74AHC2G126; 74AHCT2G126

Dual buffer/line driver; 3-state

Rev. 02 — 21 September 2004 | Product data sheet

1. General description

The 74AHC2G126; AHCT2G126 is a high-speed Si-gate CMOS device.

The 74AHC2G126; AHCT2G126 provides a dual non-inverting buffer/line driver with 3-state output. The 3-state output is controlled by the output enable input (OE). A LOW at pin nOE causes the output to assume a high-impedance OFF-state.

2. Features

- Symmetrical output impedance
- High noise immunity
- ESD protection:
  - HBM EIA/JESD22-A114-B exceeds 2000 V
  - MM EIA/JESD22-A115-A exceeds 200 V
  - CDM EIA/JESD22-C101 exceeds 1000 V.
- Low power dissipation
- Balanced propagation delays
- Multiple package options
- Specified from –40 °C to +85 °C and from –40 °C to +125 °C.

3. Quick reference data

Table 1: Quick reference data

GND = 0 V; T_{amb} = 25 °C; t_r = t_f ≤ 3.0 ns.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Type 74AHC2G126							
t_{PHL}, t_{PLH}	propagation delay nA to nY	C_L = 15 pF; V_{CC} = 5 V		-	3.4	5.5	ns
C_I	input capacitance			-	1.5	10	pF
C_{PD}	power dissipation capacitance	C_L = 50 pF; f_i = 1 MHz	[1] [2]	-	10	-	pF

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Table 1: Quick reference data *...continued*

GND = 0 V; T_{amb} = 25 °C; $t_r = t_f \leq 3.0$ ns.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Type 74AHCT2G126							
t_{PHL}, t_{PLH}	propagation delay nA to nY	C_L = 15 pF; V_{CC} = 5 V		-	3.4	5.5	ns
C_I	input capacitance			-	1.5	10	pF
C_{PD}	power dissipation capacitance	C_L = 50 pF; f_i = 1 MHz	[1] [2]	-	10	-	pF

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

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

$\Sigma(C_L \times V_{CC}^2 \times f_o)$ = sum of the outputs.

[2] The condition is V_I = GND to V_{CC}.

4. Ordering information

Table 2: Ordering information

Type number	Package			
	Temperature range	**Name**	**Description**	**Version**
74AHC2G126DP	–40 °C to +125 °C	TSSOP8	plastic thin shrink small outline package; 8 leads; body width 3 mm; lead length 0.5 mm	SOT505-2
74AHCT2G126DP	–40 °C to +125 °C	TSSOP8	plastic thin shrink small outline package; 8 leads; body width 3 mm; lead length 0.5 mm	SOT505-2
74AHC2G126DC	–40 °C to +125 °C	VSSOP8	plastic very thin shrink small outline package; 8 leads; body width 2.3 mm	SOT765-1
74AHCT2G126DC	–40 °C to +125 °C	VSSOP8	plastic very thin shrink small outline package; 8 leads; body width 2.3 mm	SOT765-1
74AHC2G126GM	–40 °C to +125 °C	XSON8	plastic extremely thin small outline package; no leads; 8 terminals; body 0.95 × 1.95 × 0.5 mm	SOT833-1
74AHCT2G126GM	–40 °C to +125 °C	XSON8	plastic extremely thin small outline package; no leads; 8 terminals; body 0.95 × 1.95 × 0.5 mm	SOT833-1

5. Marking

Table 3: Marking

Type number	Marking code
74AHC2G126DP	A26
74AHCT2G126DP	C26
74AHC2G126DC	A26
74AHCT2G126DC	C26
74AHC2G126GM	A26
74AHCT2G126GM	C26

6. Functional diagram

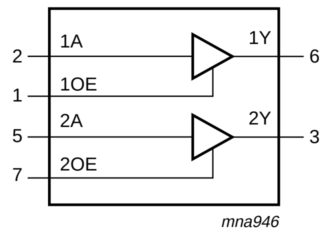


Fig 1. Logic symbol.

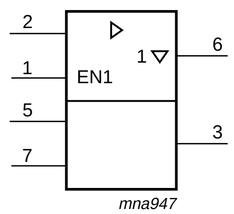


Fig 2. IEC logic symbol.

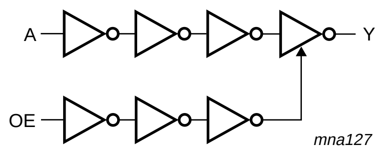


Fig 3. Logic diagram.

7. Pinning information

7.1 Pinning

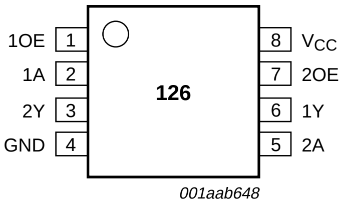


Fig 4. Pin configuration TSSOP8 and VSSOP8.

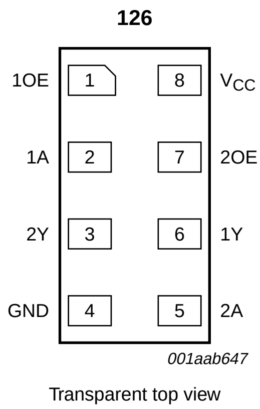


Fig 5. Pin configuration XSON8.

