

# DATA SHEET



## **PZM-NA series** Voltage regulator double diodes

Product specification  
Supersedes data of 1999 Jun 02

1999 Jun 11

# Voltage regulator double diodes

# PZM-NA series

### FEATURES

- Total power dissipation: max. 220 mW per diode
- Small plastic package suitable for surface mounted design
- Working voltage: nom. 2.4 V and 15 V (E24 range).

### APPLICATIONS

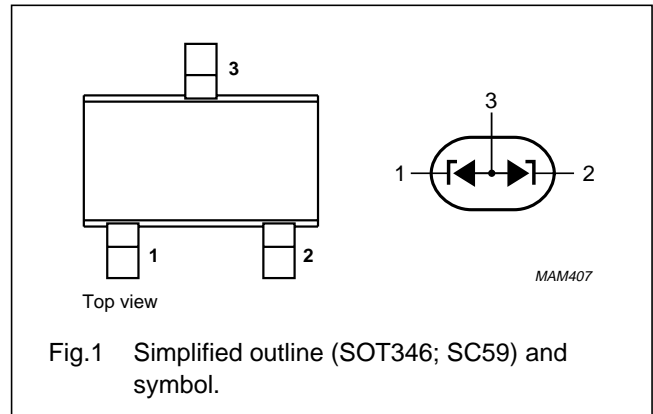
- General regulation functions.

### DESCRIPTION

Low power general purpose voltage regulator double diodes in a SOT346 (SC59) plastic package, suitable for surface mounted design.

### PINNING

PIN	DESCRIPTION
1	cathode
2	cathode
3	anode



### MARKING

TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE
PZM2.4NBA	2A4	PZM6.2NB2A	6A2
PZM2.7NB2A	2A7	PZM6.8NB2A	6A8
PZM3.0NB2A	3A0	PZM7.5NB2A	7A5
PZM3.3NB2A	3A3	PZM8.2NB2A	8A2
PZM3.6NB2A	3A6	PZM9.1NB2A	9A1
PZM3.9NB2A	3A9	PZM10NB2A	10A
PZM4.3NB2A	4A3	PZM11NB2A	11A
PZM4.7NB2A	4A7	PZM12NB2A	12A
PZM5.1NB2A	5A1	PZM13NB2A	13A
PZM5.6NB2A	5A6	PZM15NB2A	15A

## Voltage regulator double diodes

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**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
<b>Per diode</b>					
$I_F$	continuous forward current		–	200	mA
$I_{ZSM}$	non-repetitive peak current	$t_p = 100 \mu\text{s}$ ; square wave	see Table 1		
P	power dissipation; see note 1	$T_{amb} = 25 \text{ }^\circ\text{C}$	–	220	mW
$T_{stg}$	storage temperature		–65	+150	$^\circ\text{C}$
$T_j$	operating junction temperature		–	150	$^\circ\text{C}$

**Note**

1. Device mounted on an FR4 printed circuit board with Cu clad 5 × 5 mm.

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-s}$	thermal resistance from junction to soldering point	one diode loaded; note 1	350	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	one diode loaded; note 2	560	K/W

**Notes**

1. Solderpoint of cathode tab.
2. Device mounted on an FR4 printed circuit board with Cu clad 5 × 5 mm.

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**ELECTRICAL CHARACTERISTICS**

