SN74LVC1G18 Series

1-OF-2 NON-INVERTING DEMULTIPLEXER WITH 3-STATE DESELECTED OUTPUT

Features

- Wide Supply Voltage Range From 1.65V To 5.5V.
- Up to 5.5V inputs accept voltages
- ±24mA Output Drive at 3.3 V
- Low power consumption, I_{CC} = 10 μA (Max.)
- ESD Protection Exceeds JESD 22
  -2000-V Human-Body Model (A114-A)
  - 200-V Machine Model (A115-A)
  -1000-V Charged-Device Model (C101)

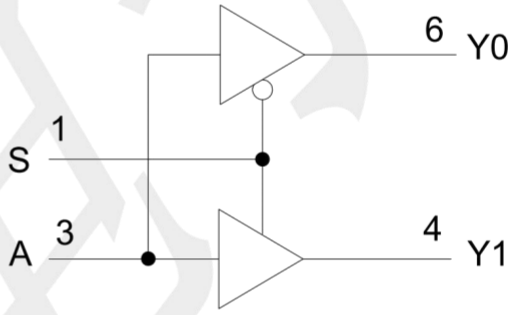
Applications

- AV Receiver
- Audio Dock:Portable
- Blu-ray Player and Home Theater
- Embedded PC
- Personal Digital Assistant(PDA)
- Power:Telecom/Server AC/DC Supply:Single Controller:Analog and Digital

General Description

The SN74LVC1G18 is a 1-of-2 non-inverting demultiplexer with 3-state output. When the select input S is low data passes from A (input) to Y0 (output) and Y1 (output) is in the high-impedance state. When the select input S is high data passes from A (input) to Y1 (output) and Y0 (output) is in the high-impedance state.

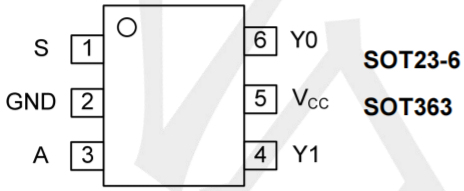
Logic Diagram



Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
SN74LVC1G18DBVR-TP	SOT23-6	Tape and Reel,3000
SN74LVC1G18DCKR-TP	SOT363	Tape and Reel,3000

Pin Configuratio



SOT23-6

SOT363

Function Table

INPUTS		OUTPUT	
S	A	Y_0	Y_1
L	L	L	Z
L	H	H	Z
H	L	Z	L
H	H	Z	H

Note:H: HIGH voltage level;L: LOW voltage level.

Absolute Maximum Ratings

PARAMETER	SYMBOL	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}	Power-Down Mode	-0.5 ~ +6.5	V
		Low state	-0.5 ~ VCC+0.5	V
VCC or GND Current	I_{CC}		±100	mA
Continuous Output Current	I_{OUT}		±50	mA
Input Clamp Current	I_{IK}		-50	mA
Output Clamp Current	I_{OK}		-50	mA
Storage Temperature Range	T_{STG}		-65 ~ +150	℃
Junction to Ambient	θ_{JA}	SOT23-6	230	℃/W
		SOT363	280	℃/W

Note: 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.

