



PMSTA06

80 V, 500 mA NPN general-purpose transistor

1 July 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 complement: PMSTA56

2. Features and benefits

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

3. Applications

- General purpose switching and amplification in e.g. telephony and professional communication equipment.

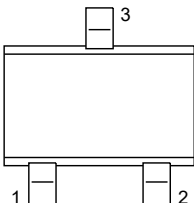
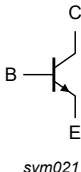
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CE0}	collector-emitter voltage	open base	-	-	80	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
PMSTA06	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]
PMSTA06	%1G

[1] % = placeholder for manufacturing site code

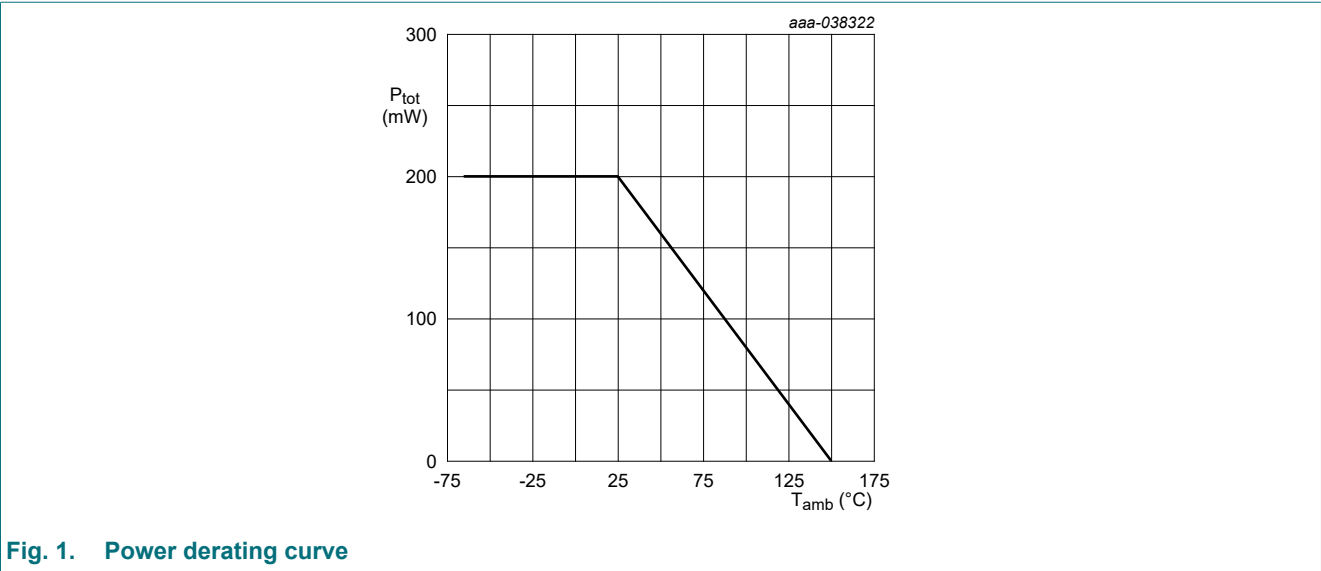
8. Limiting values

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		-	80	V
V _{CEO}	collector-emitter voltage	open base		-	80	V
V _{EBO}	emitter-base voltage	open collector		-	4	V
I _C	collector current			-	500	mA
I _{BM}	peak base current	single pulse		-	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 PCB, single-sided, 35 µm copper, tin-plated and standard footprint.

