Operating Range of 2 V to 5.5 V Low Power Consumption, 10-µA Max ICC Max tpd of 6 ns at 5 V ±8-mA Output Drive at 5 V **DBV PACKAGE** DCK PACKAGE **DRL PACKAGE** (TOP VIEW) (TOP VIEW) (TOP VIEW) □ v_{cc} OE 🗌 □ v_{cc} 1 5 OE [1 5 OE 5 Vcc Α 🗌 2 2 A GND [3 2 GND [3 3 GND 4

See mechanical drawings for dimensions.

description/ordering information

The SN74AHC1G125 is a single bus buffer gate/line driver with 3-state output. The output is disabled when the output-enable (\overline{OE}) input is high. When \overline{OE} is low, true data is passed from the A input to the Y output.

To ensure the high-impedance state during power up or power down, \overline{OE} should be tied to V_{CC} through a pullup resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver.

Τ _Α	PACKAGE	<u>e</u> t	ORDERABLE PART NUMBER	TOP-SIDE MARKING [‡]						
		Reel of 3000	SN74AHC1G125DBVR	4.05						
	SOT (SOT-23) – DBV	Reel of 250	SN74AHC1G125DBVT	A25_						
-40°C to 85°C	00T (00 TO) - DOI(Reel of 3000	SN74AHC1G125DCKR							
	SOT (SC-70) – DCK	Reel of 250	SN74AHC1G125DCKT	AM_						
	SOT (SOT-553) – DRL	Reel of 4000	SN74AHC1G125DRLR	AM_						

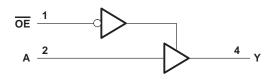
ORDERING INFORMATION

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

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

FUNCTION TABLE							
INP	UTS	OUTPUT					
OE	Α	Y					
L	Н	Н					
L	L	L					
Н	Х	Z					

logic diagram (positive logic)





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SCLS377J – AUGUST 1997 – REVISED JUNE 2005

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) Input clamp current, I_{IK} ($V_I < 0$) Output clamp current, I_{OK} ($V_O < 0$ or $V_O > V_{CC}$) Continuous output current, I_O ($V_O = 0$ to V_{CC}) Continuous current through V_{CC} or GND Package thermal impedance, θ_{JA} (see Note 2): DBV package DCK package	$\begin{array}{c} -0.5 \mbox{ V to 7 V} \\ -0.5 \mbox{ V to 7 V} \\ -20 \mbox{ mA} \\ \pm 20 \mbox{ mA} \\ \pm 25 \mbox{ mA} \\ \pm 50 \mbox{ mA} \end{array}$
DCK package DRL package	
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.

recommended operating conditions (see Note 3)

			MIN	MAX	UNIT	
VCC	Supply voltage		2	5.5	V	
		$V_{CC} = 2 V$	1.5			
ViH	High-level input voltage	$V_{CC} = 3 V$	2.1		V	
		V _{CC} = 5.5 V	3.85			
		$V_{CC} = 2 V$		0.5		
VIL	Low-level input voltage $V_{CC} = 3 V$	$V_{CC} = 3 V$		0.9	V	
		$V_{CC} = 5.5 V$		1.65		
VI	Input voltage		0	5.5	V	
VO	Output voltage		0	VCC	V	
		$V_{CC} = 2 V$		-50	μΑ	
ЮН	High-level output current	V_{CC} = 3.3 V ± 0.3 V		-4		
		V_{CC} = 5 V ± 0.5 V		-8	mA	
		$V_{CC} = 2 V$		50	μΑ	
IOL	Low-level output current	$V_{CC} = 3.3 \text{ V} \pm 0.3 \text{ V}$		4		
		V_{CC} = 5 V ± 0.5 V		8	mA	
	land the stilles also as fell as to	V_{CC} = 3.3 V ± 0.3 V		100		
Δt/Δv	Input transition rise or fall rate	V_{CC} = 5 V ± 0.5 V		20	ns/V	
ТА	Operating free-air temperature		-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.