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

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
$V_F$	forward voltage	$I_F = 10\text{ mA}$ ; see Fig.2	0.9	V
		$I_F = 100\text{ mA}$ ; see Fig.2	1.1	V
$I_R$	reverse current			
	PZM2.4NB2A	$V_R = 1\text{ V}$	50	$\mu\text{A}$
	PZM2.7NB2A	$V_R = 1\text{ V}$	20	$\mu\text{A}$
	PZM3.0NB2A	$V_R = 1\text{ V}$	10	$\mu\text{A}$
	PZM3.3NB2A	$V_R = 1\text{ V}$	5	$\mu\text{A}$
	PZM3.6NB2A	$V_R = 1\text{ V}$	5	$\mu\text{A}$
	PZM3.9NB2A	$V_R = 1\text{ V}$	3	$\mu\text{A}$
	PZM4.3NB2A	$V_R = 1\text{ V}$	3	$\mu\text{A}$
	PZM4.7NB2A	$V_R = 1\text{ V}$	3	$\mu\text{A}$
	PZM5.1NB2A	$V_R = 1.5\text{ V}$	3	$\mu\text{A}$
	PZM5.6NB2A	$V_R = 2.5\text{ V}$	2	$\mu\text{A}$
	PZM6.2NB2A	$V_R = 3.0\text{ V}$	2	$\mu\text{A}$
	PZM6.8NB2A	$V_R = 3.5\text{ V}$	2	$\mu\text{A}$
	PZM7.5NB2A	$V_R = 4.0\text{ V}$	1	$\mu\text{A}$
	PZM8.2NB2A	$V_R = 5.0\text{ V}$	700	nA
	PZM9.1NB2A	$V_R = 6.0\text{ V}$	500	nA
	PZM10NB2A	$V_R = 7.0\text{ V}$	200	nA
PZM11NB2A	$V_R = 8.0\text{ V}$	100	nA	
PZM12NB2A	$V_R = 9.0\text{ V}$	100	nA	
PZM13NB2A	$V_R = 10.0\text{ V}$	100	nA	
PZM15NB2A	$V_R = 11.0\text{ V}$	70	nA	