7.2 Pin description

Table 4: Pin description

Symbol	Pin	Description
1OE	1	output enable input (active HIGH)
1A	2	data input
2Y	3	data output
GND	4	ground (0 V)
2A	5	data input
1Y	6	data output
2OE	7	output enable input (active HIGH)
V_{CC}	8	supply voltage

8. Functional description

8.1 Function table

Table 5: Function table [1]

Input		Output
nOE	nA	nY
H	L	L
H	H	H
L	X	Z

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

9. Limiting values

Table 6: 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	+7.0	V
V_I	input voltage			–0.5	+7.0	V
I_{IK}	input diode current	$V_I < -0.5$ V		-	–20	mA
I_{OK}	output diode current	$V_O < -0.5$ V or $V_O > V_{CC} + 0.5$ V	[1]	-	±20	mA
I_O	output source or sink current	$V_O > -0.5$ V or $V_O < V_{CC} + 0.5$ V		-	±25	mA
I_{CC}, I_{GND}	V_{CC} or GND current			-	±75	mA
T_{stg}	storage temperature			–65	+150	°C
P_{tot}	power dissipation	T_{amb} = –40 °C to +125 °C		-	250	mW

[1] The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

10. Recommended operating conditions

Table 7: Recommended operating conditions

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Type 74AHC2G126						
V_{CC}	supply voltage		2.0	5.0	5.5	V
V_I	input voltage		0	-	5.5	V
V_O	output voltage		0	-	V_{CC}	V
T_{amb}	operating ambient temperature	see Section 11 and Section 12 per device	–40	+25	+125	°C
t_r, t_f	input rise and fall times	V_{CC} = 3.3 V ± 0.3 V	-	-	100	ns/V
		V_{CC} = 5.0 V ± 0.5 V	-	-	20	ns/V

Table 7: Recommended operating conditions *…continued*

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Type 74AHCT2G126						
V_{CC}	supply voltage		4.5	5.0	5.5	V
V_I	input voltage		0	-	5.5	V
V_O	output voltage		0	-	V_{CC}	V
T_{amb}	operating ambient temperature	see Section 11 and Section 12 per device	–40	+25	+125	°C
t_r, t_f	input rise and fall times	V_{CC} = 5.0 V ± 0.5 V	-	-	20	ns/V

11. Static characteristics

Table 8: Static characteristics type 74AHC2G126
At recommended operating conditions; voltages are referenced to GND (ground = 0 V).

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
T_{amb} = 25 °C						
V_{IH}	HIGH-level input voltage	V_{CC} = 2.0 V	1.5	-	-	V
		V_{CC} = 3.0 V	2.1	-	-	V
		V_{CC} = 5.5 V	3.85	-	-	V
V_{IL}	LOW-level input voltage	V_{CC} = 2.0 V	-	-	0.5	V
		V_{CC} = 3.0 V	-	-	0.9	V
		V_{CC} = 5.5 V	-	-	1.65	V
V_{OH}	HIGH-level output voltage	V_I = V_{IH} or V_{IL}				
		I_O = –50 μA; V_{CC} = 2.0 V	1.9	2.0	-	V
		I_O = –50 μA; V_{CC} = 3.0 V	2.9	3.0	-	V
		I_O = –50 μA; V_{CC} = 4.5 V	4.4	4.5	-	V
		I_O = –4.0 mA; V_{CC} = 3.0 V	2.58	-	-	V
		I_O = –8.0 mA; V_{CC} = 4.5 V	3.94	-	-	V
V_{OL}	LOW-level output voltage	V_I = V_{IH} or V_{IL}				
		I_O = 50 μA; V_{CC} = 2.0 V	-	0	0.1	V
		I_O = 50 μA; V_{CC} = 3.0 V	-	0	0.1	V
		I_O = 50 μA; V_{CC} = 4.5 V	-	0	0.1	V
		I_O = 4.0 mA; V_{CC} = 3.0 V	-	-	0.36	V
		I_O = 8.0 mA; V_{CC} = 4.5 V	-	-	0.36	V
I_{OZ}	3-state OFF-state current	V_I = V_{CC} or GND; V_{CC} = 5.5 V	-	-	0.25	μA
I_{LI}	input leakage current	V_I = V_{CC} or GND; V_{CC} = 5.5 V	-	-	0.1	μA
I_{CC}	quiescent supply current	V_I = V_{CC} or GND; I_O = 0 A; V_{CC} = 5.5 V	-	-	1.0	μA
C_I	input capacitance		-	1.5	10	pF

