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Kind regards,

Team Nexperia

DISCRETE SEMICONDUCTORS

DATA SHEET

PDTA124T series PNP resistor-equipped transistors; R1 = 22 k Ω , R2 = open

Product data sheet Supersedes data of 2004 May 05 2004 Aug 04



PNP resistor-equipped transistors; R1 = 22 k Ω , R2 = open

PDTA124T series

FEATURES

- Built-in bias resistors
- · Simplified circuit design
- Reduction of component count
- · Reduced pick and place costs.

APPLICATIONS

- General purpose switching and amplification
- · Inverter and interface circuits
- Circuit driver.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	TYP.	MAX.	UNIT
V _{CEO}	collector-emitter voltage	_	-50	V
Io	output current (DC)	_	-100	mA
R1	bias resistor	22	_	kΩ
R2	open	_	_	_

DESCRIPTION

PNP resistor-equipped transistor (see "Simplified outline, symbol and pinning" for package details).

PRODUCT OVERVIEW

TVDE NUMBER	PAC	KAGE	MARKING CORE	NDN COMPLEMENT
TYPE NUMBER	PHILIPS	EIAJ	MARKING CODE	NPN COMPLEMENT
PDTA124TE	SOT416	SC-75	3R	PDTC124TE
PDTA124TEF	SOT490	SC-89	24	PDTC124TEF
PDTA124TK	SOT346	SC-59	59	PDTC124TK
PDTA124TM	SOT883	SC-101	DJ	PDTC124TM
PDTA124TS	SOT54 (TO-92)	SC-43	TA124T	PDTC124TS
PDTA124TT	SOT23	_	*AE ⁽¹⁾	PDTC124TT
PDTA124TU	SOT323	SC-70	*7B ⁽¹⁾	PDTC124TU

Note

^{1. * =} p: Made in Hong Kong.

^{* =} t: Made in Malaysia.

^{* =} W: Made in China.

PNP resistor-equipped transistors; R1 = 22 k Ω , R2 = open

PDTA124T series

SIMPLIFIED OUTLINE, SYMBOL AND PINNING

TYPE NUMBER	CIMPLIFIED OUTLINE AND CYMPOL		PINNING
TYPE NUMBER	SIMPLIFIED OUTLINE AND SYMBOL	PIN	DESCRIPTION
PDTA124TS	1 2 1 R1 3 3	1 2 3	base collector emitter
PDTA124TE PDTA124TEF PDTA124TK PDTA124TT PDTA124TU	3 1 R1 3 Top view MDB272	1 2 3	base emitter collector
PDTA124TM	2 R1 3 1 Bottom view MDB268	1 2 3	base emitter collector

PNP resistor-equipped transistors; R1 = 22 k Ω , R2 = open

PDTA124T series

ORDERING INFORMATION

TYPE	PACKAGE								
NUMBER	NAME	DESCRIPTION	VERSION						
PDTA124TE	_	plastic surface mounted package; 3 leads	SOT416						
PDTA124TEF	_	plastic surface mounted package; 3 leads	SOT490						
PDTA124TK	_	plastic surface mounted package; 3 leads	SOT346						
PDTA124TM	-	leadless ultra small plastic package; 3 solder lands; body $1.0 \times 0.6 \times 0.5$ mm	SOT883						
PDTA124TS	_	plastic single-ended leaded (through hole) package; 3 leads	SOT54						
PDTA124TT	-	plastic surface mounted package; 3 leads	SOT23						
PDTA124TU	-	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 _{CBO}	collector-base voltage	open emitter	_	-50	V
V _{CEO}	collector-emitter voltage	open base	_	-50	V
V_{EBO}	emitter-base voltage	open collector	-	-5	V
Io	output current (DC)		_	-100	mA
I _{CM}	peak collector current		_	-100	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C			
	SOT23	note 1	_	250	mW
	SOT54	note 1	_	500	mW
	SOT323	note 1	_	200	mW
	SOT346	note 1	_	250	mW
	SOT416	note 1	_	150	mW
	SOT490	notes 1 and 2	_	250	mW
	SOT883	notes 2 and 3	_	250	mW
T _{stg}	storage temperature		-65	+150	°C
T _j	junction temperature		_	150	°C
T _{amb}	operating ambient temperature		-65	+150	°C

Notes

- 1. Refer to standard mounting conditions.
- 2. Reflow soldering is the only recommended soldering method.
- 3. Refer to SOT883 standard mounting conditions; FR4 with 60 μm copper strip line.

