SCLS2650 - DECEMBER 1995 - REVISED JULY 2003

- Inputs Are TTL-Voltage Compatible
- Latch-Up Performance Exceeds 250 mA Per JESD 17
- ESD Protection Exceeds JESD 22
 - 2000-V Human-Body Model (A114-A)
 - 200-V Machine Model (A115-A)

description/ordering information

The 'AHCT126 devices are quadruple bus buffer gates featuring independent line drivers with 3-state outputs. Each output is disabled when the associated output-enable (OE) input is low. When OE is high, the respective gate passes the data from the A input to its Y output.

To ensure the high-impedance state during power up or power down, OE should be tied to GND through a pulldown resistor; the minimum value of the resistor is determined by the current-sourcing capability of the driver. SN54AHCT126 ... J OR W PACKAGE SN74AHCT126 ... D, DB, DGV, N, NS, OR PW PACKAGE (TOP VIEW)

	(101	VIL VV	,
10E [1A [1Y [20E [2A [2Y [GND]		14 13 12 11 10 9 8	V _{CC} 4OE 4A 4Y 3OE 3A 3Y

SN54AHCT126 ... FK PACKAGE (TOP VIEW)

	1A	10E	V _{CC}	40E	
1Y NC 2OE NC 2A	4 ³	2 1	20 1	¹⁹ 18[4A
NC] 4 [°]] 5			17	NC
2OE	6			16	4Y
NC	7			15	NC
2A	8 [14	3OE
	9		י 11 1 זרייר	13	
	2	Q Z	3 ≿	3A	•
		<u>0</u> –			

NC - No internal connection

TA	PACKAGET		ORDERABLE PART NUMBER	TOP-SIDE MARKING
	PDIP – N	Tube	SN74AHCT126N	SN74AHCT126N
	SOIC - D	Tube	SN74AHCT126D	AHCT126
	3010 - 0	Tape and reel	SN74AHCT126DR	Anorizo
-40°C to 85°C	SOP – NS	Tape and reel	SN74AHCT126NSR	AHCT126
40 0 10 00 0	SSOP – DB	Tape and reel	SN74AHCT126DBR	HB126
	TSSOP – PW	Tube	SN74AHCT126PW	HB126
	1330F - FW	Tape and reel	SN74AHCT126PWR	110120
	TVSOP – DGV	Tape and reel	SN74AHCT126DGVR	HB126
	CDIP – J	Tube	SNJ54AHCT126J	SNJ54AHCT126J
–55°C to 125°C	CFP – W	Tube	SNJ54AHCT126W	SNJ54AHCT126W
	LCCC – FK	Tube	SNJ54AHCT126FK	SNJ54AHCT126FK

ORDERING INFORMATION

[†] Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.



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PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

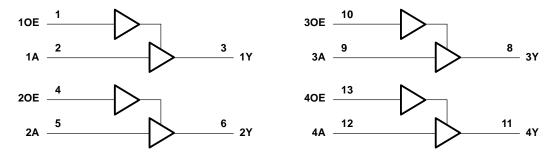


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FUNCTION TABLE (each buffer)								
INP	INPUTS OUTPUT							
OE	Α	Y						
Н	Н	Н						
н	L	L						
L	Х	Z						

logic diagram (positive logic)



Pin numbers shown are for the D, DB, DGV, J, N, NS, PW, and W packages.

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)[†]

Supply voltage range, V_{CC} Input voltage range, V_I (see Note 1) Output voltage range, V_O (see Note 1)		–0.5 V to 7 V
Input clamp current, I_{IK} ($V_I < 0$)		–20 mA
Output clamp current, I_{OK} (V _O < 0 or V _O > V _C	с)	±20 mA
Continuous output current, $I_O (V_O = 0 \text{ to } V_{CC})$	-	±25 mA
Continuous current through V _{CC} or GND		±50 mA
Package thermal impedance, θ_{JA} (see Note 2)): D package	86°C/W
	DB package	
	DGV package	127°C/W
	N package	80°C/W
	NS package	
	PW package	113°C/W
Storage temperature range, T _{stg}		–65°C to 150°C

[†] Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

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

2. The package thermal impedance is calculated in accordance with JESD 51-7.



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recommended operating conditions (see Note 3)