Table 8: Static characteristics type 74AHC2G126 *…continued*

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
T_{amb} = –40 °C to +85 °C						
V_{IH}	HIGH-level input voltage	V_{CC} = 2.0 V	1.5	-	-	V
		V_{CC} = 3.0 V	2.1	-	-	V
		V_{CC} = 5.5 V	3.85	-	-	V
V_{IL}	LOW-level input voltage	V_{CC} = 2.0 V	-	-	0.5	V
		V_{CC} = 3.0 V	-	-	0.9	V
		V_{CC} = 5.5 V	-	-	1.65	V
V_{OH}	HIGH-level output voltage	V_I = V_{IH} or V_{IL}				
		I_O = –50 μA; V_{CC} = 2.0 V	1.9	-	-	V
		I_O = –50 μA; V_{CC} = 3.0 V	2.9	-	-	V
		I_O = –50 μA; V_{CC} = 4.5 V	4.4	-	-	V
		I_O = –4.0 mA; V_{CC} = 3.0 V	2.48	-	-	V
		I_O = –8.0 mA; V_{CC} = 4.5 V	3.8	-	-	V
V_{OL}	LOW-level output voltage	V_I = V_{IH} or V_{IL}				
		I_O = 50 μA; V_{CC} = 2.0 V	-	-	0.1	V
		I_O = 50 μA; V_{CC} = 3.0 V	-	-	0.1	V
		I_O = 50 μA; V_{CC} = 4.5 V	-	-	0.1	V
		I_O = 4.0 mA; V_{CC} = 3.0 V	-	-	0.44	V
		I_O = 8.0 mA; V_{CC} = 4.5 V	-	-	0.44	V
I_{OZ}	3-state OFF-state current	V_I = V_{CC} or GND; V_{CC} = 5.5 V	-	-	2.5	μA
I_{LI}	input leakage current	V_I = V_{CC} or GND; V_{CC} = 5.5 V	-	-	1.0	μA
I_{CC}	quiescent supply current	V_I = V_{CC} or GND; I_O = 0 A; V_{CC} = 5.5 V	-	-	10	μA
C_I	input capacitance		-	-	10	pF
T_{amb} = –40 °C to +125 °C						
V_{IH}	HIGH-level input voltage	V_{CC} = 2.0 V	1.5	-	-	V
		V_{CC} = 3.0 V	2.1	-	-	V
		V_{CC} = 5.5 V	3.85	-	-	V
V_{IL}	LOW-level input voltage	V_{CC} = 2.0 V	-	-	0.5	V
		V_{CC} = 3.0 V	-	-	0.9	V
		V_{CC} = 5.5 V	-	-	1.65	V
V_{OH}	HIGH-level output voltage	V_I = V_{IH} or V_{IL}				
		I_O = –50 μA; V_{CC} = 2.0 V	1.9	-	-	V
		I_O = –50 μA; V_{CC} = 3.0 V	2.9	-	-	V
		I_O = –50 μA; V_{CC} = 4.5 V	4.4	-	-	V
		I_O = –4.0 mA; V_{CC} = 3.0 V	2.40	-	-	V
		I_O = –8.0 mA; V_{CC} = 4.5 V	3.70	-	-	V

Table 8: Static characteristics type 74AHC2G126 *…continued*

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{OL}	LOW-level output voltage	$V_I = V_{IH}$ or V_{IL}				
		$I_O = 50\ \mu A$; $V_{CC} = 2.0\ V$	-	-	0.1	V
		$I_O = 50\ \mu A$; $V_{CC} = 3.0\ V$	-	-	0.1	V
		$I_O = 50\ \mu A$; $V_{CC} = 4.5\ V$	-	-	0.1	V
		$I_O = 4.0\ mA$; $V_{CC} = 3.0\ V$	-	-	0.55	V
		$I_O = 8.0\ mA$; $V_{CC} = 4.5\ V$	-	-	0.55	V
I_{OZ}	3-state OFF-state current	$V_I = V_{CC}$ or GND; $V_{CC} = 5.5\ V$	-	-	10	μA
I_{LI}	input leakage current	$V_I = V_{CC}$ or GND; $V_{CC} = 5.5\ V$	-	-	2.0	μA
I_{CC}	quiescent supply current	$V_I = V_{CC}$ or GND; $I_O = 0\ A$; $V_{CC} = 5.5\ V$	-	-	40	μA
C_I	input capacitance		-	-	10	pF

Table 9: Static characteristics type 74AHCT2G126

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$T_{amb} = 25\ °C$						
V_{IH}	HIGH-level input voltage	$V_{CC} = 4.5\ V$ to $5.5\ V$	2.0	-	-	V
V_{IL}	LOW-level input voltage	$V_{CC} = 4.5\ V$ to $5.5\ V$	-	-	0.8	V
V_{OH}	HIGH-level output voltage	$V_I = V_{IH}$ or V_{IL}				
		$I_O = -50\ \mu A$; $V_{CC} = 4.5\ V$	4.4	4.5	4.5	V
		$I_O = -8.0\ mA$; $V_{CC} = 4.5\ V$	3.94	-	-	V
V_{OL}	LOW-level output voltage	$V_I = V_{IH}$ or V_{IL}				
		$I_O = 50\ \mu A$; $V_{CC} = 4.5\ V$	-	0	0.1	V
		$I_O = 8.0\ mA$; $V_{CC} = 4.5\ V$	-	-	0.36	V
I_{OZ}	3-state OFF-state current	$V_I = V_{CC}$ or GND; $V_{CC} = 5.5\ V$	-	-	0.25	μA
I_{LI}	input leakage current	$V_I = V_{IH}$ or V_{IL}; $V_{CC} = 5.5\ V$	-	-	0.1	μA
I_{CC}	quiescent supply current	$V_I = V_{CC}$ or GND; $I_O = 0\ A$; $V_{CC} = 5.5\ V$	-	-	1.0	μA
ΔI_{CC}	additional quiescent supply current per input pin	$V_I = 3.4\ V$; other inputs at V_{CC} or GND; $I_O = 0\ A$; $V_{CC} = 5.5\ V$	-	-	1.35	mA
C_I	input capacitance		-	1.5	10	pF
$T_{amb} = -40\ °C$ to $+85\ °C$						
V_{IH}	HIGH-level input voltage	$V_{CC} = 4.5\ V$ to $5.5\ V$	2.0	-	-	V
V_{IL}	LOW-level input voltage	$V_{CC} = 4.5\ V$ to $5.5\ V$	-	-	0.8	V

