

Single Buffer

General Description

The ET74LVC1G34 is a single buffer operating from a 1.65V to 5.5V supply. The device is fabricated with advanced CMOS technology to achieve ultra-high speed with high output drive, while maintaining low static power dissipation.

Features

- Tiny SC70-5, SOT23-5 and DFN6-1.0mm*1.5mm Packages
- Source/Sink 24mA at 3.0V
- Over-Voltage Tolerant Inputs
- Designed for 1.65V to 5.5V VCC Operation
- These Devices are Pb-Free and are RoHS Compliant Pin Configuration
- Tiny SC70-5, SOT23-5 and DFN6(1.0×1.5) Packages
- MSL1 (DFN6) , MSL3(SC70-5,SOT23-5)

Device Information

Part No.	Package	Size
ET74LVC1G34	SC70-5	1.3mm×2.1mm
ET74LVC1G34T	SOT23-5	1.6mm×2.9mm
ET74LVC1G34Y	DFN6	1.0mm×1.5mm

Pin configuration

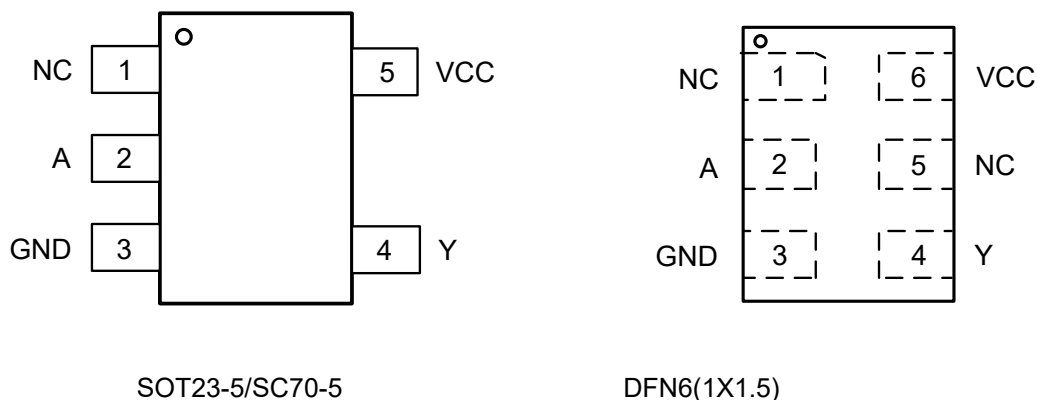


Figure1. Top View

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Pin Function

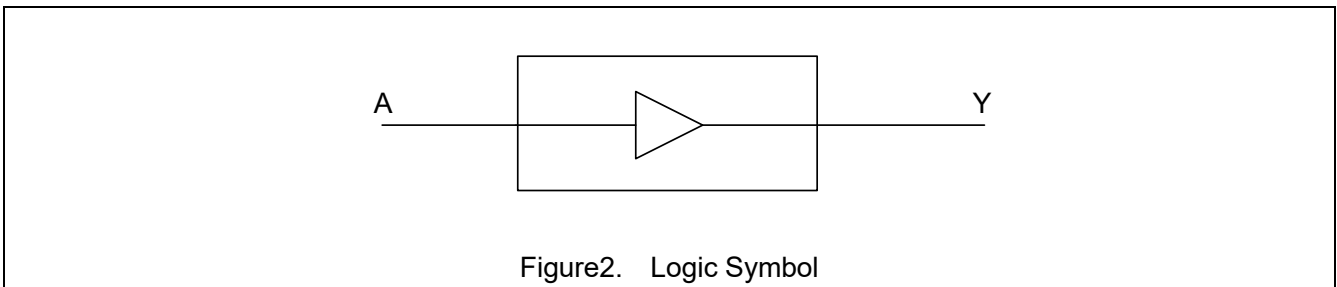
(SC70-5/ SOT23-5)

Pin No.	Pin Name	Function
1	NC	No connect
2	A	Input
3	GND	Ground
4	Y	Output
5	VCC	Supply Voltage

DFN6

Pin No.	Pin Name	Function
1	NC	No connect
2	A	Input
3	GND	Ground
4	Y	Output
5	NC	No connect
6	VCC	Supply Voltage