PNP resistor-equipped transistors; R1 = 22 k Ω , R2 = open

PDTA124T series

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th(j-a)}	thermal resistance from junction to ambient	in free air		
	SOT23	note 1	500	K/W
	SOT54	note 1	250	K/W
	SOT323	note 1	625	K/W
	SOT346	note 1	500	K/W
	SOT416	note 1	833	K/W
	SOT490	notes 1 and 2	500	K/W
	SOT883	notes 2 and 3	500	K/W

Notes

- 1. Refer to standard mounting conditions.
- 2. Reflow soldering is the only recommended soldering method.
- 3. Refer to SOT883 standard mounting conditions; FR4 with 60 μm copper strip line.

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I _{CBO}	collector-base cut-off current	$V_{CB} = -50 \text{ V}; I_E = 0 \text{ A}$	_	_	-100	nA
I _{CEO}	collector-emitter cut-off current	$V_{CE} = -30 \text{ V}; I_B = 0 \text{ A}$	_	_	-1	μΑ
		$V_{CE} = -30 \text{ V}; I_{B} = 0 \text{ A};$ $T_{j} = 150 \text{ °C}$	_	_	-50	μΑ
I _{EBO}	emitter-base cut-off current	$V_{EB} = -5 \text{ V}; I_{C} = 0 \text{ A}$	_	-	-100	nA
h _{FE}	DC current gain	$V_{CE} = -5 \text{ V}; I_{C} = -1 \text{ mA}$	100	-	_	
V _{CEsat}	collector-emitter saturation voltage	$I_C = -10 \text{ mA}; I_B = -0.5 \text{ mA}$	_	_	-150	mV
R1	input resistor		15.4	22	28.6	kΩ
C _c	collector capacitance	$I_E = I_e = 0 \text{ A}; V_{CB} = -10 \text{ V};$ f = 1 MHz	-	_	3	pF

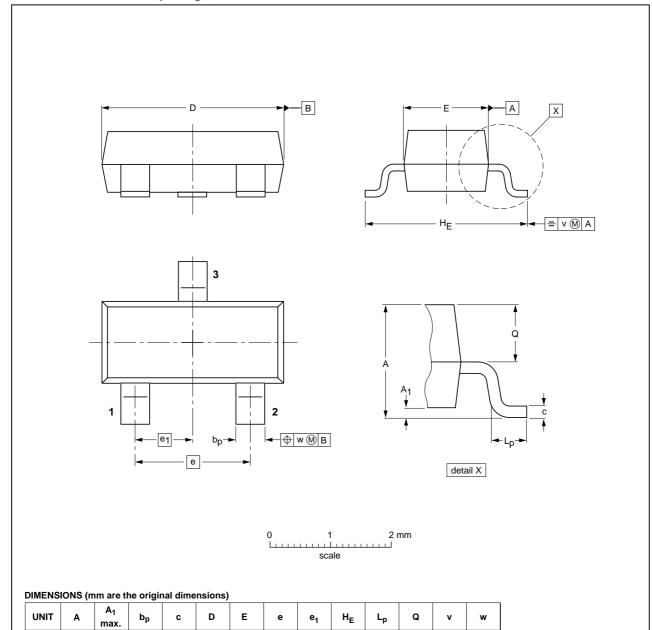
PNP resistor-equipped transistors; R1 = 22 k Ω , R2 = open

