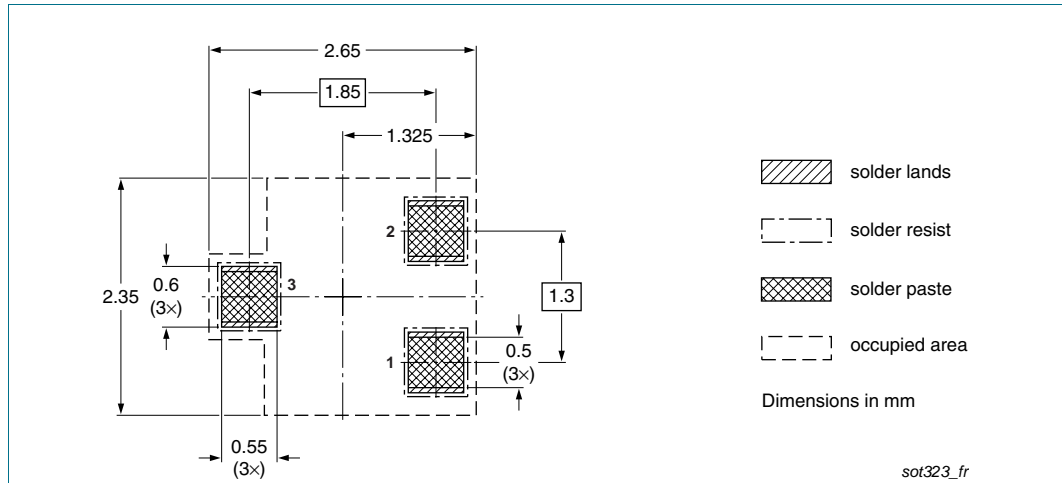


Fig 2. Reflow soldering footprint SOT323 (SC-70)

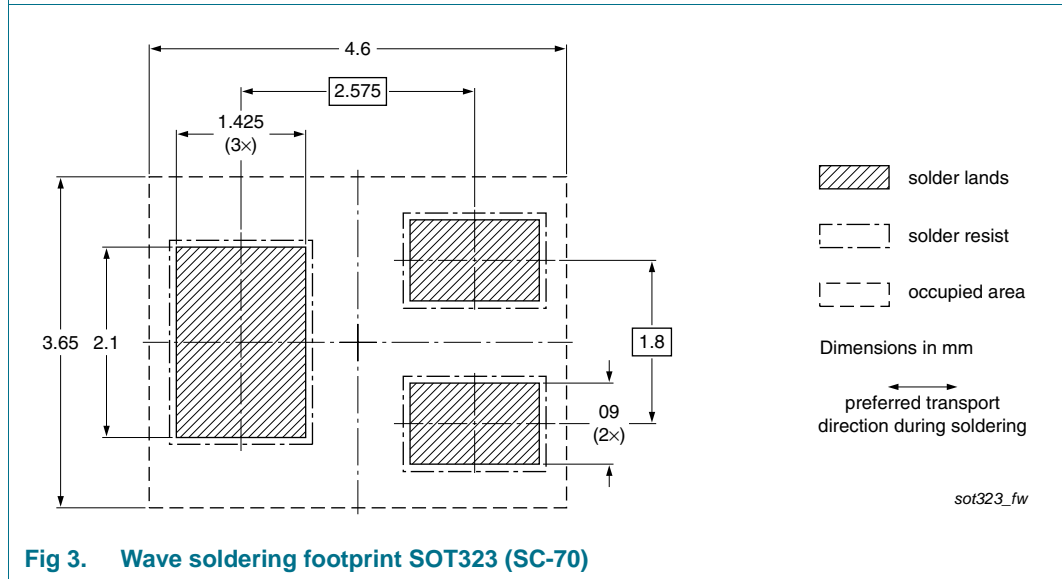


Fig 3. Wave soldering footprint SOT323 (SC-70)

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"> • The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors. • Legal texts have been adapted to the new company name where appropriate. • Section 1 "Product profile": amended • Section 3 "Ordering information": added • Section 4 "Marking": updated • Section 8 "Test information": added • Figure 1: superseded by minimized package outline drawing • Section 10 "Packing information": added • Section 11 "Soldering": added • Section 13 "Legal information": updated 			
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 ^{[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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