SWITCHING CHARACTERISTICS(unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input A to output Y	t_{PLH} t_{PHL} (t_{pd})	V_{CC}=1.8±0.15V, C_L=15pF, R_L=1MΩ	2.3	--	8.4	ns
		V_{CC}=2.5±0.20V, C_L=15pF, R_L=1MΩ	1.1	--	4.2	ns
		V_{CC}=3.3±0.30V, C_L=15pF, R_L=1MΩ	1.1	--	3.4	ns
		V_{CC}=5.0±0.50V, C_L=15pF, R_L=1MΩ	0.8	--	2.7	ns
Propagation delay from input A to output Y	t_{PLH} t_{PHL} (t_{pd})	V_{CC}=1.8±0.15V, C_L=30pF, R_L=1KΩ	3.5	--	9.3	ns
		V_{CC}=2.5±0.20V, C_L=30pF, R_L=500Ω	1.7	--	5	ns
		V_{CC}=3.3±0.30V, C_L=50pF, R_L=500Ω	1.5	--	4.2	ns
		V_{CC}=5.0±0.50V, C_L=50pF, R_L=500Ω	0.7	--	3.2	ns
Propagation delay from input S to output Y	t_{PZL} t_{PZH} (t_{en})	V_{CC}=1.8±0.15V, C_L=30pF, R_L=1KΩ	3.6	--	10.2	ns
		V_{CC}=2.5±0.20V, C_L=30pF, R_L=500Ω	1.7	--	5.6	ns
		V_{CC}=3.3±0.30V, C_L=50pF, R_L=500Ω	1.5	--	4.6	ns
		V_{CC}=5.0±0.50V, C_L=50pF, R_L=500Ω	0.9	--	3.4	ns
Propagation delay from input S to output Y	t_{PLZ} t_{PHZ} (t_{dis})	V_{CC}=1.8±0.15V, C_L=30pF, R_L=1KΩ	1.9	--	12.7	ns
		V_{CC}=2.5±0.20V, C_L=30pF, R_L=500Ω	--	1	5.3	ns
		V_{CC}=3.3±0.30V, C_L=50pF, R_L=500Ω	1.1	--	4.9	ns
		V_{CC}=5.0±0.50V, C_L=50pF, R_L=500Ω	0.5	--	3.3	ns

Recommended Operating Conditions(unless otherwise specified)

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	High	V_{IH}	V_{CC}=1.65V~1.95V	0.65×V_{CC}	--	--	V
			V_{CC}=2.3V~2.7V	1.7	--	--	V
			V_{CC}=3V~3.6V	2	--	--	V
			V_{CC}=4.5V~5.5V	0.7×V_{CC}	--	--	V
	Low	V_{IL}	V_{CC}=1.65V~1.95V	--	--	0.35×V_{CC}	V
			V_{CC}=2.3V~2.7V	--	--	0.7	V
			V_{CC}=3V~3.6V	--	--	0.8	V
			V_{CC}=4.5V~5.5V	--	--	0.3×V_{CC}	V
Input Voltage		V_{IN}		0	--	5.5	V
Output Voltage		V_{OUT}	High or low state	0	--	V_{CC}	V
Output Current	High	I_{OH}	V_{CC}=1.65V	--	--	-4	mA
			V_{CC}=2.3V	--	--	-8	mA
			V_{CC}=3V	--	--	-16	mA
				--	--	-24	mA
			V_{CC}=4.5V	--	--	-32	mA
	Low	IOL	V_{CC}=1.65V	--	--	4	mA
			V_{CC}=2.3V	--	--	8	mA
			V_{CC}=3V	--	--	16	mA
				--	--	24	mA
			V_{CC}=4.5V	--	--	32	mA
Input Transition Rise or Fall Rate		t/ v	V_{CC}=1.8±0.15V, 2.5±0.2V	--	--	20	ns/V
			V_{CC}=3.3±0.3V	--	--	10	ns/V
			V_{CC}=5.0+0.5V	--	--	5	ns/V
Operating Temperature		T_A		-40		+125	°C

