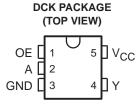
SCES527A - DECEMBER 2003 - REVISED MAY 2004

- Controlled Baseline
 - One Assembly/Test Site, One Fabrication Site
- Enhanced Diminishing Manufacturing Sources (DMS) Support
- Enhanced Product-Change Notification
- Qualification Pedigree[†]
- Supports 5-V V_{CC} Operation
- Inputs Accept Voltages to 5.5 V
- Max t_{pd} of 3.7 ns at 3.3 V
- † Component qualification in accordance with JEDEC and industry standards to ensure reliable operation over an extended temperature range. This includes, but is not limited to, Highly Accelerated Stress Test (HAST) or biased 85/85, temperature cycle, autoclave or unbiased HAST, electromigration, bond intermetallic life, and mold compound life. Such qualification testing should not be viewed as justifying use of this component beyond specified performance and environmental limits.

- Low Power Consumption, 10-μA Max I_{CC}
- ±24-mA Output Drive at 3.3 V
- I_{off} Supports Partial-Power-Down Mode Operation
- Latch-Up Performance Exceeds 100 mA Per JESD 78, Class II
- ESD Protection Exceeds JESD 22
 - 2000-V Human-Body Model (A114-A)
 - 200-V Machine Model (A115-A)
 - 1000-V Charged-Device Model (C101)



description/ordering information

This single bus buffer gate is designed for 1.65-V to 5.5-V V_{CC} operation.

The SN74LVC1G126 is a single line driver with a 3-state output. The output is disabled when the output-enable (OE) input is low.

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.

This device is fully specified for partial-power-down applications using I_{off}. The I_{off} circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.

ORDERING INFORMATION

TA	PACKAGE‡		ORDERABLE PART NUMBER	TOP-SIDE MARKING§
-40°C to 85°C	SOT (SC-70) – DCK Reel of 3000		CLVC1G126IDCKREP	CN_

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

FUNCTION TABLE

INPU	JTS	OUTPUT
OE	Α	Υ
Н	Н	Н
Н	L	L
L	Χ	Z



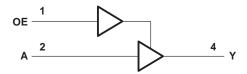
Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.



[§] DCK: The actual top-side marking has one additional character that designates the assembly/test site.

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logic diagram (positive logic)



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

Supply voltage range, V _{CC}	0.5 V to 6.5 V
Input voltage range, V _I (see Note 1)	–0.5 V to 6.5 V
Voltage range applied to any output in the high-impedance or power-off state, VO	
(see Note 1)	–0.5 V to 6.5 V
Voltage range applied to any output in the high or low state, VO	
(see Notes 1 and 2)0	$.5 \text{ V to V}_{CC} + 0.5 \text{ V}$
Input clamp current, I_{IK} ($V_I < 0$)	–50 mA
Output clamp current, I _{OK} (V _O < 0)	–50 mA
Continuous output current, IO	±50 mA
Continuous current through V _{CC} or GND	±100 mA
Package thermal impedance, θ _{JA} (see Note 3)	252°C/W
Storage temperature range, T _{stq}	–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 negative-voltage ratings may be exceeded if the input and output current ratings are observed.
 - 2. The value of V_{CC} is provided in the recommended operating conditions table.
 - 3. The package thermal impedance is calculated in accordance with JESD 51-7.



recommended operating conditions (see Note 4)

