

DATA SHEET

74LVC16244A; 74LVCH16244A

16-bit buffer/line driver; 5 V
input/output tolerant; 3-state

Product specification
Supersedes data of 2003 Jan 30

2003 Dec 08

16-bit buffer/line driver; 5 V input/output tolerant; 3-state

74LVC16244A; 74LVCH16244A

FEATURES

- 5 V tolerant inputs/outputs for interfacing with 5 V logic
- Wide supply voltage range from 1.2 to 3.6 V
- CMOS low power consumption
- MULTIBYTE™ flow-through standard pin-out architecture
- Low inductance multiple power and ground pins for minimum noise and ground bounce
- Direct interface with TTL levels
- All data inputs have bushold (74LVCH16244A only).
- Complies with JEDEC standard no. 8-1A
- ESD protection:
HBM EIA/JESD22-A114-A exceeds 2000 V
MM EIA/JESD22-A115-A exceeds 200 V.
- Specified from –40 to +85 °C and –40 to +125 °C.

DESCRIPTION

The 74LVC(H)16244A is a high-performance, low power, low voltage, Si-gate CMOS device, superior to most advanced CMOS compatible TTL families. Inputs can be driven from either 3.3 or 5 V devices. In 3-state operation, outputs can handle 5 Volt. These features allow the use of these devices as a mixed 3.3 and 5 V environment.

The 74LVC(H)16244A is a 16-bit non-inverting buffer/line driver with 3-state outputs. The device can be used as four 4-bit buffers, two 8-bit buffers or one 16-bit buffer. The device features four Output Enables (1OE, 2OE, 3OE and 4OE), each controlling four of the 3-state outputs. A HIGH on nOE causes the outputs to assume a high-impedance OFF-state.

The 74LVC(H)16244A is identical to the 74LVC16240A but has non-inverting outputs.

The 74LVCH16244A bushold data inputs eliminates the need for external pull-up resistors to hold unused inputs.

QUICK REFERENCE DATA

GND = 0 V; T_{amb} = 25 °C; t_r = t_f ≤ 2.5 ns.

SYMBOL	PARAMETER	CONDITIONS	TYPICAL	UNIT
t _{PHL} /t _{PLH}	propagation delay nAn to nYn	C _L = 50 pF; V _{CC} = 3.3 V	3.0	ns
t _{PZH} /t _{PZL}	3-state output enable time nOE to nYn	C _L = 50 pF; V _{CC} = 3.3 V	3.5	ns
t _{PHZ} /t _{PLZ}	3-state output disable time nOE to nYn	C _L = 50 pF; V _{CC} = 3.3 V	3.7	ns
C _I	input capacitance		5.0	pF
C _{PD}	power dissipation capacitance per gate	V _{CC} = 3.3 V; notes 1 and 2		
		outputs enabled	12	pF
		outputs disabled	4.0	pF

Notes

1. C_{PD} is used to determine the dynamic power dissipation (P_D in μW).

$$P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \Sigma(C_L \times V_{CC}^2 \times f_o) \text{ where:}$$

f_i = input frequency in MHz;

f_o = output frequency in MHz;

C_L = output load capacitance in pF;

V_{CC} = supply voltage in Volts;

N = total load switching outputs;

Σ(C_L × V_{CC}² × f_o) = sum of the outputs.

2. The condition is V_i = GND to V_{CC}.

16-bit buffer/line driver; 5 V input/output
tolerant; 3-state

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FUNCTION TABLE

See note 1.

INPUT		OUTPUT
$\overline{\text{nOE}}$	nAn	nYn
L	L	L
L	H	H
H	X	Z

Note

1. H = HIGH voltage level;
L = LOW voltage level;
X = don't care;
Z = high-impedance OFF-state.

ORDERING INFORMATION

TYPE NUMBER	PACKAGE				
	TEMPERATURE RANGE	PINS	PACKAGE	MATERIAL	CODE
74LVC16244ADL	-40 to +125 °C	48	SSOP48	plastic	SOT370-1
74LVCH16244ADL	-40 to +125 °C	48	SSOP48	plastic	SOT370-1
74LVC16244ADGG	-40 to +125 °C	48	TSSOP48	plastic	SOT362-1
74LVCH16244ADGG	-40 to +125 °C	48	TSSOP48	plastic	SOT362-1
74LVC16244AEV	-40 to +125 °C	56	VFBGA56	plastic	SOT702-1
74LVCH16244AEV	-40 to +125 °C	56	VFBGA56	plastic	SOT702-1

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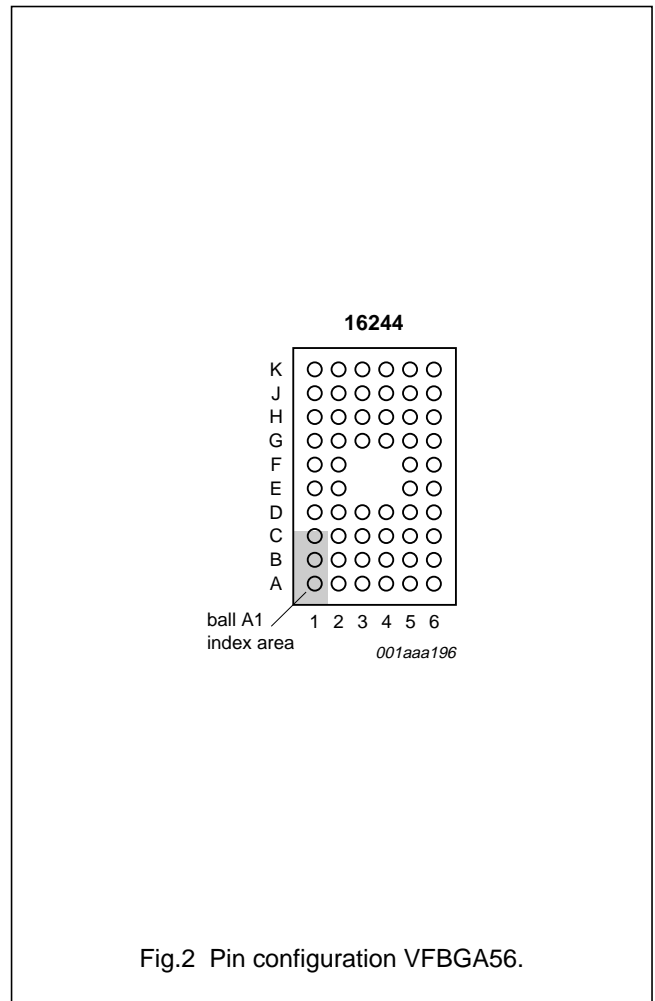
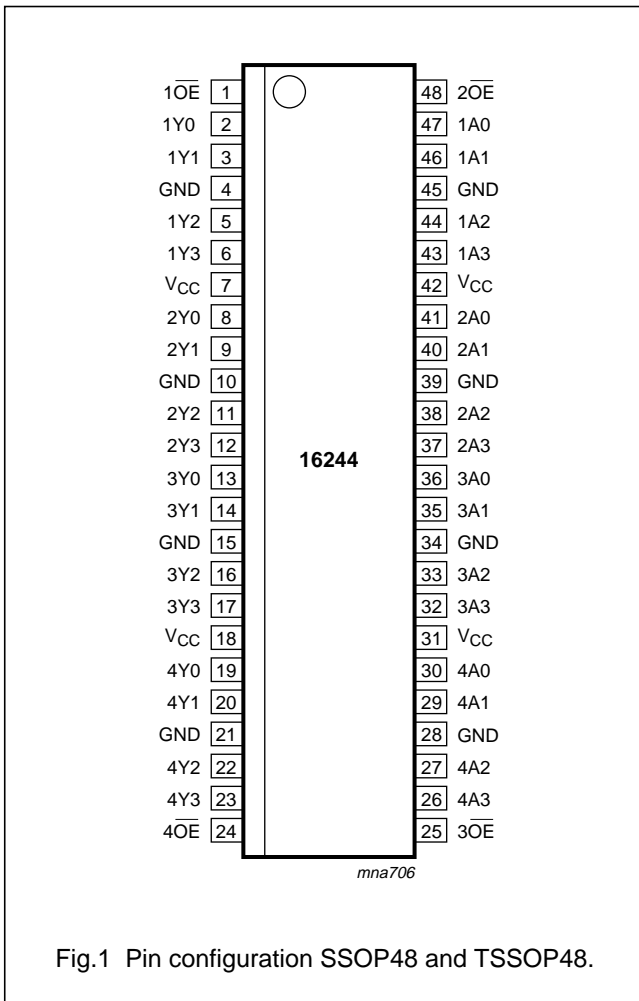
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PINNING