		SN54AHCT126		SN74AH	UNIT	
		MIN	MAX	MIN	MAX	UNIT
VCC	Supply voltage	4.5	5.5	4.5	5.5	V
VIH	High-level input voltage	2		2		V
VIL	Low-level input voltage		0.8		0.8	V
VI	Input voltage	0	5.5	0	5.5	V
Vo	Output voltage	0	VCC	0	VCC	V
ЮН	High-level output current		-8		-8	mA
I _{OL}	Low-level output current		8		8	mA
$\Delta t / \Delta v$	Input transition rise or fall rate		20		20	ns/V
Т _А	Operating free-air temperature	-55	125	-40	85	°C

NOTE 3: All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation. Refer to the TI application report, *Implications of Slow or Floating CMOS Inputs*, literature number SCBA004.

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS	Vaa	T _A = 25°C		SN54AH	CT126	SN74AHCT126		UNIT	
PARAMETER	TEST CONDITIONS	Vcc	MIN	TYP	MAX	MIN	MAX	MIN	MAX	UNIT
Vau	I _{OH} = -50 μA	4.5 V	4.4	4.5		4.4		4.4		V
VOH	I _{OH} = -8 mA	4.5 V	3.94			3.8		3.8		v
Vei	I _{OL} = 50 μA	4.5 V			0.1		0.1		0.1	V
VOL	I _{OL} = 8 mA	4.5 V			0.36		0.44		0.44	v
Ц	$V_{I} = 5.5 V \text{ or GND}$	0 V to 5.5 V			±0.1		±1*		±1	μΑ
loz	$V_{O} = V_{CC}$ or GND	5.5 V			±0.25		±2.5		±2.5	μΑ
Icc	$V_{I} = V_{CC} \text{ or } GND, \qquad I_{O} = 0$	5.5 V			2		20		20	μΑ
∆lcc†	One input at 3.4 V, Other inputs at V _{CC} or GND	5.5 V			1.35		1.5		1.5	mA
Ci	$V_I = V_{CC}$ or GND	5 V		4	10				10	pF
Co	$V_{O} = V_{CC}$ or GND	5 V		15						pF

* On products compliant to MIL-PRF-38535, this parameter is not production tested at V_{CC} = 0 V.

[†] This is the increase in supply current for each input at one of the specified TTL voltage levels, rather than 0 V or V_{CC}.



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switching characteristics over recommended operating free-air temperature range, V_{CC} = 5 V \pm 0.5 V (unless otherwise noted) (see Figure 1)

00				-											
DADAMETED	FROM	то	LOAD	Τį	T _A = 25°C		SN54AH	CT126	SN74AH	CT126	UNIT				
PARAMETER	(INPUT)	(OUTPUT)	CAPACITANCE	MIN	TYP	MAX	MIN	MAX	MIN	MAX	UNIT				
^t PLH	А	Y	C _L = 15 pF		3.8*	5.5*	1*	6.5*	1	6.5	ns				
^t PHL	A	I	CL = 13 pr		3.8*	5.5*	1*	6.5*	1	6.5	115				
^t PZH	OE	Y	C _L = 15 pF		3.6*	5.1*	1*	6*	1	6	ns				
^t PZL	ÛE	I	CL = 13 pr		3.6*	5.1*	1*	6*	1	6	115				
^t PHZ	OE	Y			4.6*	6.8*	1*	8*	1	8	ns				
^t PLZ	OL		'		·		C _L = 15 pF		4.6*	6.8*	1*	8*	1	8	115
^t PLH	А	Y	$C_{\rm L} = 50 \rm pE$		5.3	7.5	1	8.5	1	8.5	ns				
^t PHL	A	T	C _L = 50 pF		5.3	7.5	1	8.5	1	8.5	115				
^t PZH	05	Y	$C_{1} = 50 \text{ pF}$		5.1	7.1	1	8	1	8	20				
^t PZL	OE	T	C _L = 50 pF		5.1	7.1	1	8	1	8	ns				
^t PHZ	OE	Y	C _I = 50 pF		6.1	8.8	1	10	1	10	ns				
^t PLZ	UE	1	CL = 30 pr		6.1	8.8	1	10	1	10	115				
^t sk(o)			CL = 50 pF			1**				1	ns				

* On products compliant to MIL-PRF-38535, this parameter is not production tested.

