TECH PUBLIC
台舟电子

SN74LVC1G17

SINGLE SCHMITT-TRIGGER BUFFER

www.sot23.com.tw

Features

- Operation Voltage Range: 1.65V ~ 5.5V
- Low power current: I_{CC}=10μA(Max)
- ±24mA output drive (V_{CC}=3.0V)
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 1000-V Charged-Device Model (C101)
- SOT23-5 Package Available
- SOT353 Package Available
- SOT553 Package Available

Applications

- Voltage Level Shifting
- General Purpose Logic
- Power Down Signal Isolation
- Wide array of products such as:
  - PCs, Networking, Notebooks, Netbooks, PDAs
  - Tablet Computers, E-readers
  - Computer Peripherals, Hard Drives, CD/DVD ROM
  - TV, DVD, DVR, Set-Top Box
  - Cell Phones, Personal Navigation / GPS
  - MP3 Players, Cameras, Video Recorders

General Description

The SN74LVC1G17 is a single Schmitt-trigger buffer, it provides the function Y=A.

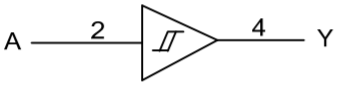
The device have different input threshold levels for positive-going (V_{T+}) and negative-going(V_{T-}) signals because of the Schmitt-trigger action in the input.

This device has power-down protective circuit, preventing device destruction when it is powered down.

Ordering Information

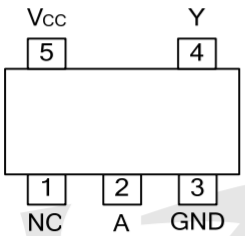
ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
SN74LVC1G17DBVR	SOT23-5	Tape and Reel,3000
SN74LVC1G17DCKR	SOT353	Tape and Reel,3000
SN74LVC1G17DRLR	SOT553	Tape and Reel,4000

Logic Diagram



Logic symbol

Pin Configuration



SOT23-5
SOT353
SOT553

Marking

SN74LVC1G17DBVR Marking:C17F

SN74LVC1G17DCKR Marking:C75

SN74LVC1G17DRLR Marking:C77

Function Table

INPUT	OUTPUT
A	Y
L	L
H	H

Absolute Maximum Ratings

PARAMETER	SYMBOL	TEST CONDITIONS	RATINGS	UNIT
Supply Voltage	V_{CC}		-0.5 ~ 6.5	V
Input Voltage	V_{IN}		-0.5 ~ 6.5	V
Output Voltage	V_{OUT}	Output in the high or low state	-0.5 ~ V_{CC}+0.5	V
		Output in the power-off state	-0.5 ~ 6.5	V
Continuous V_{CC} or GND Current	I_{CC}		±100	mA
Continuous Output Current	I_{OUT}		±50	mA
Input Clamp Current	I_{IK}	V_{IN}<0	-50	mA
Output Clamp Current	I_{OK}	V_{OUT}<0	-50	mA
Junction Temperature	T_J		+150	°C
Storage Temperature Range	T_{STG}		-65 ~ +150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

Recommended Operating Conditions

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}	Operating	1.65		5.5	V
		Data retention only	1.5			V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}	High or low state	0		V_{CC}	V
Operating Temperature	T_A		-40		+125	°C

Thermal Data

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Case	SOT-23-5	θ_{JC}	100	°C/W
	SOT-353		120	