Table 9: Static characteristics type 74AHCT2G126 *...continued*

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{OH}	HIGH-level output voltage	$V_I = V_{IH}$ or V_{IL}				
		$I_O = -50\ \mu A$; $V_{CC} = 4.5\ V$	4.4	-	-	V
		$I_O = -8.0\ mA$; $V_{CC} = 4.5\ V$	3.8	-	-	V
V_{OL}	LOW-level output voltage	$V_I = V_{IH}$ or V_{IL}				
		$I_O = 50\ \mu A$; $V_{CC} = 4.5\ V$	-	-	0.1	V
		$I_O = 8.0\ mA$; $V_{CC} = 4.5\ V$	-	-	0.44	V
I_{OZ}	3-state OFF-state current	$V_I = V_{CC}$ or GND; $V_{CC} = 5.5\ V$	-	-	2.5	µA
I_{LI}	input leakage current	$V_I = V_{IH}$ or V_{IL}; $V_{CC} = 5.5\ V$	-	-	1.0	µA
I_{CC}	quiescent supply current	$V_I = V_{CC}$ or GND; $I_O = 0\ A$; $V_{CC} = 5.5V$	-	-	10	µA
ΔI_{CC}	additional quiescent supply current per input pin	$V_I = 3.4\ V$; other inputs at V_{CC} or GND; $I_O = 0\ A$; $V_{CC} = 5.5\ V$	-	-	1.5	mA
C_I	input capacitance		-	-	10	pF
$T_{amb} = -40\ °C$ to $+125\ °C$						
V_{IH}	HIGH-level input voltage	$V_{CC} = 4.5\ V$ to $5.5\ V$	2.0	-	-	V
V_{IL}	LOW-level input voltage	$V_{CC} = 4.5\ V$ to $5.5\ V$	-	-	0.8	V
V_{OH}	HIGH-level output voltage	$V_I = V_{IH}$ or V_{IL}				
		$I_O = -50\ \mu A$; $V_{CC} = 4.5\ V$	4.4	-	-	V
		$I_O = -8.0\ mA$; $V_{CC} = 4.5\ V$	3.70	-	-	V
V_{OL}	LOW-level output voltage	$V_I = V_{IH}$ or V_{IL}				
		$I_O = 50\ \mu A$; $V_{CC} = 4.5\ V$	-	-	0.1	V
		$I_O = 8.0\ mA$; $V_{CC} = 4.5\ V$	-	-	0.55	V
I_{OZ}	3-state OFF-state current	$V_I = V_{CC}$ or GND; $V_{CC} = 5.5\ V$	-	-	10	µA
I_{LI}	input leakage current	$V_I = V_{IH}$ or V_{IL}; $V_{CC} = 5.5\ V$	-	-	2.0	µA
I_{CC}	quiescent supply current	$V_I = V_{CC}$ or GND; $I_O = 0\ A$; $V_{CC} = 5.5\ V$	-	-	40	µA
ΔI_{CC}	additional quiescent supply current per input pin	$V_I = 3.4\ V$; other inputs at V_{CC} or GND; $I_O = 0\ A$; $V_{CC} = 5.5\ V$	-	-	1.5	mA
C_I	input capacitance		-	-	10	pF

12. Dynamic characteristics

Table 10: Dynamic characteristics type 74AHC2G126

GND = 0 V; $t_r = t_f \leq 3.0$ ns; see Figure 8.

Symbol	Parameter	Test conditions		Min	Typ	Max	Unit
T_{amb} = 25 °C							
t_{PHL}, t_{PLH}	propagation delay nA to nY	see Figure 6					
		V_{CC} = 3.0 V to 3.6 V; C_L = 15 pF	[1]	-	4.7	8.0	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 15 pF	[2]	-	3.4	5.5	ns
		V_{CC} = 3.0 V to 3.6 V; C_L = 50 pF	[1]	-	6.6	11.5	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 50 pF	[2]	-	4.8	7.5	ns
t_{PZH}, t_{PZL}	propagation delay nOE to nY	see Figure 7					
		V_{CC} = 3.0 V to 3.6 V; C_L = 15 pF	[1]	-	5.0	8.0	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 15 pF	[2]	-	3.6	5.1	ns
		V_{CC} = 3.0 V to 3.6 V; C_L = 50 pF	[1]	-	6.9	11.5	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 50 pF	[2]	-	4.9	7.5	ns
t_{PHZ}, t_{PLZ}	propagation delay nOE to nY	see Figure 7; C_L = 15 pF					
		V_{CC} = 3.0 V to 3.6 V; C_L = 15 pF	[1]	-	6.0	9.7	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 15 pF	[2]	-	4.1	6.8	ns
		V_{CC} = 3.0 V to 3.6 V; C_L = 50 pF	[1]	-	8.3	13.2	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 50 pF	[2]	-	5.7	8.8	ns
C_{PD}	power dissipation capacitance	C_L = 50 pF; f_i = 1 MHz	[3] [4]	-	10	-	pF
T_{amb} = −40 °C to +85 °C							
t_{PHL}, t_{PLH}	propagation delay nA to nY	see Figure 6					
		V_{CC} = 3.0 V to 3.6 V; C_L = 15 pF		1.0	-	9.5	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 15 pF		1.0	-	6.5	ns
		V_{CC} = 3.0 V to 3.6 V; C_L = 50 pF		1.0	-	13.0	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 50 pF		1.0	-	8.5	ns
t_{PZH}, t_{PZL}	propagation delay nOE to nY	see Figure 7					
		V_{CC} = 3.0 V to 3.6 V; C_L = 15 pF		1.0	-	9.5	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 15 pF		1.0	-	6.0	ns
		V_{CC} = 3.0 V to 3.6 V; C_L = 50 pF		1.0	-	13.0	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 50 pF		1.0	-	9.0	ns
t_{PHZ}, t_{PLZ}	propagation delay nOE to nY	see Figure 7; C_L = 15 pF					
		V_{CC} = 3.0 V to 3.6 V; C_L = 15 pF		1.0	-	11.5	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 15 pF		1.0	-	8.0	ns
		V_{CC} = 3.0 V to 3.6 V; C_L = 50 pF		1.0	-	15.0	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 50 pF		1.0	-	10.0	ns

