

### Features

- Operation Voltage Range: 1.65V ~ 5.5V
- Low power current:  $I_{CC}=10\mu A(\text{Max})$
- $\pm 24\text{mA}$  output drive ( $V_{CC}=3.0\text{V}$ )
- 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

### 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.

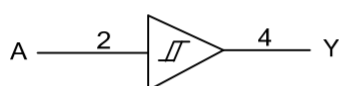
### Applications

- 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

### Ordering Information

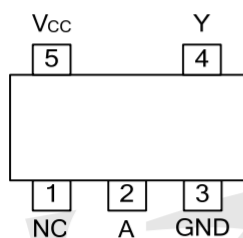
ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
SN74LVC1G17DBVR	SOT23-5	Tape and Reel,3000
SN74LVC1G17DCKR	SOT353	Tape and Reel,3000
SN74LVC1G17DRLR	SOT553	Tape and Reel,4000

### 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	H
H	L

### 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	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 ( $V_{T+}-V_{T-}$ )	$\Delta V_T$	$V_{CC}=1.65V$	0.36		0.64	V	
		$V_{CC}=2.3V$	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	$V_{OH}$	$V_{CC}=1.65V\sim 5.5V, I_{OH}=-100\mu A$	$V_{CC}-0.1$			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			
Low-Level Output Voltage	$V_{OL}$	$V_{CC}=1.65V\sim 5.5V, I_{OL}=100\mu A$			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
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=0\sim 5.5V, V_{IN}=V_{CC}$ or GND			$\pm 5$	$\mu A$	
		$V_{CC}=0V, V_{IN}$ or $V_{OUT}=5.5V$			$\pm 10$	$\mu A$	
Power OFF Leakage Current	$I_{OFF}$	$V_{CC}=0V, V_{IN}$ or $V_{OUT}=5.5V$			$\pm 10$	$\mu A$	
Quiescent Supply Current	$I_Q$	$V_{CC}=1.65V\sim 5.5V, V_{IN}=V_{CC}$ or GND $I_{OUT}=0$			10	$\mu A$	
Additional Quiescent Supply Current	$\Delta I_Q$	$V_{CC}=3V\sim 5.5V$ , One input at $V_{CC}-0.6V$ , other inputs at $V_{CC}$ or GND			500	$\mu A$	
Input Capacitance	$C_{IN}$	$V_{CC}=3.3V, V_{IN}=V_{CC}$ or GND		4.5		pF	

**Dynamic Characteristics** (Input:  $t_r, t_f \leq 3ns$ ;  $P_{RR} \leq 1MHz$ )

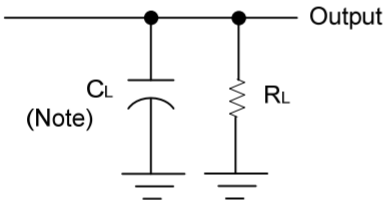
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Propagation delay from input (A) to output (Y)	$t_{PLH} / t_{PHL}$	$C_L=15pF$	$V_{CC}=1.8\pm 0.15V$	2.8		13	ns
			$V_{CC}=2.5\pm 0.2V$	1.6		9.1	ns
			$V_{CC}=3.3\pm 0.3V$	1.5		8.2	ns
			$V_{CC}=5\pm 0.5V$	0.9		6.8	ns
		$C_L=30$ or $50pF$	$V_{CC}=1.8\pm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



### Operating Characteristics

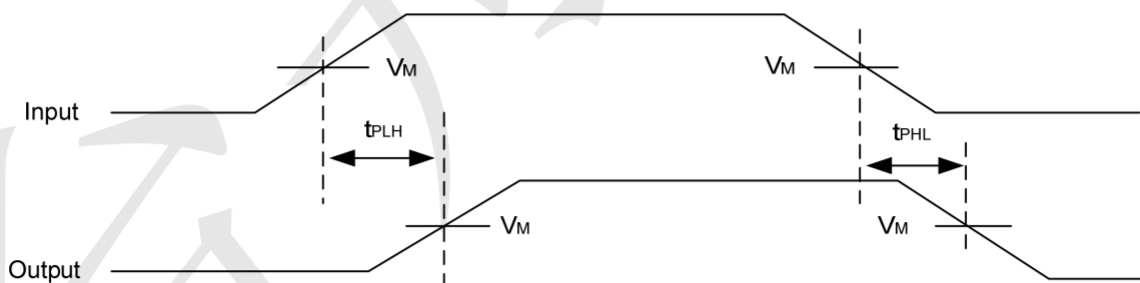
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	$C_{PD}$	$V_{CC}=1.8V$		20		pF
		$V_{CC}=2.5V$		21		pF
		$V_{CC}=3.3V$		22		pF
		$V_{CC}=5V$		25		pF

### Test Circuit And Waveforms



Note:  $C_L$  includes probe and jig capacitance.

