

# DATA SHEET

## **BST122**

P-channel enhancement mode  
vertical D-MOS transistor

Product specification  
File under Discrete Semiconductors, SC13b

April 1995

# P-channel enhancement mode vertical D-MOS transistor

**BST122**

**DESCRIPTION**

P-channel vertical D-MOS transistor in SOT89 envelope and intended for use in relay, high-speed and line-transformer drivers, using SMD-technology.

**FEATURES**

- Very low  $R_{DS(on)}$
- Direct interface to C-MOS, TTL
- High-speed switching
- No second breakdown

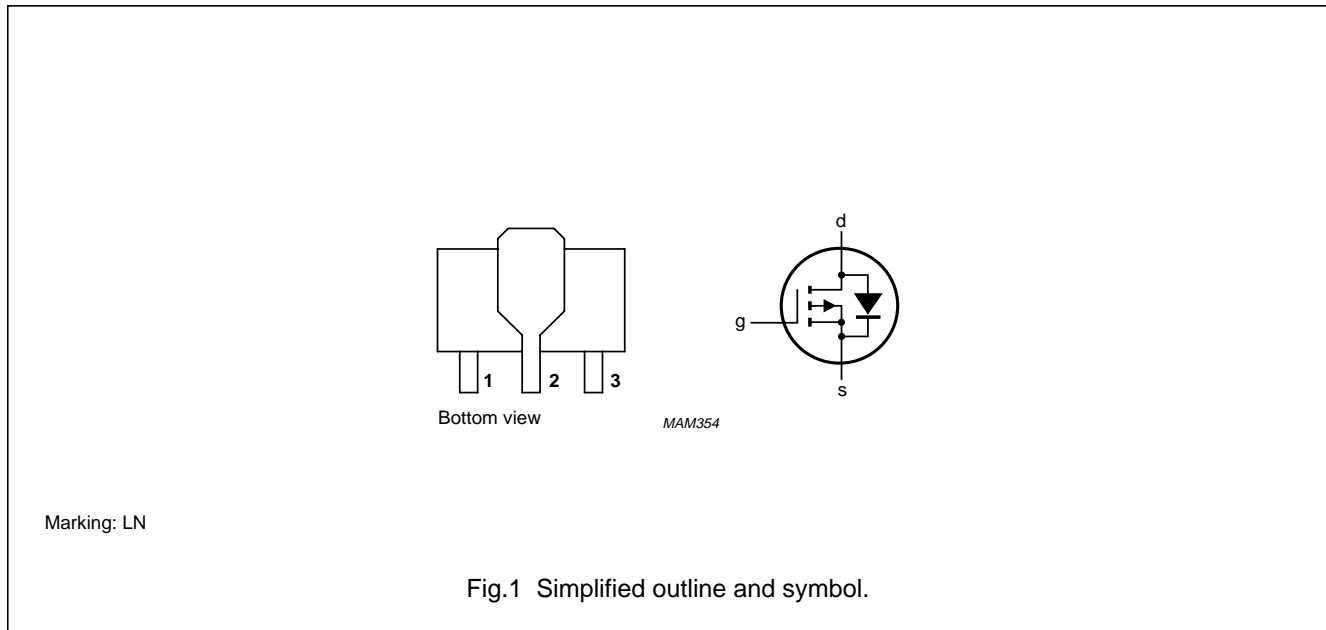
**QUICK REFERENCE DATA**

Drain-source voltage	$-V_{DS}$	max.	60 V
Gate-source voltage (open drain)	$\pm V_{GSO}$	max.	20 V
Drain current (DC)	$-I_D$	max.	0,25 A
Total power dissipation up to $T_{amb} = 25\text{ }^\circ\text{C}$	$P_{tot}$	max.	1 W
Drain-source ON-resistance $-I_D = 200\text{ mA}; -V_{GS} = 10\text{ V}$	$R_{DS(on)}$	max.	10 $\Omega$
		typ.	7.5 $\Omega$
Transfer admittance $-I_D = 200\text{ mA}; -V_{DS} = 15\text{ V}$	$ Y_{fs} $	typ.	125 mS

**PINNING - SOT89**

- 1 = source
- 2 = drain
- 3 = gate

**PIN CONFIGURATION**



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### RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

Drain-source voltage	$-V_{DS}$	max.	60 V
Gate-source voltage (open drain)	$\pm V_{GSO}$	max.	20 V
Drain current (DC)	$-I_D$	max.	0.25 A
Drain current (peak)	$-I_{DM}$	max.	0.5 A
Total power dissipation up to $T_{amb} = 25\text{ }^{\circ}\text{C}$	$P_{tot}$	max.	1 W
Storage temperature range	$T_{stg}$		-65 to + 150 $^{\circ}\text{C}$
Junction temperature	$T_j$	max.	150 $^{\circ}\text{C}$

