



PMSTA05

60 V, 500 mA NPN general-purpose transistor

3 March 2025

Product data sheet

1. General description

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

PNP complements: PMSTA55

2. Features and benefits

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

3. Applications

- Primarily intended for telephony and professional communication equipment

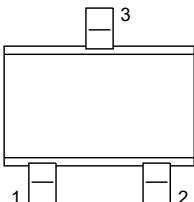
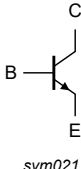
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CE0}	collector-emitter voltage	open base	-	-	60	V
I_C	collector current		-	-	500	mA
h_{FE}	DC current gain	$V_{CE} = 2 \text{ V}$; $I_C = 10 \text{ mA}$; $T_{amb} = 25 \text{ }^{\circ}\text{C}$	50	-	-	

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	B	base	 SC-70 (SOT323)	 sym021
2	E	emitter		
3	C	collector		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMSTA05	SC-70	plastic, surface-mounted package; 3 leads; 1.3 mm pitch; 2 mm x 1.25 mm x 0.95 mm body	SOT323

7. Marking

Table 4. Marking codes

Type number	Marking code[1]
PMSTA05	%1H

[1] % = placeholder for manufacturing site code

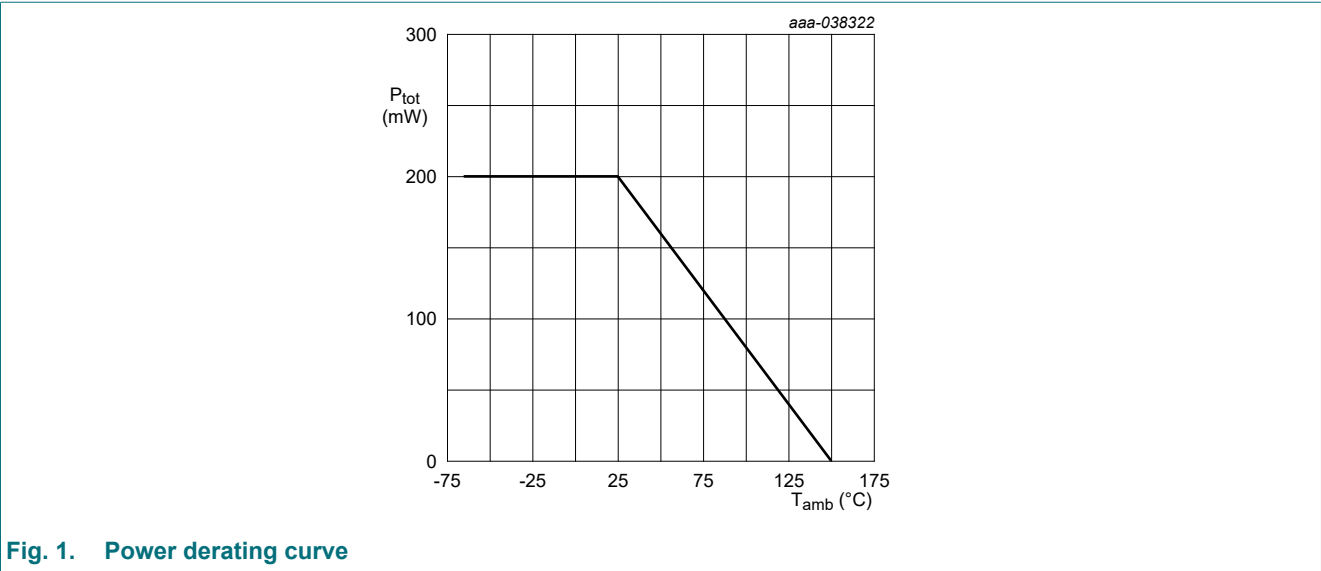
8. Limiting values

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		-	60	V
V _{CEO}	collector-emitter voltage	open base		-	60	V
V _{EBO}	emitter-base voltage	open collector		-	4	V
I _C	collector current			-	500	mA
I _{BM}	peak base current			-	500	mA
P _{tot}	total power dissipation	T _{amb} ≤ 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), single-sided copper, tin-plated and standard footprint.