SYMBOL	PIN	BALL	DESCRIPTION
1 \overline{OE}	1	A1	output enable input (active LOW)
n.c.	–	A2, A3, A4, A5, K2, K3, K4, K5	not connected
1Y0	2	B2	data output
1Y1	3	B1	data output
GND	4, 10, 15, 21, 28, 34, 39, 45	B3, B4, D3, D4, G3, G4, J3, J4	ground (0 V)
1Y2	5	C2	data output
1Y3	6	C1	data output
V _{CC}	7, 18, 31, 42	C3, H3, C4, H4	supply voltage
2Y0	8	D2	data output
2Y1	9	D1	data output
2Y2	11	E2	data output
2Y3	12	E1	data output
3Y0	13	F1	data output
3Y1	14	F2	data output
3Y2	16	G1	data output
3Y3	17	G2	data output
4Y0	19	H1	data output
4Y1	20	H2	data output
4Y2	22	J1	data output
4Y3	23	J2	data output
4 \overline{OE}	24	K1	output enable input (active LOW)
3 \overline{OE}	25	K6	output enable input (active LOW)
4A3	26	J5	data input
4A2	27	J6	data input
4A1	29	H5	data input
4A0	30	H6	data input
3A3	32	G5	data input
3A2	33	G6	data input
3A1	35	F5	data input
3A0	36	F6	data input
2A3	37	E6	data input
2A2	38	E5	data input
2A1	40	D6	data input
2A0	41	D5	data input
1A3	43	C6	data input
1A2	44	C5	data input
1A1	46	B6	data input
1A0	47	B5	data input
2 \overline{OE}	48	A6	output enable input (active LOW)

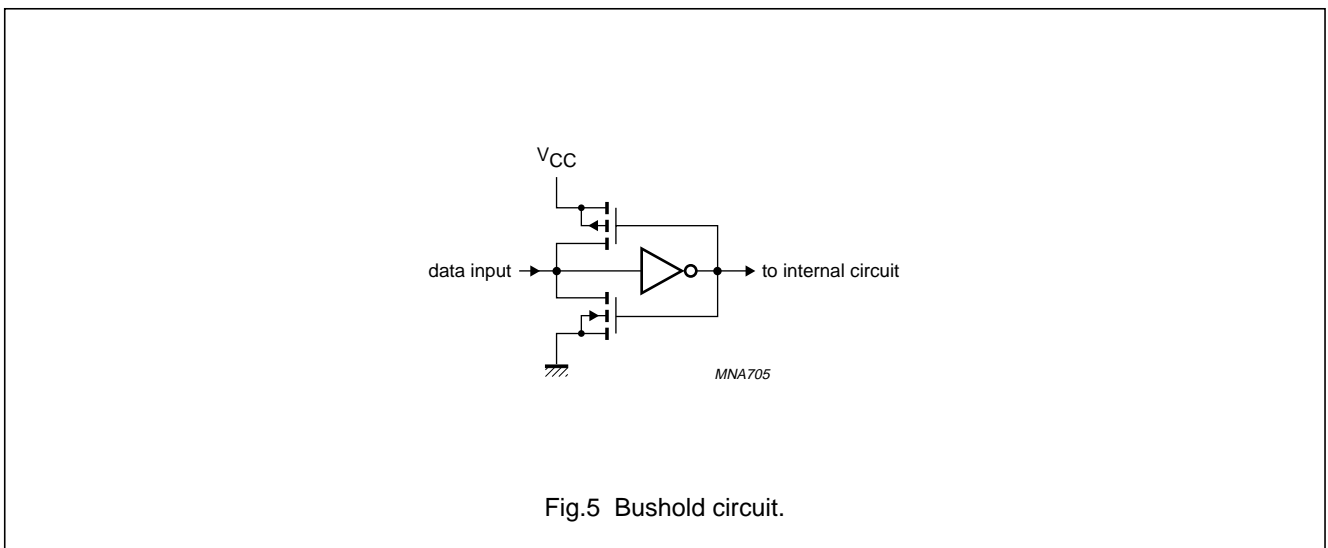
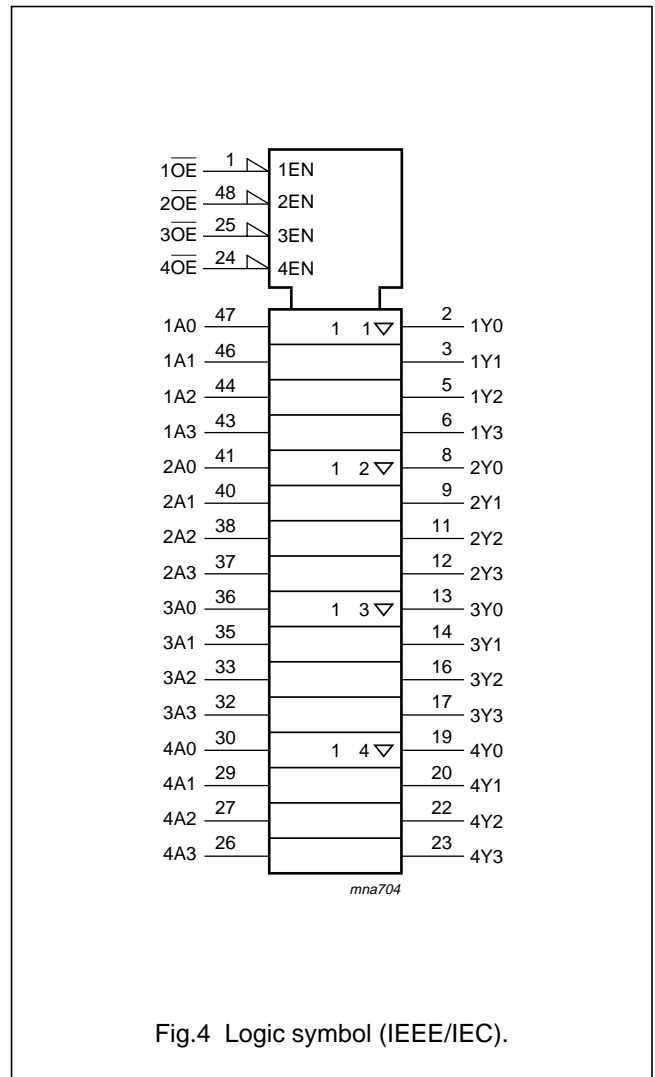
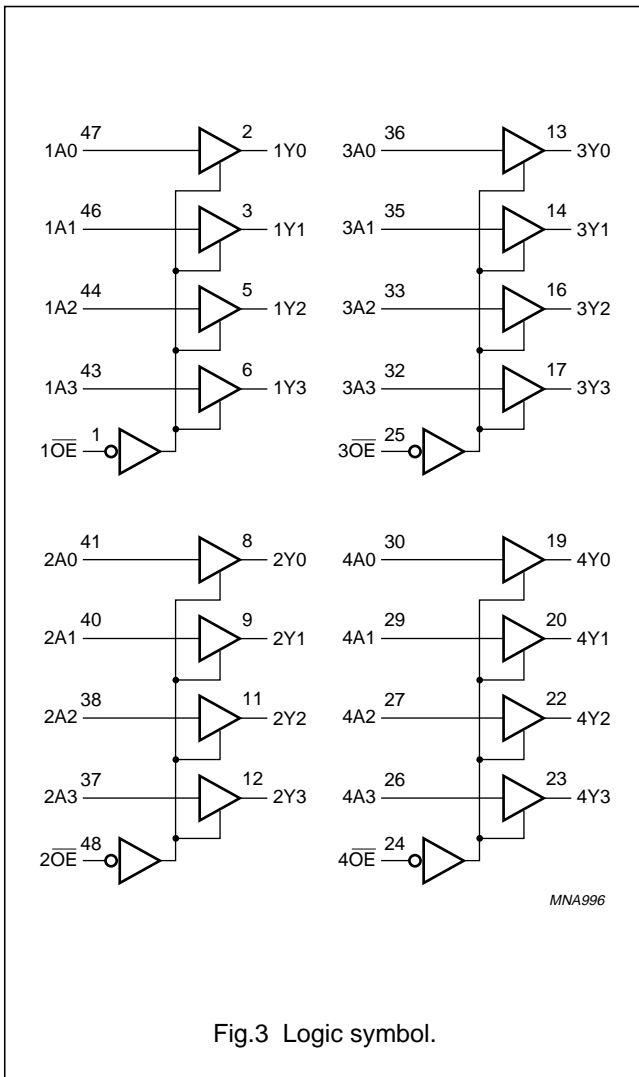
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RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{CC}	supply voltage	for maximum speed performance	2.7	3.6	V
		for low voltage applications	1.2	3.6	V
V _I	input voltage		0	5.5	V
V _O	output voltage	output HIGH or LOW state	0	V _{CC}	V
		output 3-state	0	5.5	V
T _{amb}	operating ambient temperature	in free air	-40	+125	°C
t _r , t _f	input rise and fall times	V _{CC} = 1.2 to 2.7 V	0	20	ns/V
		V _{CC} = 2.7 to 3.6 V	0	10	ns/V