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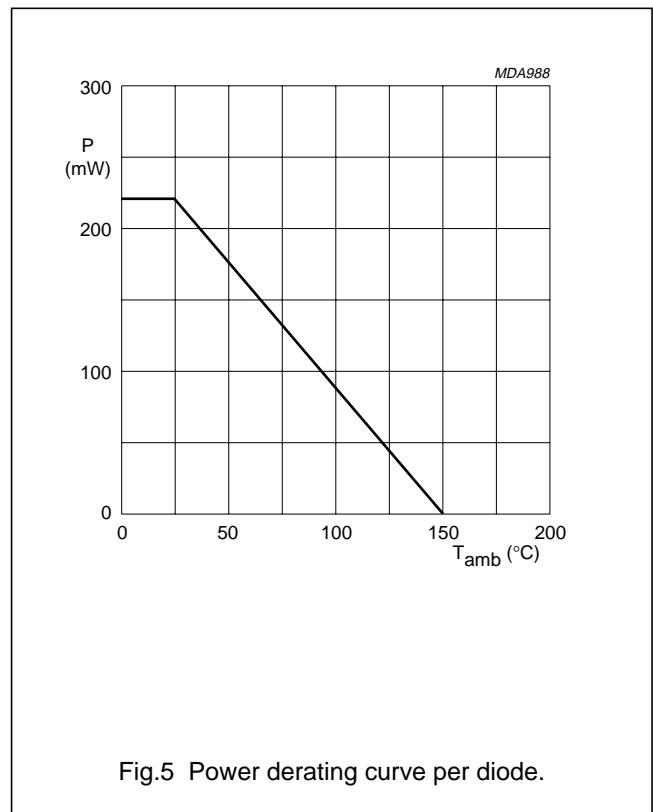
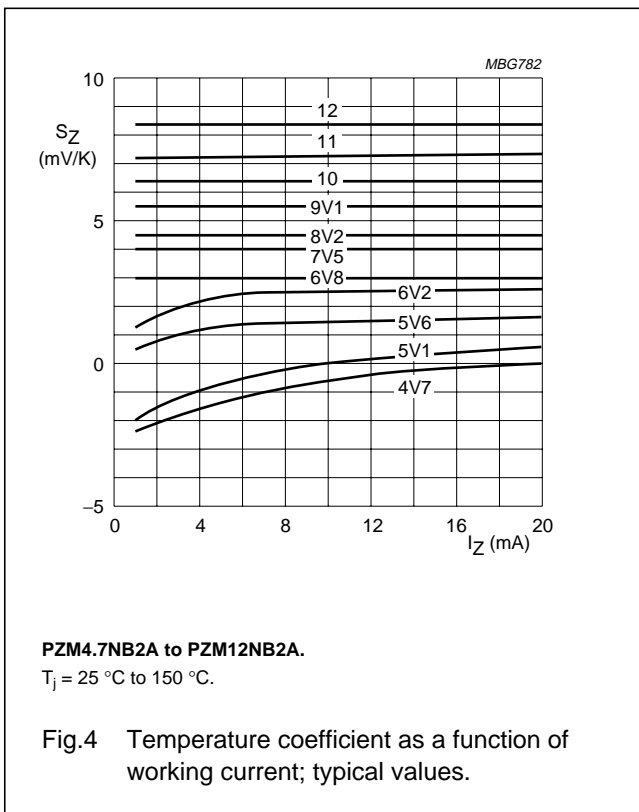
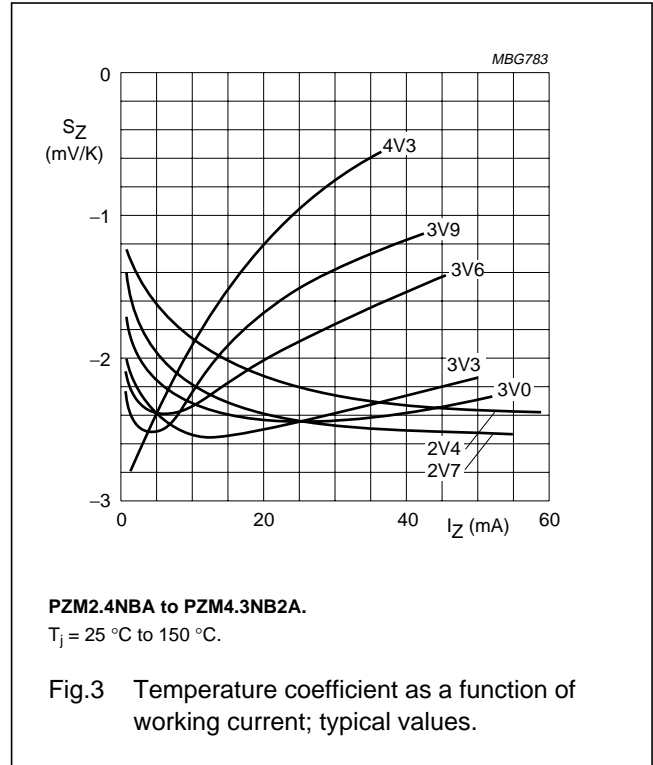
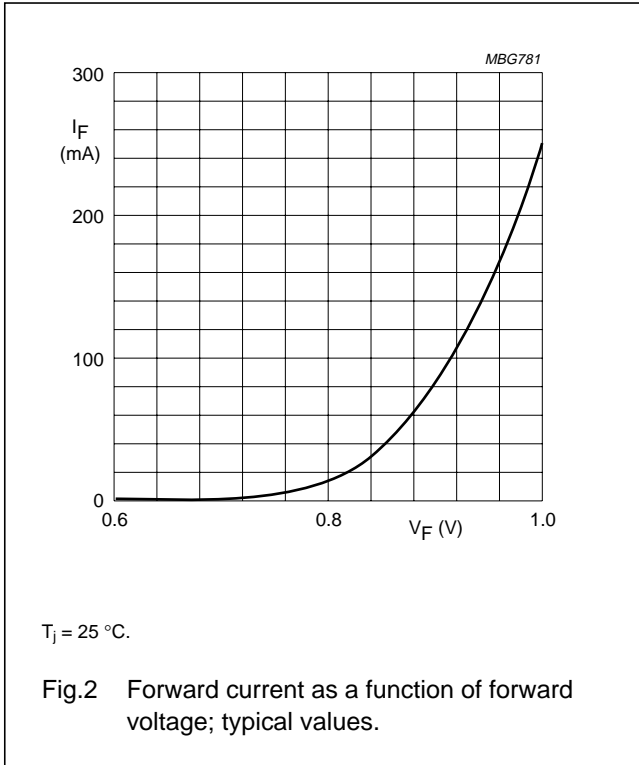
**Table 1** Per type; PZM2.4N to PZM24N $T_j = 25\text{ °C}$  unless otherwise specified.

