## ne<mark>x</mark>peria

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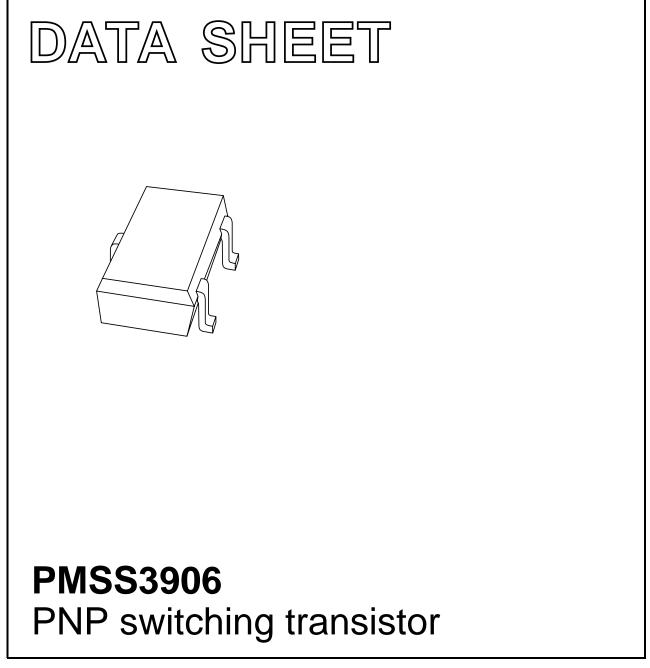
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If you have any questions related to the data sheet, please contact our nearest sales office via e-mail or telephone (details via **salesaddresses@nexperia.com**). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia

## DISCRETE SEMICONDUCTORS



Product data sheet Supersedes data of 1999 Apr 22 2004 Jan 09



**PMSS3906** 

## **PNP** switching transistor

## FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 40 V).

## **APPLICATIONS**

• Switching, e.g. telephony and professional communication equipment.

#### DESCRIPTION

PNP switching transistor in an SOT323 (SC-70) plastic package. NPN complement: PMSS3904.

## PRODUCT OVERVIEW

# TYPE NUMBER PACKAGE MARKING CODE<sup>(1)</sup> NPN COMPLEMENT PMSS3906 SOT323 SC-70 06\* PMSS3904

#### Note

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

## SIMPLIFIED OUTLINE, SYMBOL AND PINNING

TYPE NUMBER	SIMPLIFIED OUTLINE AND SYMBOL		PINNING		
			DESCRIPTION		
PMSS3906	□ 3	1	base		
		2	emitter		
	Top view MAM048	3	collector		

## QUICK REFERENCE DATA

SYMBOL	PARAMETER	TYP.	MAX.	UNIT
V <sub>CEO</sub>	collector-emitter voltage	-	-40	V
I <sub>C</sub>	collector current	-	-100	mA
h <sub>FE</sub>	DC current gain	100	300	

## PMSS3906

## **ORDERING INFORMATION**

TYPE NUMBER		PACKAGE			
ITPE NUMBER	NAME	DESCRIPTION	VERSION		
PMSS3906	_	plastic surface mounted package; 3 leads	SOT323		

### 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	_	-40	V
V <sub>CEO</sub>	collector-emitter voltage	open base	-	-40	V
V <sub>EBO</sub>	emitter-base voltage	open collector	_	-5	V
I <sub>C</sub>	collector current (DC)		_	-100	mA
I <sub>CM</sub>	peak collector current		-	-200	mA
I <sub>BM</sub>	peak base current		-	-100	mA
P <sub>tot</sub>	total power dissipation	$T_{amb} \le 25 \ ^{\circ}C$ ; notes 1 and 2	-	200	mW
T <sub>stg</sub>	storage temperature		-65	+150	°C
Tj	junction temperature		_	150	°C
T <sub>amb</sub>	operating ambient temperature		-65	+150	°C

#### Notes

- 1. Refer to standard mounting conditions.
- 2. Transistor mounted on an FR4 printed-circuit board, single-sided copper, tinplated, standard footprint.