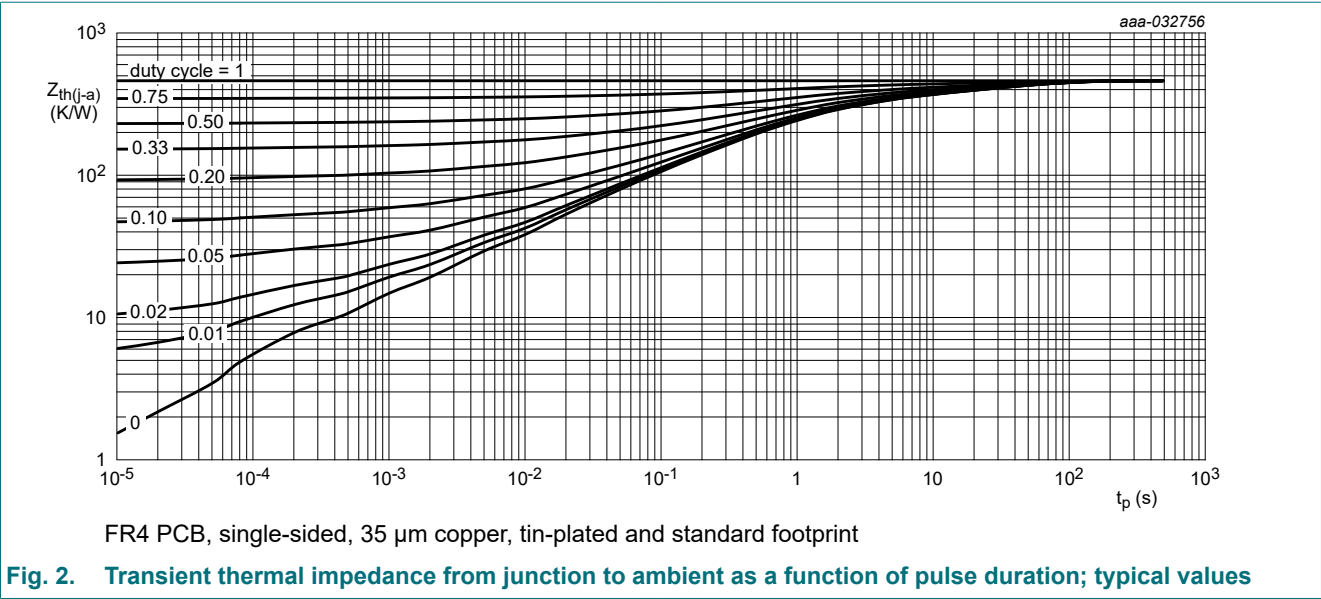


9. Thermal characteristics

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, 35 µm copper, tin-plated and standard footprint.



10. Characteristics

Table 7. Characteristics

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

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$V_{(BR)CBO}$	collector-base breakdown voltage	$I_C = 100\text{ }\mu\text{A}$; $I_E = 0\text{ A}$; $T_{amb} = 25\text{ °C}$		80	-	-	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	$I_C = 2\text{ mA}$; $I_B = 0\text{ A}$; $T_{amb} = 25\text{ °C}$		80	-	-	V
I_{CBO}	collector-base cut-off current	$V_{CB} = 80\text{ V}$; $I_E = 0\text{ A}$; $T_{amb} = 25\text{ °C}$		-	-	100	nA
I_{EBO}	emitter-base cut-off current	$V_{EB} = 3\text{ V}$; $I_C = 0\text{ A}$; $T_{amb} = 25\text{ °C}$		-	-	500	nA
h_{FE}	DC current gain	$V_{CE} = 2\text{ V}$; $I_C = 10\text{ mA}$; $T_{amb} = 25\text{ °C}$		50	-	-	
		$V_{CE} = 1\text{ V}$; $I_C = 100\text{ mA}$; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_{amb} = 25\text{ °C}$		50	-	-	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 100\text{ mA}$; $I_B = 10\text{ mA}$; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_{amb} = 25\text{ °C}$		-	-	250	mV
V_{BEsat}	base-emitter saturation voltage	$I_C = 100\text{ mA}$; $I_B = 10\text{ mA}$; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$		-	-	900	mV
V_{BE}	base-emitter voltage	$V_{CE} = 1\text{ V}$; $I_C = 100\text{ mA}$; $T_{amb} = 25\text{ °C}$		-	-	1.2	V
f_T	transition frequency	$V_{CE} = 2\text{ V}$; $I_C = 10\text{ mA}$; $f = 100\text{ MHz}$; $T_{amb} = 25\text{ °C}$		100	-	-	MHz

