



# PMST4401

NPN switching transistor

30 September 2025

Product data sheet

## 1. General description

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

PNP complement: PMST4403

## 2. Features and benefits

- High current (max. 600 mA)
- Low voltage (max. 40 V)

## 3. Applications

- General purpose switching and linear amplification, especially in portable equipment

## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{CE0}$	collector-emitter voltage	open base	-	-	40	V
$I_C$	collector current		-	-	600	mA
$h_{FE}$	DC current gain	$V_{CE} = 1\text{ V}$ ; $I_C = 10\text{ mA}$ ; $T_{amb} = 25\text{ °C}$	80	-	-	

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	B	base	 SC-70 (SOT323)	 sym123
2	E	emitter		
3	C	collector		

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMST4401	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]
PMST4401	% 2X

[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 <sub>CBO</sub>	collector-base voltage	open emitter		-	60	V
V <sub>CEO</sub>	collector-emitter voltage	open base		-	40	V
V <sub>EBO</sub>	emitter-base voltage	open collector		-	6	V
I <sub>C</sub>	collector current			-	600	mA
I <sub>CM</sub>	peak collector current			-	600	mA
I <sub>BM</sub>	peak base current			-	200	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	[1]	-	200	mW
T <sub>j</sub>	junction temperature			-	150	°C
T <sub>amb</sub>	ambient temperature			-65	150	°C
T <sub>stg</sub>	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 <sub>th(j-a)</sub>	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
I <sub>CBO</sub>	collector-base cut-off current	V <sub>CB</sub> = 60 V; I <sub>E</sub> = 0 A; T <sub>amb</sub> = 25 °C		-	-	50	nA
		V <sub>CB</sub> = 60 V; I <sub>E</sub> = 0 A; T <sub>j</sub> = 150 °C		-	-	10	µA
I <sub>EBO</sub>	emitter-base cut-off current	V <sub>EB</sub> = 6 V; I <sub>C</sub> = 0 A; T <sub>amb</sub> = 25 °C		-	-	50	nA
h <sub>FE</sub>	DC current gain	V <sub>CE</sub> = 1 V; I <sub>C</sub> = 0.1 mA; T <sub>amb</sub> = 25 °C		20	-	-	
		V <sub>CE</sub> = 1 V; I <sub>C</sub> = 1 mA; T <sub>amb</sub> = 25 °C		40	-	-	
		V <sub>CE</sub> = 1 V; I <sub>C</sub> = 10 mA; T <sub>amb</sub> = 25 °C		80	-	-	
		V <sub>CE</sub> = 1 V; I <sub>C</sub> = 150 mA; pulsed; t <sub>p</sub> ≤ 300 µs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C		100	-	300	
		V <sub>CE</sub> = 2 V; I <sub>C</sub> = 500 mA; pulsed; t <sub>p</sub> ≤ 300 µs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C		40	-	-	
V <sub>CEsat</sub>	collector-emitter saturation voltage	I <sub>C</sub> = 150 mA; I <sub>B</sub> = 15 mA; pulsed; t <sub>p</sub> ≤ 300 µs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C		-	-	400	mV
		I <sub>C</sub> = 500 mA; I <sub>B</sub> = 50 mA; pulsed; t <sub>p</sub> ≤ 300 µs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C		-	-	750	mV
V <sub>BEsat</sub>	base-emitter saturation voltage	I <sub>C</sub> = 150 mA; I <sub>B</sub> = 15 mA; pulsed; t <sub>p</sub> ≤ 300 µs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C		-	-	950	mV
		I <sub>C</sub> = 500 mA; I <sub>B</sub> = 50 mA; pulsed; t <sub>p</sub> ≤ 300 µs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C		-	-	1.2	V
C <sub>c</sub>	collector capacitance	V <sub>CB</sub> = 5 V; I <sub>E</sub> = 0 A; i <sub>e</sub> = 0 A; f = 1 MHz; T <sub>amb</sub> = 25 °C		-	-	8	pF
C <sub>e</sub>	emitter capacitance	V <sub>EB</sub> = 0.5 V; I <sub>C</sub> = 0 A; i <sub>c</sub> = 0 A; f = 1 MHz; T <sub>amb</sub> = 25 °C		-	-	30	pF
f <sub>T</sub>	transition frequency	V <sub>CE</sub> = 10 V; I <sub>C</sub> = 20 mA; f = 100 MHz; T <sub>amb</sub> = 25 °C		250	-	-	MHz
Switching times (between 10% and 90% levels)							
t <sub>d</sub>	delay time	I <sub>C</sub> = 150 mA; I <sub>Bon</sub> = 15 mA; I <sub>Boff</sub> = -15 mA; T <sub>amb</sub> = 25 °C		-	-	15	ns
t <sub>r</sub>	rise time			-	-	20	ns
t <sub>on</sub>	turn-on time			-	-	35	ns
t <sub>s</sub>	storage time			-	-	200	ns
t <sub>f</sub>	fall time			-	-	60	ns
t <sub>off</sub>	turn-off time			-	-	250	ns