PDTA124T series

PACKAGE OUTLINES

Plastic surface-mounted package; 3 leads

SOT23



OUTLINE VERSION		REFER	EUROPEAN	ISSUE DATE		
	IEC	JEDEC	JEITA		PROJECTION	ISSUE DATE
SOT23		TO-236AB				-04-11-04- 06-03-16

0.95

1.9

0.45

0.55

0.2

0.1

2004 Aug 04 6

0.48

0.38

0.15

1.1

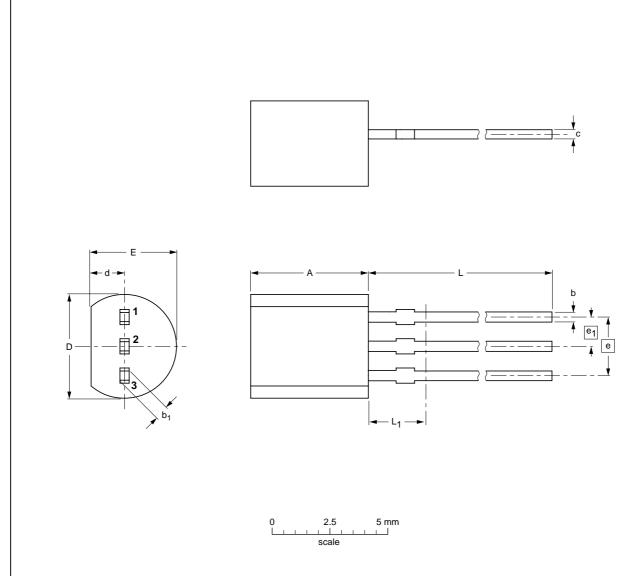
0.9

PNP resistor-equipped transistors; R1 = 22 k Ω , R2 = open

PDTA124T series

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

SOT54



DIMENSIONS (mm are the original dimensions)

UNIT	Α	b	b ₁	С	D	d	E	е	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.

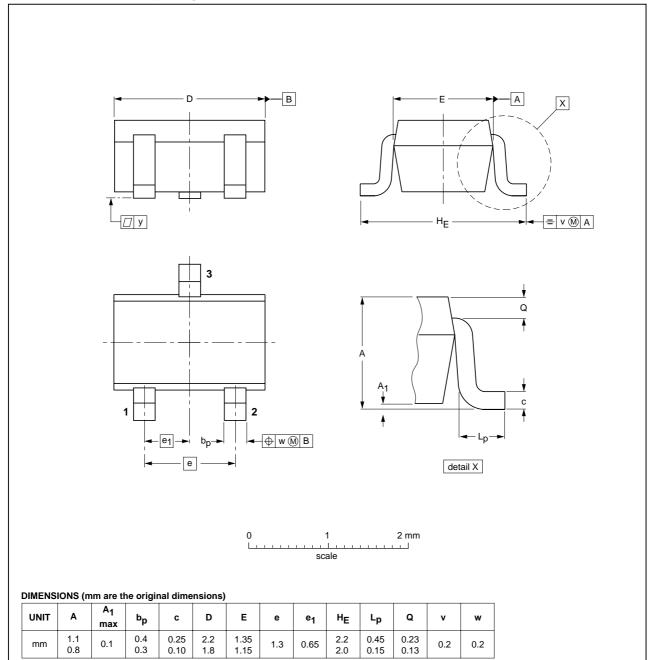
OUTLINE VERSION		REFER	EUROPEAN	ISSUE DATE	
	IEC	JEDEC	JEITA	PROJECTION	ISSUE DATE
SOT54		TO-92	SC-43A		-04-06-28 04-11-16