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134); voltages are referenced to GND (ground = 0 V).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{CC}	supply voltage		-0.5	+6.5	V
I _{IK}	input diode current	V _I < 0	-	-50	mA
V _I	input voltage	note 1	-0.5	+6.5	V
I _{OK}	output diode current	V _O > V _{CC} or V _O < 0	-	±50	mA
V _O	output voltage	output HIGH or LOW state; note 1	-0.5	V _{CC} + 0.5	V
		output 3-state; note 1	-0.5	+6.5	V
I _O	output source or sink current	V _O = 0 to V _{CC}	-	±50	mA
I _{CC} , I _{GND}	V _{CC} or GND current		-	±100	mA
T _{stg}	storage temperature		-65	+150	°C
P _{tot}	power dissipation SSOP and TSSOP package VFPGA package	T _{amb} = -40 to +125 °C; note 2	-	500	mW
		T _{amb} = -40 to +125 °C; note 3	-	1000	mW

Notes

1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.
2. Above 60 °C the value of P_{tot} derates linearly with 5.5 mW/K.
3. Above 70 °C the value of P_{tot} derates linearly with 1.8 mW/K.

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DC CHARACTERISTICS

At recommended operating conditions; voltages are referenced to GND (ground = 0 V).

SYMBOL	PARAMETER	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
		OTHER	V _{CC} (V)				
T_{amb} = -40 to +85 °C; note 1							
V _{IH}	HIGH-level input voltage		1.2	V _{CC}	-	-	V
			2.7 to 3.6	2.0	-	-	V
V _{IL}	LOW-level input voltage		1.2	-	-	0	V
			2.7 to 3.6	-	-	0.8	V
V _{OH}	HIGH-level output voltage	V _I = V _{IH} or V _{IL} I _O = -100 µA	2.7 to 3.6	V _{CC} - 0.2	V _{CC}	-	V
		I _O = -12 mA	2.7	V _{CC} - 0.5	-	-	V
		I _O = -18 mA	3.0	V _{CC} - 0.6	-	-	V
		I _O = -24 mA	3.0	V _{CC} - 0.8	-	-	V
V _{OL}	LOW-level output voltage	V _I = V _{IH} or V _{IL} I _O = 100 µA	2.7 to 3.6	-	0	0.20	V
		I _O = 12 mA	2.7	-	-	0.40	V
		I _O = 24 mA	3.0	-	-	0.55	V
I _{LI}	input leakage current	V _I = 5.5 V or GND; note 2	3.6	-	±0.1	±5	µA
I _{OZ}	3-state output OFF-state current	V _I = V _{IH} or V _{IL} ; V _O = 5.5 V or GND; note 2	3.6	-	0.1	±5	µA
I _{off}	power-off leakage supply current	V _I or V _O = 5.5 V	0.0	-	0.1	±10	µA
I _{CC}	quiescent supply current	V _I = V _{CC} or GND; I _O = 0	3.6	-	0.1	20	µA
ΔI _{CC}	additional quiescent supply current per input pin	V _I = V _{CC} - 0.6 V; I _O = 0	2.7 to 3.6	-	5	500	µA
I _{BH}	bushold LOW sustaining current	V _I = 0.8 V; notes 3 and 4	3.0	75	-	-	µA
I _{BHH}	bushold HIGH sustaining current	V _I = 2.0 V; notes 3 and 4	3.0	-75	-	-	µA
I _{BHLO}	bushold LOW overdrive current	notes 3 and 5	3.6	500	-	-	µA
I _{BHHO}	bushold HIGH overdrive current	notes 3 and 5	3.6	-500	-	-	µA