$V_{CC}$	$V_{IN}$	$t_R, t_F$	$V_M$	$C_L$	$R_L$
$1.8V \pm 0.15V$	$V_{CC}$	$\leq 2ns$	$V_{CC}/2$	15pF	1M $\Omega$
$2.5V \pm 0.2V$	$V_{CC}$	$\leq 2ns$	$V_{CC}/2$	15pF	1M $\Omega$
$3.3V \pm 0.3V$	3V	$\leq 2.5ns$	1.5V	15pF	1M $\Omega$
$5V \pm 0.5V$	$V_{CC}$	$\leq 2.5ns$	$V_{CC}/2$	15pF	1M $\Omega$
$1.8V \pm 0.15V$	$V_{CC}$	$\leq 2ns$	$V_{CC}/2$	30pF	1K $\Omega$
$2.5V \pm 0.2V$	$V_{CC}$	$\leq 2ns$	$V_{CC}/2$	30pF	500 $\Omega$
$3.3V \pm 0.3V$	3V	$\leq 2.5ns$	1.5V	50pF	500 $\Omega$
$5V \pm 0.5V$	$V_{CC}$	$\leq 2.5ns$	$V_{CC}/2$	50pF	500 $\Omega$





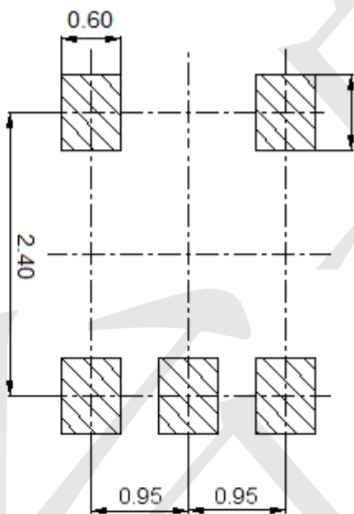
**Package Outline Dimensions** (Unit: mm)

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)





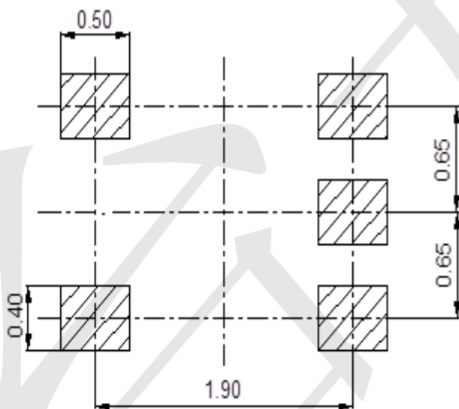
**Package Outline Dimensions** (Unit: mm)

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

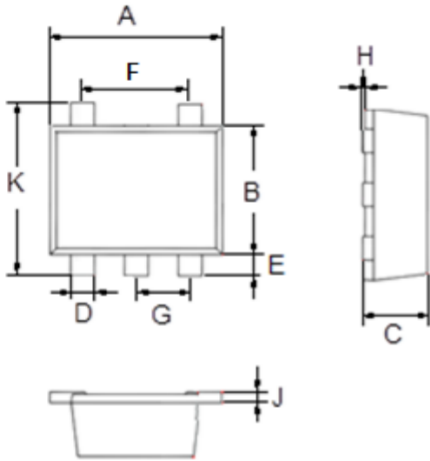
**Mounting Pad Layout** (Unit: mm)





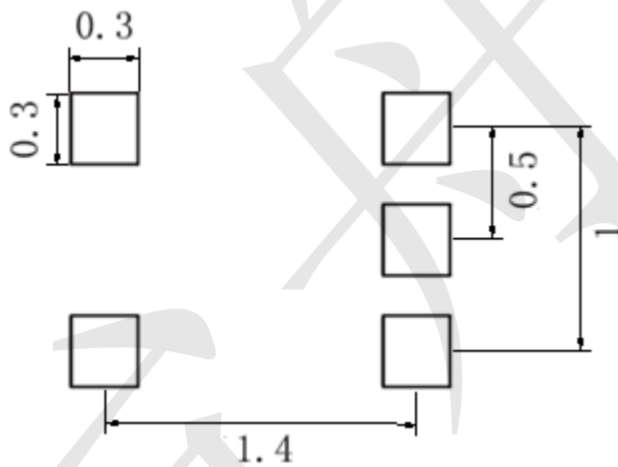
**Package Outline Dimensions** (Unit: mm)

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)



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