** On products compliant to MIL-PRF-38535, this parameter does not apply.

noise characteristics, V_{CC} = 5 V, C_L = 50 pF, T_A = 25°C (see Note 4)

	DADAMETED	SN74AH	CT126	UNIT	
	PARAMETER				
VOL(P)	Quiet output, maximum dynamic V _{OL}		0.8	V	
VOL(V)	Quiet output, minimum dynamic V _{OL}		-0.8	V	
V _{OH(V)}	Quiet output, minimum dynamic V _{OH}	4.4		V	
VIH(D)	High-level dynamic input voltage	2		V	
V _{IL(D)}	Low-level dynamic input voltage		0.8	V	

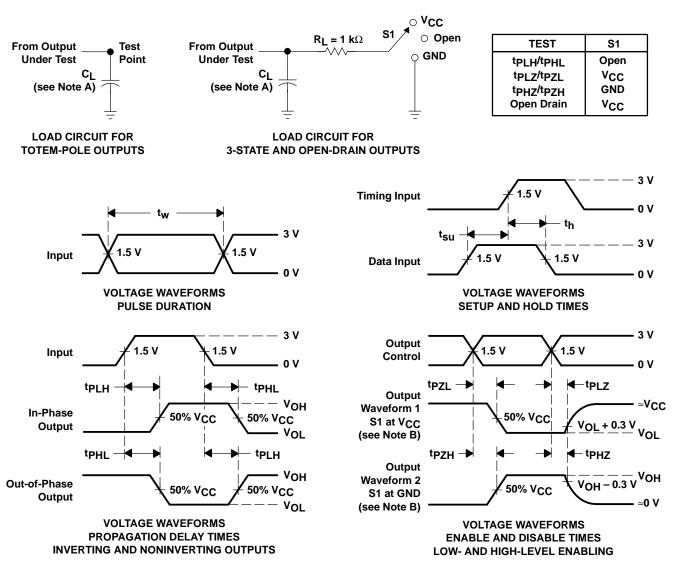
NOTE 4: Characteristics are for surface-mount packages only.

operating characteristics, $V_{CC} = 5 V$, $T_A = 25^{\circ}C$

	PARAMETER	TEST CO	ONDITIONS	TYP	UNIT
Cpd	Power dissipation capacitance	No load,	f = 1 MHz	14	pF



SCLS265O - DECEMBER 1995 - REVISED JULY 2003



PARAMETER MEASUREMENT INFORMATION

NOTES: A. C₁ includes probe and jig capacitance.

- B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
- C. All input pulses are supplied by generators having the following characteristics: PRR \leq 1 MHz, Z_O = 50 Ω , t_r \leq 3 ns, t_f \leq 3 ns.
- D. The outputs are measured one at a time with one input transition per measurement.
- E. All parameters and waveforms are not applicable to all devices.

Figure 1. Load Circuit and Voltage Waveforms



TEXAS RUMENTS www.ti.com

26-Sep-2005

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	e Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
5962-9686301Q2A	ACTIVE	LCCC	FK	20	1	TBD	Call TI	Level-NC-NC-NC
5962-9686301QCA	ACTIVE	CDIP	J	14	1	TBD	Call TI	Level-NC-NC-NC
5962-9686301QDA	ACTIVE	CFP	W	14	1	TBD	Call TI	Level-NC-NC-NC
SN74AHCT126D	ACTIVE	SOIC	D	14	50	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHCT126DBLE	OBSOLETE	SSOP	DB	14		TBD	Call TI	Call TI
SN74AHCT126DBR	ACTIVE	SSOP	DB	14	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHCT126DBRE4	ACTIVE	SSOP	DB	14	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHCT126DE4	ACTIVE	SOIC	D	14	50	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHCT126DGVR	ACTIVE	TVSOP	DGV	14	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHCT126DGVRE4	ACTIVE	TVSOP	DGV	14	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHCT126DR	ACTIVE	SOIC	D	14	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHCT126DRE4	ACTIVE	SOIC	D	14	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHCT126N	ACTIVE	PDIP	Ν	14	25	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
SN74AHCT126NSR	ACTIVE	SO	NS	14	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHCT126NSRE4	ACTIVE	SO	NS	14	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHCT126PW	ACTIVE	TSSOP	PW	14	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHCT126PWG4	ACTIVE	TSSOP	PW	14	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHCT126PWLE	OBSOLETE	TSSOP	PW	14		TBD	Call TI	Call TI
SN74AHCT126PWR	ACTIVE	TSSOP	PW	14	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHCT126PWRG4	ACTIVE	TSSOP	PW	14	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SNJ54AHCT126FK	ACTIVE	LCCC	FK	20	1	TBD	Call TI	Level-NC-NC-NC
SNJ54AHCT126J	ACTIVE	CDIP	J	14	1	TBD	Call TI	Level-NC-NC-NC
SNJ54AHCT126W	ACTIVE	CFP	W	14	1	TBD	Call TI	Level-NC-NC-NC

