

DATA SHEET

BST80

N-channel enhancement mode
vertical D-MOS transistor

Product specification
Supersedes data of April 1995
File under Discrete Semiconductors, SC13b

1997 Jun 20

N-channel enhancement mode vertical D-MOS transistor

BST80

FEATURES

- Low drain-source on-state resistance
- Direct interface to C-MOS, TTL, etc.
- High-speed switching
- No secondary breakdown.

APPLICATIONS

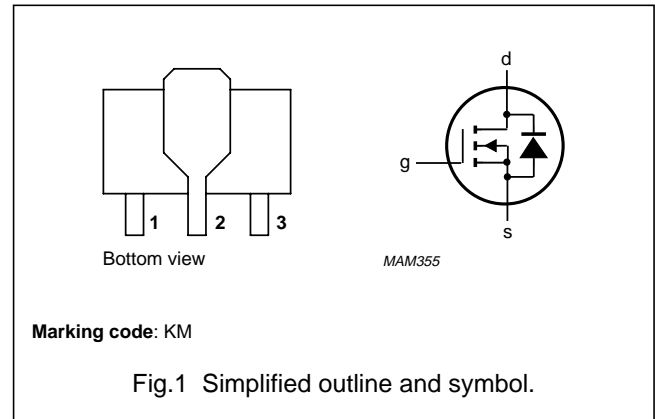
- Thin and thick film circuits
- Relay, high-speed and line transformer drivers.

DESCRIPTION

N-channel enhancement mode vertical D-MOS transistor in a SOT89 package.

PINNING - SOT89

PIN	SYMBOL	DESCRIPTION
1	s	source
2	d	drain
3	g	gate



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V_{DS}	drain-source voltage (DC)		–	80	V
V_{GSO}	gate-source voltage (DC)	open drain	–	± 20	V
I_D	drain current (DC)		–	500	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$	–	1	W
R_{DSon}	drain-source on-state resistance	$I_D = 500\text{ mA}; V_{GS} = 10\text{ V}$	2	3	Ω
$ y_{fs} $	forward transfer admittance	$I_D = 500\text{ mA}; V_{DS} = 15\text{ V}$	300	–	mS

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BST80

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage (DC)		–	80	V
V_{GSO}	gate-source voltage (DC)	open drain	–	± 20	V
I_D	drain current (DC)		–	500	mA
I_{DM}	peak drain current		–	1	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$; note 1	–	1	W
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	125	K/W

Note to the Limiting values and Thermal characteristics

- Device mounted on a ceramic substrate; area 2.5 cm²; thickness 0.7 mm.

