

# DATA SHEET



## **PDT114YT** NPN resistor-equipped transistor

Product specification  
Supersedes data of 1998 May 19

1999 May 21

# NPN resistor-equipped transistor

# PDTC114YT

### FEATURES

- Built-in bias resistors R1 and R2 (typ. 10 and 47 kΩ respectively)
- Simplification of circuit design
- Reduces number of components and board space.

### APPLICATIONS

- Especially suitable for space reduction in interface and driver circuits
- Inverter circuit configurations without use of external resistors.

### DESCRIPTION

NPN resistor-equipped transistor in a SOT23 plastic package.

### PINNING

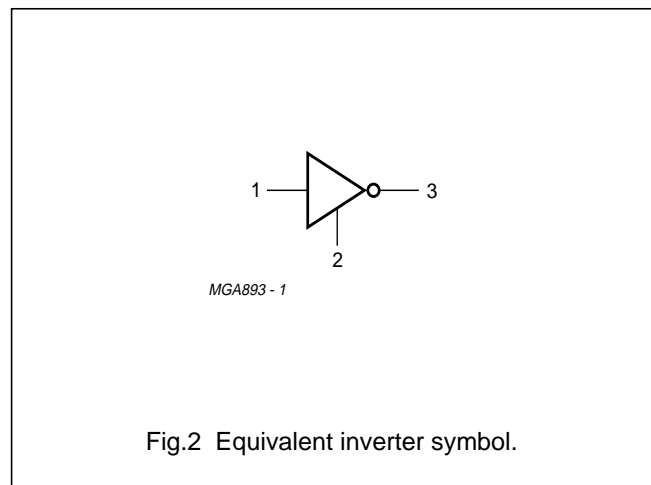
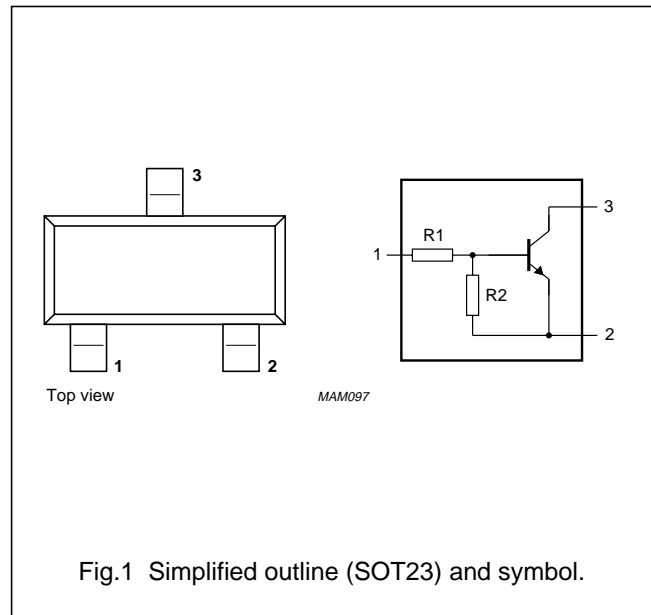
PIN	DESCRIPTION
1	base/input
2	emitter/ground
3	collector/output

### MARKING

TYPE NUMBER	MARKING CODE <sup>(1)</sup>
PDTC114YT	*27

### Note

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



## NPN resistor-equipped transistor

## PDTC114YT

**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 134).

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	–	10	V
$V_i$	input voltage positive negative		–	+40	V
			–	–6	V
$I_O$	output current (DC)		–	100	mA
$I_{CM}$	peak collector current		–	100	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$ ; note 1	–	250	mW
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–	150	°C
$T_{amb}$	operating ambient temperature		–65	+150	°C