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SYMBOL	PARAMETER	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
		OTHER	V _{CC} (V)				
T_{amb} = -40 to +125 °C							
V _{IH}	HIGH-level input voltage		1.2	V _{CC}	-	-	V
			2.7 to 3.6	2.0	-	-	V
V _{IL}	LOW-level input voltage		1.2	-	-	0	V
			2.7 to 3.6	-	-	0.8	V
V _{OH}	HIGH-level output voltage	V _I = V _{IH} or V _{IL}	2.7 to 3.6	V _{CC} - 0.3	-	-	V
		I _O = -100 μA	2.7	V _{CC} - 0.65	-	-	V
		I _O = -12 mA	3.0	V _{CC} - 0.75	-	-	V
		I _O = -18 mA	3.0	V _{CC} - 1	-	-	V
V _{OL}	LOW-level output voltage	V _I = V _{IH} or V _{IL}	2.7 to 3.6	-	-	0.3	V
		I _O = 100 μA	2.7	-	-	0.6	V
		I _O = 12 mA	3.0	-	-	0.8	V
		I _O = 24 mA	3.0	-	-	0.8	V
I _{LI}	input leakage current	V _I = 5.5 V or GND; note 2	3.6	-	-	±20	μA
I _{OZ}	3-state output OFF-state current	V _I = V _{IH} or V _{IL} ; V _O = 5.5 V or GND; note 2	3.6	-	-	±20	μA
I _{off}	power-off leakage supply current	V _I or V _O = 5.5 V	0.0	-	-	±20	μA
I _{CC}	quiescent supply current	V _I = V _{CC} or GND; I _O = 0	3.6	-	-	80	μA
ΔI _{CC}	additional quiescent supply current per input pin	V _I = V _{CC} - 0.6 V; I _O = 0	2.7 to 3.6	-	-	5000	μA
I _{BH}	bushold LOW sustaining current	V _I = 0.8 V; notes 3 and 4	3.0	60	-	-	μA
I _{BHH}	bushold HIGH sustaining current	V _I = 2.0 V; notes 3 and 4	3.0	-60	-	-	μA
I _{BHLO}	bushold LOW overdrive current	notes 3 and 5	3.6	500	-	-	μA
I _{BHHO}	bushold HIGH overdrive current	notes 3 and 5	3.6	-500	-	-	μA

Notes

1. All typical values are measured at V_{CC} = 3.3 V and T_{amb} = 25 °C.
2. For bushold parts, the bushold circuit is switched off when V_I > V_{CC} allowing 5.5 V on the input pin.
3. Valid for data inputs of bushold parts (74LVCH16244A) only. For data inputs only, control inputs do not have a bushold circuit.
4. The specified sustaining current at the data inputs holds the input below the specified V_I level.
5. The specified overdrive current at the data input forces the data input to the opposite logic input state.

16-bit buffer/line driver; 5 V input/output
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AC CHARACTERISTICS

GND = 0 V; $t_r = t_f \leq 2.5$ ns; $C_L = 50$ pF; $R_L = 500 \Omega$.

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
		WAVEFORMS	V _{CC} (V)				
T_{amb} = -40 to +85 °C; note1							
t _{PHL} /t _{PLH}	propagation delay nAn to nYn	see Figs 6 and 8	1.2	–	11.0	–	ns
			2.7	1.0	–	4.7	ns
			3.0 to 3.6	1.1	3.0 ⁽²⁾	4.1	ns
t _{PZH} /t _{PZL}	3-state output enable time n \overline{OE} to nYn	see Figs 7 and 8	1.2	–	15.0	–	ns
			2.7	1.0	–	5.8	ns
			3.0 to 3.6	1.0	3.5 ⁽²⁾	4.6	ns
t _{PHZ} /t _{PLZ}	3-state output disable time n \overline{OE} to nYn	see Figs 7 and 8	1.2	–	10.0	–	ns
			2.7	1.0	–	6.2	ns
			3.0 to 3.6	1.8	3.7 ⁽²⁾	5.2	ns
T_{amb} = -40 to +125 °C							
t _{PHL} /t _{PLH}	propagation delay nAn to nYn	see Figs 6 and 8	1.2	–	–	–	ns
			2.7	1.0	–	6.0	ns
			3.0 to 3.6	1.1	–	5.5	ns
t _{PZH} /t _{PZL}	3-state output enable time n \overline{OE} to nYn	see Figs 7 and 8	1.2	–	–	–	ns
			2.7	1.0	–	7.5	ns
			3.0 to 3.6	1.0	–	6.0	ns
t _{PHZ} /t _{PLZ}	3-state output disable time n \overline{OE} to nYn	see Figs 7 and 8	1.2	–	–	–	ns
			2.7	1.0	–	8.0	ns
			3.0 to 3.6	1.8	–	6.5	ns

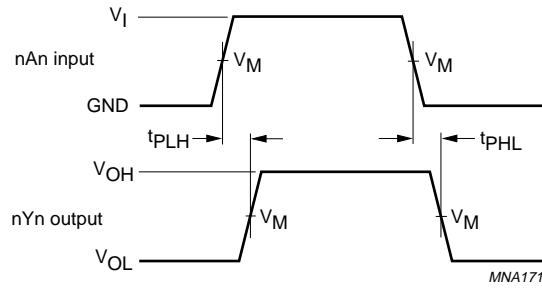
Notes

1. All typical values are measured at T_{amb} = 25 °C.
2. These typical values are measured at V_{CC} = 3.3 V and T_{amb} = 25 °C.

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AC WAVEFORMS



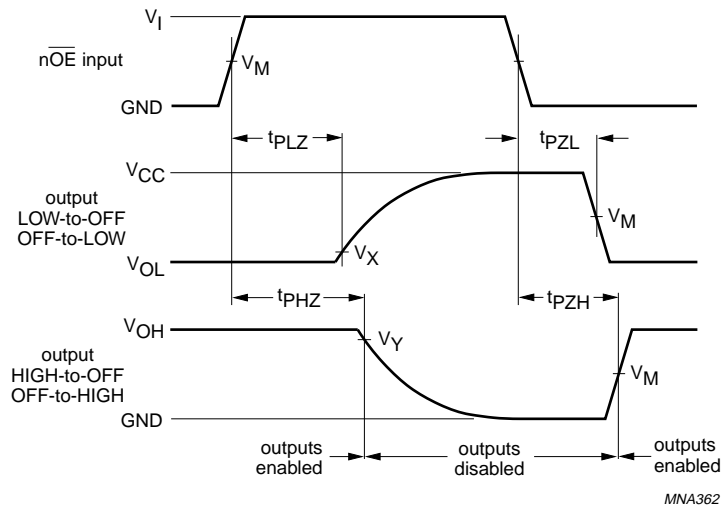
V_{CC}	V_M	INPUT	
		V_I	$t_r = t_f$
1.2 V	$0.5 \times V_{CC}$	V_{CC}	≤ 2.5 ns
2.7 V	1.5 V	2.7 V	≤ 2.5 ns
3.0 to 3.6 V	1.5 V	2.7 V	≤ 2.5 ns

V_{OL} and V_{OH} are typical output voltage drop that occur with the output load.

Fig.6 The input nAn to output nYn propagation delays.

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V _{CC}	V _M	INPUT	
		V _I	t _r = t _f
1.2 V	0.5 × V _{CC}	V _{CC}	≤ 2.5 ns
2.7 V	1.5 V	2.7 V	≤ 2.5 ns
3.0 to 3.6 V	1.5 V	2.7 V	≤ 2.5 ns

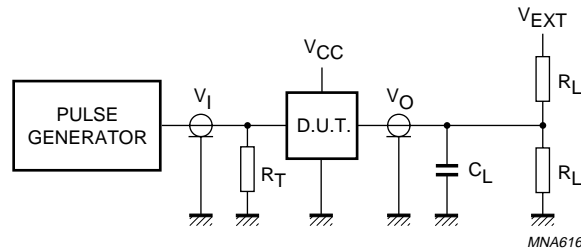
V_X = V_{OL} + 0.3 V at V_{CC} ≥ 2.7 V;
 V_X = V_{OL} + 0.1 V at V_{CC} < 2.7 V;
 V_Y = V_{OH} - 0.3 V at V_{CC} ≥ 2.7 V;
 V_Y = V_{OH} - 0.1 V at V_{CC} < 2.7 V.