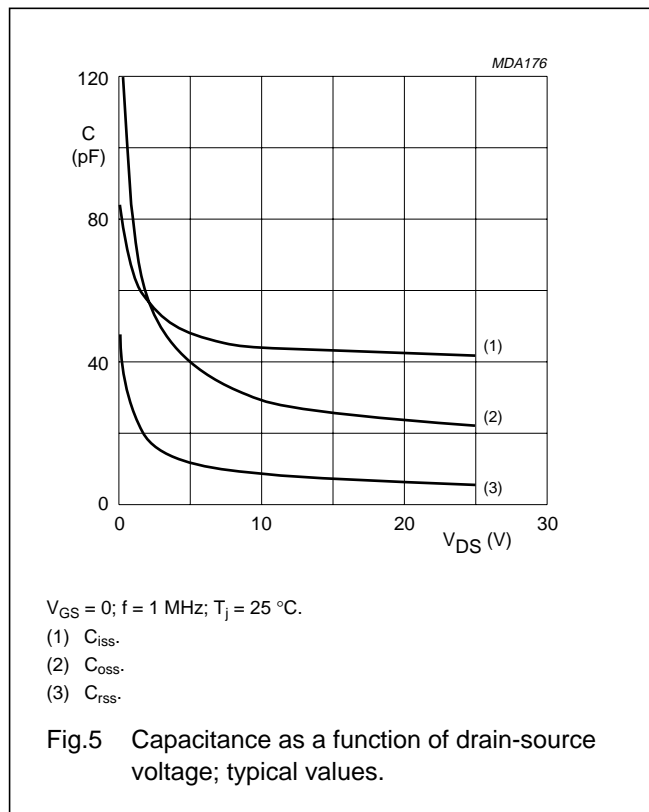
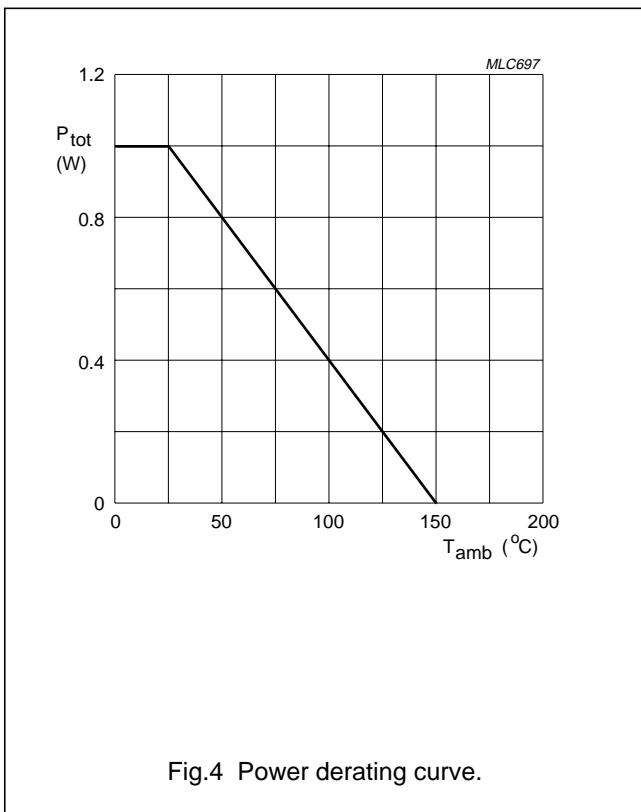
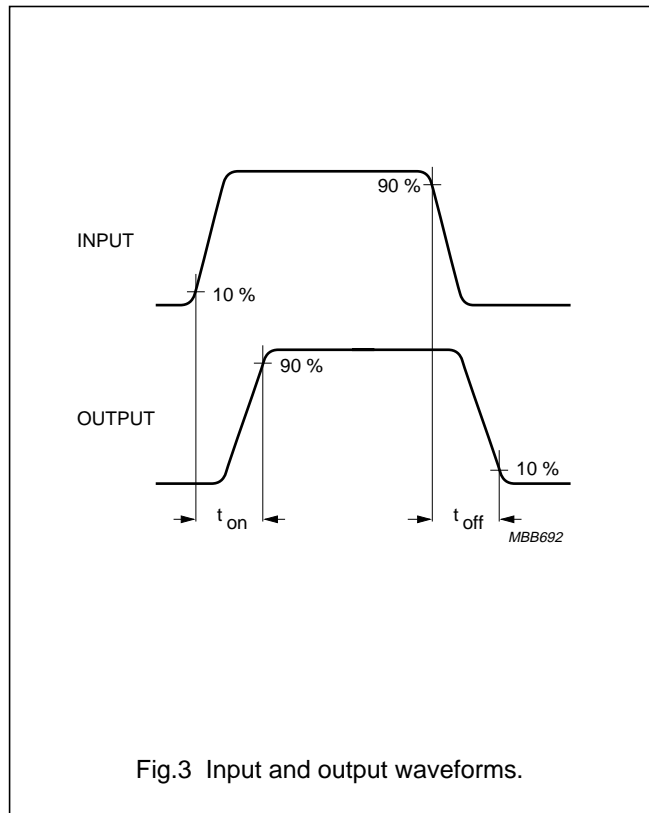
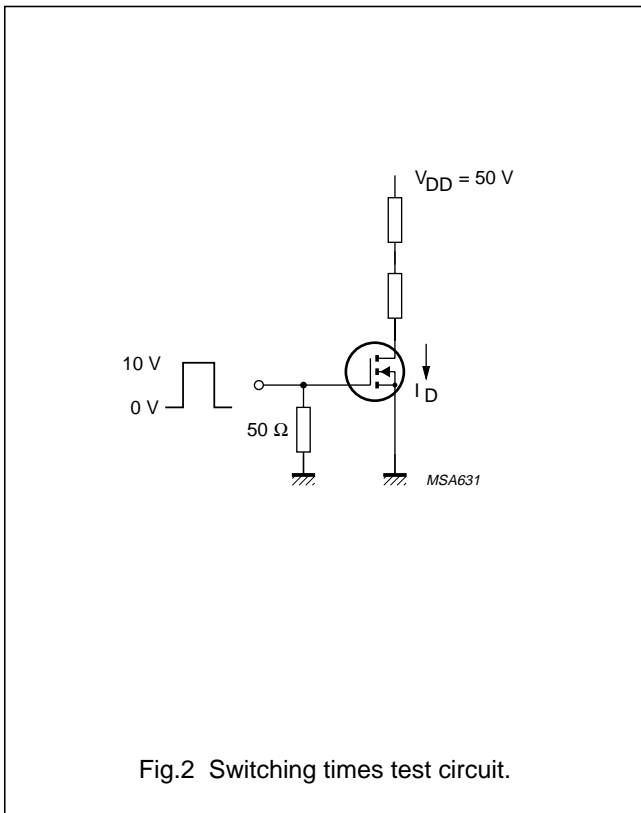
CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{GS} = 0$; $I_D = 10\ \mu\text{A}$	80	–	–	V
V_{GSth}	gate-source threshold voltage	$V_{DS} = V_{GS}$; $I_D = 1\ \text{mA}$	1.5	–	3.5	V
I_{DSS}	drain-source leakage current	$V_{DS} = 60\ \text{V}$; $V_{GS} = 0$	–	–	1	μA
I_{GSS}	gate leakage current	$V_{DS} = 0$; $V_{GS} = \pm 20\ \text{V}$	–	–	± 100	nA
R_{DSon}	drain-source on-state resistance	$V_{GS} = 10\ \text{V}$; $I_D = 500\ \text{mA}$	–	2	3	Ω
$ y_{fs} $	forward transfer admittance	$I_D = 500\ \text{mA}$; $V_{DS} = 15\ \text{V}$	–	300	–	mS
C_{iss}	input capacitance	$V_{DS} = 10\ \text{V}$; $V_{GS} = 0$; $f = 1\ \text{MHz}$	–	45	60	pF
C_{oss}	output capacitance	$V_{DS} = 10\ \text{V}$; $V_{GS} = 0$; $f = 1\ \text{MHz}$	–	30	45	pF
C_{rss}	reverse transfer capacitance	$V_{DS} = 10\ \text{V}$; $V_{GS} = 0$; $f = 1\ \text{MHz}$	–	8	12	pF
Switching times (see Figs 2 and 3)						
t_{on}	turn-on time	$V_{GS} = 0\ \text{to}\ 10\ \text{V}$; $V_{DD} = 50\ \text{V}$; $I_D = 500\ \text{mA}$	–	–	10	ns
t_{off}	turn-off time	$V_{GS} = 10\ \text{to}\ 0\ \text{V}$; $V_{DD} = 50\ \text{V}$; $I_D = 500\ \text{mA}$	–	–	15	ns