Table 10: Dynamic characteristics type 74AHC2G126 *...continued*

GND = 0 V; $t_r = t_f \leq 3.0$ ns; see Figure 8.

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
T_{amb} = −40 °C to +125 °C						
t_{PHL}, t_{PLH}	propagation delay nA to nY	see Figure 6				
		V_{CC} = 3.0 V to 3.6 V; C_L = 15 pF	1.0	-	11.5	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 15 pF	1.0	-	7.0	ns
		V_{CC} = 3.0 V to 3.6 V; C_L = 50 pF	1.0	-	14.5	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 50 pF	1.0	-	9.5	ns
t_{PZH}, t_{PZL}	propagation delay nOE to nY	see Figure 7				
		V_{CC} = 3.0 V to 3.6 V; C_L = 15 pF	1.0	-	11.5	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 15 pF	1.0	-	6.5	ns
		V_{CC} = 3.0 V to 3.6 V; C_L = 50 pF	1.0	-	14.5	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 50 pF	1.0	-	9.5	ns
t_{PHZ}, t_{PLZ}	propagation delay nOE to nY	see Figure 7; C_L = 15 pF				
		V_{CC} = 3.0 V to 3.6 V; C_L = 15 pF	1.0	-	12.5	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 15 pF	1.0	-	8.5	ns
		V_{CC} = 3.0 V to 3.6 V; C_L = 50 pF	1.0	-	16.5	ns
		V_{CC} = 4.5 V to 5.5 V; C_L = 50 pF	1.0	-	11.0	ns

[1] Typical values are measured at V_{CC} = 3.3 V.

[2] Typical values are measured at V_{CC} = 5.0 V.

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

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

$\Sigma(C_L \times V_{CC}^2 \times f_o)$ = sum of the outputs.

[4] The condition is V_I = GND to V_{CC}.

Table 11: Dynamic characteristics type 74AHCT2G126

GND = 0 V; $t_r = t_f \leq 3.0$ ns; V_{CC} = 4.5 V to 5.5 V; see Figure 8

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
T_{amb} = 25 °C [1]						
t_{PHL}, t_{PLH}	propagation delay nA to nY	see Figure 6				
		C_L = 15 pF	-	3.4	5.5	ns
		C_L = 50 pF	-	4.8	7.5	ns
t_{PZH}, t_{PZL}	propagation delay nOE to nY	see Figure 7				
		C_L = 15 pF	-	3.9	5.1	ns
		C_L = 50 pF	-	5.1	7.5	ns
t_{PHZ}, t_{PLZ}	propagation delay nOE to nY	see Figure 7				
		C_L = 15 pF	-	4.5	6.8	ns
		C_L = 50 pF	-	6.1	8.8	ns

Table 11: Dynamic characteristics type 74AHCT2G126 *...continued*
GND = 0 V; $t_r = t_f \leq 3.0$ ns; V_{CC} = 4.5 V to 5.5 V; see Figure 8