V_{OL} and V_{OH} are typical output voltage drop that occur with the output load.

Fig.7 3-state enable and disable times.

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V _{CC}	V _I	C _L	R _L	V _{EXT}		
				t _{PLH} /t _{PHL}	t _{PZH} /t _{PHZ}	t _{PZL} /t _{PLZ}
1.2 V	V _{CC}	50 pF	500 Ω ⁽¹⁾	open	GND	2 × V _{CC}
2.7 V	2.7 V	50 pF	500 Ω	open	GND	2 × V _{CC}
3.0 to 3.6 V	2.7 V	50 pF	500 Ω	open	GND	2 × V _{CC}

Note

1. The circuit performs better when R_L = 1000 Ω.

Definitions for test circuits:

R_L = Load resistor.

C_L = Load capacitance including jig and probe capacitance.

R_T = Termination resistance should be equal to the output impedance Z_o of the pulse generator.

Fig.8 Load circuitry for switching times.

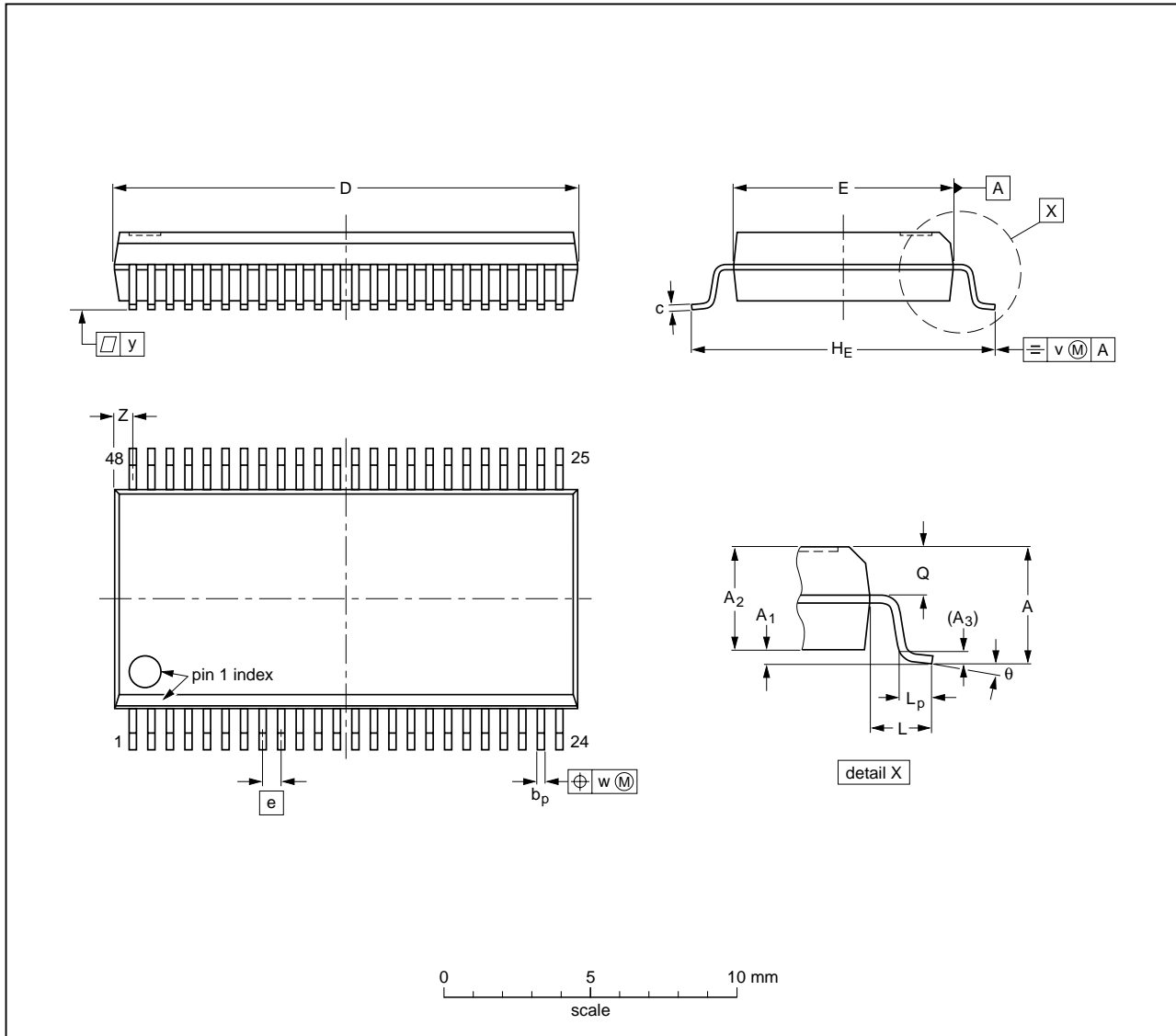
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PACKAGE OUTLINES

SSOP48: plastic shrink small outline package; 48 leads; body width 7.5 mm

SOT370-1



DIMENSIONS (mm are the original dimensions)

UNIT	A max.	A ₁	A ₂	A ₃	b _p	c	D ⁽¹⁾	E ⁽¹⁾	e	H _E	L	L _p	Q	v	w	y	Z ⁽¹⁾	θ
mm	2.8	0.4 0.2	2.35 2.20	0.25	0.3 0.2	0.22 0.13	16.00 15.75	7.6 7.4	0.635	10.4 10.1	1.4	1.0 0.6	1.2 1.0	0.25	0.18	0.1	0.85 0.40	8° 0°

Note
1. Plastic or metal protrusions of 0.25 mm maximum per side are not included.