**Note**

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

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	500	K/W

**Note**

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

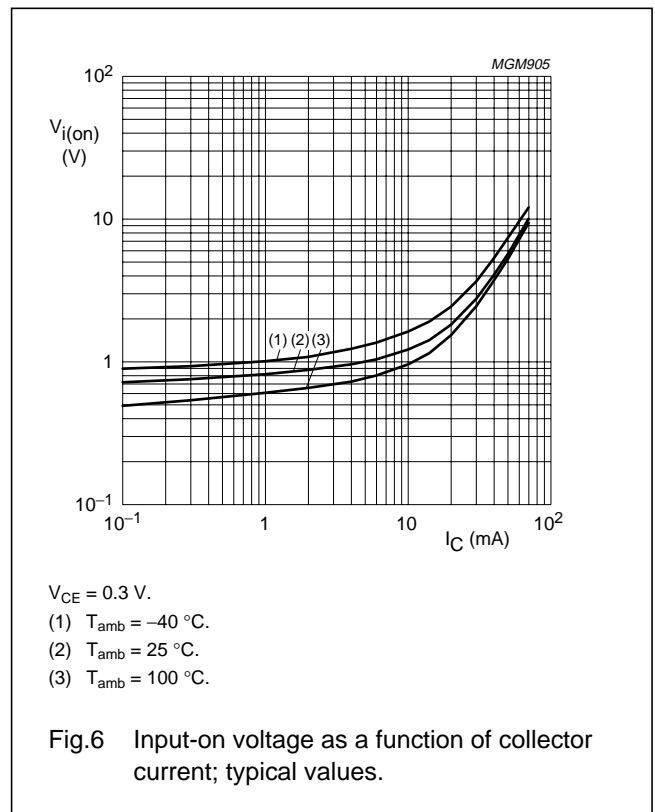
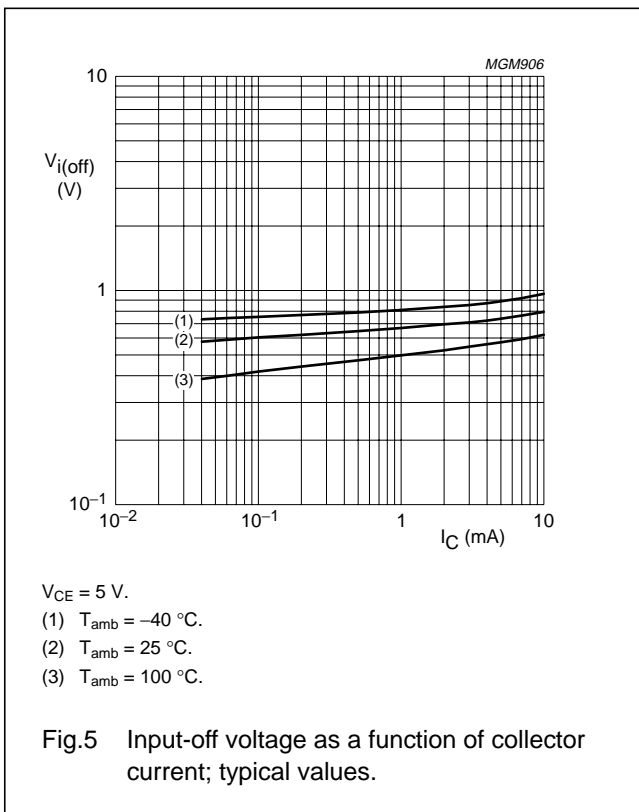
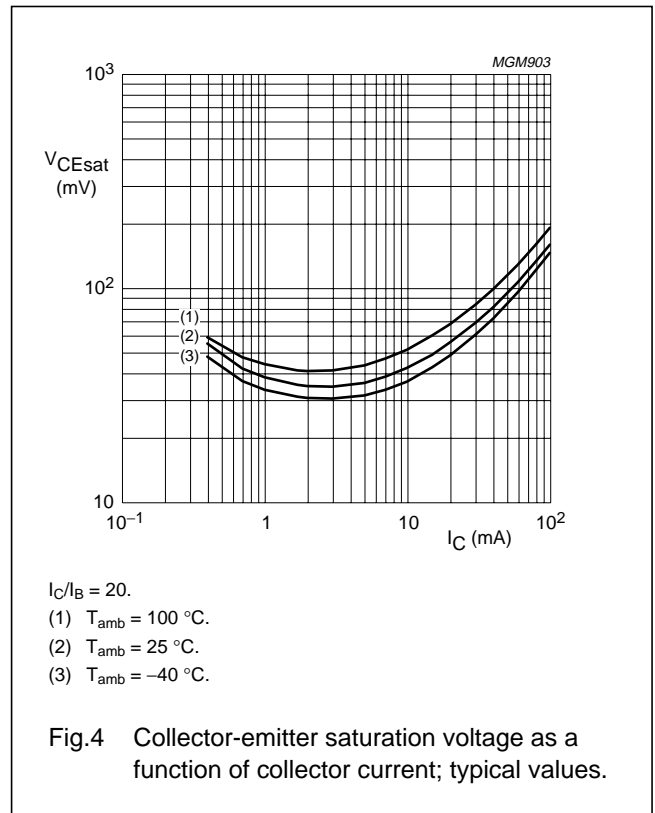
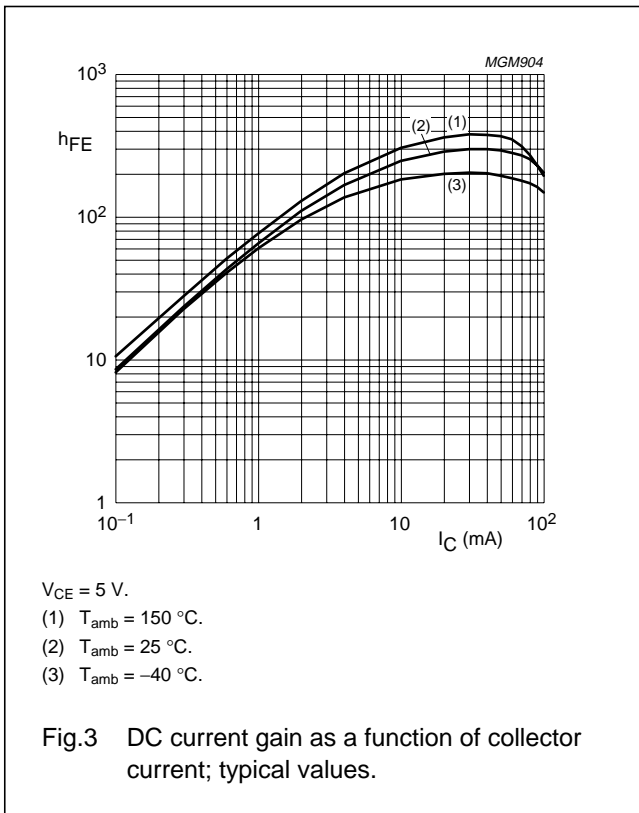
**CHARACTERISTICS**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0$ ; $V_{CB} = 50\text{ V}$	–	–	100	nA
$I_{CEO}$	collector cut-off current	$I_B = 0$ ; $V_{CE} = 30\text{ V}$	–	–	1	$\mu\text{A}$
		$I_B = 0$ ; $V_{CE} = 30\text{ V}$ ; $T_j = 150\text{ °C}$	–	–	50	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0$ ; $V_{EB} = 5\text{ V}$	–	–	150	$\mu\text{A}$
$h_{FE}$	DC current gain	$I_C = 5\text{ mA}$ ; $V_{CE} = 5\text{ V}$	100	–	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 5\text{ mA}$ ; $I_B = 0.25\text{ mA}$	–	–	100	mV
$V_{i(off)}$	input-off voltage	$I_C = 100\text{ }\mu\text{A}$ ; $V_{CE} = 5\text{ V}$	–	0.7	0.5	V
$V_{i(on)}$	input-on voltage	$I_C = 1\text{ mA}$ ; $V_{CE} = 0.3\text{ V}$	1.4	0.8	–	V
R1	input resistor		7	10	13	k $\Omega$
$\frac{R2}{R1}$	resistor ratio		3.7	4.7	5.7	
$C_c$	collector capacitance	$I_E = i_e = 0$ ; $V_{CB} = 10\text{ V}$ ; $f = 1\text{ MHz}$	–	–	2.5	pF

