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Electronic Components Sourcing Information

Product Reference Information

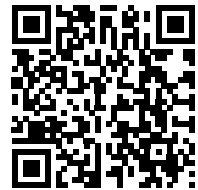
Part Number:	MPS3906,126
Manufacturer:	NXP USA Inc.
Package:	TO-226-3, TO-92-3 (TO-226AA) Formed Leads
Availability:	Please confirm with sales

Product Page:

<https://antrexco.com/product/details/nxp-usa-inc/mps3906-126.html>

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Supplier verification and packaging condition review

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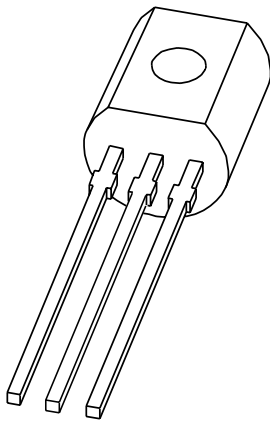
Secure sourcing support for OEM / EMS projects

Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

DATA SHEET



MPS3906 PNP switching transistor

Product specification
Supersedes data of 1999 Apr 12

2004 Oct 27

PNP switching transistor

MPS3906

FEATURES

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

APPLICATIONS

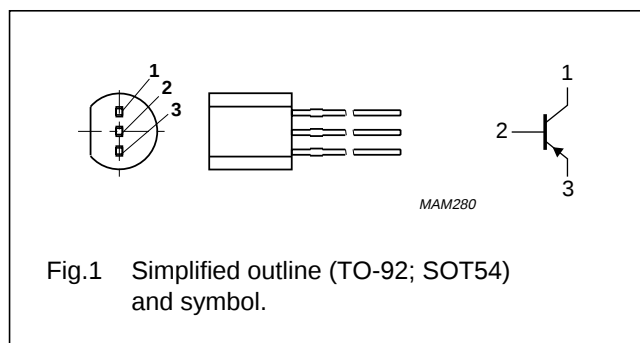
- General purpose switching and amplification.

DESCRIPTION

PNP transistor in a plastic TO-92; SOT54 package.
NPN complement: MPS3904.

PINNING

PIN	DESCRIPTION
1	collector
2	base
3	emitter



ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
MPS3906	SC-43A	plastic single-ended leaded (through hole) package; 3 leads	SOT54

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	–	–40	V
V_{CEO}	collector-emitter voltage	open base	–	–40	V
V_{EBO}	emitter-base voltage	open collector	–	–5	V
I_C	collector current (DC)		–	–100	mA
I_{CM}	peak collector current		–	–200	mA
I_{BM}	peak base current		–	–200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$	–	500	mW
T_{stg}	storage temperature		–65	+150	$^{\circ}\text{C}$
T_j	junction temperature		–	150	$^{\circ}\text{C}$
T_{amb}	ambient temperature		–65	+150	$^{\circ}\text{C}$

PNP switching transistor

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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	note 1	250	K/W

Note

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

CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$V_{CB} = -30\text{ V}$; $I_E = 0\text{ A}$	–	–50	nA
I_{EBO}	emitter-base cut-off current	$V_{EB} = -5\text{ V}$; $I_E = 0\text{ A}$	–	–50	nA
h_{FE}	DC current gain	$V_{CE} = -1\text{ V}$; note 1 $I_C = -0.1\text{ mA}$ $I_C = -1\text{ mA}$ $I_C = -10\text{ mA}$ $I_C = -50\text{ mA}$ $I_C = -100\text{ mA}$	60 80 100 60 30	– – 300 – –	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -10\text{ mA}$; $I_B = -1\text{ mA}$; note 1	–	–250	mV
		$I_C = -50\text{ mA}$; $I_B = -5\text{ mA}$; note 1	–	–400	mV
V_{BEsat}	base-emitter saturation voltage	$I_C = -10\text{ mA}$; $I_B = -1\text{ mA}$; note 1	–650	–850	mV
		$I_C = -50\text{ mA}$; $I_B = -5\text{ mA}$; note 1	–	–950	mV
C_c	collector capacitance	$V_{CB} = -5\text{ V}$; $I_E = I_C = 0\text{ A}$; $f = 100\text{ kHz}$ to 1 MHz	–	5	pF
C_e	emitter capacitance	$V_{EB} = -0.5\text{ V}$; $I_C = I_E = 0\text{ A}$; $f = 100\text{ kHz}$ to 1 MHz	–	15	pF
f_T	transition frequency	$V_{CE} = -20\text{ V}$; $I_C = -10\text{ mA}$; $f = 100\text{ MHz}$	150	–	MHz
F	noise figure	$V_{CE} = -5\text{ V}$; $I_C = -100\text{ }\mu\text{A}$; $R_S = 1\text{ k}\Omega$; $f = 10\text{ Hz}$ to 15.7 kHz	–	4	dB

Switching times (between 10 % and 90 % levels); (see Fig.2)