			MIN	MAX	UNIT
.,	Cumply valle as	Operating	1.65	5.5	V
VCC	Supply voltage	Data retention only	1.5		V
		V _{CC} = 1.65 V to 1.95 V	0.65 × V _{CC}		
.,	LPak Israel Sanatorakana	V _{CC} = 2.3 V to 2.7 V	1.7		
V_{IH}	High-level input voltage	V _{CC} = 3 V to 3.6 V	2		V
		$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$	$0.7 \times V_{CC}$		
		V _{CC} = 1.65 V to 1.95 V		0.35 × V _{CC}	
.,	Lavy lavyal import orality as	$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$		0.7	V
V_{IL}	Low-level input voltage	V _{CC} = 3 V to 3.6 V		0.8	V
		V _{CC} = 4.5 V to 5.5 V		$0.3 \times V_{CC}$	
VI	Input voltage		0	5.5	V
٧o	Output voltage		0	Vcc	V
		V _{CC} = 1.65 V		-4	
		V _{CC} = 2.3 V		-8	
loh	High-level output current			-16	mA
	Output voltage	VCC = 3 V		-24	
		V _{CC} = 4.5 V		-32	
		V _{CC} = 1.65 V		4	
		V _{CC} = 2.3 V		8	
loL	Low-level output current	V 2V		16	mA
		V _{CC} = 3 V		24	
		V _{CC} = 4.5 V		32	
		$V_{CC} = 1.8 \text{ V} \pm 0.15 \text{ V}, 2.5 \text{ V} \pm 0.2 \text{ V}$		20	
Δt/Δν	Input transition rise or fall rate	$V_{CC} = 3.3 V \pm 0.3 V$		10	ns/V
		V _{CC} = 5 V ± 0.5 V		5	
T _A	Operating free-air temperature		-40	85	°C

NOTE 4: 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	VCC	MIN	TYPT MAX	UNIT
	$I_{OH} = -100 \mu A$	1.65 V to 5.5 V	V _{CC} -0.1		
	$I_{OH} = -4 \text{ mA}$	1.65 V	1.2		
	$I_{OH} = -8 \text{ mA}$	2.3 V	1.9		
VOH	$I_{OH} = -16 \text{ mA}$		2.4		V
	$I_{OH} = -24 \text{ mA}$	3 V	2.3		
	$I_{OH} = -32 \text{ mA}$	4.5 V	3.8		
	$I_{OL} = 100 \mu A$	1.65 V to 5.5 V		0.1	
	I _{OL} = 4 mA	1.65 V		0.45]
	I _{OL} = 8 mA	2.3 V		0.3]
VOL	$I_{OL} = 16 \text{ mA}$			0.4	V
	$I_{OL} = 24 \text{ mA}$	3 V		0.55	
	$I_{OL} = 32 \text{ mA}$	4.5 V		0.55	
I _I A or OE inputs	$V_I = 5.5 \text{ V or GND}$	0 to 5.5 V		±5	μΑ
l _{off}	V_I or $V_O = 5.5 V$	0		±10	μΑ
loz	$V_0 = 0 \text{ to } 5.5 \text{ V}$	3.6 V		10	μΑ
Icc	$V_I = 5.5 \text{ V or GND}, \qquad I_O = 0$	1.65 V to 5.5 V		10	μΑ
ΔlCC	One input at V _{CC} – 0.6 V, Other inputs at V _{CC} or GND	3 V to 5.5 V		500	μΑ
Ci	$V_I = V_{CC}$ or GND	3.3 V		4	pF

[†] All typical values are at $V_{CC} = 3.3 \text{ V}$, $T_A = 25^{\circ}\text{C}$.

switching characteristics over recommended operating free-air temperature range, C_L = 15 pF (unless otherwise noted) (see Figure 1)

PARAMETER FROM TO (OUTPUT)	то	V _{CC} =		V _{CC} =		V _{CC} =		V _{CC} :		UNIT	
	(INPUT)	(001701)	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
t _{pd}	A	Y	1.7	6.9	0.6	4.6	0.6	3.7	0.5	3.4	ns

switching characteristics over recommended operating free-air temperature range, $C_L = 30$ pF or 50 pF (unless otherwise noted) (see Figure 2)

