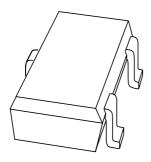
DISCRETE SEMICONDUCTORS

DATA SHEET



PMST3904 NPN switching transistor

Product data sheet Supersedes data of 1999 Apr 22 2004 Jan 21



NPN switching transistor

PMST3904

FEATURES

- Collector current capability I_C = 200 mA
- Collector-emitter voltage V_{CEO} = 40 V.

APPLICATIONS

• General amplification and switching.

DESCRIPTION

NPN switching transistor in a SOT323 plastic package. PNP complement: PMST3906.

MARKING

TYPE NUMBER	MARKING CODE(1)
PMST3904	*1A

Note

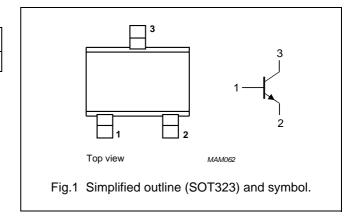
- 1. * = p: Made in Hong Kong.
 - * = t: Made in Malaysia.
 - * = W: Made in China.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V _{CEO}	collector-emitter voltage	40	٧
I _C	collector current (DC)	200	mA

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



ORDERING INFORMATION

TYPE	PACKAGE			
NUMBER	NAME	DESCRIPTION VERSION		
PMST3904	_	plastic surface mounted package; 3 leads SOT32		

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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	_	40	V
V _{EBO}	emitter-base voltage	open collector	_	6	V
I _C	collector current (DC)		_	200	mA
I _{CM}	peak collector current		-	200	mA
I _{BM}	peak base current		-	100	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C; note 1	-	200	mW
T _{stg}	storage temperature		-65	+150	°C
Tj	junction temperature		_	150	°C
T _{amb}	operating ambient temperature		-65	+150	°C

Note

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th(j-a)}	thermal resistance from junction to ambient	note 1	625	K/W

Note

1. Transistor mounted on an FR4 printed-circuit board.

^{1.} Transistor mounted on an FR4 printed-circuit board.

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CHARACTERISTICS

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

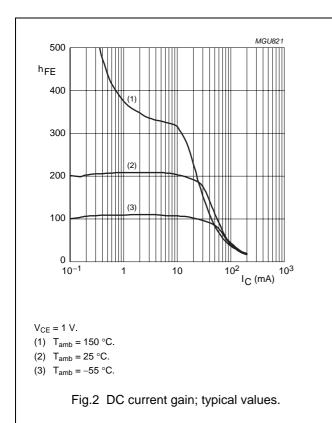
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I _{CBO}	collector cut-off current	I _E = 0; V _{CB} = 30 V	_	50	nA
I _{EBO}	emitter cut-off current	I _C = 0; V _{EB} = 6 V	_	50	nA
h _{FE}	DC current gain	V _{CE} = 1 V; see Fig.2; note 1			
		$I_{\rm C} = 0.1 {\rm mA}$	60	_	
		I _C = 1 mA	80	_	
		I _C = 10 mA	100	300	
		I _C = 50 mA	60	_	
		I _C = 100 mA	30	_	
V _{CEsat}	collector-emitter saturation	I _C = 10 mA; I _B = 1 mA	_	200	mV
	voltage	I _C = 50 mA; I _B = 5 mA	_	300	mV
V _{BEsat}	base-emitter saturation voltage	I _C = 10 mA; I _B = 1 mA	650	850	mV
	I _C = 50 mA; I _B = 5 mA	_	950	mV	
C _c	collector capacitance	$I_E = I_e = 0$; $V_{CB} = 5$ V; $f = 1$ MHz	_	4	pF
C _e	emitter capacitance	$I_C = I_c = 0$; $V_{BE} = 500 \text{ mV}$; $f = 1 \text{ MHz}$	_	8	pF
f _T	transition frequency	$I_C = 10 \text{ mA}; V_{CE} = 20 \text{ V};$ f = 100 MHz	300	_	MHz
F	noise figure	I_C = 100 μA; V_{CE} = 5 V; R_S = 1 kΩ; f = 10 Hz to 15.7 kHz	-	5	dB
Switching ti	mes (between 10% and 90% lev	els); see Fig.7	•	•	<u> </u>
t _d	delay time	I _{Con} = 10 mA; I _{Bon} = 1 mA;	_	35	ns
t _r	rise time	I _{Boff} = -1 mA	_	35	ns
ts	storage time		_	200	ns
t _f	fall time		_	50	ns

