



PMSTA06-Q

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-Q

2. Features and benefits

- High current (max. 500 mA)
- Very small SMD plastic package
- Collector-emitter voltage: 80 V
- Qualified according to AEC-Q101 and recommended for use in automotive applications

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-Q	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-Q	%1G

[1] % = placeholder for manufacturing site code

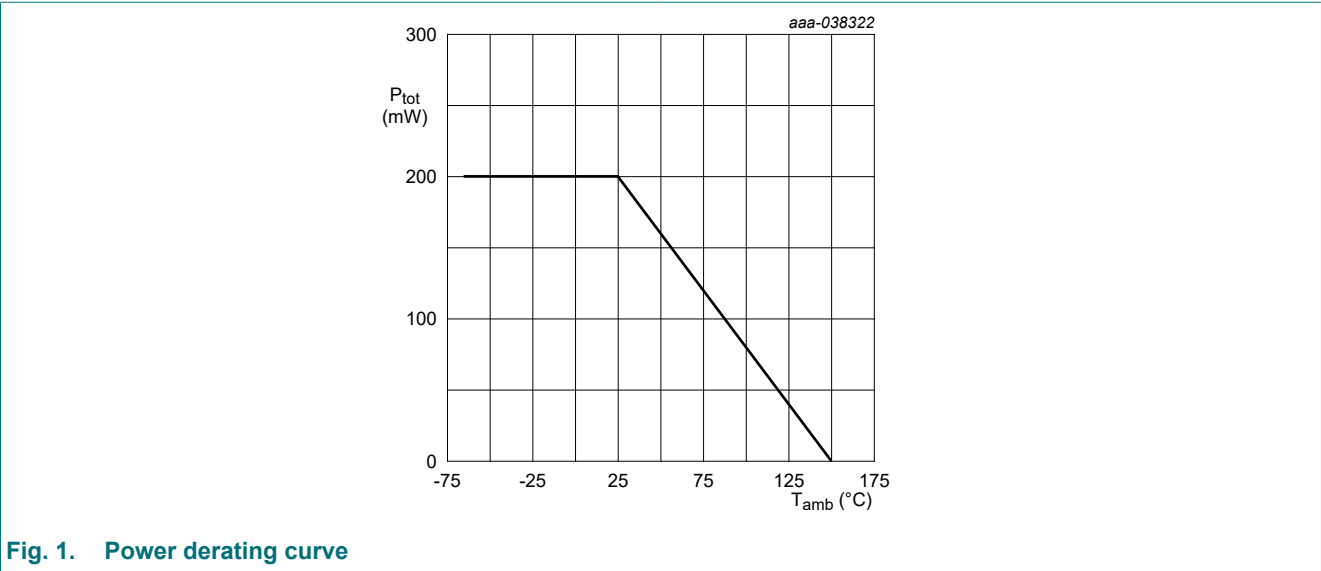
8. Limiting values

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.