PZM -XXX	WORKING VOLTAGE $V_Z$ (V) at $I_Z = 5\text{ mA}$ ; $t_m = 40\text{ ms}$ ; $T_{amb} = 25\text{ °C}$		DIFFERENTIAL RESISTANCE $r_{dif}$ ( $\Omega$ )				TEMP. COEFF. $S_Z$ (mV/K) at $I_Z = 5\text{ mA}$	DIODE CAP. $C_d$ (pF) at $f = 1\text{ MHz}$ ; $V_R = 0$	NON-REPETITIVE PEAK REVERSE CURRENT $I_{ZSM}$ (A) at $t_p = 100\text{ }\mu\text{s}$
			$I_Z = 1\text{ mA}$		$I_Z = 5\text{ mA}$				
	MIN.	MAX.	TYP.	MAX.	TYP.	MAX.	TYP.	MAX.	MAX.
2.4NBA	2.30	2.60	275	400	70	100	-1.6	450	8.00
2.7NB2A	2.65	2.90	300	450	75	100	-2.0	440	8.00
3.0NB2A	2.95	3.20	325	500	80	95	-2.1	425	8.00
3.3NB2A	3.25	3.50	350	500	85	95	-2.4	410	8.00
3.6NB2A	3.55	3.80	375	500	85	90	-2.4	390	8.00
3.9NB2A	3.87	4.10	400	500	85	90	-2.5	370	8.00
4.3NB2A	4.15	4.34	410	600	80	90	-2.5	350	8.00
4.7NB2A	4.55	4.75	425	500	50	80	-1.4	325	8.00
5.1NB2A	4.98	5.20	400	480	40	60	-0.8	300	8.00
5.6NB2A	5.49	5.73	80	400	15	40	1.2	275	8.00
6.2NB2A	6.06	6.33	40	150	6	10	2.3	250	8.00
6.8NB2A	6.65	6.93	30	80	6	15	3.0	215	8.00
7.5NB2A	7.28	7.60	15	80	2	10	4.0	170	3.50
8.2NB2A	8.02	8.36	20	80	2	10	4.6	150	3.50
9.1NB2A	8.85	9.23	20	100	2	10	5.5	120	3.50
10NB2A	9.77	10.21	20	150	2	10	6.4	110	3.50
11NB2A	10.76	11.22	25	150	2	10	7.4	110	3.00
12NB2A	11.74	12.24	25	150	2	10	8.4	105	3.00
13NB2A	12.91	13.49	25	170	2	10	9.4	105	2.50
15NB2A	14.34	14.98	25	200	3	15	11.4	100	2.00

