

General Description

The operating voltage range of the SN74LVC1G34 single buffer is 1.65 V to 5.5 V .

The SN74LVC1G34 device contains one buffer and performs the Boolean function $Y=A$. The CMOS device has high output drive while maintaining low static power dissipation over a broad VCC operating range.

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.


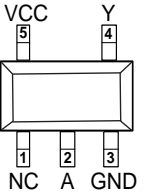

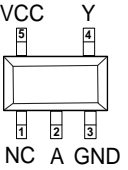
Features

- Low Power Consumption, 10- μ A Max I_{CC}
- Supports 5 V V_{CC} Operation
- Inputs Accept Voltages to 5.5 V
- Max t_{pd} of 3.3 ns at 3.3 V
- ± 24 -mA Output Drive at 3.3 V
- I_{off} Supports Partial-Power-Down Mode
- Typical $V_{OHV} > 2$ V at $V_{CC} = 3.3$ V, $T_A = 25^\circ\text{C}$
- Typical $V_{OLP} < 0.8$ V at $V_{CC} = 3.3$ V, $T_A = 25^\circ\text{C}$

Applications

- AV Receivers
- Audio Docks: Portable
- Blu-ray Players and Home Theater
- Embedded PC
- MP3 Player/Recorder (Portable Audio)
- Personal Digital Assistant (PDA)
- Power: Telecom/Server AC/DC Supply
- Solid State Drive (SSD): Client and Enterprise
- TV: LCD/Digital and High-Definition (HDTV)
- Tablet: Enterprise
- Video Analytics: Server
- Wireless Headset, Keyboard, and Mouse

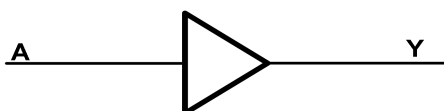
Pinning and Package

SOT23-5		SC70-5	
	 <p>VCC 5, Y 4, 1 NC, 2 A, 3 GND</p>		 <p>VCC 5, Y 4, 1 NC, 2 A, 3 GND</p>

Order information

Package	Orderable Device	Packing Option
SOT23-5	SN74LVC1G34DBVRW	3000/盘
SC70-5	SN74LVC1G34DCKRW	

Circuit Diagram



Pin Functions

Pin		Type	Description
Name	SOT23-5/SC70-5		
NC	1	—	No internal connection
A	2	I	Input
GND	3	—	Ground
Y	4	O	Output
VCC	5	—	Positive Supply

Absolute Maximum Ratings

Parameters		Min	Max.	Unit
V _{CC}	Supply voltage range	-0.5	6.5	V
V _I	Input voltage range	-0.5	6.5	V
V _O	Voltage range applied to any output in the high-impedance or power-off state	-0.5	6.5	V
V _O	Voltage range applied to any output in the high or low state	-0.5	V _{CC} +0.5	V
I _{IK}	Input clamp current	V _I <0	-50	mA
I _{OK}	Output clamp current	V _O <0	-50	mA
I _O	Continuous output current		±50	mA
	Continuous current through V _{CC} or GND		±100	mA
T _J	Junction temperature under bias		150	°C
T _{stg}	Storage temperature range	-65	150	°C

(1) 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.

(2) The input negative-voltage and output voltage ratings may be exceeded if the input and output current ratings are observed.

Recommended Operating Conditions

Over operating free-air temperature range (unless otherwise noted)

Symbol	Parameter	Min	Max	Unit
V _{CC}	Supply voltage	1.65	5.5	V
V _I	Input voltage	0	5.5	V
V _O	Output voltage	0	V _{CC}	V
I _{OH}	High-level output current	V _{CC} =1.65V	-4	mA
		V _{CC} =2.3V	-8	
		V _{CC} =3V	-16	
			-24	
		V _{CC} =4.5V	-32	
I _{OL}	Low-level output current	V _{CC} =1.65V	4	mA
		V _{CC} =2.3V	8	
		V _{CC} =3V	16	
			24	
		V _{CC} =4.5V	32	
T _A	Operating free-air temperature	-40	125	°C

Electrical Characteristics

V_{CC}=5.0V or 3.3V, Typical values are at T_A =+25°C. (unless otherwise noted).