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	notes 1 and 2	625	K/W

#### Notes

1. Refer to standard mounting conditions.

2. Transistor mounted on an FR4 printed-circuit board, single-sided copper, tinplated, standard footprint.

## PMSS3906

## CHARACTERISTICS

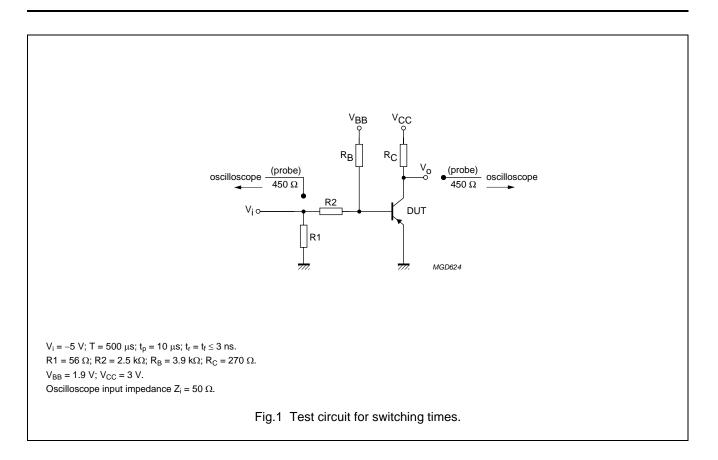
 $T_{amb}$  = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I <sub>CBO</sub>	collector-base cut-off current	$I_E = 0; V_{CB} = -30 V$	-	-50	nA
		$I_E = 0; V_{CB} = -30 \text{ V}; T_j = 150 \text{ °C}$	-	-10	μA
I <sub>EBO</sub>	emitter-base cut-off current	$I_{C} = 0; V_{EB} = -5 V$	_	-50	nA
h <sub>FE</sub>	DC current gain	$V_{CE} = -1 V$			
		$I_{\rm C} = -0.1  {\rm mA}$	60	-	
		$I_{\rm C} = -1  \mathrm{mA}$	80	_	
		$I_{\rm C} = -10 \text{ mA}$	100	300	
		I <sub>C</sub> = -50 mA; note 1	60	_	
		I <sub>C</sub> = -100 mA; note 1	30	-	
V <sub>CEsat</sub>	collector-emitter saturation	$I_{\rm C} = -10 \text{ mA}; I_{\rm B} = -1 \text{ mA}$	_	-250	mV
	voltage	$I_{C} = -50 \text{ mA}; I_{B} = -5 \text{ mA}; \text{ note } 1$	-	-400	mV
V <sub>BEsat</sub>	base-emitter saturation voltage	$I_{\rm C} = -10 \text{ mA}; I_{\rm B} = -1 \text{ mA}$	-	-850	mV
		$I_{C} = -50 \text{ mA}; I_{B} = -5 \text{ mA}; \text{ note } 1$	-	-950	mV
C <sub>c</sub>	collector capacitance	$I_E = i_e = 0; V_{CB} = -5 V; f = 1 MHz$	-	4.5	pF
C <sub>e</sub>	emitter capacitance	$I_{C} = i_{c} = 0; V_{EB} = -0.5 V; f = 1 MHz$	_	14	pF
f <sub>T</sub>	transition frequency	$I_E = -10 \text{ mA}; V_{CB} = -20 \text{ V}; \text{ f} = 100 \text{ MHz}$	150	_	MHz
F	noise figure	$I_{C}$ = -100 μA; $V_{CE}$ = -5 V; $R_{S}$ = 1 kΩ; f = 10 Hz to 15.7 kHz	_	4	dB
Switching t	imes (between 10% and 90% lev	rels); see Fig.1		•	
t <sub>on</sub>	turn-on time	$I_{Con} = -10 \text{ mA}; I_{Bon} = -1 \text{ mA}; I_{Boff} = 1 \text{ mA}$	-	100	ns
t <sub>d</sub>	delay time		_	50	ns
t <sub>r</sub>	rise time	1	_	50	ns
t <sub>off</sub>	turn-off time	1	_	700	ns
ts	storage time	1	_	600	ns
t <sub>f</sub>	fall time	1	-	100	ns

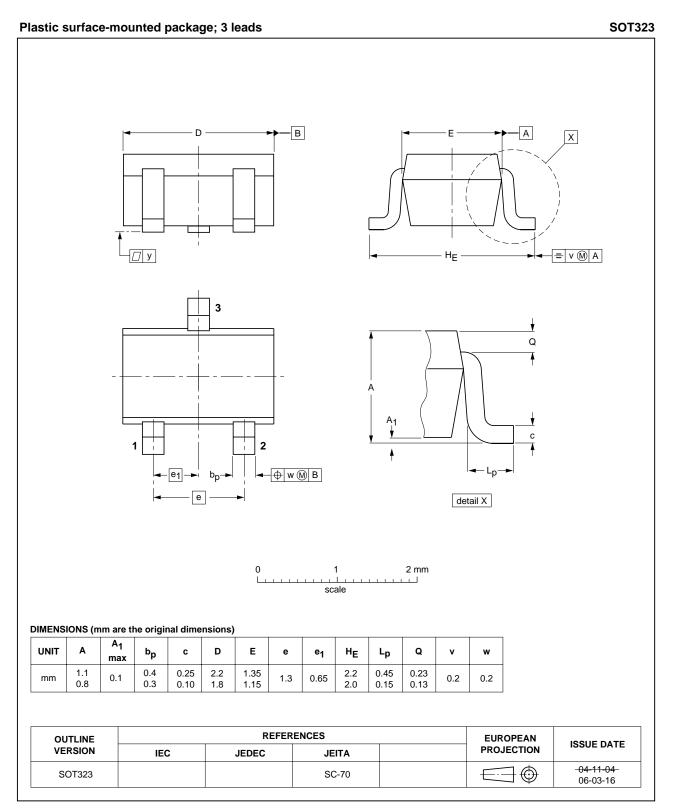
#### Note

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

## PMSS3906



## PACKAGE OUTLINE



## PMSS3906

PMSS3906

#### DATA SHEET STATUS

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	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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## **NXP Semiconductors**

#### **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 For sales offices addresses send e-mail to: salesaddresses@nxp.com

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