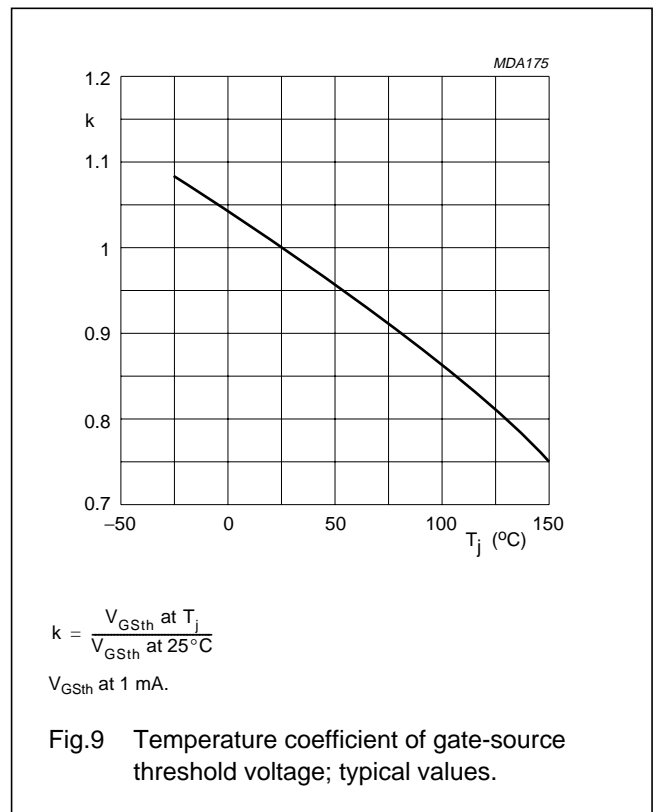
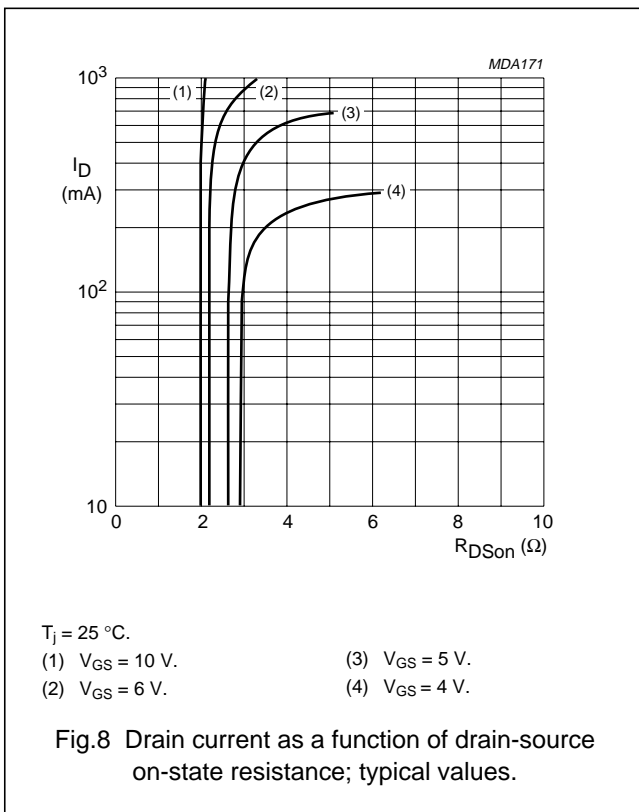
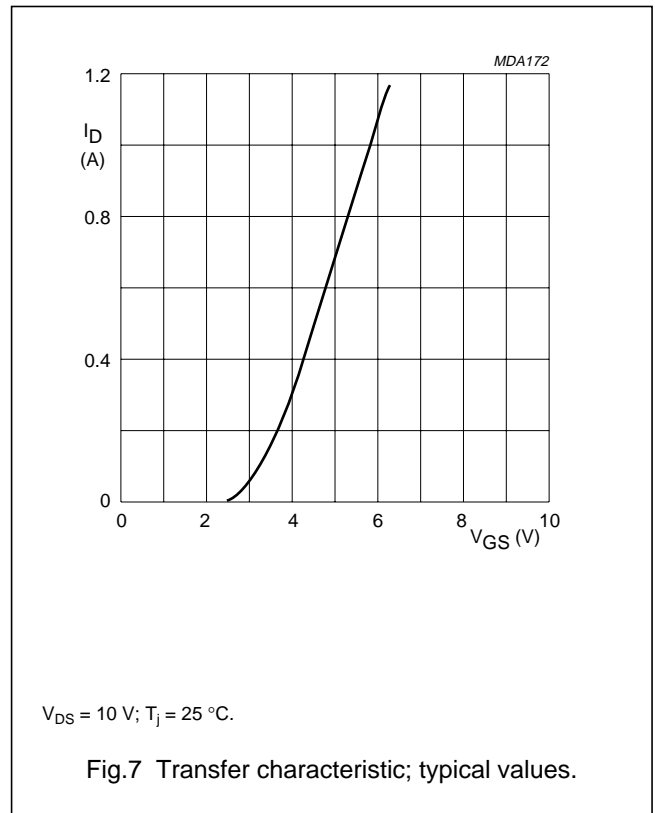
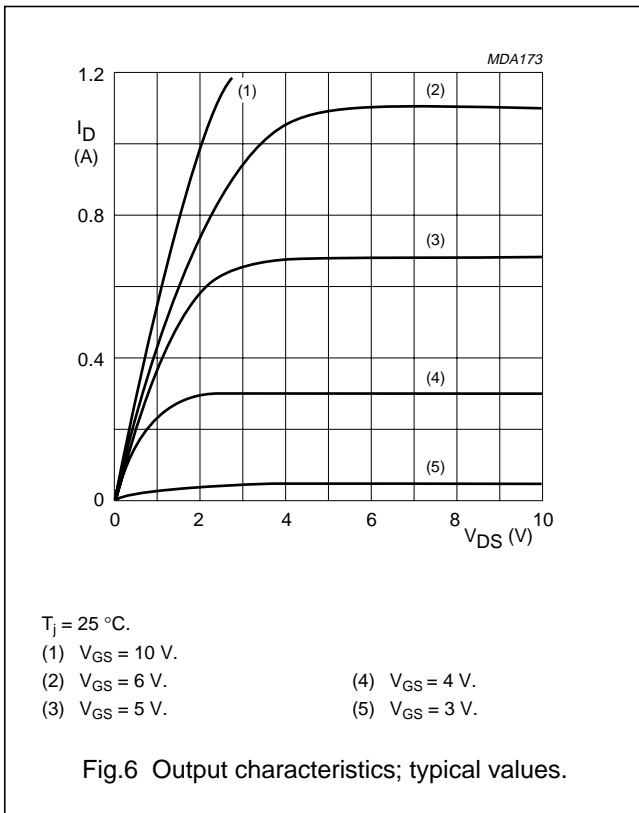
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BST80