SN74AHC1G125 SINGLE BUS BUFFER GATE WITH 3-STATE OUTPUT SCLS377J – AUGUST 1997 – REVISED JUNE 2005

			T,	₄ = 25°C	;			
PARAMETER	TEST CONDITIONS	Vcc	MIN	TYP	MAX	MIN	MAX	UNIT
		2 V	1.9	2		1.9		
	I _{OH} = -50 μA	3 V	2.9	3		2.9		
VOH		4.5 V	4.4	4.5		4.4		V
	$I_{OH} = -4 \text{ mA}$	3 V	2.58			2.48		
	I _{OH} = -8 mA	4.5 V	3.94			3.8		
		2 V			0.1		0.1	
	I _{OL} = 50 μA	3 V			0.1		0.1	
VOL		4.5 V			0.1		0.1	V
	$I_{OL} = 4 \text{ mA}$	3 V			0.36		0.44	
	$I_{OL} = 8 \text{ mA}$	4.5 V			0.36		0.44	
lj	$V_{I} = 5.5 V \text{ or GND}$	0 V to 5.5 V			±0.1		±1	μA
I _{OZ}	$V_I = V_{CC}$ or GND	5.5 V			±0.25		±2.5	μA
ICC	$V_{I} = V_{CC} \text{ or } GND, \qquad I_{O} = 0$	5.5 V			1		10	μA
Ci	$V_{I} = V_{CC}$ or GND	5 V		4	10		10	pF
Co	$V_{O} = V_{CC}$ or GND	5 V		10				pF

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

switching characteristics over recommended operating free-air temperature range, V_{CC} = 3.3 V \pm 0.3 V (unless otherwise noted) (see Figure 1)

DADAMETED	FROM	TO LOAD (OUTPUT) CAPACITANCE		Τ ₄	∖ = 25°C	;	MAINI		
PARAMETER	(INPUT)			MIN	TYP	MAX	MIN	MAX	UNIT
^t PLH	•	Y	0 45 -5		5.6	8	1	9.5	
^t PHL	A	ř	C _L = 15 pF		5.6	8	1	9.5	ns
^t PZH	OE	Y	0. 45 - 5		5.4	8	1	9.5	
^t PZL	OE	Y	CL = 15 pF		5.4	8	1	9.5	ns
^t PHZ	OE	Y	Cl = 15 pF		7	9.7	1	11.5	ns
^t PLZ	OE	I	0 <u>[</u> = 10 pi		7	9.7	1	11.5	115
^t PLH	•	Y	0. 50 = 5		8.1	11.5	1	13	
^t PHL	A	Y	C _L = 50 pF		8.1	11.5	1	13	ns
^t PZH	OE	Y	0 50 5		7.9	11.5	1	13	
t _{PZL}	OE	Y	C _L = 50 pF		7.9	11.5	1	13	ns
^t PHZ	OE	Y	$C_{1} = 50 \text{ pF}$		9.5	13.2	1	15	ns
t _{PLZ}	UE	ſ	C _L = 50 pF		9.5	13.2	1	15	115



SN74AHC1G125 SINGLE BUS BUFFER GATE WITH 3-STATE OUTPUT SCLS377J – AUGUST 1997 – REVISED JUNE 2005

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

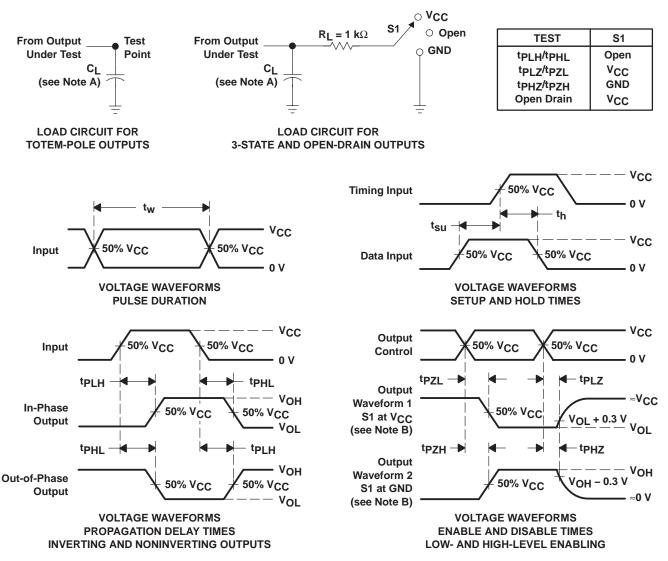
00	-								
DADAMETED	FROM	то	LOAD	Τį	ς = 25°C	;			
PARAMETER	(INPUT)	(OUTPUT)	CAPACITANCE	MIN	TYP	MAX	MIN	MAX	UNIT
^t PLH	•	Y	0. 45 -5		3.8	5.5	1	6.5	
^t PHL	A	Ŷ	C _L = 15 pF		3.8	5.5	1	6.5	ns
^t PZH	OE	Y	0 45 - 5		3.6	5.1	1	6	
^t PZL	OE	Ŷ	C _L = 15 pF		3.6	5.1	1	6	ns
^t PHZ	OE	Y	C _L = 15 pF		4.6	6.8	1	8	ns
^t PLZ	UE	T	CL = 15 pr		4.6	6.8	1	8	115
^t PLH	•	X	0. 50 = 5		5.3	7.5	1	8.5	
^t PHL	A	Y	C _L = 50 pF		5.3	7.5	1	8.5	ns
^t PZH	OE	X	0 50 - 5		5.1	7.1	1	8	
^t PZL	UE	Y	C _L = 50 pF		5.1	7.1	1	8	ns
^t PHZ	ŌĒ	Y	$C_{1} = 50 \text{ pF}$		6.1	8.8	1	10	
^t PLZ	UE UE	ſ	C _L = 50 pF		6.1	8.8	1	10	ns

operating characteristics, V_{CC} = 5 V, T_A = 25°C

PARAMETER	TEST CONDITIONS	TYP	UNIT
C _{pd} Power dissipation capacitance	No load, f = 1 MHz	14	pF