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GRAPHICAL DATA



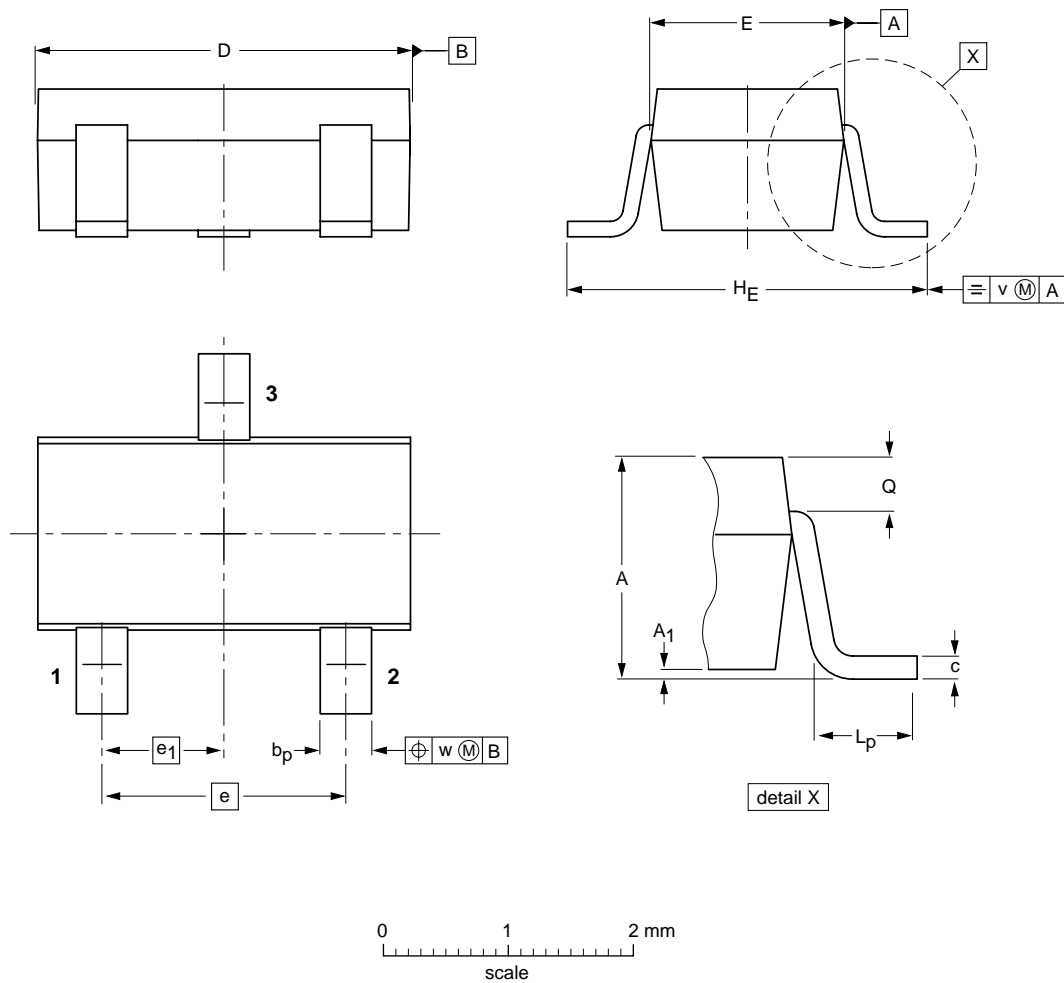
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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT346



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub>	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w
mm	1.3 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 VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT346		TO-236	SC-59			98-07-17

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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.	

**LIFE SUPPORT APPLICATIONS**

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.



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**NOTES**

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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

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**Bulgaria:** Philips Bulgaria Ltd., Energoproject, 15th floor,  
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**China/Hong Kong:** 501 Hong Kong Industrial Technology Centre,  
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**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,  
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**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

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**Israel:** RAPAC Electronics, 7 Kehilat Saloniki St, PO Box 18053,  
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**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,  
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**Korea:** Philips House, 260-199 Itaewon-dong, Yongsan-ku, SEOUL,  
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**Malaysia:** No. 76 Jalan Universiti, 46200 PETALING JAYA, SELANGOR,  
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Tel. +64 9 849 4160, Fax. +64 9 849 7811

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**South America:** Al. Vicente Pinzon, 173, 6th floor,  
04547-130 SÃO PAULO, SP, Brazil,  
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**Spain:** Balmes 22, 08007 BARCELONA,  
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**Sweden:** Kottbygatan 7, Akalla, S-16485 STOCKHOLM,  
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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,  
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