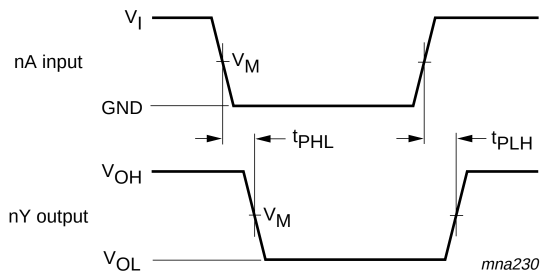
Symbol	Parameter	Test conditions		Min	Typ	Max	Unit
C_{PD}	power dissipation capacitance	C_L = 50 pF; f_i = 1 MHz	[2] [3]	-	10	-	pF
T_{amb} = −40 °C to +85 °C							
t_{PHL}, t_{PLH}	propagation delay nA to nY	see Figure 6					
		C_L = 15 pF		1.0	-	6.5	ns
		C_L = 50 pF		1.0	-	8.5	ns
t_{PZH}, t_{PZL}	propagation delay nOE to nY	see Figure 7					
		C_L = 15 pF		1.0	-	6.0	ns
		C_L = 50 pF		1.0	-	9.0	ns
t_{PHZ}, t_{PLZ}	propagation delay nOE to nY	see Figure 7					
		C_L = 15 pF		1.0	-	8.0	ns
		C_L = 50 pF		1.0	-	10.0	ns
T_{amb} = −40 °C to +125 °C							
t_{PHL}, t_{PLH}	propagation delay nA to nY	see Figure 6					
		C_L = 15 pF		1.0	-	7.0	ns
		C_L = 50 pF		1.0	-	9.5	ns
t_{PZH}, t_{PZL}	propagation delay nOE to nY	see Figure 7					
		C_L = 15 pF		1.0	-	6.5	ns
		C_L = 50 pF		1.0	-	9.5	ns
t_{PHZ}, t_{PLZ}	propagation delay nOE to nY	see Figure 7					
		C_L = 15 pF		1.0	-	8.5	ns
		C_L = 50 pF		1.0	-	11.0	ns

[1] Typical values are measured at V_{CC} = 5.0 V.

[2] C_{PD} is used to determine the dynamic power dissipation (P_D in μW).
$P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \Sigma(C_L \times V_{CC}^2 \times f_o)$ 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;
$\Sigma(C_L \times V_{CC}^2 \times f_o)$ = sum of the outputs.

[3] The condition is V_I = GND to V_{CC}.

13. Waveforms

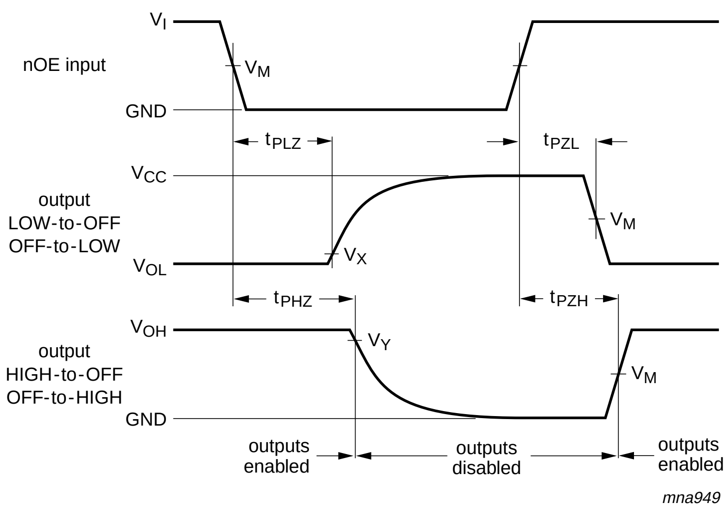


Measurement points are given in Table 12.

Fig 6. The input (nA) to output (nY) propagation delays.

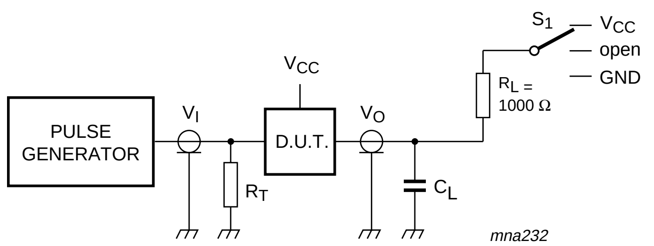
Table 12: Measurement points

Type	Input		Output		
	V_I	V_M	V_M	V_X	V_Y
74AHC2G126	GND to V_{CC}	50 % V_{CC}	50 % V_{CC}	V_{OL} + 0.3 V	V_{OL} – 0.3 V
74AHCT2G126	GND to 3.0 V	1.5 V	50 % V_{CC}	V_{OL} + 0.3 V	V_{OL} – 0.3 V



Measurement points are given in Table 12.

Fig 7. The 3-state enable and disable times.



Switch positions:

t_{PLH}, t_{PHL}: open

t_{PLZ}, t_{PZL}: V_{CC}

t_{PHZ}, t_{PZH}: GND

Definitions for test circuit:

C_L = Load capacitance including jig and probe capacitance (see Section 12 for the value).