Electrical Characteristics

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Positive-going Input Threshold Voltage	V_{T+}	V_{CC}=1.65V		0.76		1.16	V
		V_{CC}=2.3V		1.08		1.56	
		V_{CC}=3.0V		1.48		1.92	
		V_{CC}=4.5V		2.16		2.74	
		V_{CC}=5.5V		2.61		3.33	
Negative-going Input Threshold Voltage	V_{T-}	V_{CC}=1.65V		0.35		0.62	V
		V_{CC}=2.3V		0.56		0.88	
		V_{CC}=3.0V		0.84		1.2	
		V_{CC}=4.5V		1.41		1.97	
		V_{CC}=5.5V		1.87		2.4	
Hysteresis Voltage (V_{T+}-V_{T-})	$\triangle V_T$	V_{CC}=1.65V		0.36		0.64	
		V_{CC}=2.3V		0.45		0.78	
		V_{CC}=3.0V		0.51		0.87	
		V_{CC}=4.5V		0.58		1.04	
		V_{CC}=5.5V		0.69		1.11	
High-Level Output Voltage	V_{OH}	V_{CC}=1.65V~5.5V, I_{OH}=-100μA		V_{CC}-0.1			V
		V_{CC}= 1.65V, I_{OH}=-4mA		1.2			
		V_{CC}= 2.3V, I_{OH}=-8mA		1.9			
		V_{CC}= 3.0V	I_{OH}=-16mA	2.4			
			I_{OH}=-24mA	2.3			
		V_{CC}= 4.5V, I_{OH}=-32mA		3.8			
Low-Level Output Voltage	V_{OL}	V_{CC}= 1.65V~5.5V, I_{OL}=100μA				0.1	V
		V_{CC}= 1.65V, I_{OL}=4mA				0.45	
		V_{CC}= 2.3V, I_{OL}=8mA				0.3	
		V_{CC}= 3.0V	I_{OL}=16mA			0.4	
			I_{OL}=24mA			0.55	
		V_{CC}= 4.5V, I_{OL}=32mA				0.55	
Input Leakage Current	$I_{I(LEAK)}$	V_{CC}= 0~5.5V, V_{IN}=V_{CC} or GND				±5	μA
Power OFF Leakage Current	I_{OFF}	V_{CC}= 0V, V_{IN} or V_{OUT}=5.5V				±10	μA
Quiescent Supply Current	I_Q	V_{CC}= 1.65V~5.5V, V_{IN}=V_{CC} or GND I_{OUT}=0				10	μA
Additional Quiescent Supply Current	ΔI_Q	V_{CC}= 3V~5.5V, One input at V_{CC}-0.6V, other inputs at V_{CC} or GND				500	μA
Input Capacitance	C_{IN}	V_{CC}= 3.3V, V_{IN}=V_{CC} or GND			4.5		pF

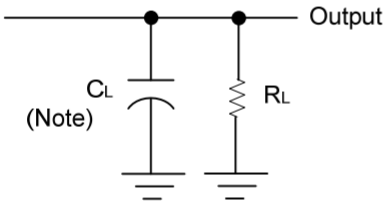
Dynamic Characteristics (Input: t_R, t_F≤3ns; P_{RR}≤1MHz)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation delay from input (A) to output (Y)	t_{PLH} / t_{PHL}	C_L=15pF	V_{CC}=1.8±0.15V	2.8		13	ns
			V_{CC}=2.5±0.2V	1.6		9.1	ns
			V_{CC}=3.3±0.3V	1.5		8.2	ns
			V_{CC}=5±0.5V	0.9		6.8	ns
		C_L=30 or 50pF	V_{CC}=1.8±0.15V	3.8		14.5	ns
			V_{CC}=2.5±0.2V	2		11.1	ns
			V_{CC}=3.3±0.3V	1.8		10.2	ns
			V_{CC}=5±0.5V	1.2		8.3	ns