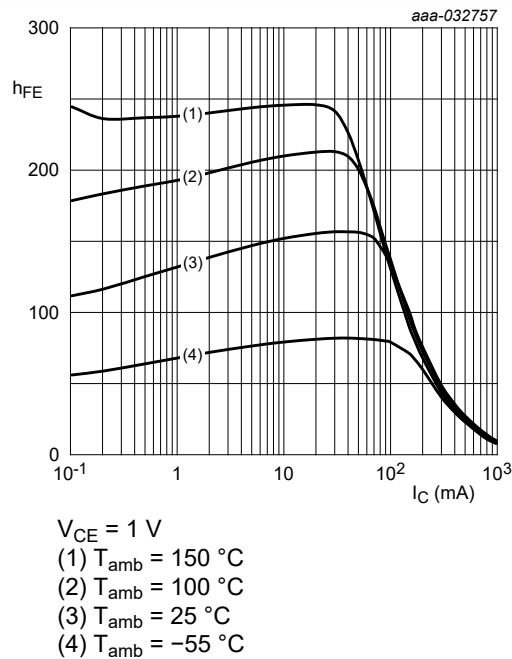


Fig. 3. DC current gain as a function of collector current; typical values

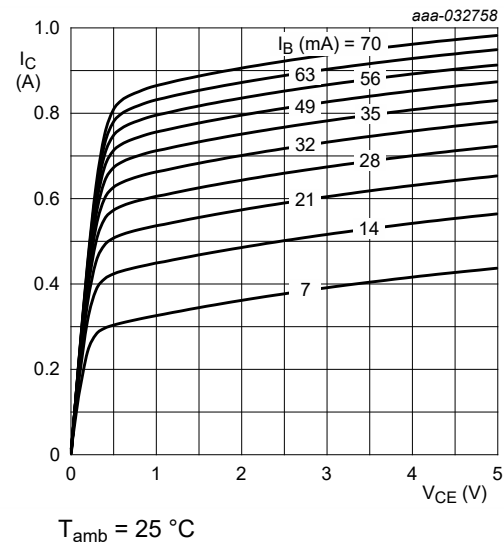


Fig. 4. Collector current as a function of collector-emitter voltage; typical values