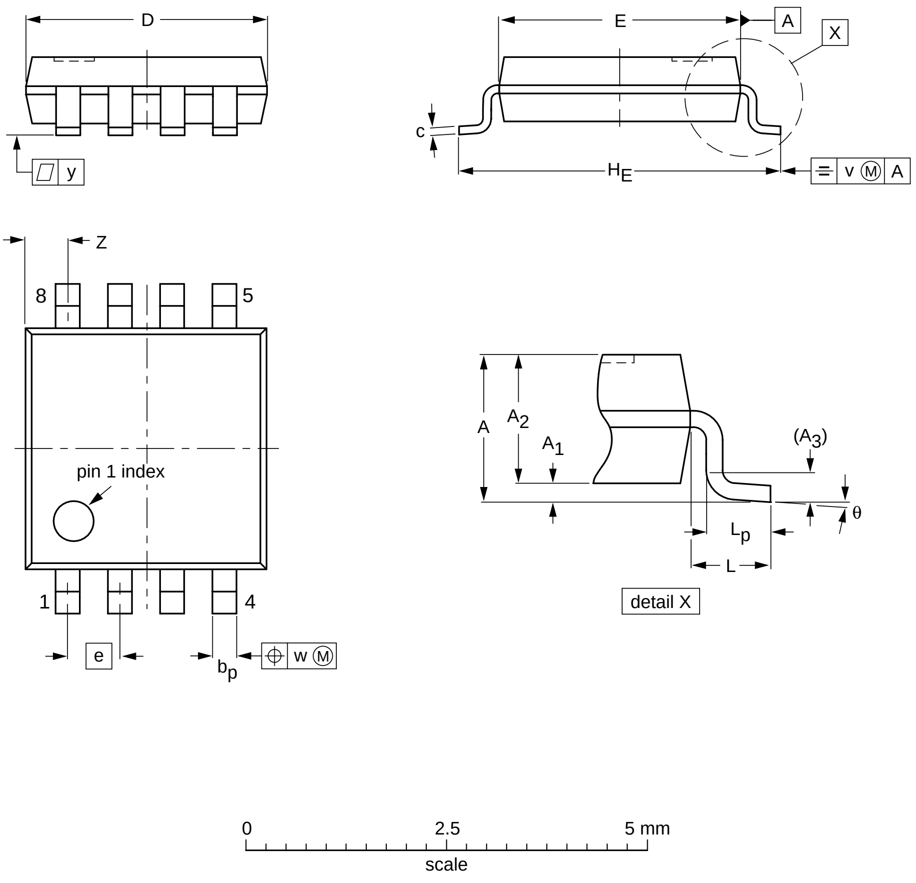
R_L = Load resistor.

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

Fig 8. Load circuitry for switching times.

14. Package outline

TSSOP8: plastic thin shrink small outline package; 8 leads; body width 3 mm; lead length 0.5 mm SOT505-2



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	v	w	y	$Z^{(1)}$	θ
mm	1.1	0.15 0.00	0.95 0.75	0.25	0.38 0.22	0.18 0.08	3.1 2.9	3.1 2.9	0.65	4.1 3.9	0.5	0.47 0.33	0.2	0.13	0.1	0.70 0.35	8° 0°

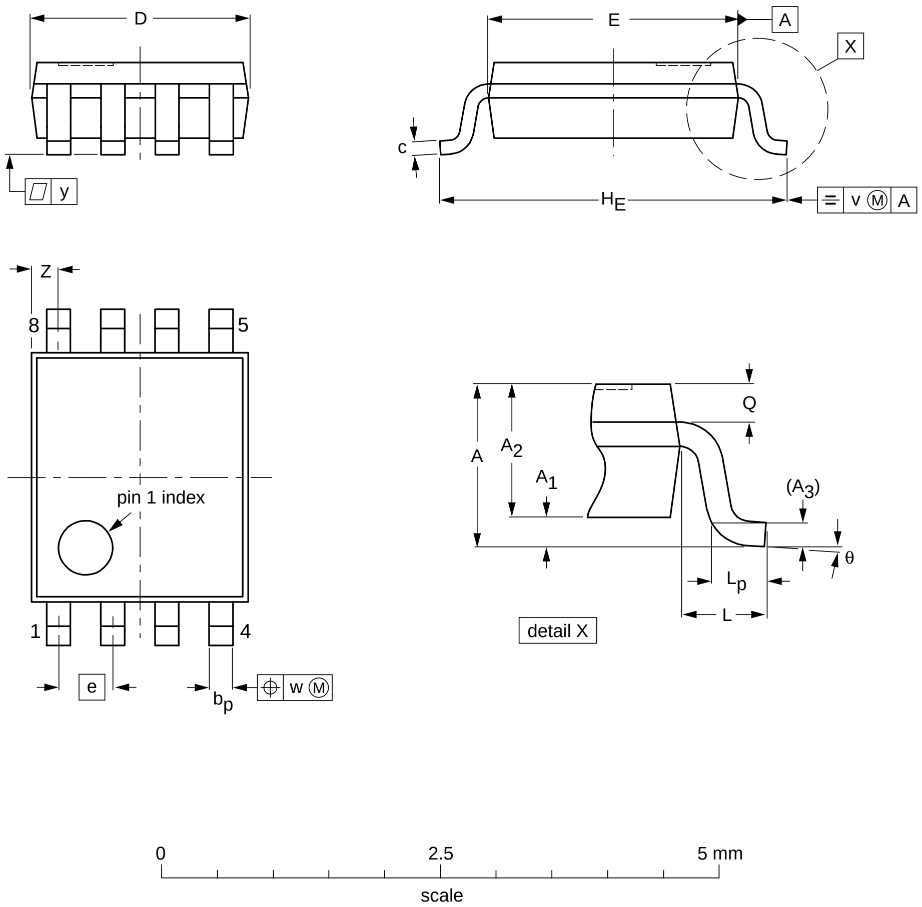
Note

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

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT505-2		- - -				02-01-16

Fig 9. Package outline SOT505-2 (TSSOP8).