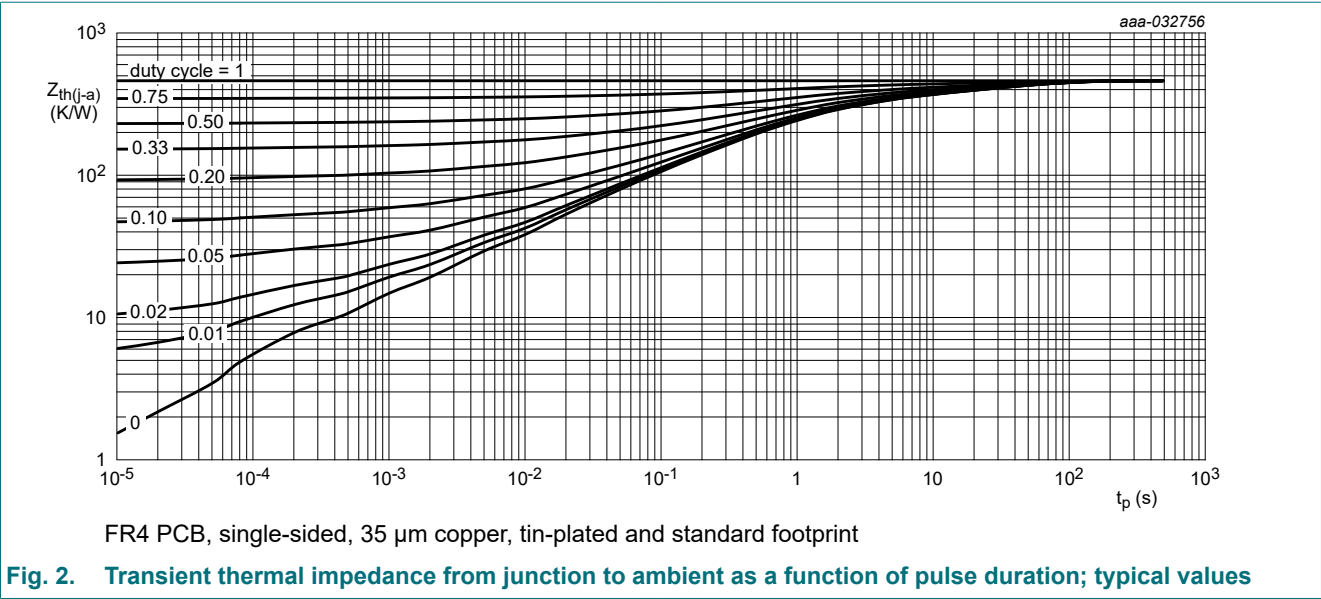


9. Thermal characteristics

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]	-	-	625	K/W

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



10. Characteristics

Table 7. Characteristics

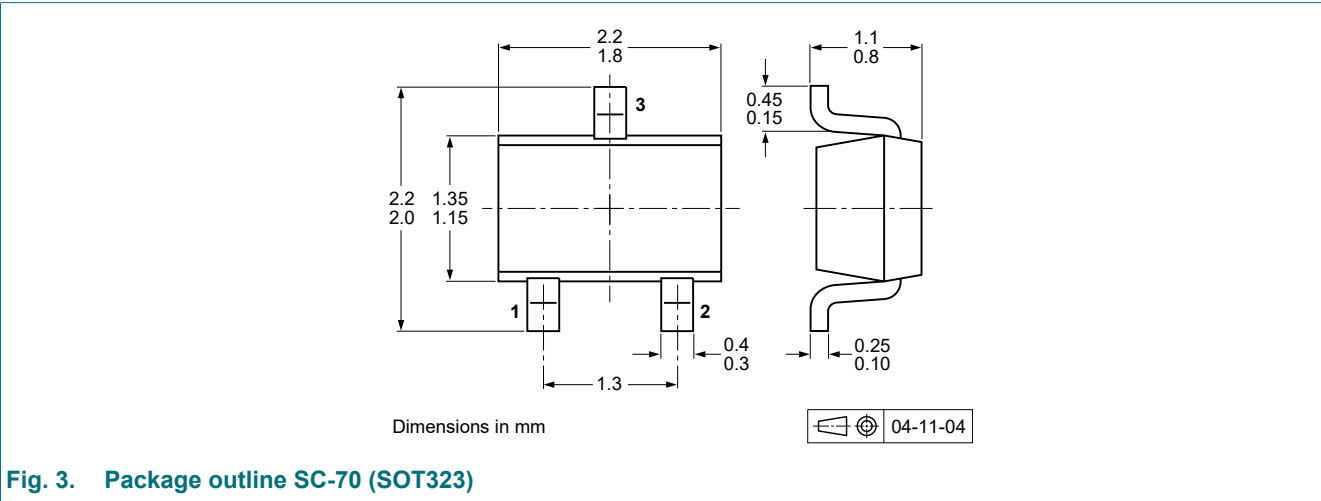
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$V_{(BR)CBO}$	collector-base breakdown voltage	$I_C = 100\text{ }\mu\text{A}$; $I_E = 0\text{ A}$; $T_{amb} = 25\text{ }^\circ\text{C}$		60	-	-	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	$I_C = 1\text{ mA}$; $I_B = 0\text{ A}$; $T_{amb} = 25\text{ }^\circ\text{C}$		60	-	-	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	$I_C = 100\text{ }\mu\text{A}$; $I_E = 0\text{ A}$; $T_{amb} = 25\text{ }^\circ\text{C}$		-	4	-	V
I_{CBO}	collector-base cut-off current	$V_{CB} = 60\text{ V}$; $I_E = 0\text{ A}$; $T_{amb} = 25\text{ }^\circ\text{C}$		-	-	100	nA
I_{EBO}	emitter-base cut-off current	$V_{EB} = 3\text{ V}$; $I_C = 0\text{ A}$; $T_{amb} = 25\text{ }^\circ\text{C}$		-	-	500	nA
h_{FE}	DC current gain	$V_{CE} = 2\text{ V}$; $I_C = 10\text{ mA}$; $T_{amb} = 25\text{ }^\circ\text{C}$		50	-	-	
		$V_{CE} = 1\text{ V}$; $I_C = 100\text{ mA}$; pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_{amb} = 25\text{ }^\circ\text{C}$		50	-	-	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 100\text{ mA}$; $I_B = 10\text{ mA}$; pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_{amb} = 25\text{ }^\circ\text{C}$		-	-	250	mV
V_{BEsat}	base-emitter saturation voltage			-	-	900	mV
V_{BE}	base-emitter voltage	$V_{CE} = 1\text{ V}$; $I_C = 100\text{ mA}$; $T_{amb} = 25\text{ }^\circ\text{C}$		-	-	1.2	V
f_T	transition frequency	$V_{CE} = 2\text{ V}$; $I_C = 10\text{ mA}$; $f = 100\text{ MHz}$; $T_{amb} = 25\text{ }^\circ\text{C}$		100	-	-	MHz