### THERMAL RESISTANCE

From junction to ambient (note 1)	$R_{th\ j-a}$	=	125	K/W
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### Note

1. Transistor mounted on a ceramic substrate: area = 2,5 cm<sup>2</sup>; thickness = 0,7 mm.

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### CHARACTERISTICS

$T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified

Drain-source breakdown voltage

$-I_D = 10\text{ }\mu\text{A}; V_{GS} = 0$   $-V_{(BR)DSS}$  min. 60 V

Drain-source leakage current

$-V_{DS} = 48\text{ V}; V_{GS} = 0$   $-I_{DSS}$  max. 1  $\mu\text{A}$

Gate-source leakage current

$-V_{GS} = 20\text{ V}; V_{DS} = 0$   $-I_{GSS}$  max. 100 nA

Gate threshold voltage

$-I_D = 1\text{ mA}; V_{DS} = V_{GS}$   $-V_{GS(th)}$  min. 1.5 V  
max. 3.5 V

Drain-source ON-resistance

$-I_D = 200\text{ mA}; -V_{GS} = 10\text{ V}$   $R_{DS(on)}$  max. 10  $\Omega$   
typ. 7.5  $\Omega$

Transfer admittance

$-I_D = 200\text{ mA}; -V_{DS} = 15\text{ V}$   $|Y_{fs}|$  typ. 125 mS

Input capacitance at  $f = 1\text{ MHz}$

$-V_{DS} = 10\text{ V}; V_{GS} = 0$   $C_{iss}$  typ. 30 pF  
max. 45 pF

Output capacitance at  $f = 1\text{ MHz}$

$-V_{DS} = 10\text{ V}; V_{GS} = 0$   $C_{oss}$  typ. 20 pF  
max. 30 pF

Feedback capacitance at  $f = 1\text{ MHz}$

$-V_{DS} = 10\text{ V}; V_{GS} = 0$   $C_{rss}$  typ. 5 pF  
max. 10 pF

Switching times (see Figs 2 and 3)

$-I_D = 200\text{ mA}; -V_{DD} = 50\text{ V}; -V_{GS} = 0\text{ to }10\text{ V}$   $t_{on}$  typ. 4 ns  
 $t_{off}$  typ. 10 ns

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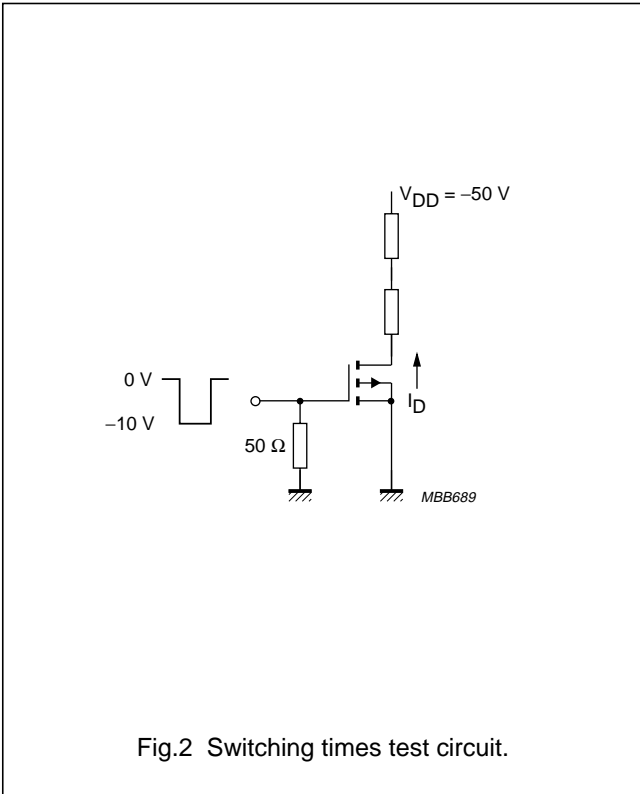


Fig.2 Switching times test circuit.