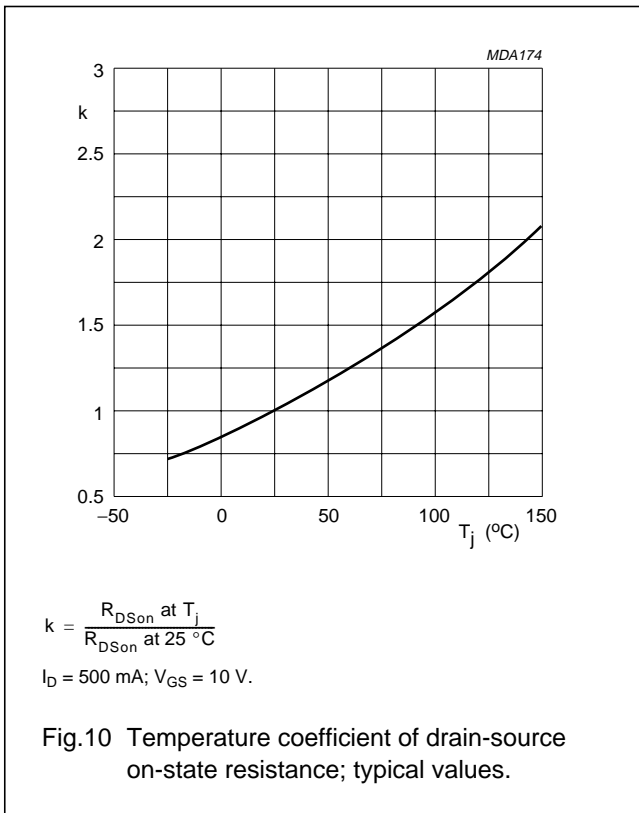
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BST80