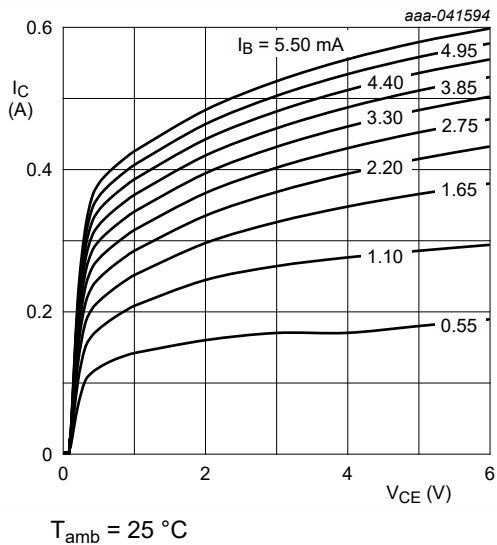


Fig. 1. Collector current as a function of collector-emitter voltage; typical values

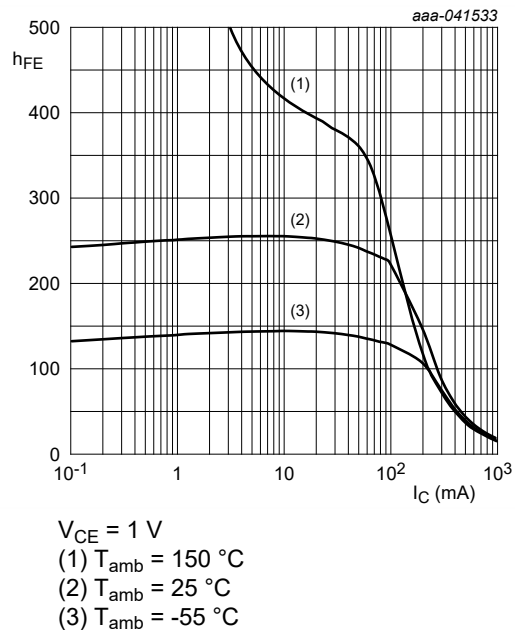


Fig. 2. DC current gain as a function of collector current; typical values

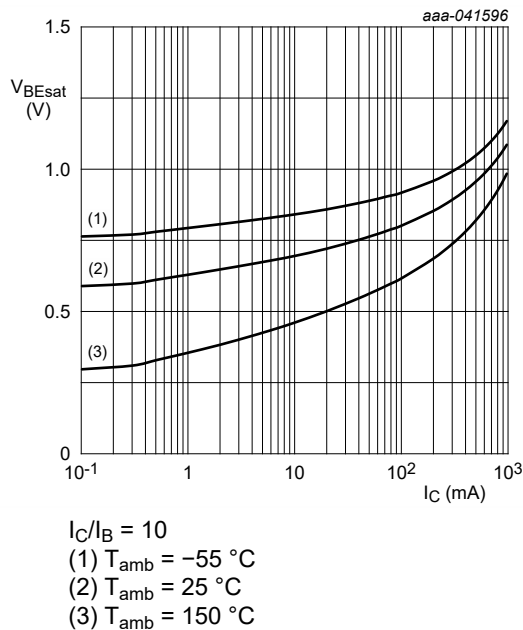


Fig. 3. Base-emitter saturation voltage as a function of collector current; typical values

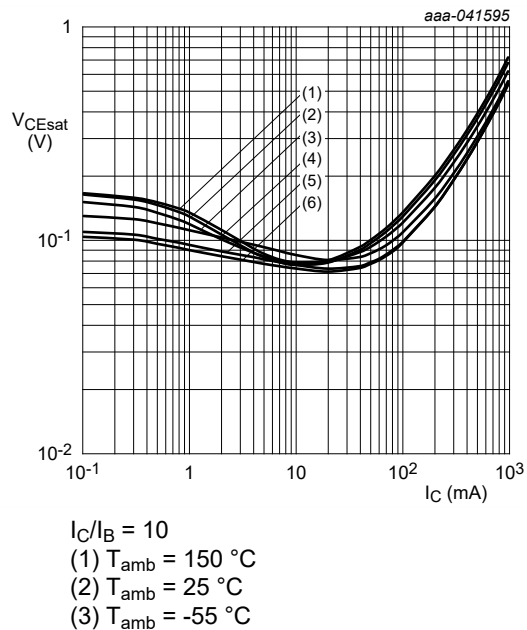


Fig. 4. Collector-emitter saturation voltage as a function of collector current; typical values