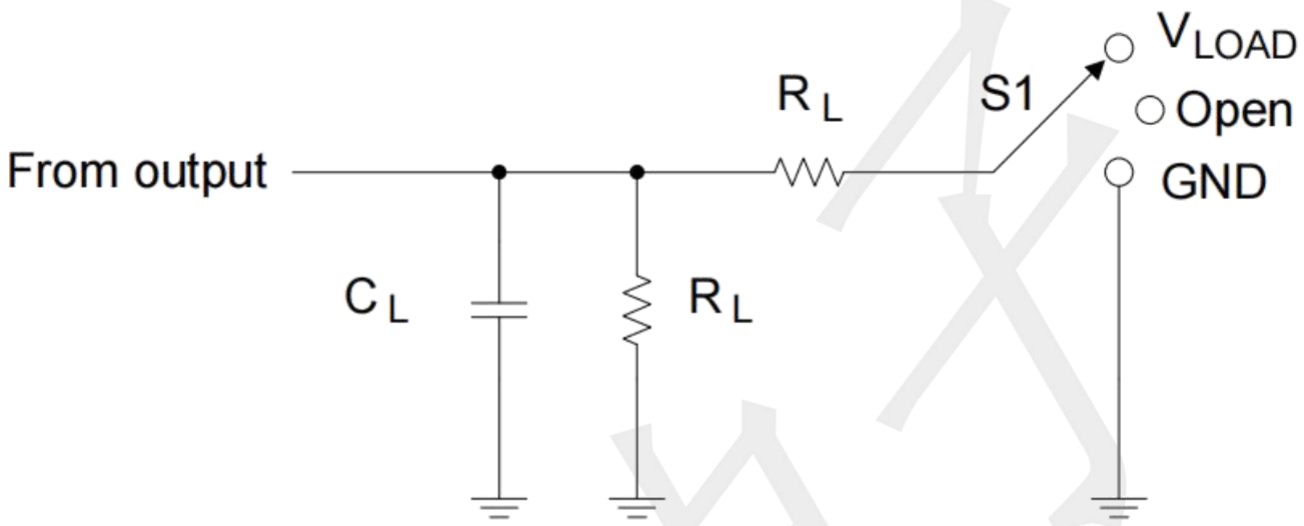
Electrical Characteristics (unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	High	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
			V_{CC}=2.3V, I_{OH}=-8mA	1.9	--	--	V
			V_{CC}=3V, I_{OH}=-16mA	2.4	--	--	V
			V_{CC}=3V, I_{OH}=-24mA	2.3	--	--	V
			V_{CC}=4.5V, I_{OH}=-32mA	3.8	--	--	V
	Low	V_{OL}	V_{CC}=1.65V ~ 5.5V, I_{OL}=100μA	--	--	0.1	V
			V_{CC}=1.65V, I_{OL}=4mA	--	--	0.45	V
			V_{CC}=2.3V, I_{OL}=8mA	--	--	0.3	V
			V_{CC}=3V, I_{OL}=16mA	--	--	0.4	V
			V_{CC}=3V, I_{OL}=24mA	--	--	0.55	V
			V_{CC}=4.5V, I_{OL}=32mA	--	--	0.55	V
Input Leakage Current (A or S inputs)		$I_{I(LEAK)}$	V_{IN} = 5.5V or GND, V_{CC} = 0 ~ 5.5V	--	--	±5	μA
OFF-state Current		I_{OFF}	V_{IN} or V_O = 5.5V, V_{CC} = 0V	--	--	±10	μA
High-impedance state Current		I_{OZ}	V_O = 0 to 5.5V, V_{CC} = 3.6V	--	--	10	μA
Quiescent Supply Current		I_{CC}	V_{IN} = 5.5V or GND, I_{OUT} = 0, V_{CC} = 1.65V to 5.5V	--	--	10	μA
Additional quiescent Supply Current		ΔI_{CC}	One input at V_{CC} – 0.6V; other inputs at V_{CC} or GND; V_{CC}=3V ~ 5.5V	--	--	500	μA
Input Capacitance		C_{IN}	V_{IN} = V_{CC} or GND, V_{CC}=3.3V	--	4		pF
Output Capacitance		C_{OUT}	V_{OUT} = V_{CC} or GND, V_{CC}=3.3V	--	6		pF

OPERATING CHARACTERISTICS (f=10MHz, TA =25°C , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{pd}	V_{CC} = 1.8V, f=10MHz	--	17	--	pF
		V_{CC} = 2.5V, f=10MHz	--	17	--	pF
		V_{CC} = 3.3V, f=10MHz	--	18	--	pF
		V_{CC} = 5.0V, f=10MHz	--	21	--	pF