VSSOP8: plastic very thin shrink small outline package; 8 leads; body width 2.3 mm **SOT765-1**



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(1)	θ
mm	1	0.15 0.00	0.85 0.60	0.12	0.27 0.17	0.23 0.08	2.1 1.9	2.4 2.2	0.5	3.2 3.0	0.4	0.40 0.15	0.21 0.19	0.2	0.13	0.1	0.4 0.1	8° 0°

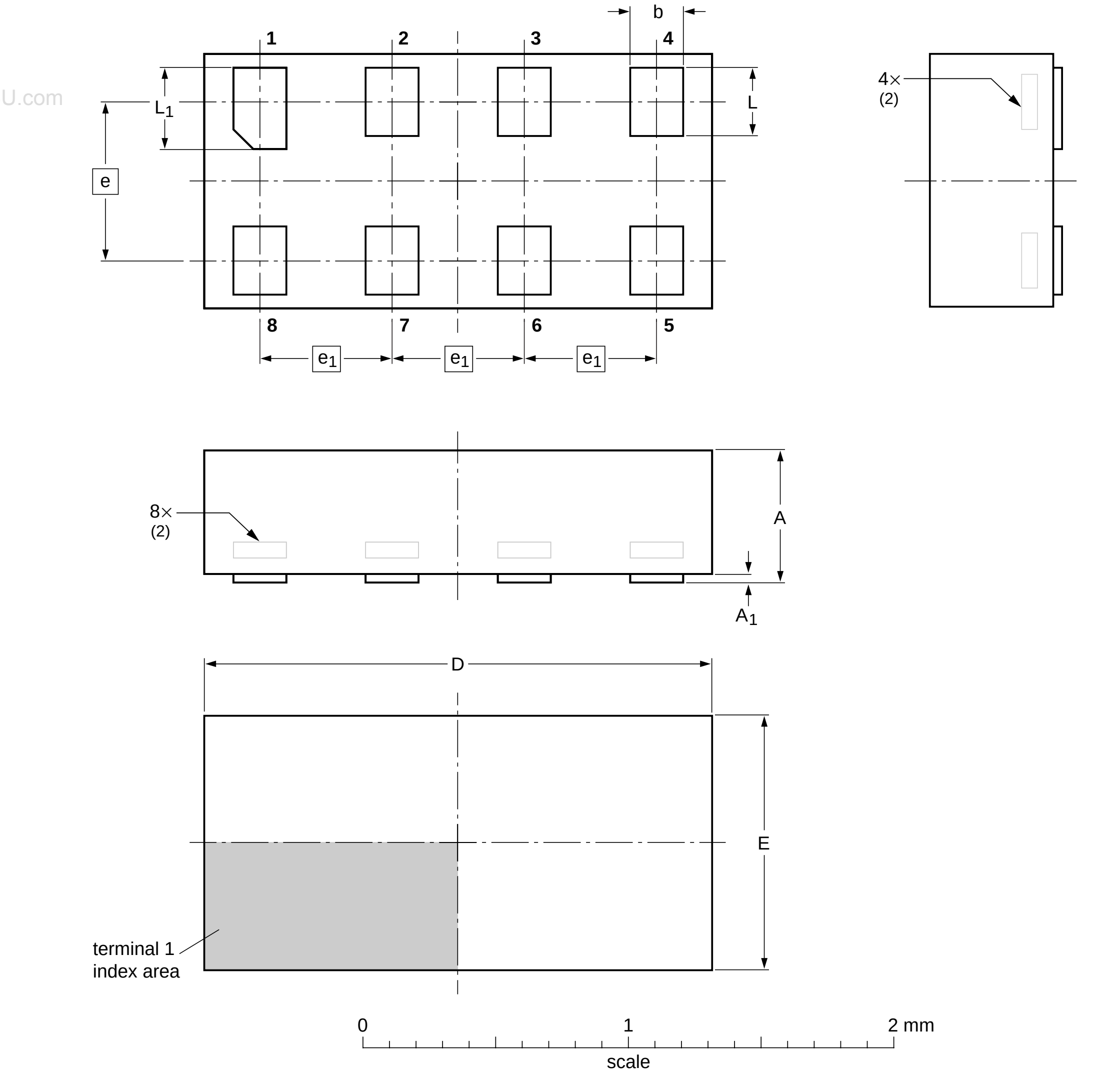
Notes

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

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT765-1		MO-187				02-06-07

Fig 10. Package outline SOT765-1 (VSSOP8).

XSON8: plastic extremely thin small outline package; no leads; 8 terminals; body 0.95 x 1.95 x 0.5 mm **SOT833-1**



DIMENSIONS (mm are the original dimensions)

UNIT	A (1) max	A_1 max	b	D	E	e	e_1	L	L_1
mm	0.5	0.04	0.25 0.17	2.0 1.9	1.0 0.9	0.6	0.5	0.35 0.27	0.40 0.32

Notes

1. Including plating thickness.
2. Can be visible in some manufacturing processes.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT833-1	- - -	MO-252	- - -			~~04-07-15~~ 04-07-22

Fig 11. Package outline SOT833-1 (XSON8).

15. Revision history

Table 13: Revision history

Document ID	Release date	Data sheet status	Change notice	Order number	Supersedes
74AHC_AHCT2G126_2	20040921	Product data sheet	-	9397 750 13736	74AHC_AHCT2G126_1
Modification:	• Addition of SOT833-1 and Ordering information.				
74AHC_AHCT2G126_1	20040304	Product data sheet	-	9397 750 12698	-

16. 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).

[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.

[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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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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20. Contents

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