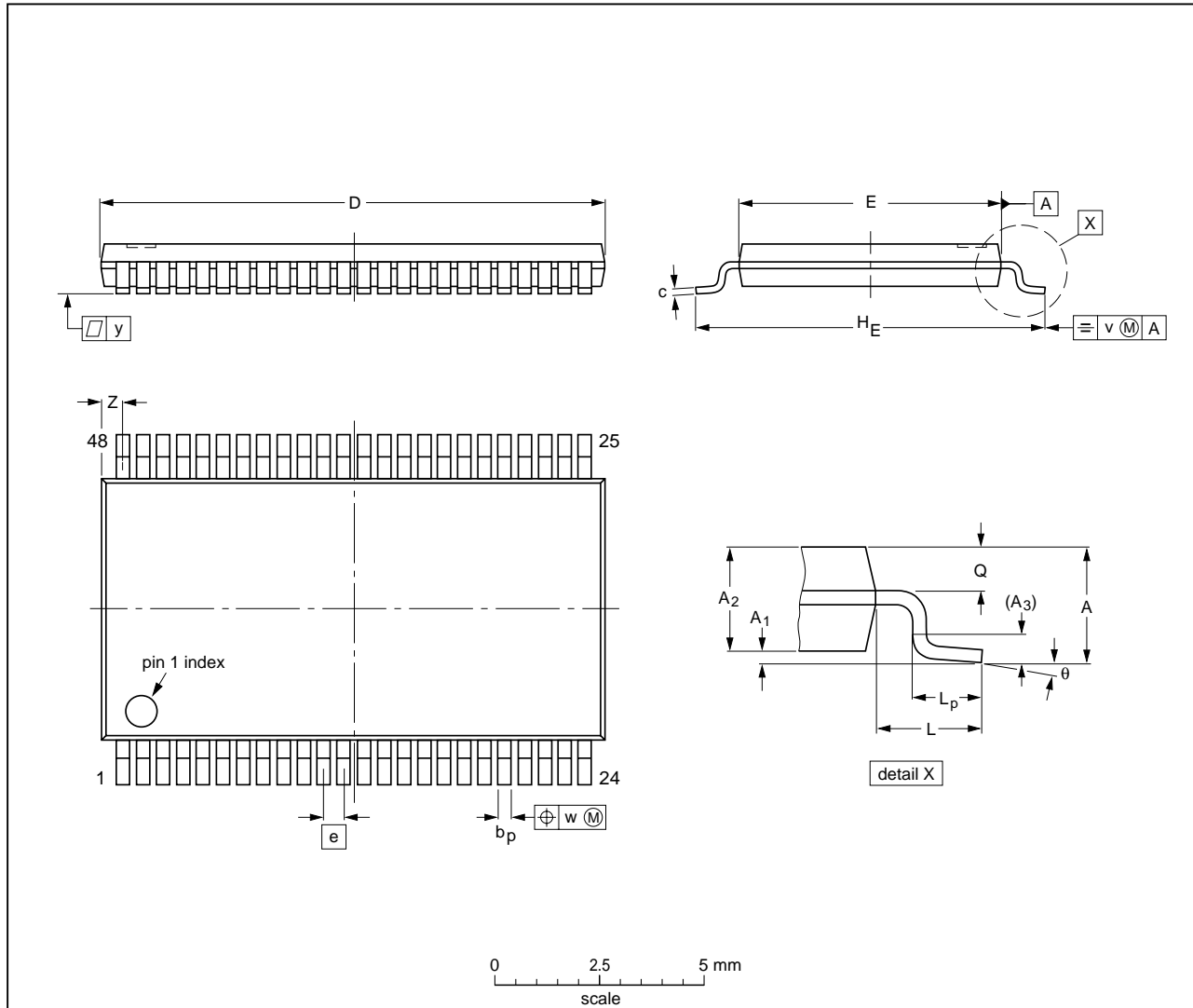
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	IEC	JEDEC	JEITA		
SOT370-1		MO-118			99-12-27 03-02-19

16-bit buffer/line driver; 5 V input/output tolerant; 3-state

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TSSOP48: plastic thin shrink small outline package; 48 leads; body width 6.1 mm

SOT362-1



DIMENSIONS (mm are the original dimensions).

UNIT	A max.	A ₁	A ₂	A ₃	b _p	c	D ⁽¹⁾	E ⁽²⁾	e	H _E	L	L _p	Q	v	w	y	Z	θ
mm	1.2	0.15 0.05	1.05 0.85	0.25	0.28 0.17	0.2 0.1	12.6 12.4	6.2 6.0	0.5	8.3 7.9	1	0.8 0.4	0.50 0.35	0.25	0.08	0.1	0.8 0.4	8° 0°

Notes

1. Plastic or metal protrusions of 0.15 mm maximum per side are not included.
2. Plastic interlead protrusions of 0.25 mm maximum per side are not included.

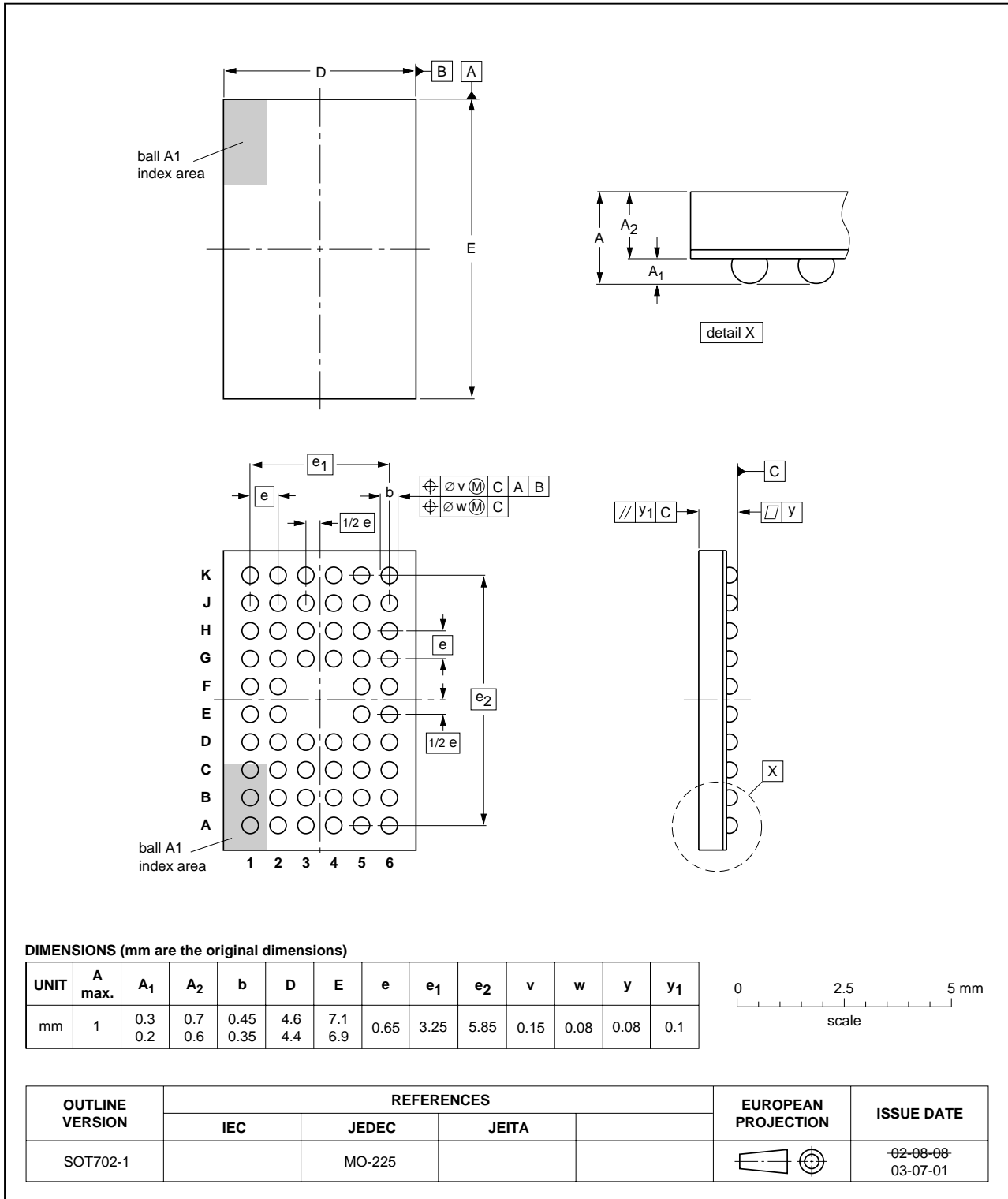
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SOT362-1		MO-153			99-12-27 03-02-19

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VFBGA56: plastic very thin fine-pitch ball grid array package; 56 balls; body 4.5 x 7 x 0.65 mm

SOT702-1



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DATA SHEET STATUS

LEVEL	DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾⁽³⁾	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
II	Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
III	Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN).