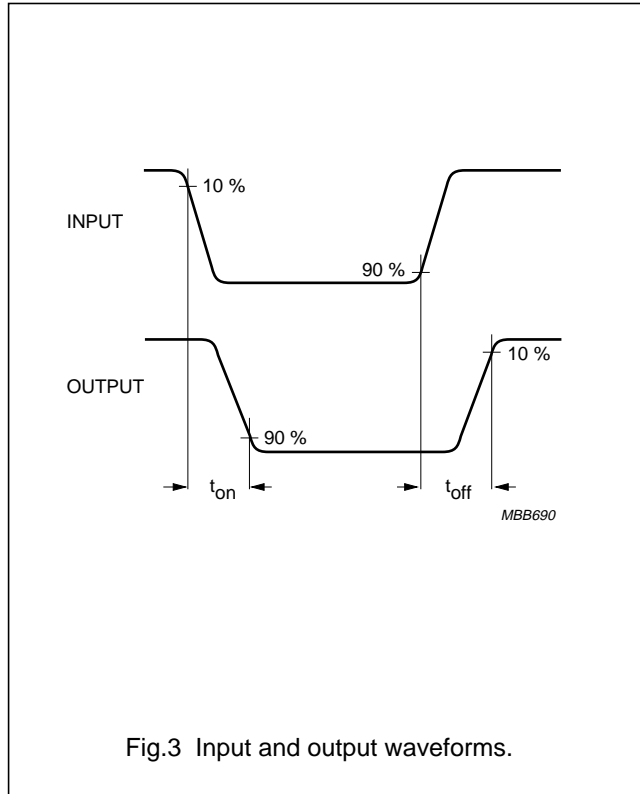


Fig.3 Input and output waveforms.

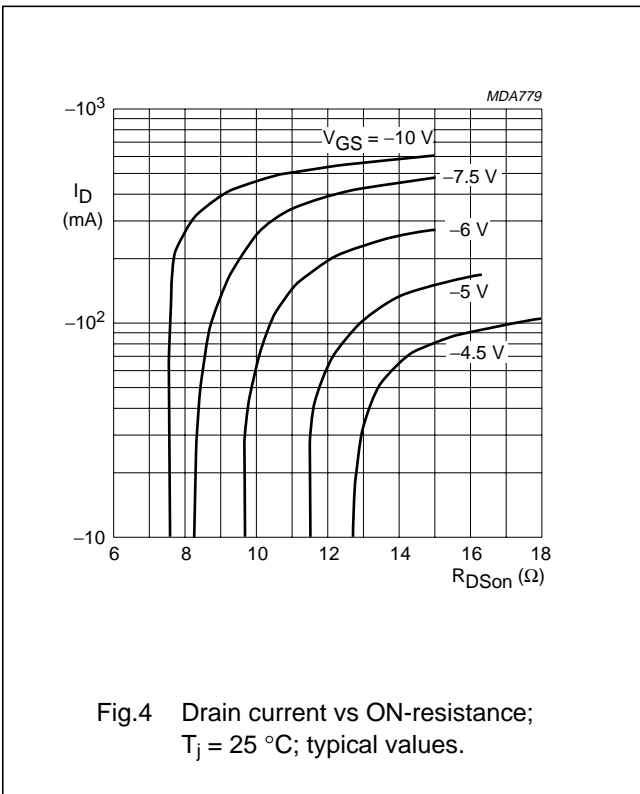


Fig.4 Drain current vs ON-resistance;  $T_j = 25\text{ }^\circ\text{C}$ ; typical values.