TEST CIRCUIT AND WAVEFORMS



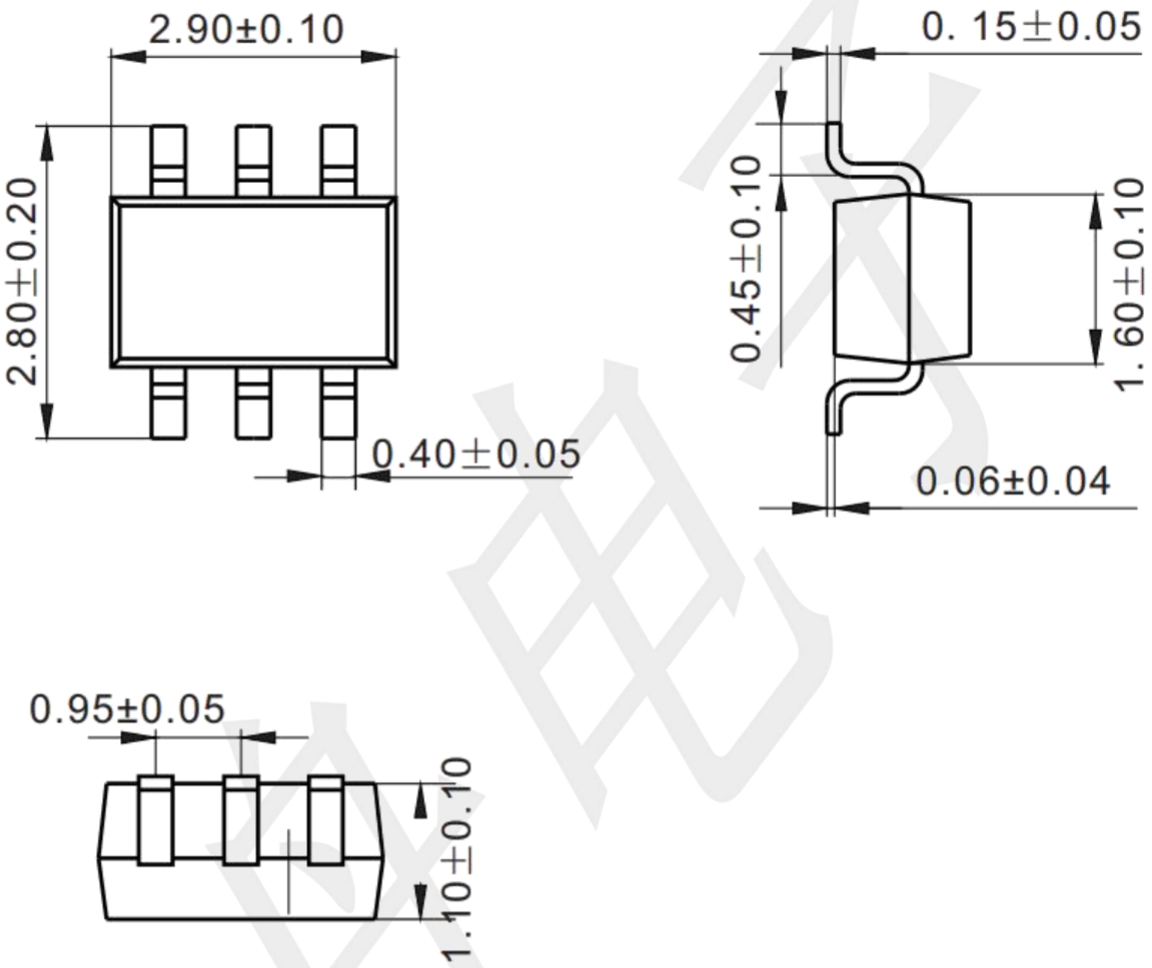
TEST CIRCUIT

TEST	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	V_{LOAD}
t_{PHZ}/t_{PZH}	GND

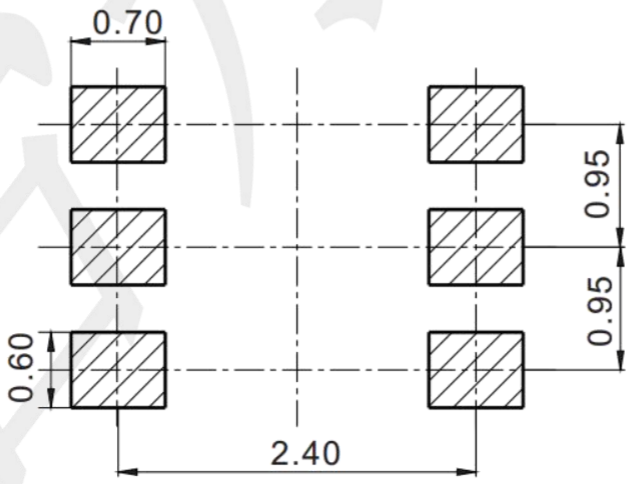
V_{CC}	Inputs		V_M	V_{LOAD}	C_L	R_L	V_Δ
	V_{IN}	t_r, t_f					
1.8V±0.15V	V_{CC}	≤2ns	$V_{CC}/2$	$2\times V_{CC}$	15pF	1MΩ	0.15V
2.5V±0.2V	V_{CC}	≤2ns	$V_{CC}/2$	$2\times V_{CC}$	15pF	1MΩ	0.15V
3.3V±0.3V	3V	≤2.5ns	1.5V	6V	15pF	1MΩ	0.3V
5V±0.5V	V_{CC}	≤2.5ns	$V_{CC}/2$	$2\times V_{CC}$	15pF	1MΩ	0.3V
1.8V±0.15V	V_{CC}	≤2ns	$V_{CC}/2$	$2\times V_{CC}$	30pF	1KΩ	0.15V
2.5V±0.2V	V_{CC}	≤2ns	$V_{CC}/2$	$2\times V_{CC}$	30pF	500Ω	0.15V
3.3V±0.3V	3V	≤2.5ns	1.5V	6V	50pF	500Ω	0.3V
5V±0.5V	V_{CC}	≤2.5ns	$V_{CC}/2$	$2\times V_{CC}$	50pF	500Ω	0.3V