⁽¹⁾ The marketing status values are defined as follows: ACTIVE: Product device recommended for new designs.

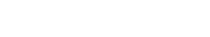
LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS) or Green (RoHS & no Sb/Br) - please check http://www.ti.com/product content for the latest availability information and additional product content details. TBD: The Pb-Free/Green conversion plan has not been defined.



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⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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J (R-GDIP-T**) 14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



NOTES: A. All linear dimensions are in inches (millimeters).

- B. This drawing is subject to change without notice.
- C. This package is hermetically sealed with a ceramic lid using glass frit.
- D. Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
- E. Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

W (R-GDFP-F14)

CERAMIC DUAL FLATPACK



- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. This package can be hermetically sealed with a ceramic lid using glass frit.
 - D. Index point is provided on cap for terminal identification only.
 - E. Falls within MIL STD 1835 GDFP1-F14 and JEDEC MO-092AB



MLCC006B - OCTOBER 1996

FK (S-CQCC-N**)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



NOTES: A. All linear dimensions are in inches (millimeters).

- B. This drawing is subject to change without notice.
- C. This package can be hermetically sealed with a metal lid.
- D. The terminals are gold plated.
- E. Falls within JEDEC MS-004



N (R-PDIP-T**)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



NOTES:

- A. All linear dimensions are in inches (millimeters).B. This drawing is subject to change without notice.
- Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
- \triangle The 20 pin end lead shoulder width is a vendor option, either half or full width.



PLASTIC SMALL-OUTLINE

MPDS006C - FEBRUARY 1996 - REVISED AUGUST 2000

DGV (R-PDSO-G**)

24 PINS SHOWN



NOTES: A. All linear dimensions are in millimeters.

B. This drawing is subject to change without notice.

- C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15 per side.
- D. Falls within JEDEC: 24/48 Pins MO-153

14/16/20/56 Pins – MO-194



D (R-PDSO-G14)

PLASTIC SMALL-OUTLINE PACKAGE



NOTES: A. All linear dimensions are in inches (millimeters).

B. This drawing is subject to change without notice.

C. Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).

D. Falls within JEDEC MS-012 variation AB.



PLASTIC SMALL-OUTLINE PACKAGE

0,51 0,35 ⊕0,25⊛ 1,27 8 14 0,15 NOM 5,60 8,20 5,00 7,40 \bigcirc Gage Plane ₽ 0,25 7 1 1,05 0,55 0°-10° Δ 0,15 0,05 Seating Plane — 2,00 MAX 0,10PINS ** 14 16 20 24 DIM 10,50 10,50 12,90 15,30 A MAX A MIN 9,90 9,90 12,30 14,70 4040062/C 03/03

NOTES: A. All linear dimensions are in millimeters.

NS (R-PDSO-G**)

14-PINS SHOWN

- B. This drawing is subject to change without notice.
- C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15.



MSSO002E - JANUARY 1995 - REVISED DECEMBER 2001

DB (R-PDSO-G**)

PLASTIC SMALL-OUTLINE

28 PINS SHOWN



NOTES: A. All linear dimensions are in millimeters.

- B. This drawing is subject to change without notice.
- C. Body dimensions do not include mold flash or protrusion not to exceed 0,15.
- D. Falls within JEDEC MO-150



MTSS001C - JANUARY 1995 - REVISED FEBRUARY 1999

PW (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

14 PINS SHOWN



NOTES: A. All linear dimensions are in millimeters.

- B. This drawing is subject to change without notice.
- C. Body dimensions do not include mold flash or protrusion not to exceed 0,15.
- D. Falls within JEDEC MO-153



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Texas Instruments

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