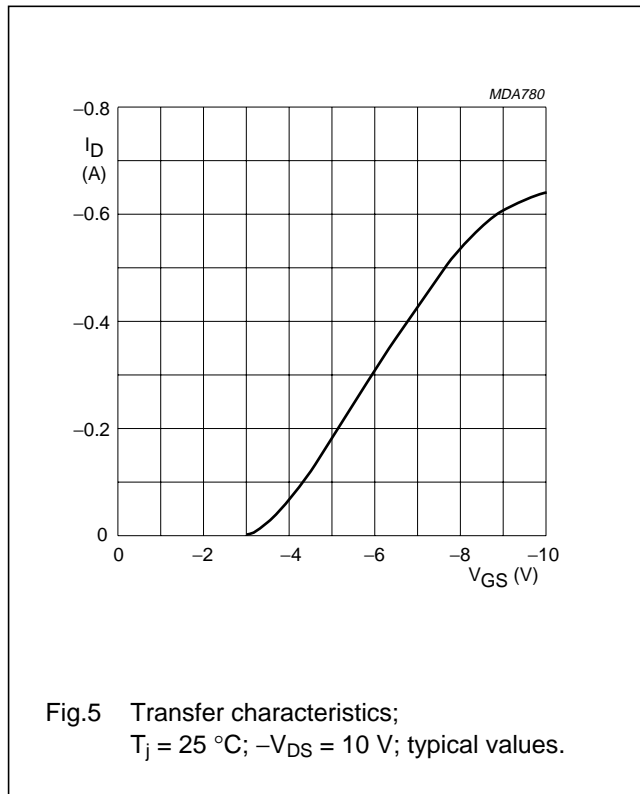
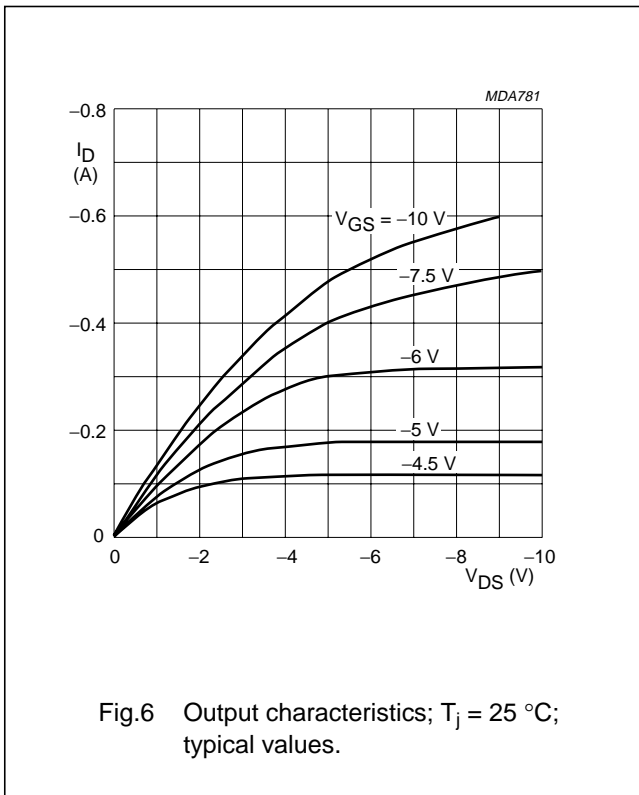


Fig.5 Transfer characteristics;  $T_j = 25\text{ }^\circ\text{C}$ ;  $-V_{DS} = 10\text{ V}$ ; typical values.

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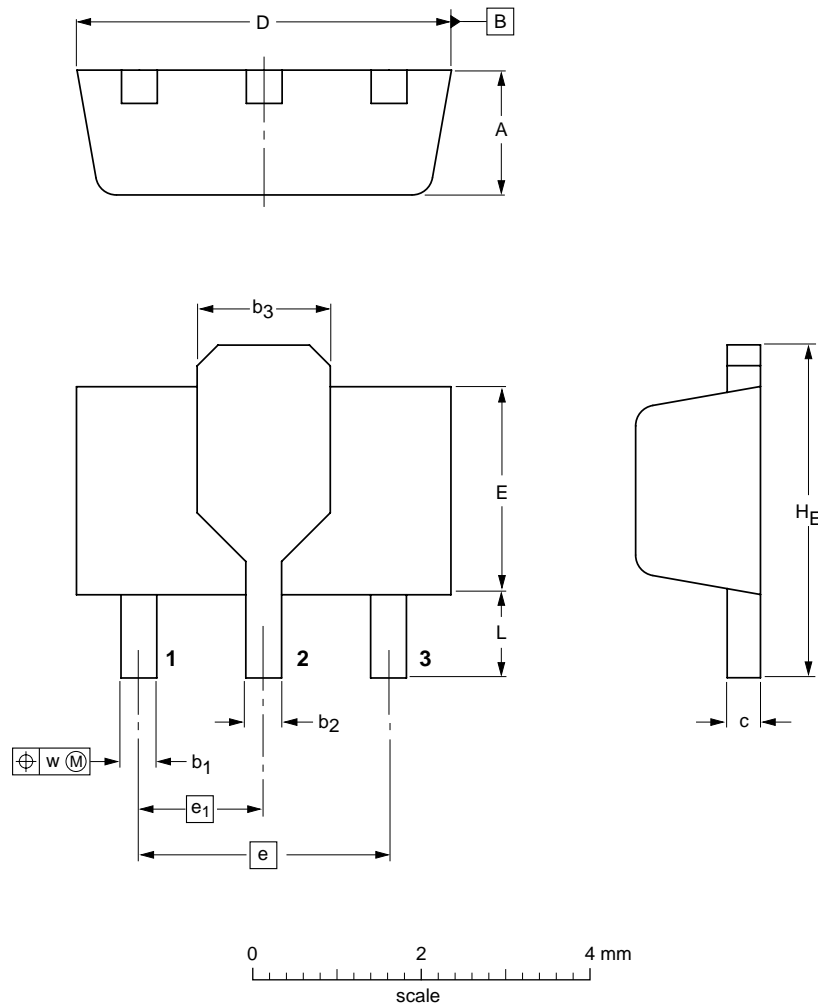
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PACKAGE OUTLINES