Package information

SOT23-6 (Unit: mm)

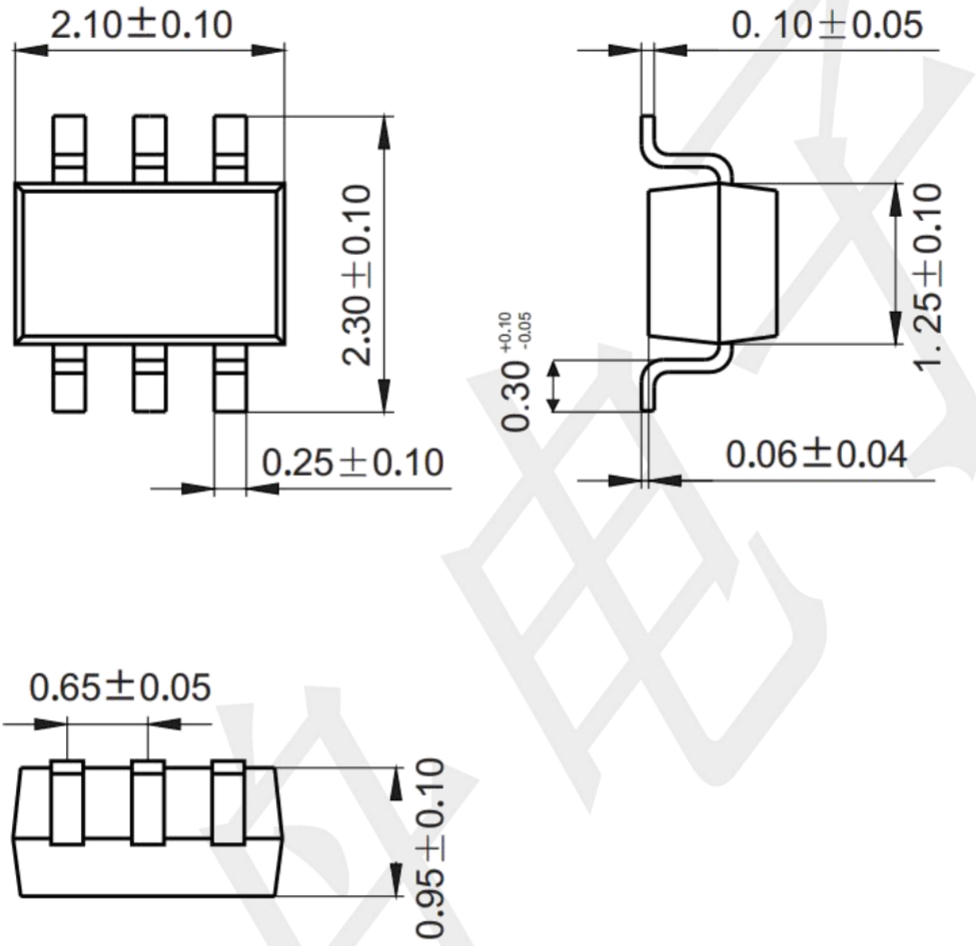


Mounting Pad Layout (unit: mm)



Package information

SOT363 (Unit: mm)



Mounting Pad Layout (unit: mm)