Operating Characteristics

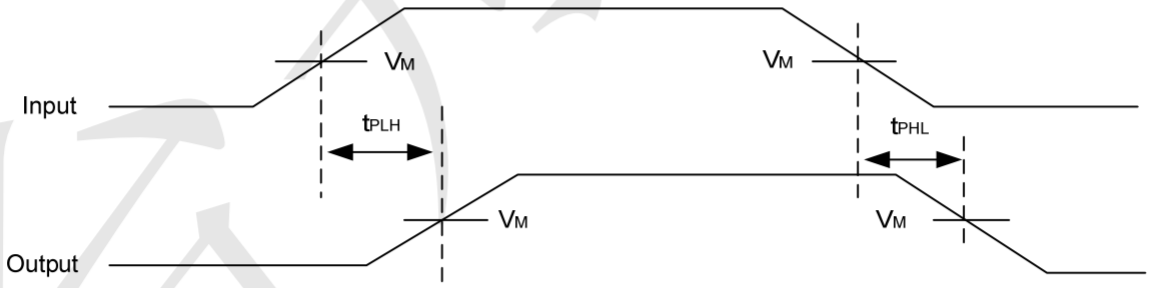
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	V_{CC}=1.8V		20		pF
		V_{CC}=2.5V		21		pF
		V_{CC}=3.3V		22		pF
		V_{CC}=5V		25		pF

Test Circuit And Waveforms



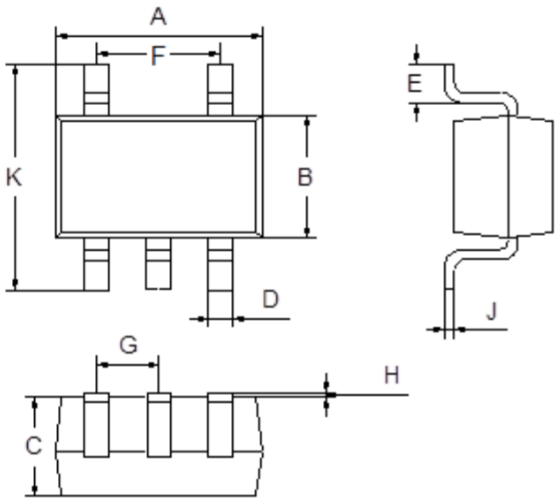
Note: C_L includes probe and jig capacitance.

V_{CC}	V_{IN}	t_R, t_F	V_M	C_L	R_L
1.8V±0.15V	V_{CC}	≤2ns	V_{CC}/2	15pF	1MΩ
2.5V±0.2V	V_{CC}	≤2ns	V_{CC}/2	15pF	1MΩ
3.3V±0.3V	3V	≤2.5ns	1.5V	15pF	1MΩ
5V±0.5V	V_{CC}	≤2.5ns	V_{CC}/2	15pF	1MΩ
1.8V±0.15V	V_{CC}	≤2ns	V_{CC}/2	30pF	1KΩ
2.5V±0.2V	V_{CC}	≤2ns	V_{CC}/2	30pF	500Ω
3.3V±0.3V	3V	≤2.5ns	1.5V	50pF	500Ω
5V±0.5V	V_{CC}	≤2.5ns	V_{CC}/2	50pF	500Ω



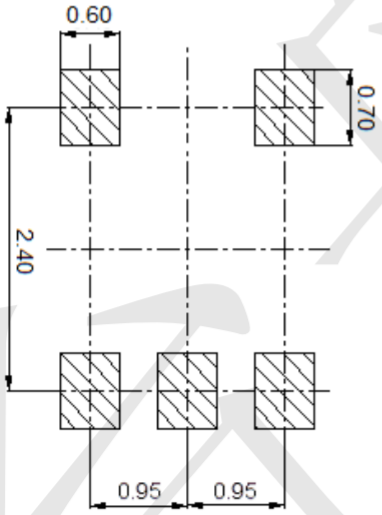
Package Outline Dimensions (Unit: mm)