11. Test information

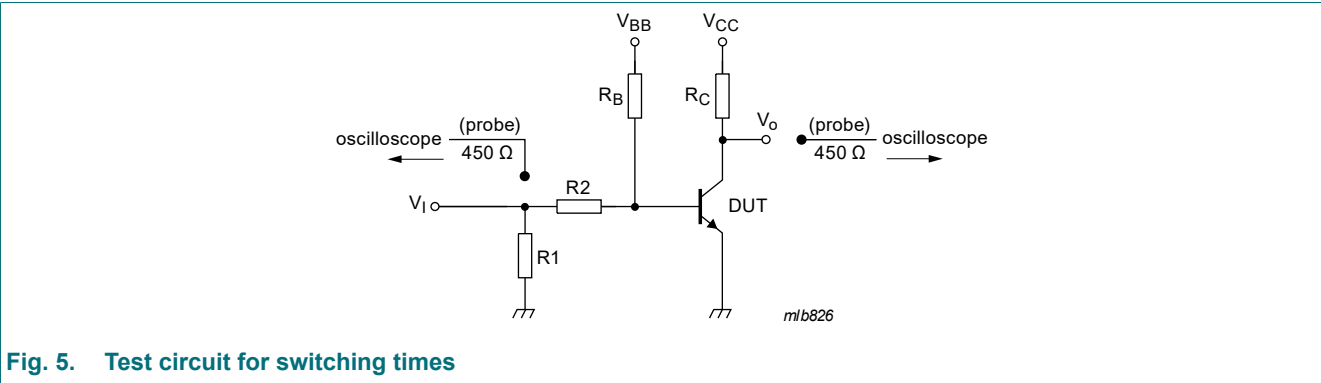


Fig. 5. Test circuit for switching times

12. Package outline

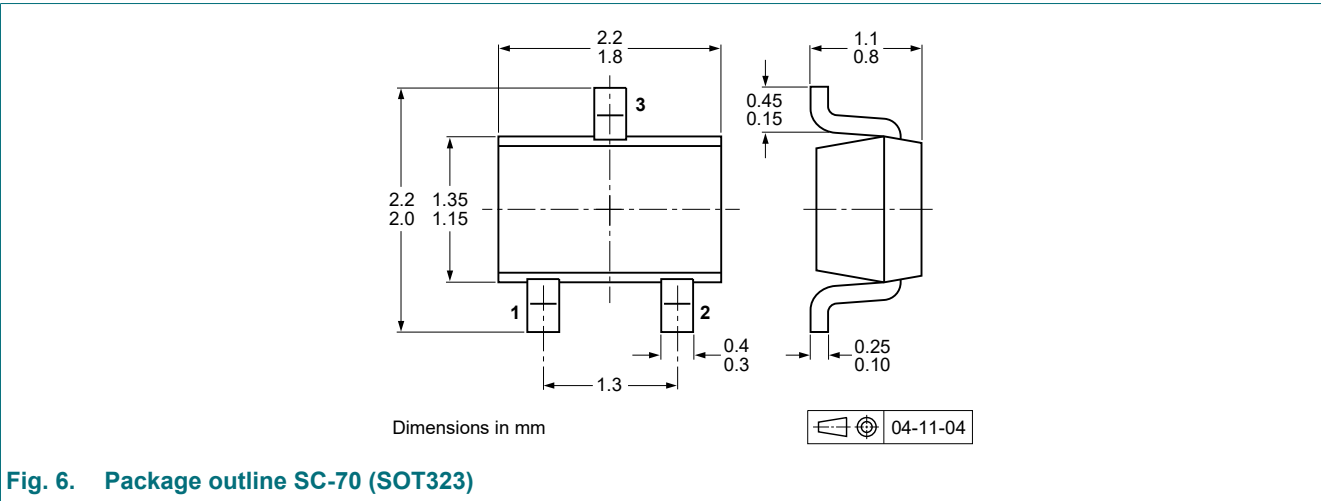


Fig. 6. Package outline SC-70 (SOT323)