Parameter	Test Conditions	V _{CC}	-40°C to 85°C			-40°C to 125°C			Unit
			Min	Typ	Max	Min	Typ	Max	
V _{OH}	I _{OH} =-100 μA	1.65 V to 5.5 V	V _{CC} -0.1			V _{CC} -0.1			V
	I _{OH} =-4 mA	1.65 V	1.2			1.2			
	I _{OH} =-8 mA	2.3 V	1.9			1.9			
	I _{OH} =-16 mA	3 V	2.4			2.4			
	I _{OH} =-24 mA		2.3			2.3			
	I _{OH} =-32 mA	4.5 V	3.8			3.8			
V _{OL}	I _{OL} =100 μA	1.65 V to 5.5 V			0.1			0.1	V
	I _{OL} =4 mA	1.65 V			0.45			0.45	
	I _{OL} =8 mA	2.3 V			0.3			0.3	
	I _{OL} =16 mA	3 V			0.4			0.4	
	I _{OL} =24 mA				0.55			0.55	
	I _{OL} =32 mA	4.5 V			0.55			0.55	
I _I	A input	V _I =5.5 V or GND	0 to 5.5 V			±5			μA
I _{off}	V _I or V _O =5.5 V	0				±10			μA
I _{CC}	V _I =5.5 V or GND, I _O =0	1.65 V to 5.5 V				10			μA
ΔI _{CC}	One input at V _{CC} -0.6 V, Other inputs at V _{CC} or GND	3 V to 5.5 V				500			μA
C _i	V _I =V _{CC} or GND	3.3 V	5			5			pF

(1) All unused digital inputs of the device must be held at V_{CC} or GND to ensure proper device operation

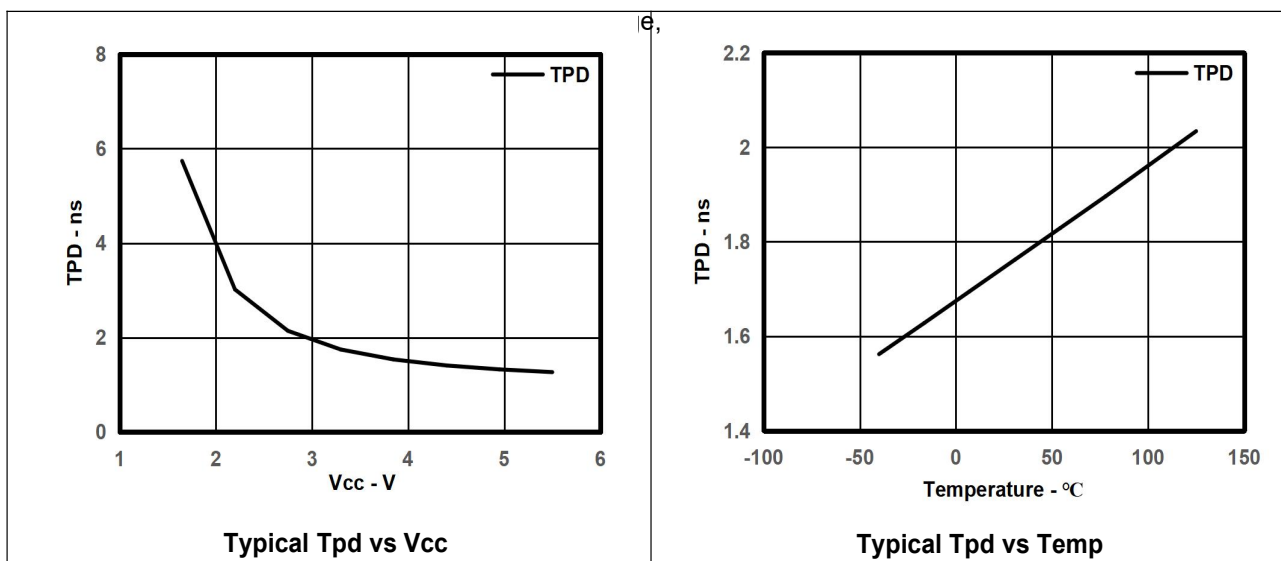
V_{CC}=5.0V or 3.3V, Typical values are at T_A =+25°C. (unless otherwise noted).

Parameter	From (Input)	To (Output)	-40°C to 125°C								Unit
			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		
			Min	Max	Min	Max	Min	Max	Min	Max	
t _{pd}	A	Y	3.9	9.5	1.4	4.5	1	3.3	1	3.0	ns

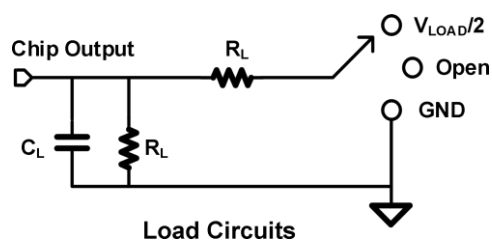
T_A=25°C

Parameter		Test Conditions	V _{CC} =1.8 V	V _{CC} =2.5 V	V _{CC} =3.3 V	V _{CC} =5 V	Unit
			Typ	Typ	Typ	Typ	
C _{pd}	Power dissipation capacitance	f=10 MHz	17	28	33	47	pF