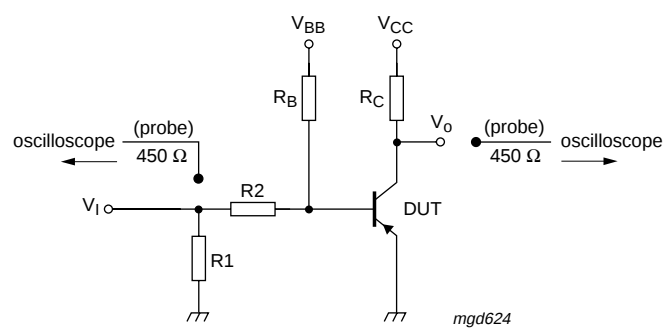
t_{on}	turn-on time	$I_{Bon} = -10\text{ mA}$; $I_{Boff} = -1\text{ mA}$; $I_{Boff} = 1\text{ mA}$; $V_{CC} = -3\text{ V}$; $V_{BB} = 1.9\text{ V}$	–	100	ns
t_d	delay time		–	50	ns
t_r	rise time		–	50	ns
t_{off}	turn-off time		–	700	ns
t_s	storage time		–	600	ns
t_f	fall time		–	100	ns

Note

1. Pulse test: $t_p = 300\text{ }\mu\text{s}$; $\delta = 0.02$.

PNP switching transistor

MPS3906



$V_i = -5\text{ V}$; $t_p \geq 4\ \mu\text{s}$; $t_r = t_f \leq 3\text{ ns}$.

$R_1 = 56\ \Omega$; $R_2 = 2.5\text{ k}\Omega$; $R_B = 3.9\text{ k}\Omega$; $R_C = 270\ \Omega$.

Oscilloscope: input impedance $Z_i = 50\ \Omega$.

Fig.2 Test circuit for switching times.

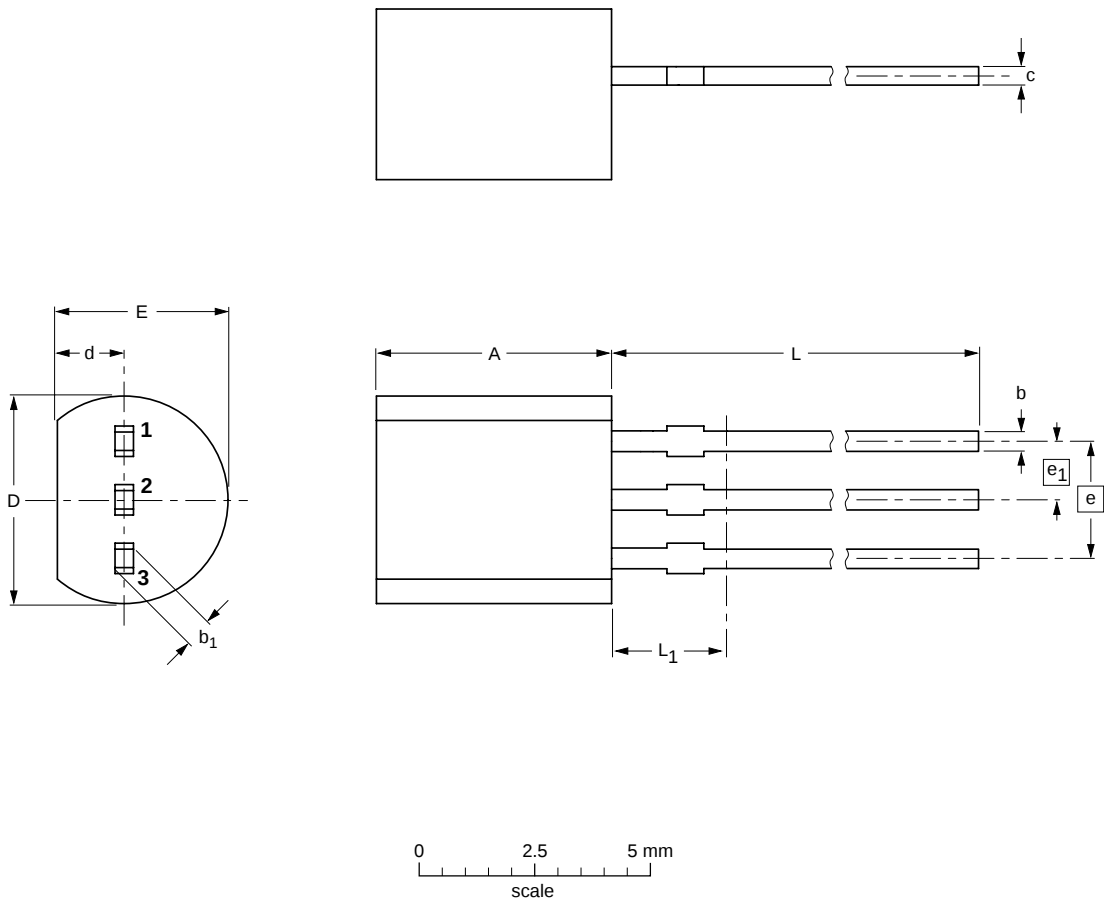
PNP switching transistor

MPS3906

PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; 3 leads

SOT54



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b ₁	c	D	d	E	e	e ₁	L	L ₁ ⁽¹⁾ max.
mm	5.2 5.0	0.48 0.40	0.66 0.55	0.45 0.38	4.8 4.4	1.7 1.4	4.2 3.6	2.54	1.27	14.5 12.7	2.5

Note

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT54		TO-92	SC-43A			-97-02-28 04-06-28

PNP switching transistor

MPS3906

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾⁽³⁾	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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