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PDTA124T series

Plastic surface-mounted package; 3 leads

SOT323



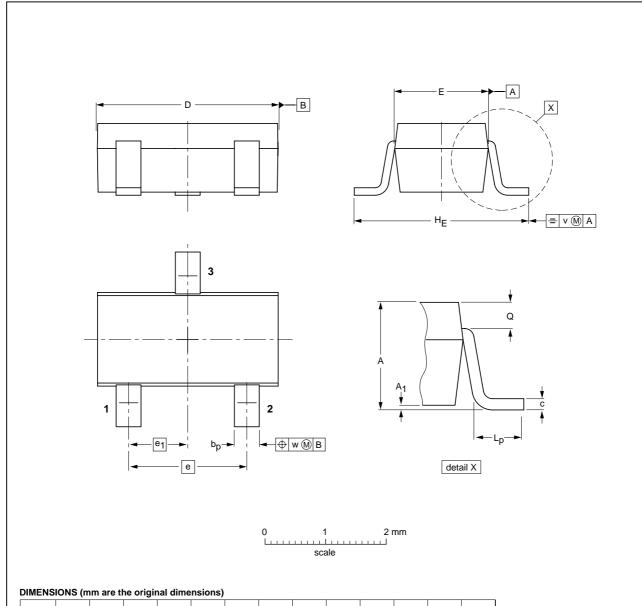
OUTLINE			REFER	EUROPEAN	ISSUE DATE		
'	VERSION	IEC	JEDEC	JEITA		PROJECTION	ISSUE DATE
	SOT323			SC-70			04-11-04 06-03-16

PNP resistor-equipped transistors; R1 = 22 k Ω , R2 = open

PDTA124T series

Plastic surface-mounted package; 3 leads

SOT346



UNIT	Α	A ₁	bp	С	D	E	е	e ₁	HE	Lp	Q	v	w
mm	1.3 1.0	0.1 0.013	0.50 0.35	0.26 0.10	3.1 2.7	1.7 1.3	1.9	0.95	3.0 2.5	0.6 0.2	0.33 0.23	0.2	0.2

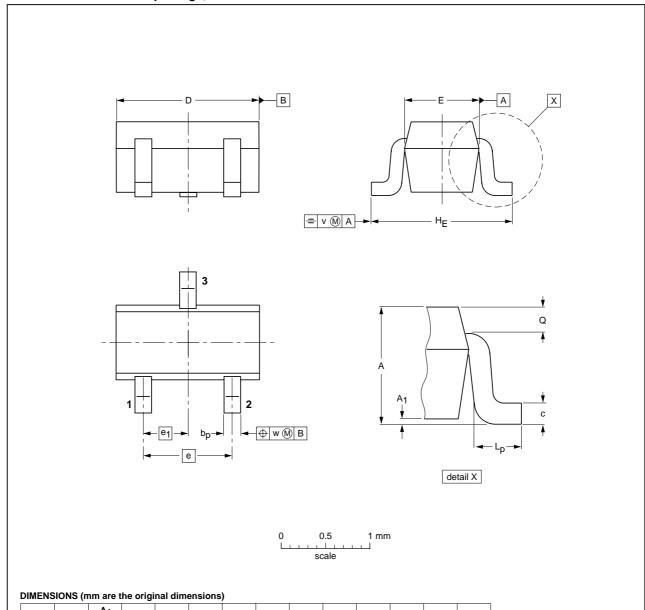
OUTLINE		REFER	ENCES	EUROPEAN	ISSUE DATE
VERSION	IEC	JEDEC	JEITA	PROJECTION	ISSUE DATE
SOT346		TO-236	SC-59A		04-11-11 06-03-16

PNP resistor-equipped transistors; R1 = 22 k Ω , R2 = open

PDTA124T series

Plastic surface-mounted package; 3 leads

SOT416



UNIT	Α	A ₁ max	bp	С	D	E	е	e ₁	HE	Lp	ø	v	w
mm	0.95 0.60	0.1	0.30 0.15	0.25 0.10	1.8 1.4	0.9 0.7	1	0.5	1.75 1.45	0.45 0.15	0.23 0.13	0.2	0.2