Block Diagram



Functional Description

Function Table

Output Y = Input A	
Input A	Output Y
L	L
H	H

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Absolute Maximum Ratings

Absolute Maximum Ratings

Symbol	Parameter		Value	Unit
V _{CC}	DC Supply Voltage		−0.5 to 7.0	V
V _I	DC Input Voltage ⁽¹⁾		−0.5 ≤ V _I ≤ +7.0	V
V _O	DC Output Voltage Output in Higher or Low State		−0.5 to V _{CC} + 0.5	V
I _{IK}	DC Input Diode Current	V _I < GND	−50	mA
I _{OK}	DC Output Diode Current	V _O < GND, V _O > V _{CC}	±50	mA
I _O	DC Output Sink Current		±50	mA
I _{CC}	DC Supply Current per Supply Pin		±100	mA
I _{GND}	DC Ground Current per Supply Pin		±100	mA
T _{STG}	Storage Temperature Range		−65 to 150	°C
T _L	Lead Temperature, Soldering 10 Seconds		260	°C
T _J	Max Junction Temperature		150	°C
V _{ESD}	ESD Classification	Human Body Model ⁽²⁾	±4000	V
		Charged Device Model ⁽³⁾	±1000	
I _{LU}	Max Latchup Current Above V _{CC} and GND at 125°C ⁽⁴⁾		±100	mA

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Note1. IO absolute maximum rating must be observed.

Note2. Tested to EIA/JESD22-A114-A.

Note3. Tested to JESD22-C101-A.

Note4. Tested to EIA/JESD78.

Thermal Characteristics

Symbol	Package	Ratings	Value	Unit
R _{θJA}	SC70-5	Thermal Characteristics, Thermal Resistance, Junction-to-Air	300	°C/W
	SOT23-5		250	
	DFN6(1×1.5)		440	
P _D	SC70-5	Power Dissipation in Still Air at 85°C	215	mW
	SOT23-5		260	
	DFN6(1×1.5)		150	

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Recommended Operating Conditions

Symbol	Parameter		Min	Max	Unit
V _{CC}	DC Supply Voltage Operating		1.65	5.5	V
	Date Retention		1.5	5.5	
V _{IN}	DC Input Voltage		0	5.5	V
V _{OUT}	DC Output Voltage (High or Low State)		0	5.5	V
T _A	Operating Temperature Range		-40	125	°C
t _r ,t _f	Input Rise and Fall Time	V _{CC} = 2.5 V ± 0.2 V	0	20	ns/V
		V _{CC} = 3.0 V ± 0.3 V	0	10	
		V _{CC} = 5.0 V ± 0.5 V	0	5	

Electrical Characteristics

DC Electrical Characteristics

Symbol	Parameter	Condition	V _{CC} (V)	T _A = 25°C			-40°C ≤ T _A ≤ 125°C		Unit
				Min	Typ	Max	Min	Max	
V _{IH}	High-Level Input Voltage		1.65 - 1.95 2.3 - 5.5	0.75V _{CC} 0.7V _{CC}			0.75V _{CC} 0.7V _{CC}		V
V _{IL}	Low-Level Input Voltage		1.65 - 1.95 2.3 - 5.5			0.25V _{CC} 0.3V _{CC}		0.25V _{CC} 0.3V _{CC}	V
V _{OH}	High-Level Output Voltage	I _{OH} = -100µA	1.65 to 5.5	V _{CC} - 0.1	V _{CC}		V _{CC} - 0.1		V
		I _{OH} = -3mA	1.65	1.29	1.4		1.29		
		I _{OH} = -8mA	2.3	1.9	2.1		1.9		
		I _{OH} = -12mA	2.7	2.2	2.4		2.2		
		I _{OH} = -16mA	3.0	2.4	2.7		2.4		
		I _{OH} = -24mA	3.0	2.3	2.5		2.3		
		I _{OH} = -32mA	4.5	3.8	4.0		3.8		
V _{OL}	Low-Level Output Voltage	I _{OL} = 100µA	1.65 - 5.5		0.0	0.1		0.1	V
		I _{OL} = 3mA	1.65		0.08	0.24		0.24	
		I _{OL} = 8mA	2.3		0.20	0.3		0.3	
		I _{OL} = 12mA	2.7		0.22	0.4		0.4	
		I _{OL} = 16mA	3.0		0.28	0.4		0.4	
		I _{OL} = 24mA	3.0		0.38	0.55		0.55	
		I _{OL} = 32mA	4.5		0.42	0.55		0.55	
I _{IN}	Input Leakage Current	V _{IN} = 5.5V or GND	0 - 5.5			±0.1		±1.0	µA
I _{OFF}	Power Off Leakage Current	V _{IN} = 5.5V or V _{OUT} = 5.5V	0			1		10	µA