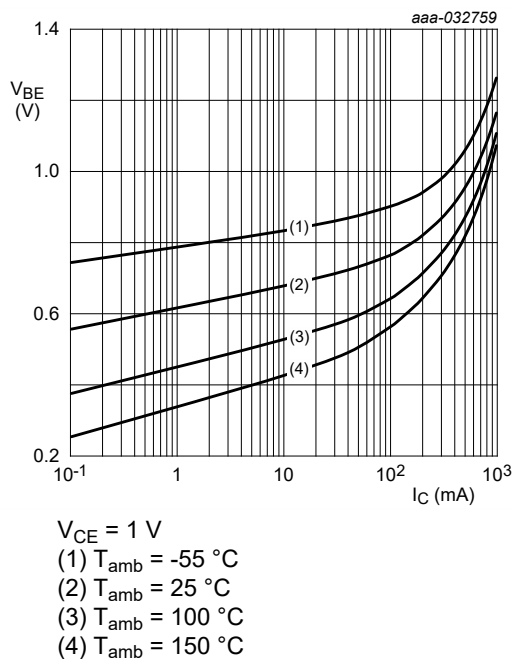


Fig. 5. Base-emitter voltage as a function of collector current; typical values

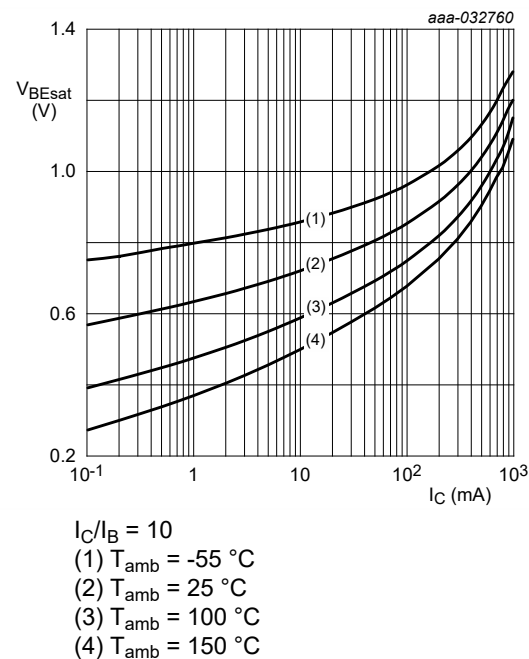
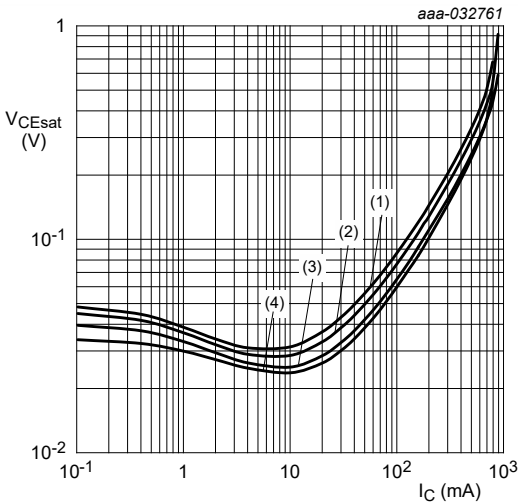


Fig. 6. Base-emitter saturation voltage as a function of collector current; typical values



$I_C/I_B = 10$
(1) $T_{amb} = 150\text{ }^{\circ}\text{C}$
(2) $T_{amb} = 100\text{ }^{\circ}\text{C}$
(3) $T_{amb} = 25\text{ }^{\circ}\text{C}$
(4) $T_{amb} = -55\text{ }^{\circ}\text{C}$

Fig. 7. Collector-emitter saturation voltage as a function of collector current; typical values