Notes

1. Please consult the most recently issued data sheet before initiating or completing a design.
2. The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL <http://www.semiconductors.philips.com>.
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Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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74LVC16244A; 74LVCH16244A

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Datasheet



**74LVC16244A;
74LVCH16244A**
(Product Specification)
08-Dec-03, 18 Pages,
117kB

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74LVC16244A; 74LVCH16244A - 16-bit buffer/line driver; 5 V input/output tolerant; 3-state

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General description

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The 74LVC(H)16244A is a high-performance, low power, low voltage, Si-gate CMOS device, superior to most advanced CMOS compatible TTL families. Inputs can be driven from either 3.3 or 5 V devices. In 3-state operation, outputs can handle 5 Volt. These features allow the use of these devices as a mixed 3.3 and 5 V environment.

The 74LVC(H)16244A is a 16-bit non-inverting buffer/line driver with 3-state outputs. The device can be used as four 4-bit buffers, two 8-bit buffers or one 16-bit buffer. The device features four Output Enables (1OE, 2OE, 3OE and 4OE), each controlling four of the 3-state outputs. A HIGH on nOE causes the outputs to assume a high-impedance OFF-state.

The 74LVC(H)16244A is identical to the 74LVC16240A but has non-inverting outputs.

The 74LVCH16244A bushold data inputs eliminates the need for external pull-up resistors to hold unused inputs.

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Features

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- 5 V tolerant inputs/outputs for interfacing with 5 V logic
- Wide supply voltage range from 1.2 to 3.6 V
- CMOS low power consumption
- MULTIBYTE™ flow-through standard pin-out architecture
- Low inductance multiple power and ground pins for minimum noise and ground bounce
- Direct interface with TTL levels
- All data inputs have bushold (74LVCH16244A only).
- Complies with JEDEC standard no. 8-1A
- ESD protection:
 - HBM EIA/JESD22-A114-A exceeds 2000 V
 - MM EIA/JESD22-A115-A exceeds 200 V.
- Specified from -40 to +85 Cel and -40 to +125 Cel.

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Products/packages

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Type number	Orderable part number	Ordering code (12NC)	Product status	Package	Packing	Marking	ECCN
74LVC16244ADGG	74LVC16244ADGG,112	9352 351 50112	Volume production	SOT362-1 (TSSOP48)	Tube	Standard Marking	
74LVC16244ADGG	74LVC16244ADGG,118	9352 351 50118	Volume production	SOT362-1 (TSSOP48)	Reel Pack, SMD, 13"	Standard Marking	
74LVC16244ADL	74LVC16244ADL,112	9352 351 40112	Volume production	SOT370-1 (SSOP48)	Tube	Standard Marking	
74LVC16244ADL	74LVC16244ADL,118	9352 351 40118	Volume production	SOT370-1 (SSOP48)	Tape reel smd	Standard Marking	
74LVC16244AEV	74LVC16244AEV,118	9352 719 37118	Volume production	SOT702-1 (VFBGA56)	Reel Pack, SMD, 13"	Standard Marking	
74LVC16244AEV	74LVC16244AEV,151	9352 719 37151	Volume production	SOT702-1 (VFBGA56)	Tray Pack, Bakeable, Single	Standard Marking	
74LVC16244AEV	74LVC16244AEV,157	9352 719 37157	Volume production	SOT702-1 (VFBGA56)	Tray Pack, Bakeable, Multiple	Standard Marking	
74LVCH16244ADGG	74LVCH16244ADGG:11	9352 384 50112	Volume production	SOT362-1 (TSSOP48)	Tube	Standard Marking	
74LVCH16244ADGG	74LVCH16244ADGG,11	9352 384 50118	Volume production	SOT362-1 (TSSOP48)	Reel Pack, SMD, 13"	Standard Marking	
74LVCH16244ADL	74LVCH16244ADL,112	9352 384 40112	Volume production	SOT370-1 (SSOP48)	Tube	Standard Marking	
74LVCH16244ADL	74LVCH16244ADL,118	9352 384 40118	Volume production	SOT370-1 (SSOP48)	Tape reel smd	Standard Marking	
74LVCH16244AEV	74LVCH16244AEV,118	9352 707 92118	Volume production	SOT702-1 (VFBGA56)	Reel Pack, SMD, 13"	Standard Marking	
74LVCH16244AEV	74LVCH16244AEV,151	9352 707 92151	Volume production	SOT702-1 (VFBGA56)	Tray Pack, Bakeable, Single	Standard Marking	
74LVCH16244AEV	74LVCH16244AEV,157	9352 707 92157	Volume production	SOT702-1 (VFBGA56)	Tray Pack, Bakeable, Multiple	Standard Marking	

The variants in the table below are discontinued. See the table [Discontinued information](#) for more information.

Type number	Orderable part number	Ordering code (12NC)	Product status	Package	Packing	Marking	ECCN
74LVC16244ADGG	74LVC16244ADGG,518	9352 351 50518	Discontinued Replacement product	SOT362-1 (TSSOP48)	Reel Dry Pack, SMD, 13"	Standard Marking	
74LVC16244ADGG	74LVC16244ADGG,512	9352 351 50512	Discontinued Replacement product	SOT362-1 (TSSOP48)	Tube Dry Pack	Standard Marking	
74LVCH16244ADGG	74LVCH16244ADGG:51	9352 384 50518	Discontinued Replacement product	SOT362-1 (TSSOP48)	Reel Dry Pack, SMD, 13"	Standard Marking	
74LVCH16244ADGG	74LVCH16244ADGG,51	9352 384 50512	Discontinued Replacement product	SOT362-1 (TSSOP48)	Tube Dry Pack	Standard Marking	

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Quality/reliability/chemical content

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Type number	Orderable part number	Chemical content	RoHS	Leadfree conversion date	RHF	IFR (FIT)	MTBF (hours)	MSL
74LVC16244ADGG	74LVC16244ADGG,112	74LVC16244ADGG		Always Pb-free		3,87	2,58E+08	1
74LVC16244ADGG	74LVC16244ADGG,118	74LVC16244ADGG		Always Pb-free		3,87	2,58E+08	1
74LVC16244ADL	74LVC16244ADL,112	74LVC16244ADL		week 13, 2005		3,87	2,58E+08	1
74LVC16244ADL	74LVC16244ADL,118	74LVC16244ADL		week 13, 2005		3,87	2,58E+08	1
74LVC16244AEV	74LVC16244AEV,118	74LVC16244AEV				3,87	2,58E+08	2
74LVC16244AEV	74LVC16244AEV,151	74LVC16244AEV				3,87	2,58E+08	2
74LVC16244AEV	74LVC16244AEV,157	74LVC16244AEV				3,87	2,58E+08	2
74LVCH16244ADGG	74LVCH16244ADGG:11	74LVCH16244ADGG		Always Pb-free		3,87	2,58E+08	1
74LVCH16244ADGG	74LVCH16244ADGG,11	74LVCH16244ADGG		Always Pb-free		3,87	2,58E+08	1
74LVCH16244ADL	74LVCH16244ADL,112	74LVCH16244ADL		week 13, 2005		3,87	2,58E+08	1
74LVCH16244ADL	74LVCH16244ADL,118	74LVCH16244ADL		week 13, 2005		3,87	2,58E+08	1
74LVCH16244AEV	74LVCH16244AEV,118	74LVCH16244AEV				3,87	2,58E+08	2
74LVCH16244AEV	74LVCH16244AEV,151	74LVCH16244AEV				3,87	2,58E+08	2
74LVCH16244AEV	74LVCH16244AEV,157	74LVCH16244AEV				3,87	2,58E+08	2

The variants in the table below are discontinued. See the table [Discontinued information](#) for more information.