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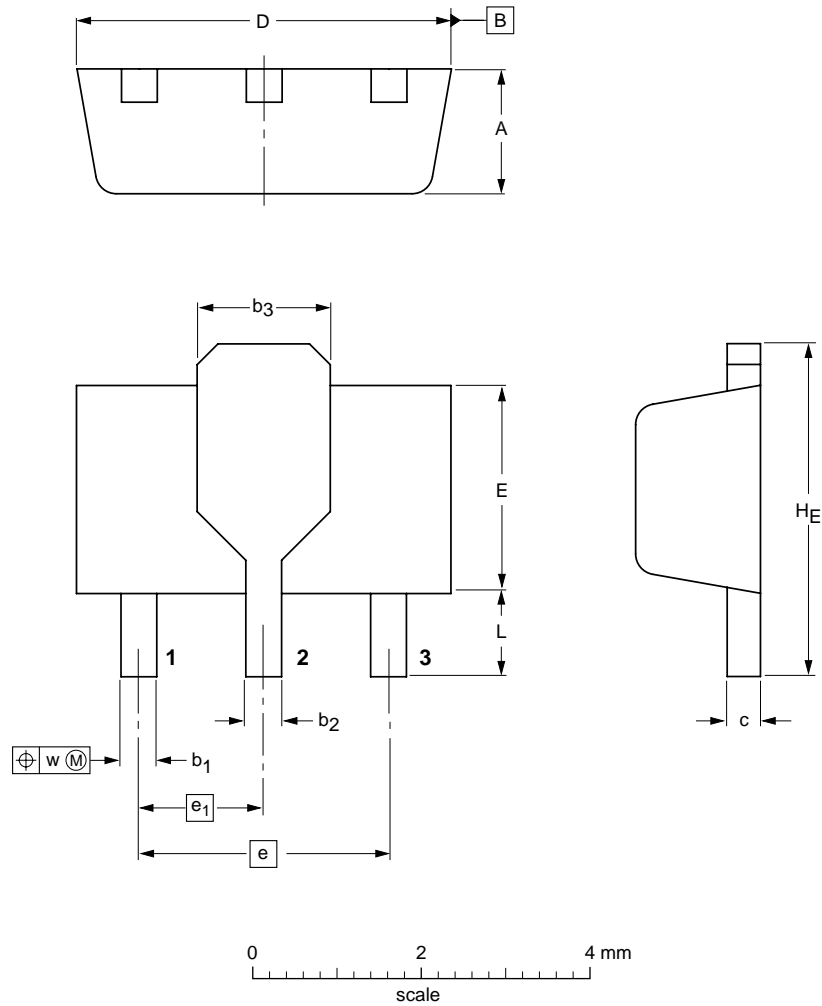
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PACKAGE OUTLINE