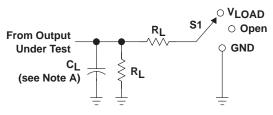
PARAMETER FROM (INPUT)		TO (OUTPUT)	V _{CC} = 1.8 V ± 0.15 V		V _{CC} = 2.5 V ± 0.2 V		V _{CC} = 3.3 V ± 0.3 V		V _{CC} = 5 V ± 0.5 V		UNIT
(INPUT)	(INPOT)	(OUTPUT)	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
tpd	А	Υ	2.6	8	1.1	5.5	1	4.5	1	4	ns
t _{en}	OE	Υ	2.8	9.4	1.3	6.6	1.2	5.3	1	5	ns
t _{dis}	OE	Υ	1.6	9.8	1	5.5	1	5.5	1	4.2	ns

operating characteristics, T_A = 25°C

	PARAMETER		TEST	V _{CC} = 1.8 V	$V_{CC} = 2.5 V$	$V_{CC} = 3.3 \text{ V}$	$V_{CC} = 5 V$	
			CONDITIONS	TYP	TYP	TYP	TYP	UNIT
C .	Power dissipation	Outputs enabled	(40 141 1-	19	19	19	21	
C _{pd}	capacitance	Outputs disabled	f = 10 MHz	2	2	3	4	pF



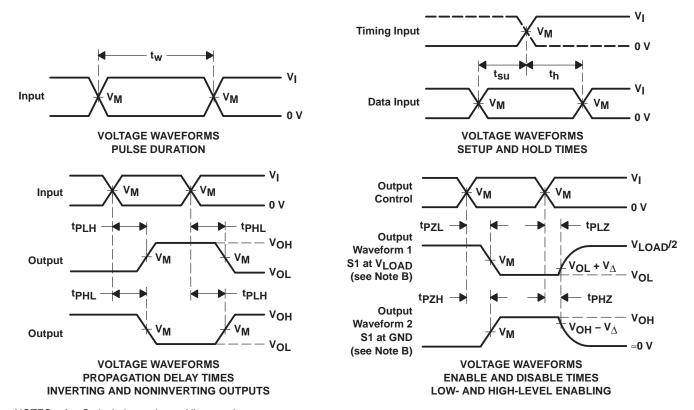
PARAMETER MEASUREMENT INFORMATION



TEST	S1
tPLH/tPHL	Open
tPLZ/tPZL	VLOAD
^t PHZ ^{/t} PZH	GND

LOAD CIRCUIT

W	INF	PUTS		V	0.	6	, ,
VCC	٧ _I	t _r /t _f	VM	VLOAD	CL	R_L	$oldsymbol{V}_\Delta$
1.8 V \pm 0.15 V	VCC	≤ 2 ns	V _{CC} /2	2×V _{CC}	15 pF	1 M Ω	0.15 V
2.5 V \pm 0.2 V	VCC	≤2 ns	V _{CC} /2	2×VCC	15 pF	1 M Ω	0.15 V
3.3 V \pm 0.3 V	3 V	≤2.5 ns	1.5 V	6 V	15 pF	1 M Ω	0.3 V
5 V \pm 0.5 V	VCC	≤2.5 ns	V _{CC} /2	2×V _{CC}	15 pF	1 M Ω	0.3 V



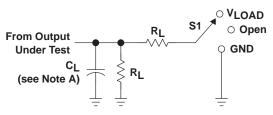
NOTES: A. C_L includes probe and jig capacitance.

- 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 10 MHz, $Z_{O} = 50 \Omega$.
- D. The outputs are measured one at a time, with one transition per measurement.
- E. tpLZ and tpHZ are the same as tdis.
- F. tpzL and tpzH are the same as ten.
- G. tpLH and tpHL are the same as tpd.
- H. All parameters and waveforms are not applicable to all devices.