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I _{CC}	Quiescent Supply Current	V _{IN} = 5.5 V or GND	5.5			1		10	uA
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Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

AC Electrical Characteristics

t_r = t_f = 2.5ns

Symbol	Parameter	Condition	V _{CC} (V)	T _A = 25°C			-40°C ≤ T _A ≤ 125°C		Unit
				Min	Typ	Max	Min	Max	
t _{PLH} t _{PHL}	Propagation Delay (Figure3 and 4)	R _L = 1MΩ C _L = 15pF	1.65	2.0	10.1	12.9	2.0	13.9	ns
			1.8	2.0	9.1	11.6	2.0	12.4	
		R _L = 1MΩ C _L = 15pF	2.5	0.2	6.0	7.7	0.8	8.2	
		R _L = 1MΩ C _L = 15pF	3.3	0.8	5.0	6.5	0.5	7.0	
				1.2	5.6	7.1	1.5	7.6	
		R _L = 1MΩ C _L = 15pF	5.0	0.5	4.4	5.6	0.5	6.1	
		R _L = 500Ω C _L = 50pF		0.8	4.8	6.1	0.8	6.6	

Capacitance Characteristics

Symbol	Parameter	Condition	Typ	Unit
C _{IN}	Input Capacitance	V _{CC} = 5.5V, V _I = 0V or V _{CC}	>2.5	pF
C _{PD}	Power Dissipation Capacitance ⁽⁵⁾	10MHz, V _{CC} = 3.3V, V _I = 0V or V _{CC}	21	pF
		10MHz, V _{CC} = 5.5V, V _I = 0V or V _{CC}	21	

Note5. C_{PD} is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load. Average operating current can be obtained by the equation: I_{CC(OPR)}=C_{PD}×V_{CC}×fin+I_{CC}×C_{PD} is used to determine the no-load dynamic power consumption; P_D=C_{PD}×V_{CC}² ×fin+I_{CC}×V_{CC}×Fig.