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

SOT89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b ₁	b ₂	b ₃	c	D	E	e	e ₁	H _E	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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DEFINITIONS

Data Sheet Status	
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.
Limiting values	
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.	
Application information	
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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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,
220050 MINSK, Tel. +375 172 200 733, Fax. +375 172 200 773

Belgium: see The Netherlands

Brazil: see South America

Bulgaria: Philips Bulgaria Ltd., Energoproject, 15th floor,
51 James Bourchier Blvd., 1407 SOFIA,
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

Indonesia: see Singapore

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

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

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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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.,
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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

Russia: Philips Russia, Ul. Usatcheva 35A, 119048 MOSCOW,
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Singapore: Lorong 1, Toa Payoh, SINGAPORE 1231,
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Slovakia: see Austria

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South Africa: S.A. PHILIPS Pty Ltd., 195-215 Main Road Martindale,
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Tel. +55 11 821 2333, Fax. +55 11 829 1849

Spain: Balmes 22, 08007 BARCELONA,
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Sweden: Kottbygatan 7, Akalla, S-16485 STOCKHOLM,
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Ukraine: PHILIPS UKRAINE, 4 Patrice Lumumba str., Building B, Floor 7,
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United Kingdom: Philips Semiconductors Ltd., 276 Bath Road, Hayes,
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