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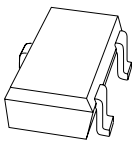
Team Nexperia



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

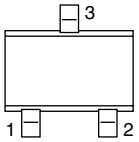
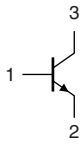
Table 2. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{CEO}	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 V; I_C = 10 mA		50	-	-	
		V_{CE} = 1 V; I_C = 100 mA	[1]	50	-	-	

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

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

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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	$T_{amb} \leq 25$ °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.

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7. Characteristics

Table 8. Characteristics

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

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

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

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

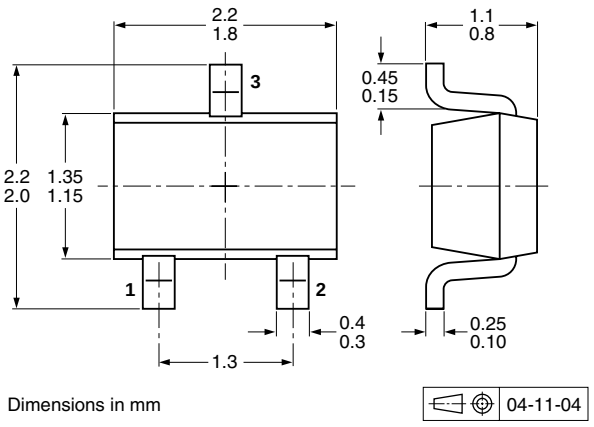

Fig 1. Package outline SOT323 (SC-70)

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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

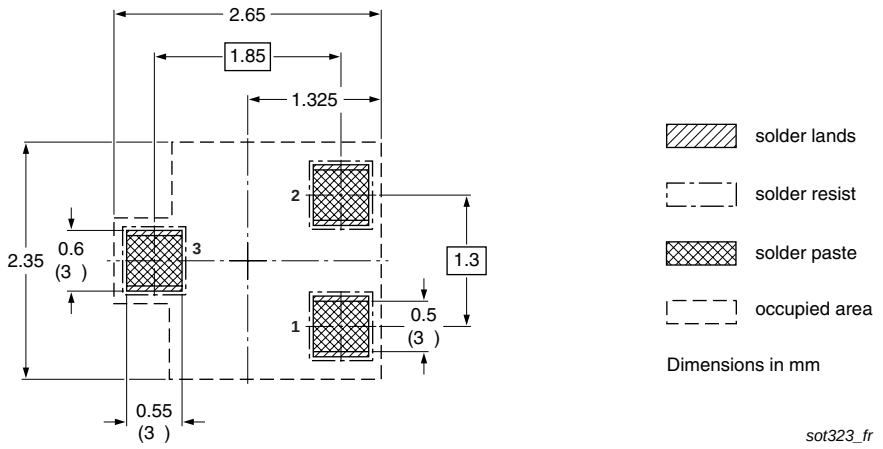

Fig 2. Reflow soldering footprint SOT323 (SC-70)

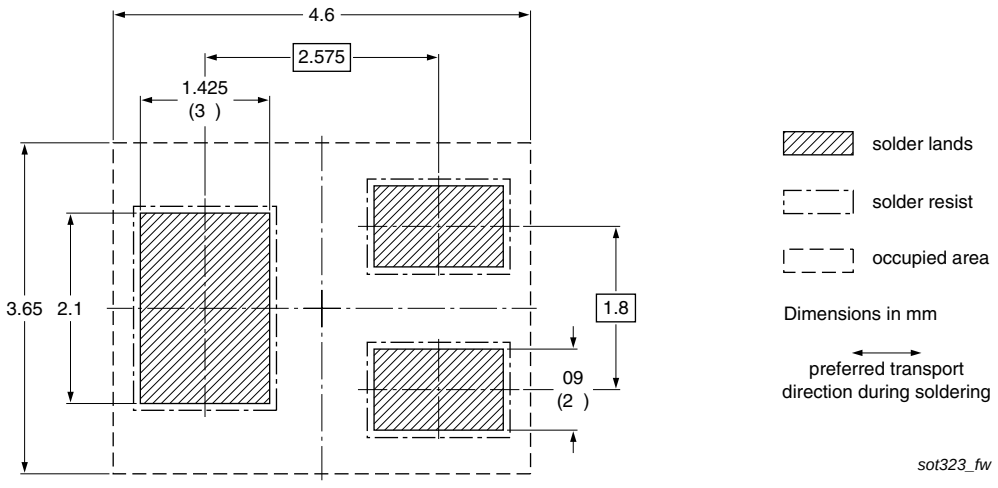

Fig 3. Wave soldering footprint SOT323 (SC-70)

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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:	• 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	-	-

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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".

[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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