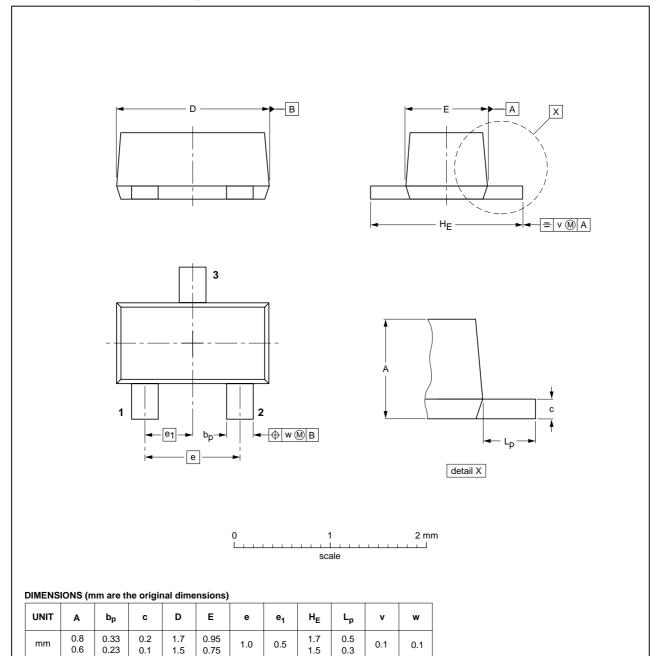
OUTLINE		REFER	ENCES	EUROPEAN	ISSUE DATE
VERSION	IEC	JEDEC	JEITA	PROJECTION	ISSUE DATE
SOT416			SC-75		04-11-04 06-03-16

PNP resistor-equipped transistors; R1 = 22 k Ω , R2 = open

PDTA124T series

Plastic surface-mounted package; 3 leads

SOT490



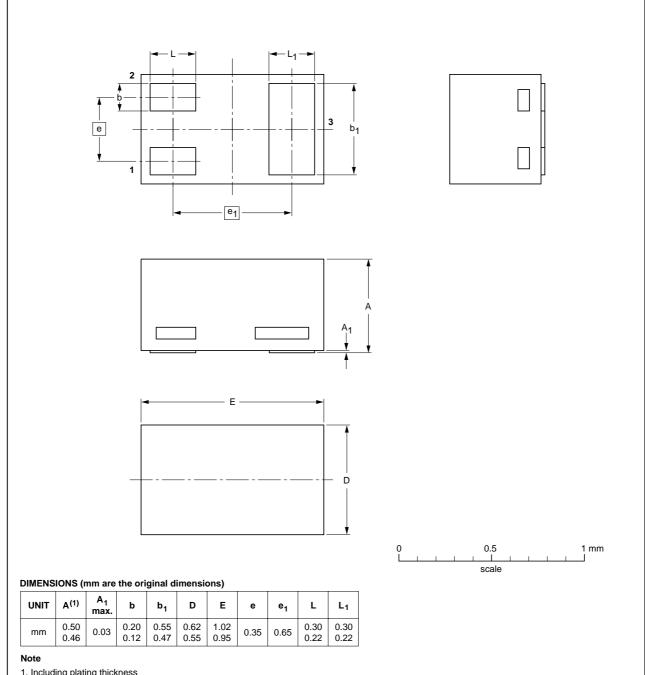
VERSION IEC JEDEC JEITA PROJECTION ISSUE DATE SOT490 SC-89 \$6-07-28 \\ 06-03-16 \$6-03-16	OUTLINE	REFERENCES				EUROPEAN	ISSUE DATE
SC-89	VERSION	IEC	JEDEC	JEITA		PROJECTION	ISSUE DATE
	SOT490			SC-89			

PNP resistor-equipped transistors; $R1 = 22 \text{ k}\Omega$, R2 = open

PDTA124T series

Leadless ultra small plastic package; 3 solder lands; body 1.0 x 0.6 x 0.5 mm

SOT883



1. Including plating thickness

OUTLINE		REFER	ENCES	EUROPEAN	ISSUE DATE
VERSION	IEC	JEDEC	JEITA	PROJECTION	ISSUE DATE
SOT883			SC-101		03-02-05 03-04-03

2004 Aug 04 12

PNP resistor-equipped transistors; R1 = 22 k Ω , R2 = open

PDTA124T series

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.

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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

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