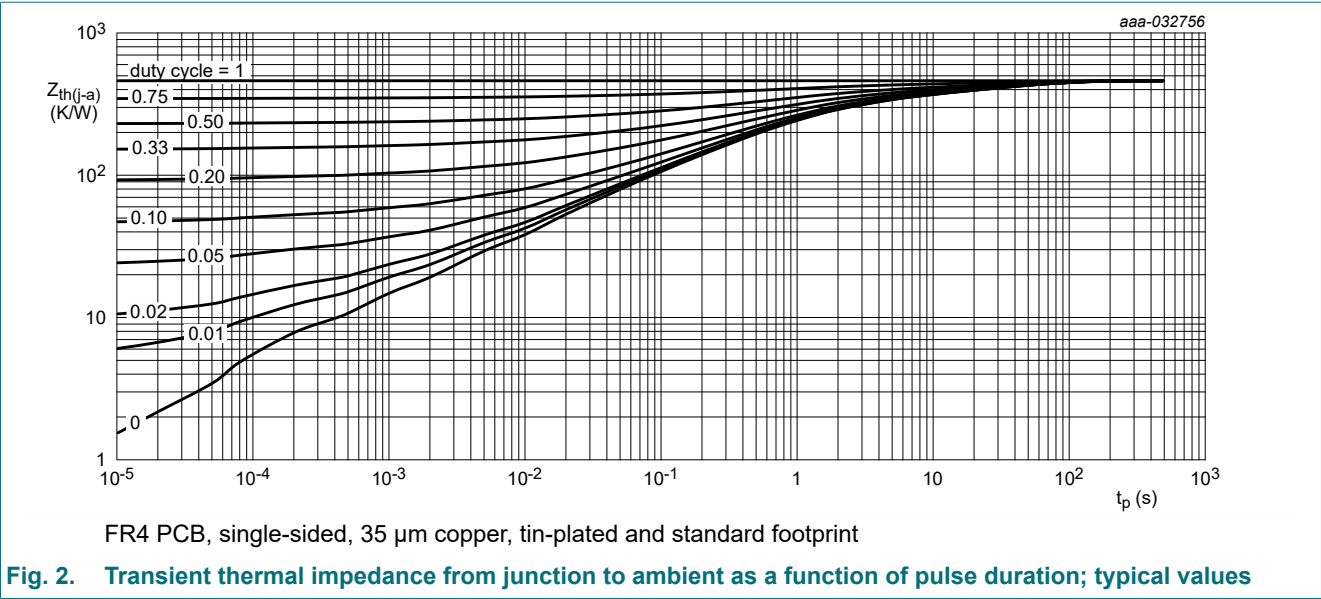


9. Thermal characteristics

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

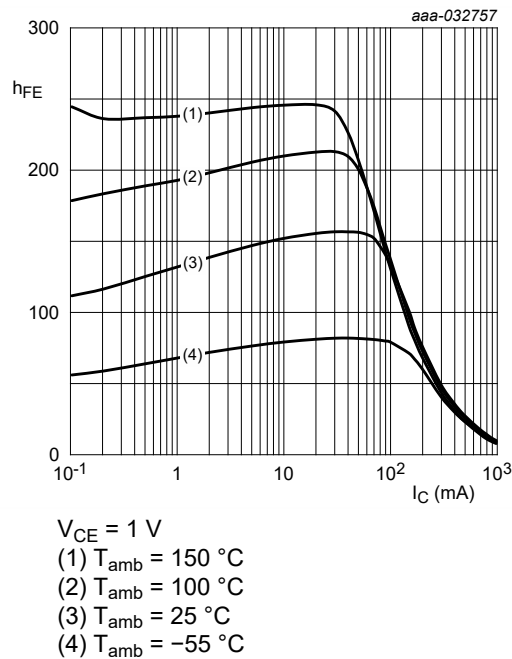


Fig. 3. DC current gain as a function of collector current; typical values

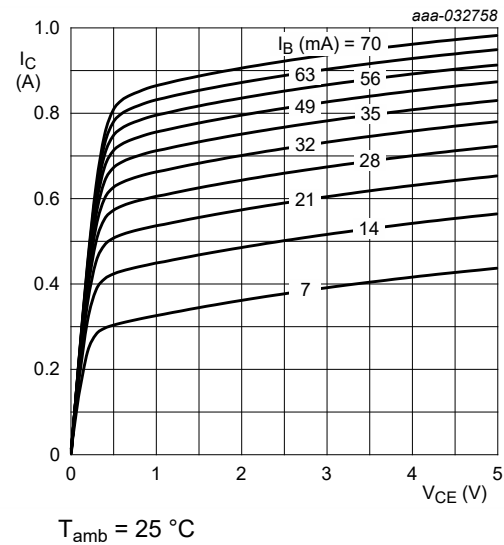


Fig. 4. Collector current as a function of collector-emitter voltage; typical values