Plastic surface mounted package; collector pad for good heat transfer; 3 leads

SOT89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L min.	w
mm	1.6 1.4	0.48 0.35	0.53 0.40	1.8 1.4	0.44 0.37	4.6 4.4	2.6 2.4	3.0	1.5	4.25 3.75	0.8	0.13

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT89						97-02-28

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**BST122****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>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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**NOTES**

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**NOTES**

# Philips Semiconductors – a worldwide company

**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, Fax. +43 1 60 101 1210

**Belarus:** Hotel Minsk Business Center, Bld. 3, r. 1211, Volodarski Str. 6,  
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**Belgium:** see The Netherlands

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**Bulgaria:** Philips Bulgaria Ltd., Energoproject, 15th floor,  
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Tel. +359 2 689 211, Fax. +359 2 689 102

**Canada:** PHILIPS SEMICONDUCTORS/COMPONENTS,  
Tel. +1 800 234 7381

**China/Hong Kong:** 501 Hong Kong Industrial Technology Centre,  
72 Tat Chee Avenue, Kowloon Tong, HONG KONG,  
Tel. +852 2319 7888, Fax. +852 2319 7700

**Colombia:** see South America

**Czech Republic:** see Austria

**Denmark:** Prags Boulevard 80, PB 1919, DK-2300 COPENHAGEN S,  
Tel. +45 32 88 2636, Fax. +45 31 57 0044

**Finland:** Sinikalliontie 3, FIN-02630 ESPOO,  
Tel. +358 9 615800, Fax. +358 9 61580920

**France:** 4 Rue du Port-aux-Vins, BP317, 92156 SURESNES Cedex,  
Tel. +33 1 40 99 6161, Fax. +33 1 40 99 6427

**Germany:** Hammerbrookstraße 69, D-20097 HAMBURG,  
Tel. +49 40 23 53 60, Fax. +49 40 23 536 300

**Greece:** No. 15, 25th March Street, GR 17778 TAVROS/ATHENS,  
Tel. +30 1 4894 339/239, Fax. +30 1 4814 240

**Hungary:** see Austria

**India:** Philips INDIA Ltd, Shivsagar Estate, A Block, Dr. Annie Besant Rd.  
Worli, MUMBAI 400 018, Tel. +91 22 4938 541, Fax. +91 22 4938 722

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**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 2 6752 2531, Fax. +39 2 6752 2557

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**Malaysia:** No. 76 Jalan Universiti, 46200 PETALING JAYA, SELANGOR,  
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**Mexico:** 5900 Gateway East, Suite 200, EL PASO, TEXAS 79905,  
Tel. +9-5 800 234 7381

**Middle East:** see Italy

**Netherlands:** Postbus 90050, 5600 PB EINDHOVEN, Bldg. VB,  
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

**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

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Tel. +48 22 612 2831, Fax. +48 22 612 2327

**Portugal:** see Spain

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**Slovakia:** see Austria

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2092 JOHANNESBURG, P.O. Box 7430 Johannesburg 2000,  
Tel. +27 11 470 5911, Fax. +27 11 470 5494

**South America:** Rua do Rocio 220, 5th floor, Suite 51,  
04552-903 São Paulo, SÃO PAULO - SP, Brazil,  
Tel. +55 11 821 2333, Fax. +55 11 829 1849

**Spain:** Balmes 22, 08007 BARCELONA,  
Tel. +34 3 301 6312, Fax. +34 3 301 4107

**Sweden:** Kottbygatan 7, Akalla, S-16485 STOCKHOLM,  
Tel. +46 8 632 2000, Fax. +46 8 632 2745

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**Taiwan:** Philips Semiconductors, 6F, No. 96, Chien Kuo N. Rd., Sec. 1,  
TAIPEI, Taiwan Tel. +886 2 2134 2865, Fax. +886 2 2134 2874

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Tel. +66 2 745 4090, Fax. +66 2 398 0793

**Turkey:** Talatpasa Cad. No. 5, 80640 GÜLTEPE/ISTANBUL,  
Tel. +90 212 279 2770, Fax. +90 212 282 6707

**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

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**Yugoslavia:** PHILIPS, Trg N. Pasica 5/v, 11000 BEOGRAD,  
Tel. +381 11 625 344, Fax. +381 11 635 777

**For all other countries apply to:** Philips Semiconductors, Marketing & Sales Communications,  
Building BE-p, P.O. Box 218, 5600 MD EINDHOVEN, The Netherlands, Fax. +31 40 27 24825

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