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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub> max.	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23						97-02-28

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**DEFINITIONS**

<b>Data Sheet Status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). 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.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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**Argentina:** see South America

**Australia:** 34 Waterloo Road, NORTH RYDE, NSW 2113,  
Tel. +61 2 9805 4455, Fax. +61 2 9805 4466

**Austria:** Computerstr. 6, A-1101 WIEN, P.O. Box 213,  
Tel. +43 1 60 101 1248, Fax. +43 1 60 101 1210

**Belarus:** Hotel Minsk Business Center, Bld. 3, r. 1211, Volodarski Str. 6,  
220050 MINSK, Tel. +375 172 20 0733, Fax. +375 172 20 0773

**Belgium:** see The Netherlands

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**Bulgaria:** Philips Bulgaria Ltd., Energoproject, 15th floor,  
51 James Bourchier Blvd., 1407 SOFIA,  
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**Canada:** PHILIPS SEMICONDUCTORS/COMPONENTS,  
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**China/Hong Kong:** 501 Hong Kong Industrial Technology Centre,  
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**Colombia:** see South America

**Czech Republic:** see Austria

**Denmark:** Sydhavnsgade 23, 1780 COPENHAGEN V,  
Tel. +45 33 29 3333, Fax. +45 33 29 3905

**Finland:** Sinikalliontie 3, FIN-02630 ESPOO,  
Tel. +358 9 615 800, Fax. +358 9 6158 0920

**France:** 51 Rue Carnot, BP317, 92156 SURESNES Cedex,  
Tel. +33 1 4099 6161, Fax. +33 1 4099 6427

**Germany:** Hammerbrookstraße 69, D-20097 HAMBURG,  
Tel. +49 40 2353 60, Fax. +49 40 2353 6300

**Hungary:** see Austria

**India:** Philips INDIA Ltd, Band Box Building, 2nd floor,  
254-D, Dr. Annie Besant Road, Worli, MUMBAI 400 025,  
Tel. +91 22 493 8541, Fax. +91 22 493 0966