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_Q = 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



PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	e Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
74AHC1G125DBVRE4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AHC1G125DBVRG4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AHC1G125DBVTE4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AHC1G125DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AHC1G125DCKRE4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AHC1G125DCKRG4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AHC1G125DCKTE4	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AHC1G125DCKTG4	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
74AHC1G125DRLRG4	ACTIVE	SOT	DRL	5	4000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHC1G125DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHC1G125DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHC1G125DCKR	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHC1G125DCKT	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74AHC1G125DRLR	ACTIVE	SOT	DRL	5	4000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM

⁽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.

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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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PACKAGE OPTION ADDENDUM

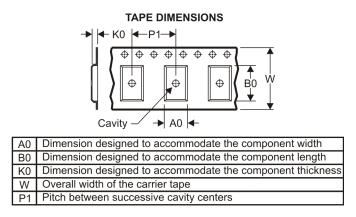
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TAPE AND REEL INFORMATION





QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE

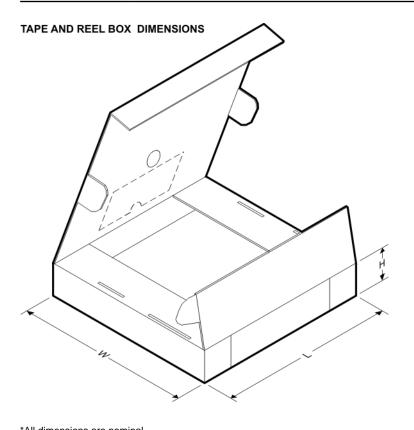


*All dimensions are nominal												
Device	Package Type	Package Drawing		SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74AHC1G125DBVR	SOT-23	DBV	5	3000	178.0	9.0	3.23	3.17	1.37	4.0	8.0	Q3
SN74AHC1G125DBVR	SOT-23	DBV	5	3000	180.0	9.2	3.23	3.17	1.37	4.0	8.0	Q3
SN74AHC1G125DBVT	SOT-23	DBV	5	250	180.0	9.2	3.23	3.17	1.37	4.0	8.0	Q3
SN74AHC1G125DCKR	SC70	DCK	5	3000	180.0	9.2	2.24	2.34	1.22	4.0	8.0	Q3
SN74AHC1G125DCKR	SC70	DCK	5	3000	178.0	9.0	2.4	2.5	1.2	4.0	8.0	Q3
SN74AHC1G125DCKT	SC70	DCK	5	250	178.0	9.0	2.4	2.5	1.2	4.0	8.0	Q3
SN74AHC1G125DCKT	SC70	DCK	5	250	180.0	9.2	2.24	2.34	1.22	4.0	8.0	Q3
SN74AHC1G125DRLR	SOT	DRL	5	4000	180.0	9.2	1.78	1.78	0.69	4.0	8.0	Q3



PACKAGE MATERIALS INFORMATION

22-Nov-2008



*All dimensions are nominal							-
Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74AHC1G125DBVR	SOT-23	DBV	5	3000	565.0	140.0	75.0
SN74AHC1G125DBVR	SOT-23	DBV	5	3000	205.0	200.0	33.0
SN74AHC1G125DBVT	SOT-23	DBV	5	250	205.0	200.0	33.0
SN74AHC1G125DCKR	SC70	DCK	5	3000	205.0	200.0	33.0
SN74AHC1G125DCKR	SC70	DCK	5	3000	565.0	140.0	75.0
SN74AHC1G125DCKT	SC70	DCK	5	250	565.0	140.0	75.0
SN74AHC1G125DCKT	SC70	DCK	5	250	205.0	200.0	33.0
SN74AHC1G125DRLR	SOT	DRL	5	4000	202.0	201.0	28.0

DBV (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-178 Variation AA.



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.



DRL (R-PDSO-N5)

PLASTIC SMALL OUTLINE



NOTES:

All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994. Α. B. This drawing is subject to change without notice.

🖄 Body dimensions do not include mold flash, interlead flash, protrusions, or gate burrs. Mold flash, interlead flash, protrusions, or gate burrs shall not exceed 0,15 per end or side.





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