SOT23-5



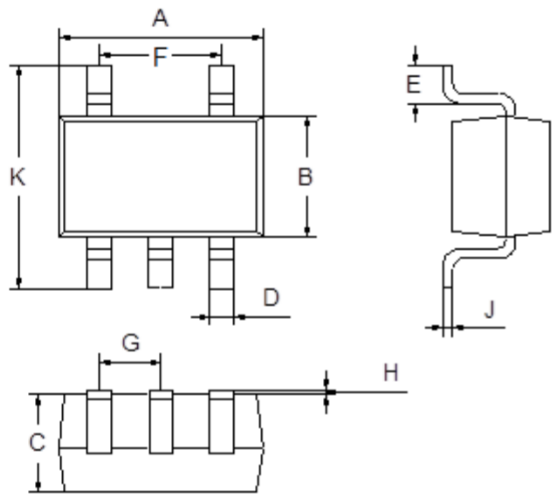
Dimension	Min.	Max.
A	2.80	3.00
B	1.50	1.70
C	1.00	1.20
D	0.35	0.45
E	0.35	0.55
F	1.80	2.00
G	0.90	1.00
H	0.02	0.10
J	0.10	0.20
K	2.60	3.00

Mounting Pad Layout (Unit: mm)



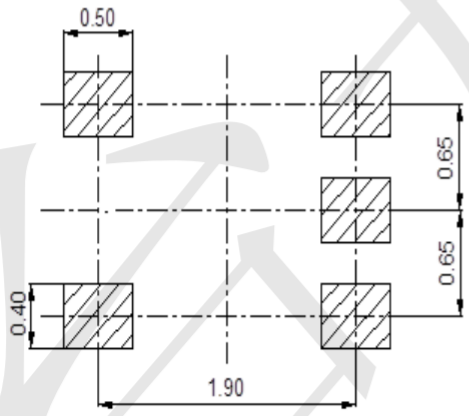
Package Outline Dimensions (Unit: mm)

SOT353



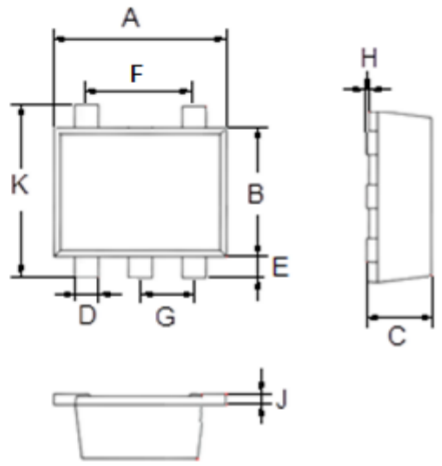
Dimension	Min.	Max.
A	2.00	2.20
B	1.15	1.35
C	0.85	1.05
D	0.15	0.35
E	0.25	0.40
F	1.20	1.40
G	0.60	0.70
H	0.02	0.10
J	0.05	0.15
K	2.20	2.40

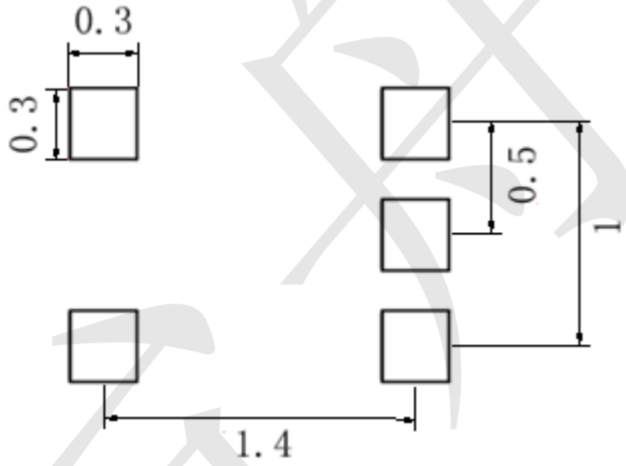
Mounting Pad Layout (Unit: mm)



Package Outline Dimensions (Unit: mm)

SOT553



Dimension	Min.	Max.
A	1.500	1.700
B	1.100	1.300
C	0.525	0.600
D	0.170	0.270
E	0.100	0.300
F	0.400	0.600
G	0.450	0.550
H	0.000	0.050
J	0.090	0.160
K	1.500	1.700

Mounting Pad Layout (Unit: mm)