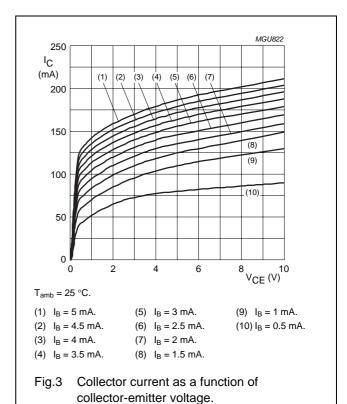
Note

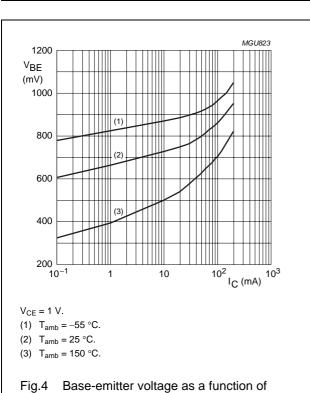
1. Pulse test: $t_p \leq 300~\mu s;~\delta \leq 0.02.$

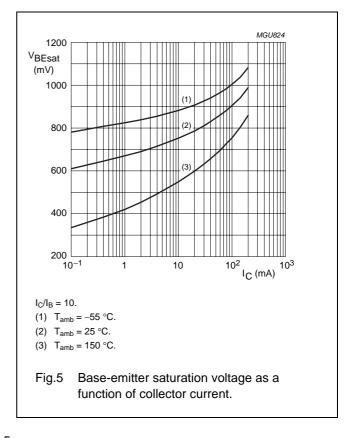
NPN switching transistor

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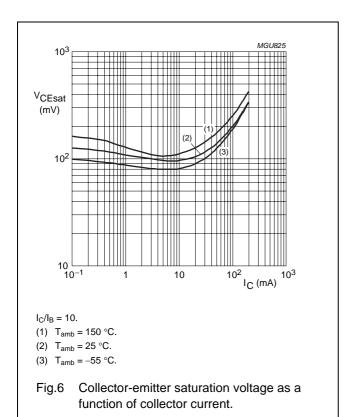


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collector current.

NPN switching transistor

PMST3904



oscilloscope $\frac{(\text{probe})}{450\,\Omega}$ $\frac{\text{NB}}{450\,\Omega}$ $\frac{\text{NC}}{450\,\Omega}$ oscilloscope $\frac{(\text{probe})}{450\,\Omega}$ oscilloscope $\frac{(\text{probe})}{4$

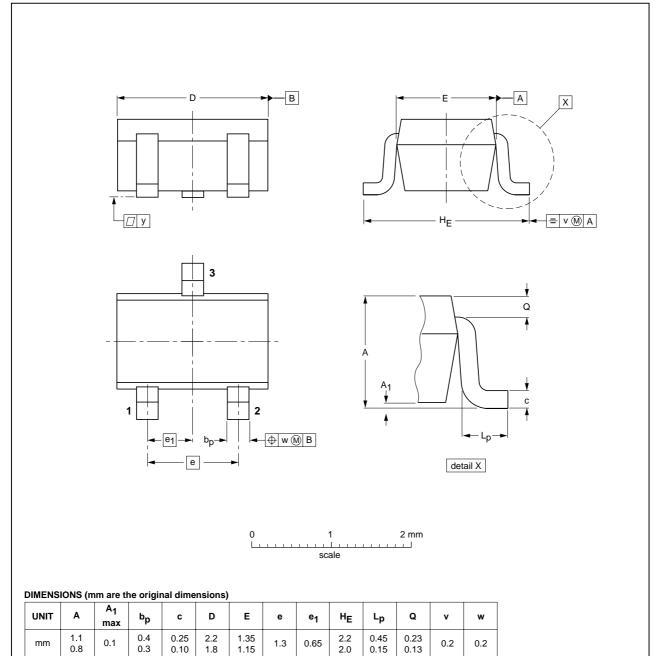
NPN switching transistor

PMST3904

PACKAGE OUTLINE



SOT323



OUTLINE	REFERENCES		EUROPEAN	ICCUE DATE		
VERSION	IEC	JEDEC	JEITA		PROJECTION	ISSUE DATE
SOT323			SC-70			04-11-04 06-03-16

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0.3

NPN switching transistor

PMST3904

DATA SHEET STATUS

DOCUMENT STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

Notes

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- 2. 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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Customer notification

This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content, except for package outline drawings which were updated to the latest version.

Contact information

For additional information please visit: http://www.nxp.com
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