13. Soldering

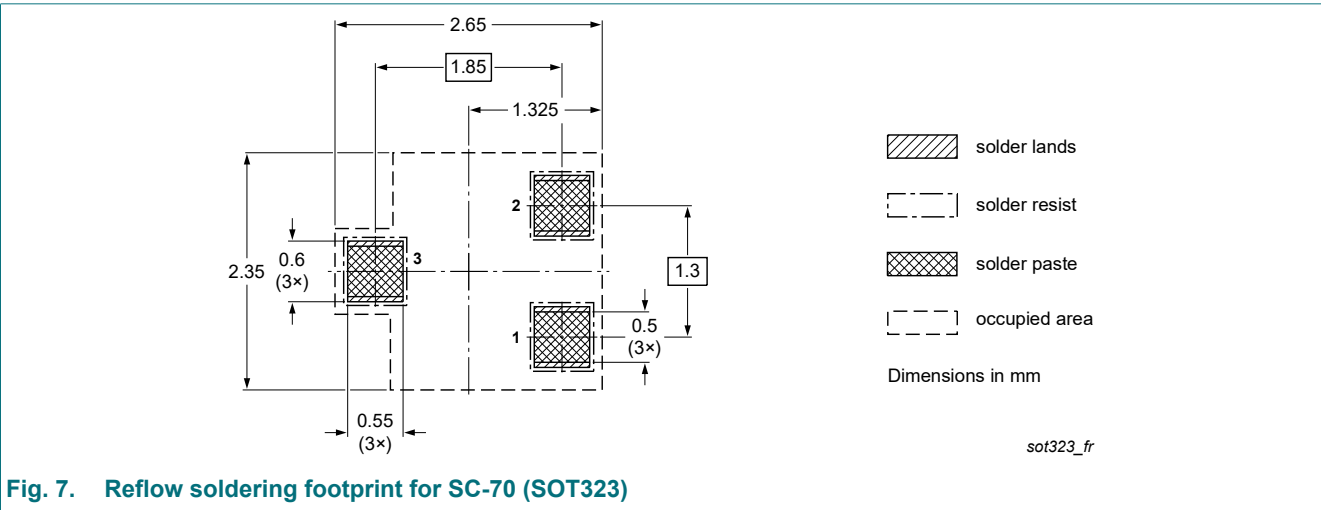
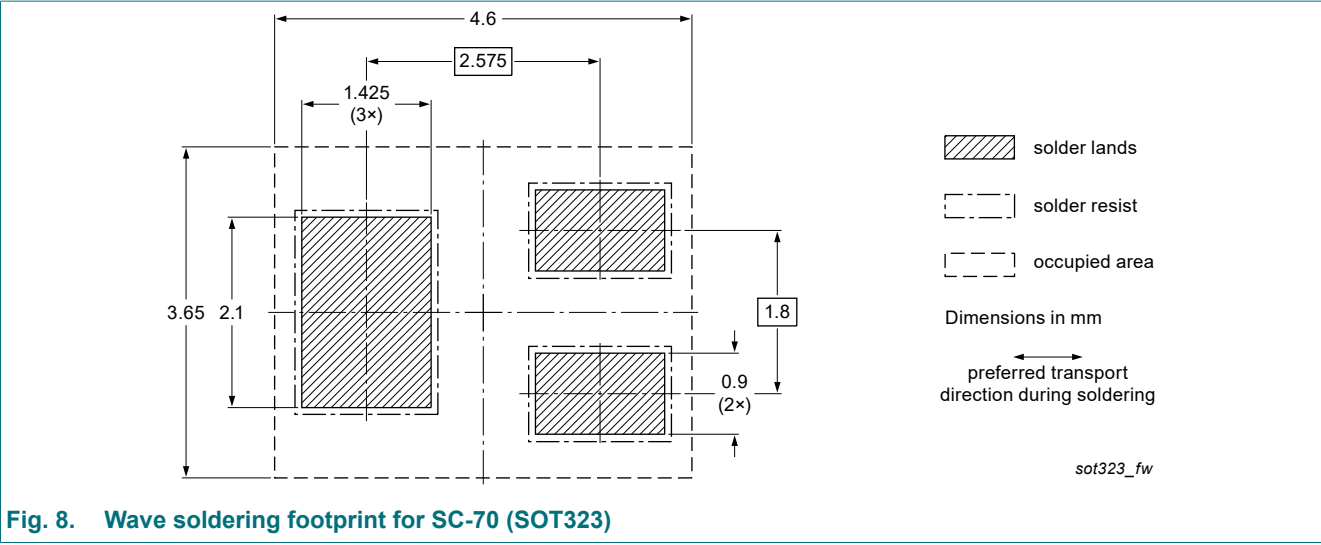


Fig. 7. Reflow soldering footprint for SC-70 (SOT323)



14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMST4401 v.5	20250930	Product data sheet	-	PMST4401 v.4
Modifications:	<ul style="list-style-type: none"><li>Product(s) changed to non-automotive qualification. Please refer to nexperia.com for automotive (-Q) product alternative(s).</li></ul>			
PMST4401 v.4	20250515	Product data sheet	-	PMST4401 v.3
PMST4401 v.3	20240117	Product data sheet	-	PMST4401 v.2
PMST4401 v.2	19990422	Product data sheet	-	PMST4401 v.1
PMST4401 v.1	19970507	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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