Typical Characteristics



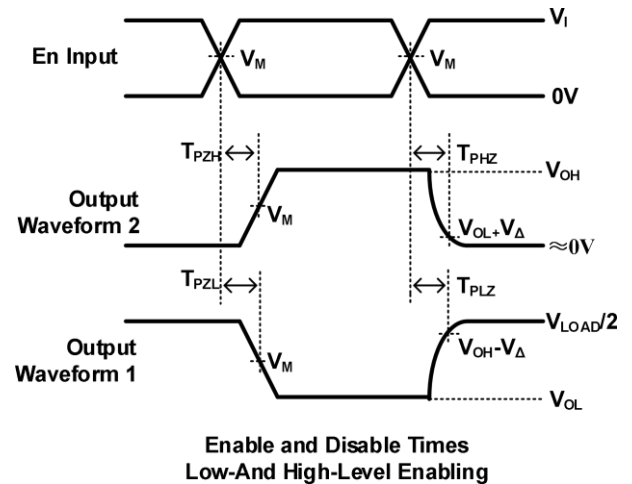
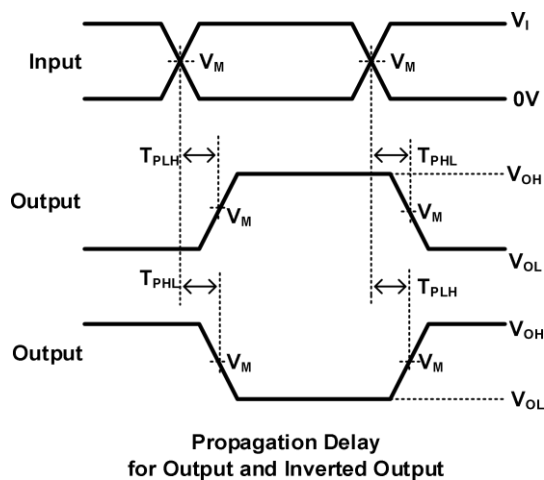
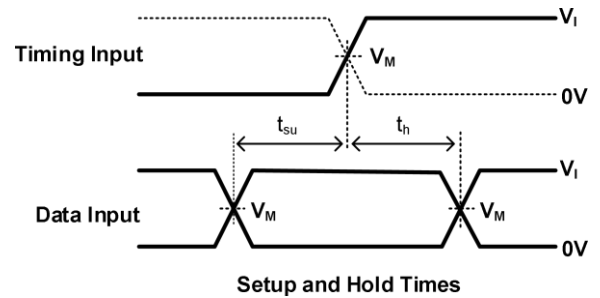
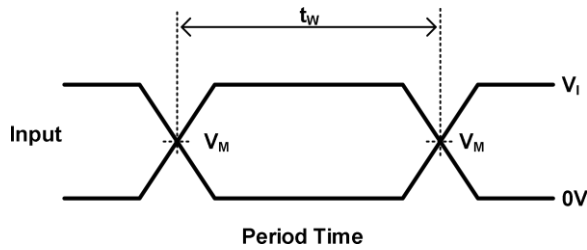
Parameter Measurement Information



TEST	S1
T _{PHL} /T _{PLH}	OPEN
T _{PLZ} /T _{PZL}	V _{LOAD}
T _{PHZ} /T _{PZH}	GND

V _{CC}	INPUTS		V _M	V _{LOAD}	C _L	R _L	V _Δ
	V _I	T _r /T _f					
1.8V±0.15V	V _{CC}	≤2ns	V _{CC} /2	2×V _{CC}	30pF	1kΩ	0.15V
2.5V±0.15V	V _{CC}	≤2ns	V _{CC} /2	2×V _{CC}	30pF	500Ω	0.15V
3.3V±0.15V	3V	≤2.5ns	1.5V	6V	50pF	500Ω	0.3V
5V±0.15V	V _{CC}	≤2.5ns	V _{CC} /2	2×V _{CC}	50pF	500Ω	0.3V

Parameter Measurement Information(Continued)



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 10 MHz, $Z = 50$.

D. The outputs are measured one at a time, with one transition per measurement.

E. t_{PLZ} and t_{PHZ} are the same as t_{dis} .

F. t_{PZL} and t_{PZH} are the same as t_{en} .

G. t_{PLH} and t_{PHL} are the same as t_{pd} .

H. All parameters and waveforms are not applicable to all device.

Feature Description

The device is designed for 1.65V to 5.5V V_{CC} operation and it allows down voltage translation from 5V to 3.3V, or 3.3V to 1.8V. The input voltage of SN74LVC1G34 accepts to 5.5V.

The SN74LVC1G34 has power-down protection (off) and Schmitt-trigger input.

I_{off} feature allows voltage on the inputs and outputs when V_{CC} is 0 V, and is able to reduce leakage when V_{CC} is 0V.