11. Test information

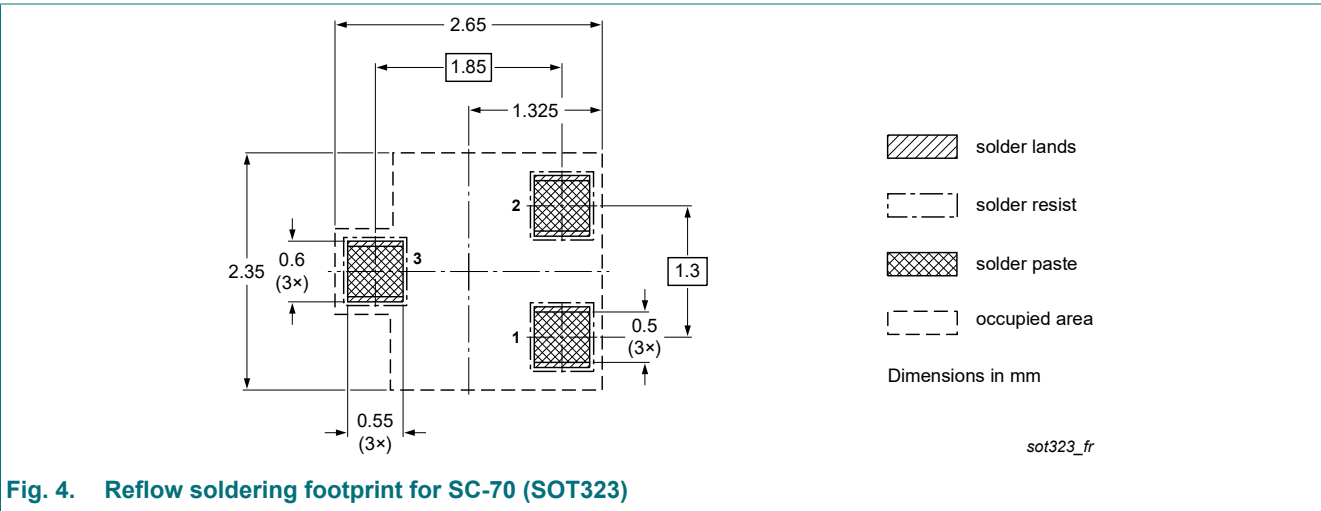
Quality information

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.

12. Package outline



13. Soldering



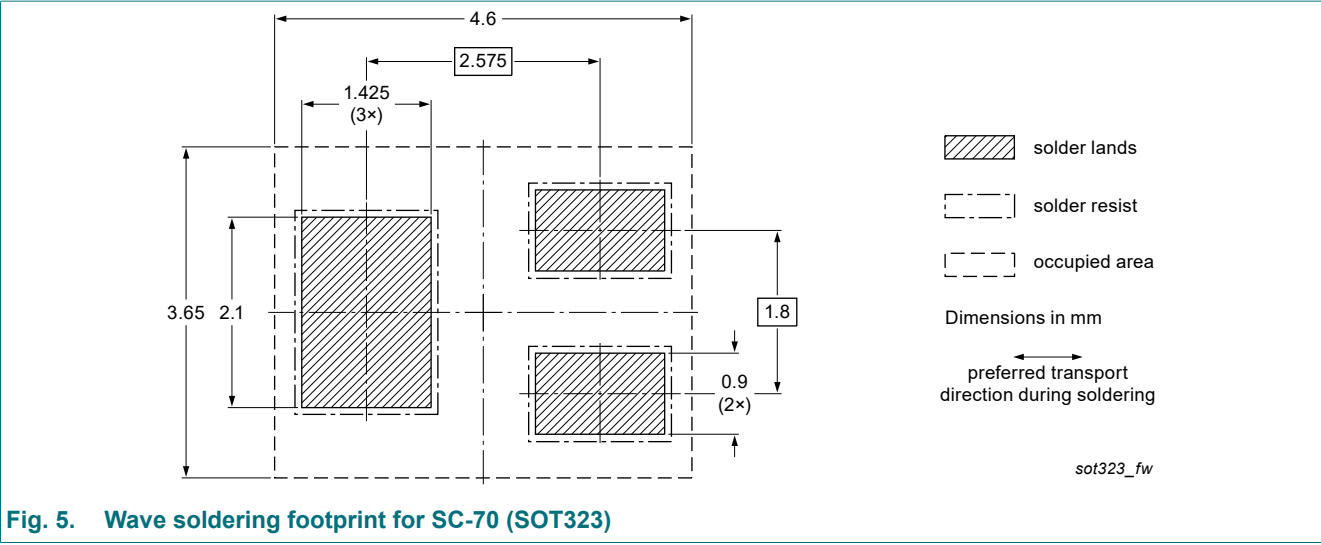


Fig. 5. Wave soldering footprint for SC-70 (SOT323)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMSTA05 v.4	20250303	Product data sheet	-	PMSTA05_06_3
Modifications:	<ul style="list-style-type: none">Family data sheet splitted to single type data sheets.Section "Packing information" removed.			
PMSTA05_06_3	20100722	Product data sheet	-	PMSTA05_06_2
PMSTA05_06_2	19990429	Product specification	-	PMSTA05_06_1
PMSTA05_06_1	19970616	Product specification	-	-

15. 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.

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- [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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