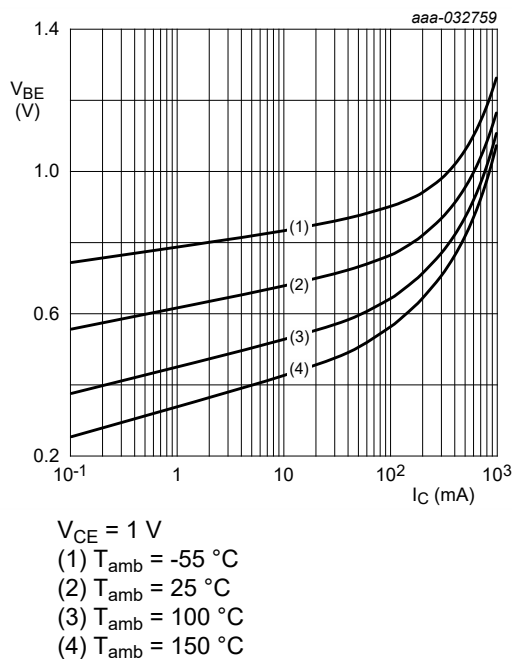


Fig. 5. Base-emitter voltage as a function of collector current; typical values

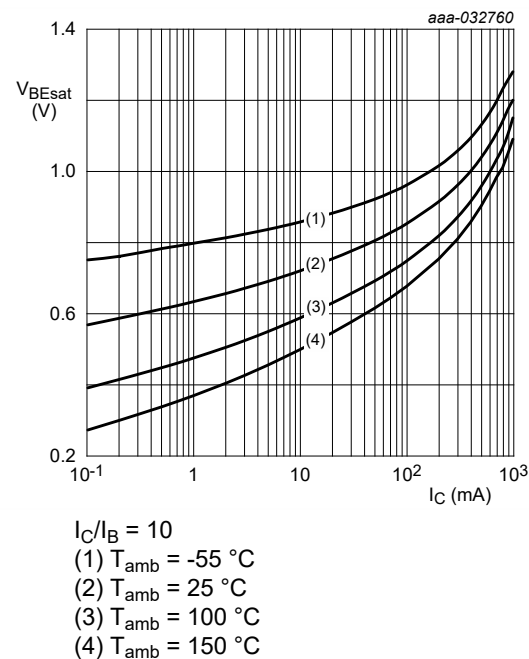
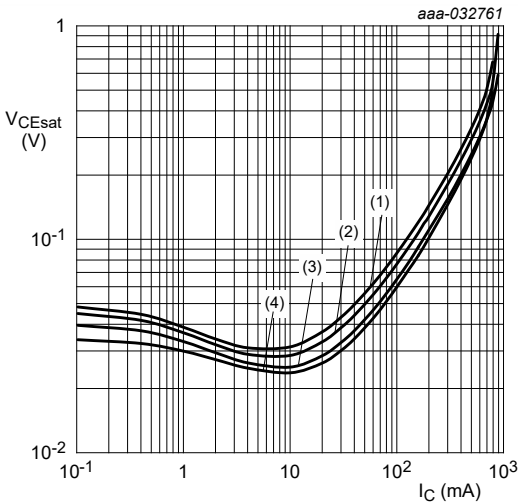


Fig. 6. Base-emitter saturation voltage as a function of collector current; typical values



$I_C/I_B = 10$
(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

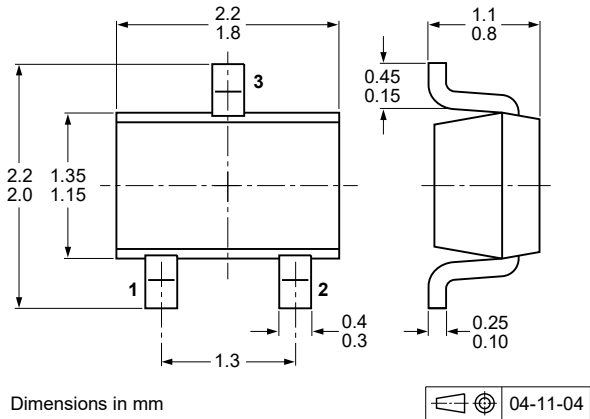


Fig. 8. Package outline SC-70 (SOT323)