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

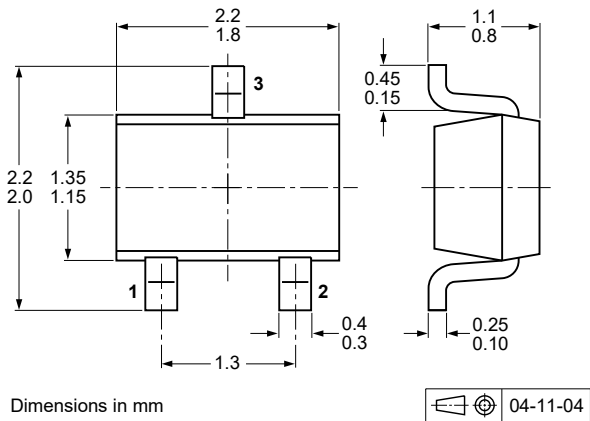
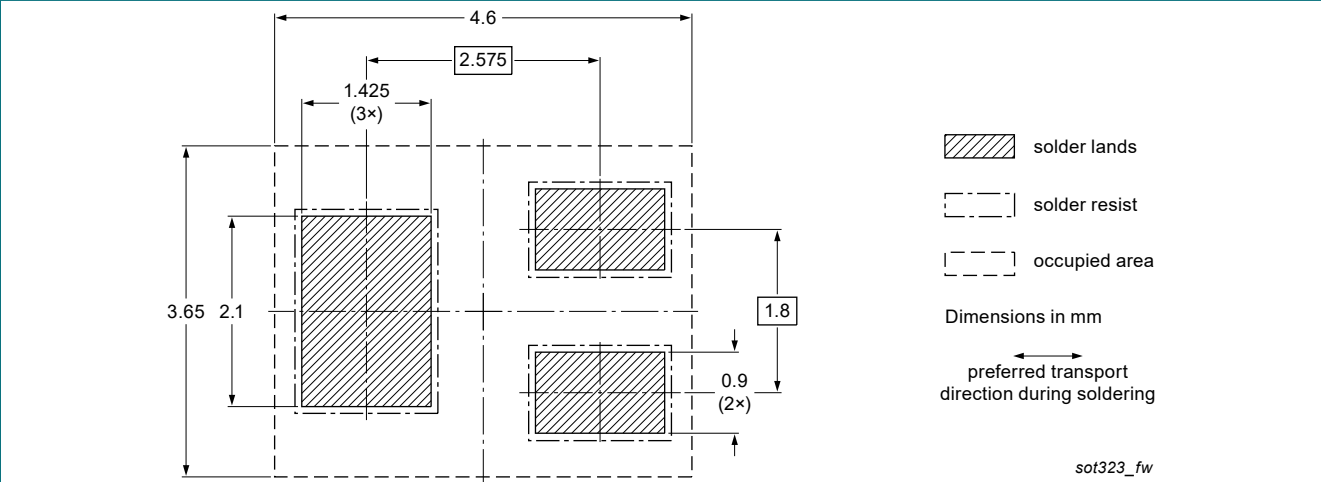
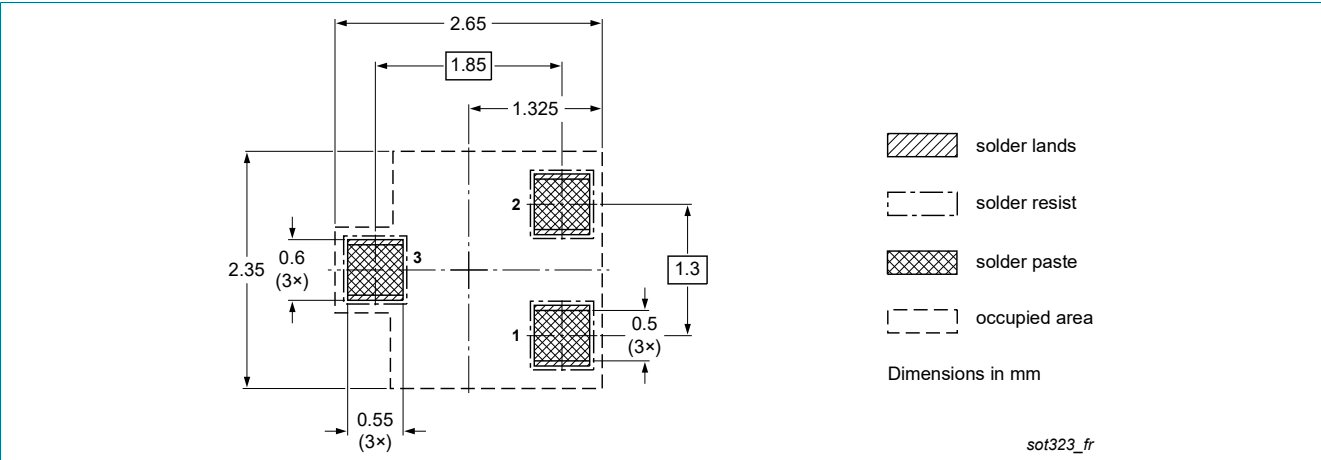


Fig. 8. Package outline SC-70 (SOT323)

13. Soldering



14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMSTA06 v.4	20250701	Product data sheet	-	PMSTA05_06 v.3
Modifications:	<ul style="list-style-type: none">Family data sheet split to single type data sheetSection "Packing information" removed			
PMSTA05_06 v.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.

- [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 <https://www.nexperia.com>.

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