**Indonesia:** PT Philips Development Corporation, Semiconductors Division,  
Gedung Philips, Jl. Buncit Raya Kav.99-100, JAKARTA 12510,  
Tel. +62 21 794 0040 ext. 2501, Fax. +62 21 794 0080

**Ireland:** Newstead, Clonskeagh, DUBLIN 14,  
Tel. +353 1 7640 000, Fax. +353 1 7640 200

**Israel:** RAPAC Electronics, 7 Kehilat Saloniki St, PO Box 18053,  
TEL AVIV 61180, Tel. +972 3 645 0444, Fax. +972 3 649 1007

**Italy:** PHILIPS SEMICONDUCTORS, Piazza IV Novembre 3,  
20124 MILANO, Tel. +39 02 67 52 2531, Fax. +39 02 67 52 2557

**Japan:** Philips Bldg 13-37, Kohnan 2-chome, Minato-ku,  
TOKYO 108-8507, Tel. +81 3 3740 5130, Fax. +81 3 3740 5077

**Korea:** Philips House, 260-199 Itaewon-dong, Yongsan-ku, SEOUL,  
Tel. +82 2 709 1412, Fax. +82 2 709 1415

**Malaysia:** No. 76 Jalan Universiti, 46200 PETALING JAYA, SELANGOR,  
Tel. +60 3 750 5214, Fax. +60 3 757 4880

**Mexico:** 5900 Gateway East, Suite 200, EL PASO, TEXAS 79905,  
Tel. +9-5 800 234 7381, Fax +9-5 800 943 0087

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Tel. +31 40 27 82785, Fax. +31 40 27 88399

**New Zealand:** 2 Wagener Place, C.P.O. Box 1041, AUCKLAND,  
Tel. +64 9 849 4160, Fax. +64 9 849 7811

**Norway:** Box 1, Manglerud 0612, OSLO,  
Tel. +47 22 74 8000, Fax. +47 22 74 8341

**Pakistan:** see Singapore

**Philippines:** Philips Semiconductors Philippines Inc.,  
106 Valero St. Salcedo Village, P.O. Box 2108 MCC, MAKATI,  
Metro MANILA, Tel. +63 2 816 6380, Fax. +63 2 817 3474

**Poland:** Ul. Lukiska 10, PL 04-123 WARSZAWA,  
Tel. +48 22 612 2831, Fax. +48 22 612 2327

**Portugal:** see Spain

**Romania:** see Italy

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**Slovakia:** see Austria

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2092 JOHANNESBURG, P.O. Box 58088 Newville 2114,  
Tel. +27 11 471 5401, Fax. +27 11 471 5398

**South America:** Al. Vicente Pinzon, 173, 6th floor,  
04547-130 SÃO PAULO, SP, Brazil,  
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**Spain:** Balmes 22, 08007 BARCELONA,  
Tel. +34 93 301 6312, Fax. +34 93 301 4107

**Sweden:** Kottbygatan 7, Akalla, S-16485 STOCKHOLM,  
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**Switzerland:** Allmendstrasse 140, CH-8027 ZÜRICH,  
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**Taiwan:** Philips Semiconductors, 6F, No. 96, Chien Kuo N. Rd., Sec. 1,  
TAIPEI, Taiwan Tel. +886 2 2134 2886, Fax. +886 2 2134 2874

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**Turkey:** Yukari Dudullu, Org. San. Blg., 2.Cad. Nr. 28 81260 Umraniye,  
ISTANBUL, Tel. +90 216 522 1500, Fax. +90 216 522 1813

**Ukraine:** PHILIPS UKRAINE, 4 Patrice Lumumba str., Building B, Floor 7,  
252042 KIEV, Tel. +380 44 264 2776, Fax. +380 44 268 0461

**United Kingdom:** Philips Semiconductors Ltd., 276 Bath Road, Hayes,  
MIDDLESEX UB3 5BX, Tel. +44 181 730 5000, Fax. +44 181 754 8421

**United States:** 811 East Arques Avenue, SUNNYVALE, CA 94088-3409,  
Tel. +1 800 234 7381, Fax. +1 800 943 0087

**Uruguay:** see South America

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**Yugoslavia:** PHILIPS, Trg N. Pasica 5/v, 11000 BEOGRAD,  
Tel. +381 11 62 5344, Fax. +381 11 63 5777

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