Figure 1. Load Circuit and Voltage Waveforms



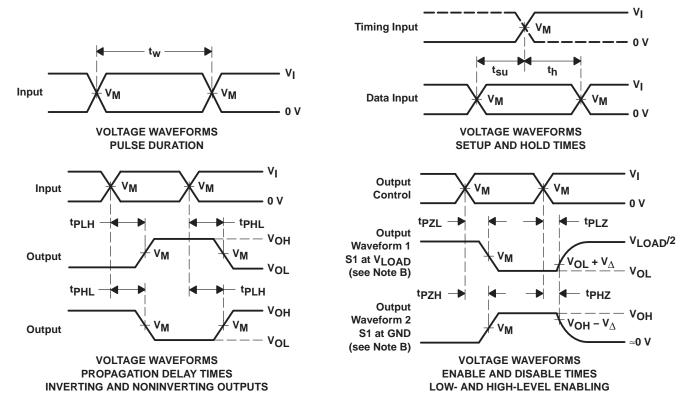
PARAMETER MEASUREMENT INFORMATION



TEST	S1
tPLH/tPHL	Open
tPLZ/tPZL	VLOAD
tPHZ/tPZH	GND

LOAD CIRCUIT

W	INF	PUTS	Van VI CAD		0.	D.	V
VCC	٧ _I	t _r /t _f	VM	VLOAD	CL	RL	$v_{\scriptscriptstyle\Delta}$
1.8 V \pm 0.15 V	VCC	≤2 ns	V _{CC} /2	2×V _{CC}	30 pF	1 k Ω	0.15 V
2.5 V \pm 0.2 V	VCC	≤ 2 ns	V _{CC} /2	2×VCC	30 pF	500 Ω	0.15 V
3.3 V \pm 0.3 V	3 V	≤2.5 ns	1.5 V	6 V	50 pF	500 Ω	0.3 V
5 V \pm 0.5 V	VCC	≤2.5 ns	V _{CC} /2	2×V _{CC}	50 pF	500 Ω	0.3 V



- NOTES: A. C_I 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 10 MHz, $Z_{\Omega} = 50 \Omega$.
 - D. The outputs are measured one at a time, with one transition per measurement.
 - E. tpLZ and tpHZ are the same as tdis.
 - F. tpzL and tpzH are the same as ten.
 - G. tpLH and tpHL are the same as tpd.
 - H. All parameters and waveforms are not applicable to all devices.

Figure 2. Load Circuit and Voltage Waveforms





PACKAGE OPTION ADDENDUM

31-May-2014

PACKAGING INFORMATION

Orderable Device	Status	Package Type	_	Pins	_	Eco Plan	Lead/Ball Finish	MSL Peak Temp	Op Temp (°C)	Device Marking	Samples
	(1)		Drawing		Qty	(2)	(6)	(3)		(4/5)	
CLVC1G126IDCKREP	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	CNO	Samples
V62/04736-01XE	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	CNO	Samples

(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), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

- (3) MSL, Peak Temp. The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.
- (4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.
- (5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.
- (6) Lead/Ball Finish Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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PACKAGE OPTION ADDENDUM

31-May-2014

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

OTHER QUALIFIED VERSIONS OF SN74LVC1G126-EP:

Catalog: SN74LVC1G126

Automotive: SN74LVC1G126-Q1

NOTE: Qualified Version Definitions:

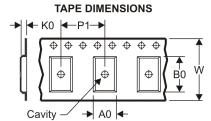
- Catalog TI's standard catalog product
- Automotive Q100 devices qualified for high-reliability automotive applications targeting zero defects

PACKAGE MATERIALS INFORMATION

www.ti.com 20-Jul-2010

TAPE AND REEL INFORMATION





	Dimension designed to accommodate the component width
	Dimension designed to accommodate the component length
	Dimension designed to accommodate the component thickness
	Overall width of the carrier tape
P1	Pitch between successive cavity centers

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*All dimensions are nominal

Device	Package Type	Package Drawing			Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
CLVC1G126IDCKREP	SC70	DCK	5	3000	179.0	8.4	2.2	2.5	1.2	4.0	8.0	Q3

PACKAGE MATERIALS INFORMATION

www.ti.com 20-Jul-2010



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)	
CLVC1G126IDCKREP	SC70	DCK	5	3000	203.0	203.0	35.0	

DCK (R-PDSO-G5)

PLASTIC SMALL-OUTLINE PACKAGE



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. Mold flash and protrusion shall not exceed 0.15 per side.
- D. Falls within JEDEC MO-203 variation AA.



DCK (R-PDSO-G5)

PLASTIC SMALL OUTLINE



NOTES:

- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Customers should place a note on the circuit board fabrication drawing not to alter the center solder mask defined pad.
- D. Publication IPC-7351 is recommended for alternate designs.
- E. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Example stencil design based on a 50% volumetric metal load solder paste. Refer to IPC-7525 for other stencil recommendations.



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