13. Soldering

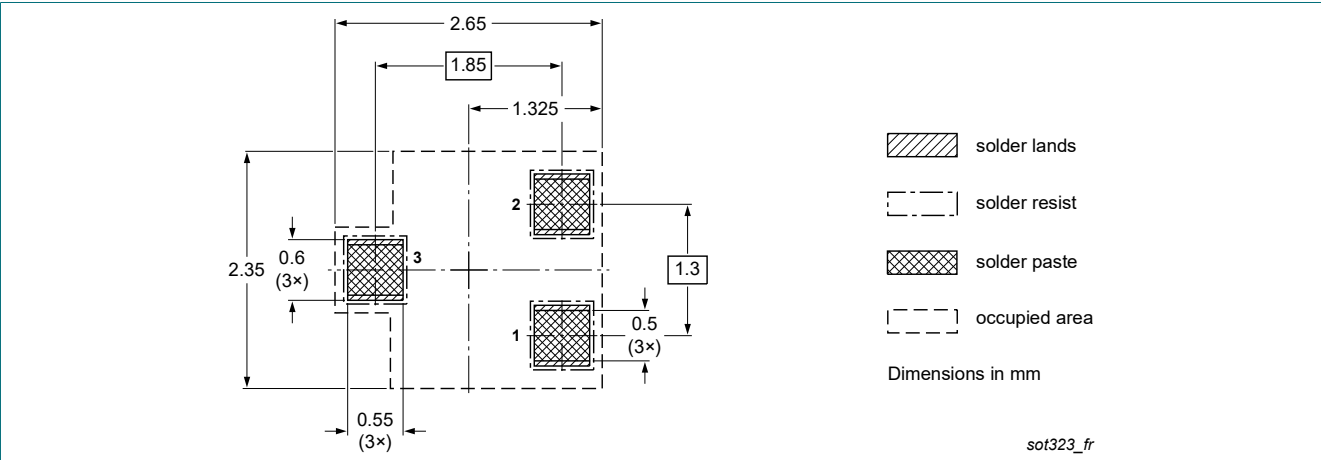


Fig. 9. Reflow soldering footprint for SC-70 (SOT323)

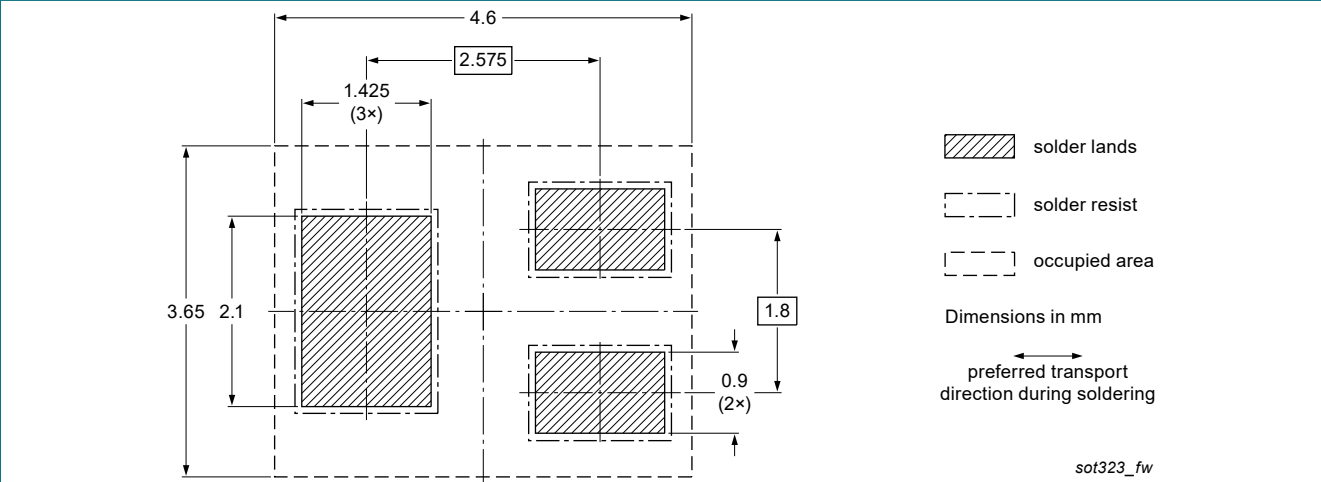


Fig. 10. Wave soldering footprint for SC-70 (SOT323)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMSTA06-Q v.1	20250701	Product data sheet	-	-

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".
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