Schmitt-Trigger input can improve the noise immunity capability

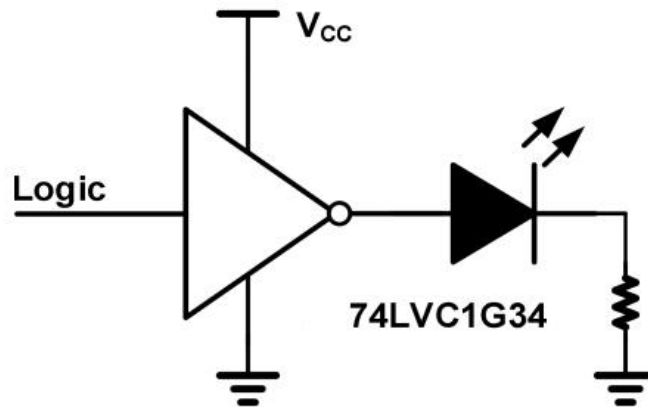
Device Functional Modes

Input A	Output Y
H	H
L	L

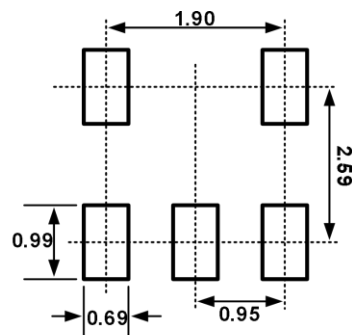
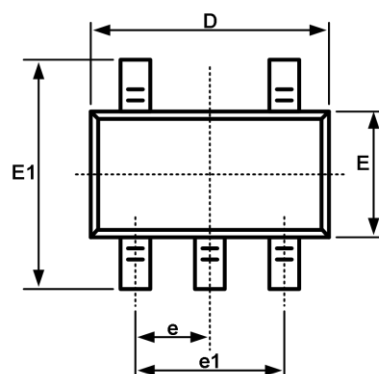
Application Information

The SN74LVC1G34 is a high drive CMOS device that can be used for implementing inversion logic with a high output drive, such as an LED application. It can produce 24 mA of drive current at 3.3 V making it Ideal for driving multiple outputs and good for high-speed applications up to 100 Mhz. The inputs are 5.5 V tolerant allowing it to translate down to V_{CC} .

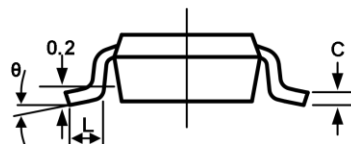
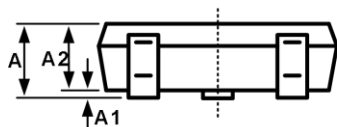
Typical Power Button Circuit



Package Outline SOT23-5

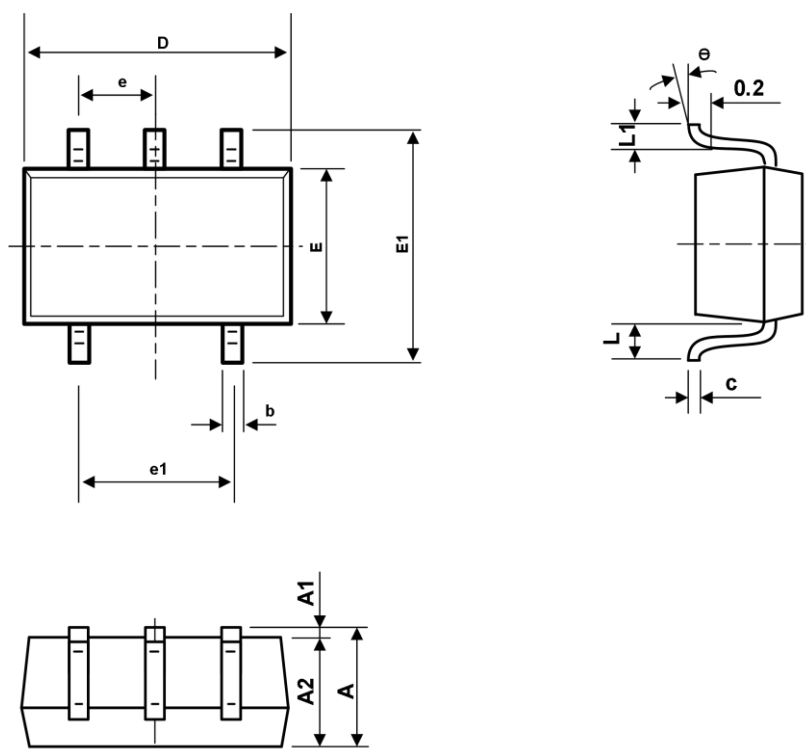


Recommended Land Pattern (Unit: mm)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950BSC		0.037BSC	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
L1	0.600REF		0.024REF	
θ	0°	8°	0°	8°

Package Outline SC70-5



symbol	Dimension In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.110	0.175	0.004	0.007
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650TYP		0.026TYP	
e1	1.200	1.400	0.047	0.055
L	0.525REF		0.021REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

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