Type number	Orderable part number	Chemical content	RoHS	Leadfree conversion date	RHF	IFR (FIT)	MTBF (hours)	MSL
74LVC16244ADGG	74LVC16244ADGG,518	74LVC16244ADGG		week 14, 2005		3,87	2,58E+08	1
74LVC16244ADGG	74LVC16244ADGG,512	74LVC16244ADGG		week 14, 2005		3,87	2,58E+08	1
74LVCH16244ADGG	74LVCH16244ADGG:51	74LVCH16244ADGG		week 14, 2005		3,87	2,58E+08	1
74LVCH16244ADGG	74LVCH16244ADGG,51	74LVCH16244ADGG		week 14, 2005		3,87	2,58E+08	1

Quality and reliability disclaimer

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Pricing/ordering/availability

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Type number	Ordering code (12NC)	Orderable part number	Indicative price/unit(\$)	Region	Distributor	In stock	Order quantity	Inventory date	Buy online	Samples
74LVC16244ADGG	9352 351 50112	74LVC16244ADGG,112		NA	FUTURE ELECTRONICS	3		11/12/2009	Buy online	not available
74LVC16244ADGG	9352 351 50118	74LVC16244ADGG,118		ASIA	SACL - Hong Kong/China	yes	2000	11/12/2009	Buy online	not available
74LVC16244ADL	9352 351 40112	74LVC16244ADL,112	0.7500							not available
74LVC16244ADL	9352 351 40118	74LVC16244ADL,118	0.7500							not available
74LVC16244AEV	9352 719 37118	74LVC16244AEV,118	2.2300							Order samples

74LVC16244AEV	9352 719 37151	74LVC16244AEV,151	2.2300							not available
74LVC16244AEV	9352 719 37157	74LVC16244AEV,157	2.2300							not available
74LVCH16244ADGG	9352 384 50112	74LVCH16244ADGG:11								not available
74LVCH16244ADGG	9352 384 50118	74LVCH16244ADGG,11								not available
74LVCH16244ADL	9352 384 40112	74LVCH16244ADL,112	0.8900							not available
74LVCH16244ADL	9352 384 40118	74LVCH16244ADL,118	0.8900	NA	MOUSER ELECTRONICS	100		11/12/2009	Buy online	Order samples
74LVCH16244AEV	9352 707 92118	74LVCH16244AEV,118	2.1300							Order samples
74LVCH16244AEV	9352 707 92151	74LVCH16244AEV,151	2.1300							not available
74LVCH16244AEV	9352 707 92157	74LVCH16244AEV,157	2.1300							not available

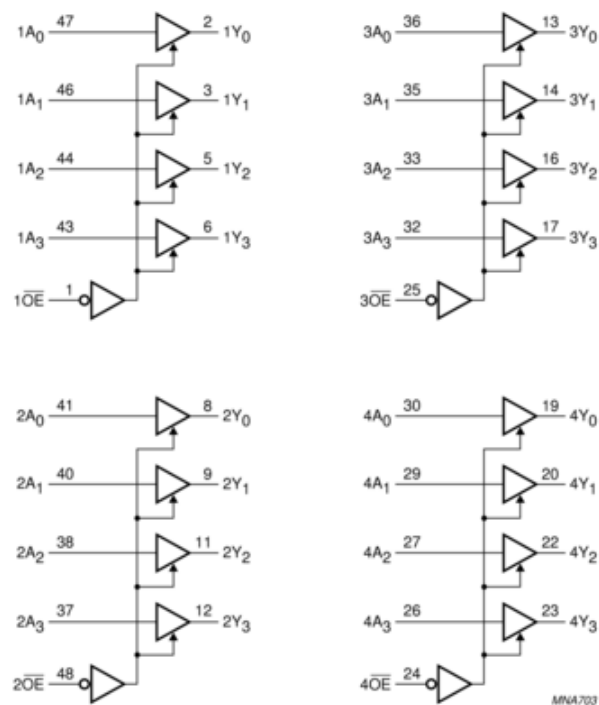
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Type number	Ordering code (12NC)	Last-time buy date	Last-time delivery date	Replacement product	DN Notice	Status	Comments
74LVC16244ADGG	935235150518				DN		
74LVC16244ADGG	935235150512				DN		
74LVCH16244ADGG	935238450518				DN		
74LVCH16244ADGG	935238450512				DN		

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Application Notes

- [AN240; Interfacing 3 Volt and 5 Volt Applications \(1995-09-15\)](#)
- [AN263_2; Power considerations when using CMOS and BiCMOS logic devices \(2002-02-05\)](#)
- [AN263_2; Power considerations when using CMOS and BiCMOS logic devices \(2002-02-05\)](#)

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Parametrics/similar products

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Type number	Package	Description	Propagation Delay(ns)	Voltage	No. of Pins	Power Dissipation Considerations	Logic Switching Levels	Output Drive Capability
74LVC16244ADGG	SOT362-1 (TSSOP48)	3.3V 16-Bit Buffer/Line Driver; Non-Inverting (3-State)	3.0@3.3V	1.2-3.6	48	Low Power or Battery Applications	TTL	+/- 24 mA
74LVC16244ADL	SOT370-1 (SSOP48)	3.3V 16-Bit Buffer/Line Driver; Non-Inverting (3-State)	3.0@3.3V	1.2-3.6	48	Low Power or Battery Applications	TTL	+/- 24 mA
74LVC16244AEV	SOT702-1 (VFPGA56)	3.3V 16-Bit Buffer/Line Driver; Non-Inverting (3-State)	3.0@3.3V	1.2-3.6		Low Power or Battery Applications	TTL	+/- 24 mA
74LVCH16244ADGG	SOT362-1 (TSSOP48)	3.3V 16-Bit Buffer/Line Driver; Non-Inverting with Bus Hold (3-State)	3.0@3.3V	1.2-3.6	48	Low Power or Battery Applications	TTL	+/- 24 mA
	SOT370-1	3.3V 16-Bit Buffer/Line Driver; Non-				Low Power or Battery		

74LVCH16244ADL	(SSOP48)	Inverting with Bus Hold (3-State)	3.0@3.3V	1.2-3.6	48	Applications	TTL	+/- 24 mA
74LVCH16244AEV	SOT702-1 (VFPGA56)	3.3V 16-Bit Buffer/Line Driver; Non-Inverting with Bus Hold (3-State)	3.0@3.3V	1.2-3.6		Low Power or Battery Applications	TTL	+/- 24 mA

Similar products

[74LVC16244A](#); [74LVCH16244A](#) links to the similar products page containing an overview of products that are similar in function or related to the type number(s) as listed on this page. The similar products page includes products from the same catalog tree(s), relevant selection guides and products from the same functional category.

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