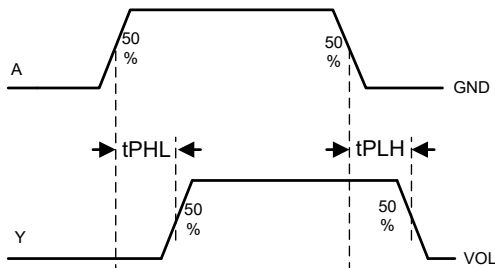


Figure3. Switching Waveform

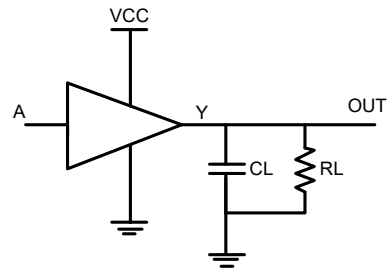
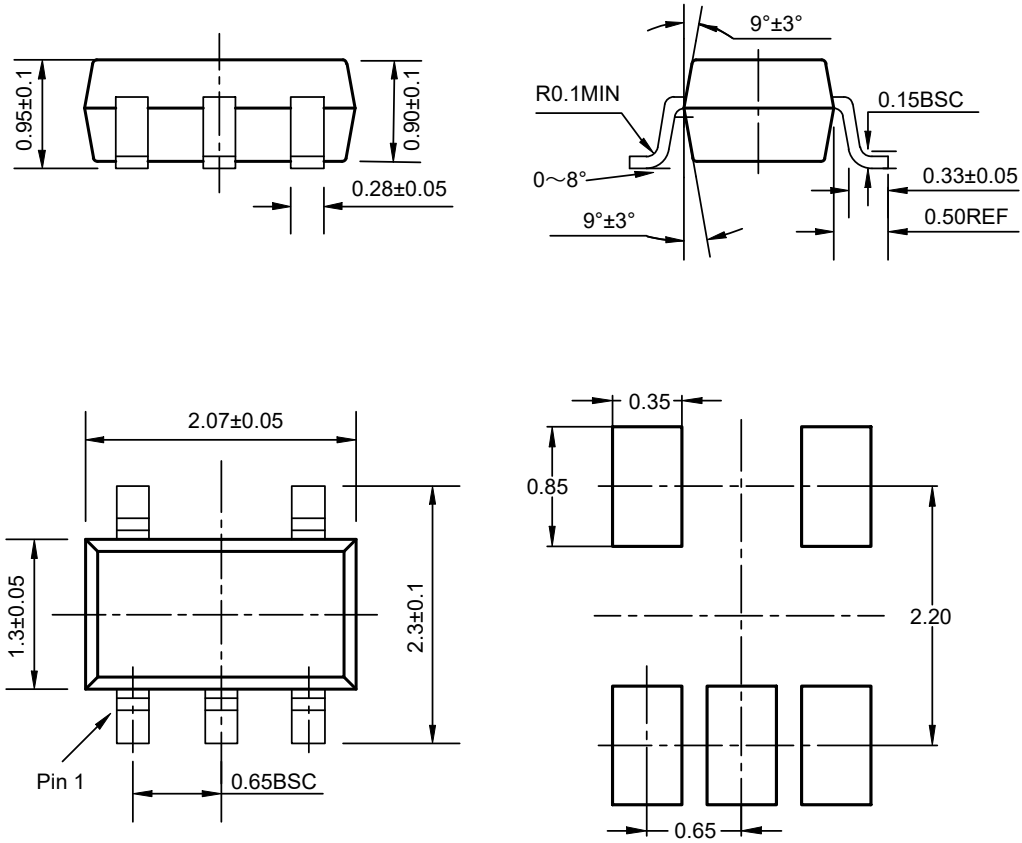


Figure4. Test Circuit

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Package Dimension

SC70-5

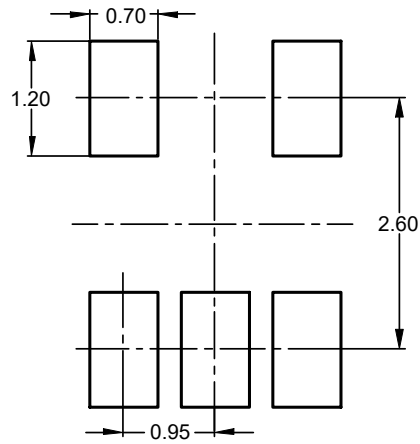
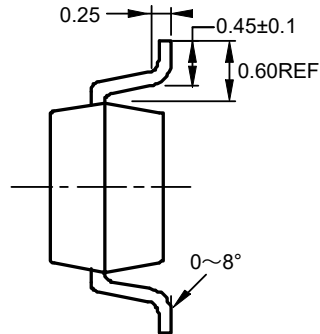
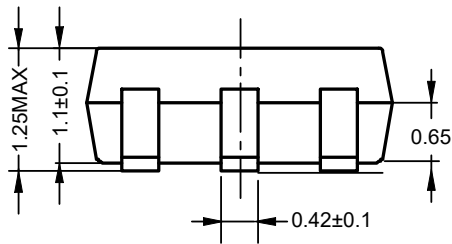
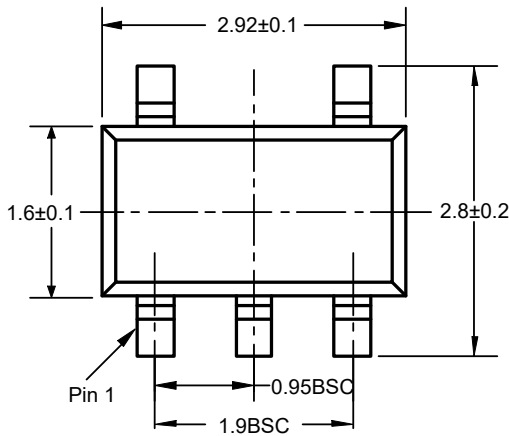


Recommended Land Pattern

Unit: mm

ET74LVC1G34

SOT23-5

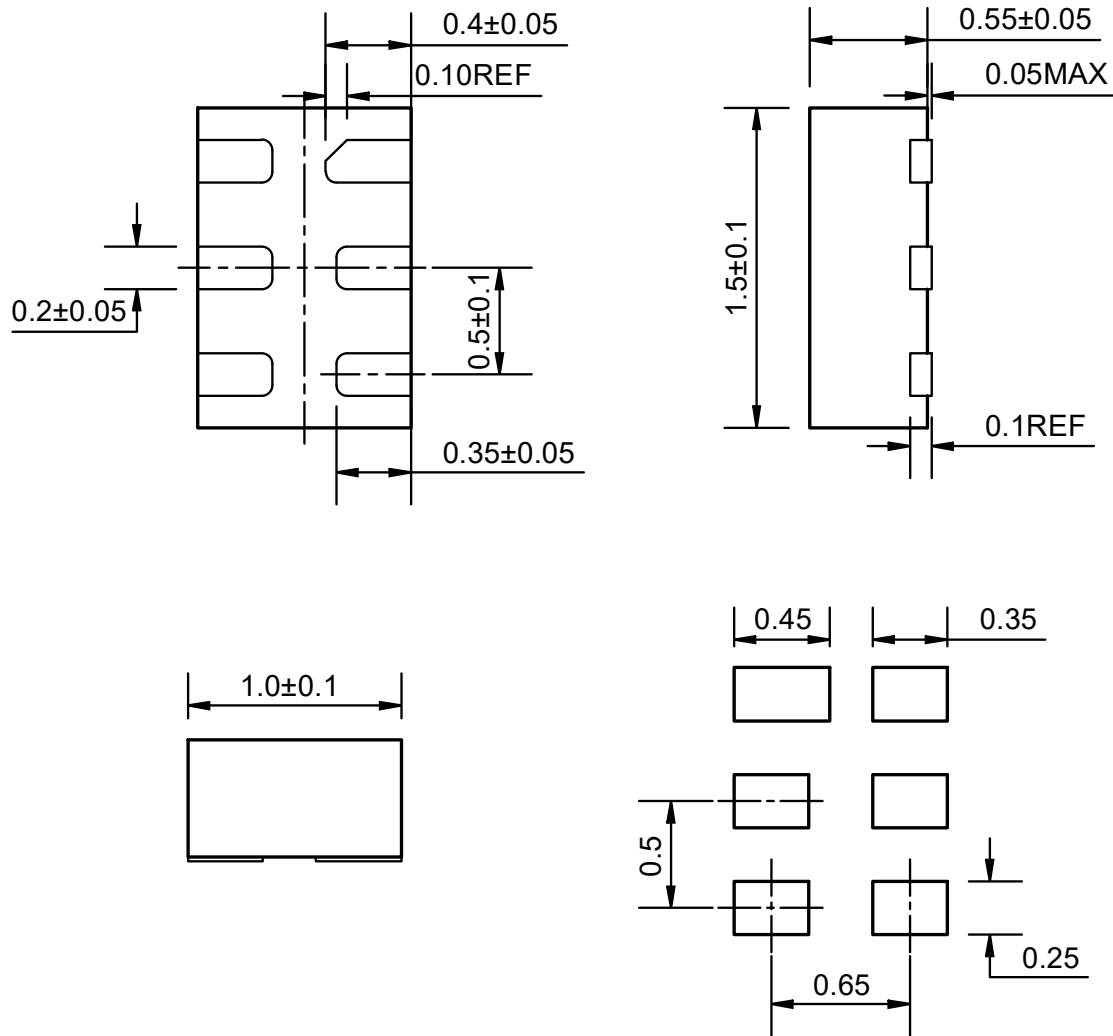


Recommended Land Pattern

Unit: mm

ET74LVC1G34

DFN6 (1.0×1.5)



Recommended Land Pattern

Unit: mm

ET74LVC1G34

Revision History and Checking Table

Version	Date	Revision Item	Modifier	Function & Spec Checking	Package & Tape Checking
1.0	2017-10-23	Original Version	Ma Yong jian	Ma Yong jian	Liu Jia Ying
1.1	2019-07-18	Update AC Table and Device Information	Ma Yong jian	Ma Yong jian	Liu Jia Ying
1.2	2022-06-10	ESD Update	Shibo	Shibo	Zhuji
1.3	2022-08-16	Update TA to 125℃	Shibo	Shibo	Zhuji
1.4	2023-11-29	Update Typeset /ESD	Shibo	Shibo	Shibo