

1. General Description

The 74LVC1G3157G is a single SPDT low on-resistance analog switch. It can operate from 1.5V to 5.5V power supply. The device offers low ON-state resistance and excellent ON-state resistance matching with break-before-make feature, to prevent signal distortion during the transferring of a signal from one channel to another. The device is capable of truly isolation. Even when A overrides V_{CC} , very little current will flow back to the supply.

2. Features and Benefits

- Wide Supply Range from 1.5 V to 5.5 V
- Low ON-state resistance, typically 1.9Ω ($V_{CC}=5.5 \text{ V}$)
- 1.8 V Compatible Control Logic Inputs
- High Off-Isolation: -80 dB @ 10 kHz
- Low Channel-to-Channel Crosstalk: -82 dB @ 10 kHz
- High Bandwidth: -3dB @ 800MHz
- Low Quiescent Current ($< 1\mu\text{A}$) when $V_{CC} = 3.3 \text{ V}$

3. Applications

- Audio, Video, UART, USB2.0 Signal and Supply Routing
- Cell phones and TWS headset

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4. Ordering Information

Table 1. Ordering information

Type number	Package		
	Name	Description	Quantity
74LVC1G3157GW	SOT363	SOT363 package, 6 pins 2.1 mm × 1.25 mm; 1.1 mm (Max) height	3000
74LVC1G3157GV	SOT23-6L	SOT23 package, 6pins 2.92 mm × 1.6 mm; 1.25 mm (Max) height	3000

5. Pinning Information

5.1. Pin map

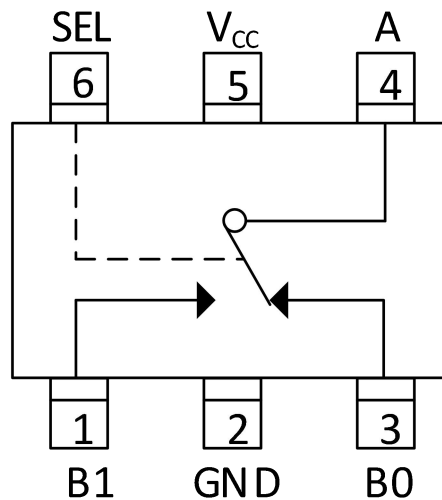


Fig 1. Top view pin configuration SOT363 and SOT23-6L

5.2. Pin description

Table 2. Pin description

Symbol	Pin	Description
B1	1	Analog/Digital Signal Port (Normally open)

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GND	2	Ground (0V)
B0	3	Analog/Digital Signal Port (Normally closed)
A	4	Common Signal Port
V _{CC}	5	Supply voltage
SEL	6	Logic Input Control

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6. Functional Description

Table 3. Function table

H = HIGH voltage level; L = LOW voltage level.

Input SEL	Channel on
L	B0
H	B1

7. Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

Table 4. Absolute Maximum Ratings

In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to GND.

Symbol	Parameter	Conditions	Min	Max	Unit
V_{CC}	supply voltage		-0.3	6.5	V
V_{SEL}	control Input Voltage		-0.3	6.5	V
V_A	signal input voltage		-0.3	6.5	V
I_{max}	continuous Current Through A, B0, B1			±100	mA
	peak Current Through A, B0, B1 (pulsed at 1ms 50% duty cycle)			±200	mA
T_J	junction Temperature under Bias			150	°C
T_L	lead Temperature (Soldering, 10 seconds)			260	°C
$R_{\theta JA}$	thermal resistance			350	°C/W

8. Recommended Operating Conditions

The Recommended Operating Conditions table defines the conditions for actual device operation. Recommended operating conditions are specified to ensure optimal performance to the datasheet specifications. Please do not exceed them or design to Absolute Maximum Ratings.

Table 5. Recommended Operating Conditions

Symbol	Parameter	Conditions	Min	Max	Unit
V _{CC}	supply voltage		1.5	5.5	V
V _{SEL}	control input voltage		0	5.5	V
V _A	signal input voltage		0	V _{CC}	V
T _{amb}	ambient temperature		-40	125	°C

9. Electrical Characteristics

Table 6. Static characteristics
 $T_{amb}=25\text{ }^{\circ}\text{C}$, $V_{CC}=3.3\text{ V}$, unless otherwise specified

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
DC Electrical Characteristics						
V_{IH}	input logic high level	$V_{CC} = 3.4\text{ V to }5.5\text{ V}$	1.6			V
		$V_{CC} = 1.5\text{ V to }3.3\text{ V}$	1.4			V
V_{IL}	input logic low level	$V_{CC} = 3.4\text{ V to }5.5\text{ V}$			0.6	V
		$V_{CC} = 1.5\text{ V to }3.3\text{ V}$			0.4	V
I_{CC}	supply current	$I_A = 0$, $V_{SEL} = 0$ or $V_{SEL} = V_{CC}$			1.0	μA
ΔI_{CC}	additional supply current	$I_A = 0$, $V_{CC} = 2.5\text{ V or }4.2\text{ V}$ $V_{SEL} = 1.6\text{ V}$			3.0	μA
I_{off}	OFF-state switch leakage current from A to B0 (or B1)	$V_A = 5\text{ V}$, V_{B0} or $V_{B1} = 0\text{ V}$			± 2.0	μA
R_{ON}	on-resistance	$V_{CC} = 3.5\text{ V}$, $V_A = 0.8\text{ V to }2.0\text{ V}$, $I_A = 10\text{ mA}$		3.4	4.0	Ω
		$V_{CC} = 4.5\text{ V}$, $V_A = 0.8\text{ V to }2.3\text{ V}$, $I_A = 10\text{ mA}$		2.4	3.0	Ω
		$V_{CC} = 5.5\text{ V}$, $V_A = 0.8\text{ V to }2.6\text{ V}$, $I_A = 10\text{ mA}$		1.9	2.5	Ω
R_{FLAT}	on-resistance flatness	$V_{CC} = 3.5\text{ V}$, $V_A = 0.8\text{ V to }2.0\text{ V}$, $I_A = 10\text{ mA}$		0.2	0.4	Ω
		$V_{CC} = 4.5\text{ V}$, $V_A = 0.8\text{ V to }2.3\text{ V}$, $I_A = 10\text{ mA}$		0.25	0.45	Ω
		$V_{CC} = 5.5\text{ V}$, $V_A = 0.8\text{ V to }2.6\text{ V}$, $I_A = 10\text{ mA}$		0.3	0.5	Ω
ΔR_{ON}	on-resistance matching between channels	$V_{CC} = 3.5\text{ V}$, $V_A = 0.8\text{ V to }2.0\text{ V}$, $I_A = 10\text{ mA}$		0.1	0.2	Ω
		$V_{CC} = 4.5\text{ V}$, $V_A = 0.8\text{ V to }2.3\text{ V}$, $I_A = 10\text{ mA}$		0.1	0.2	Ω
		$V_{CC} = 5.5\text{ V}$, $V_A = 0.8\text{ V to }2.6\text{ V}$, $I_A = 10\text{ mA}$		0.1	0.2	Ω

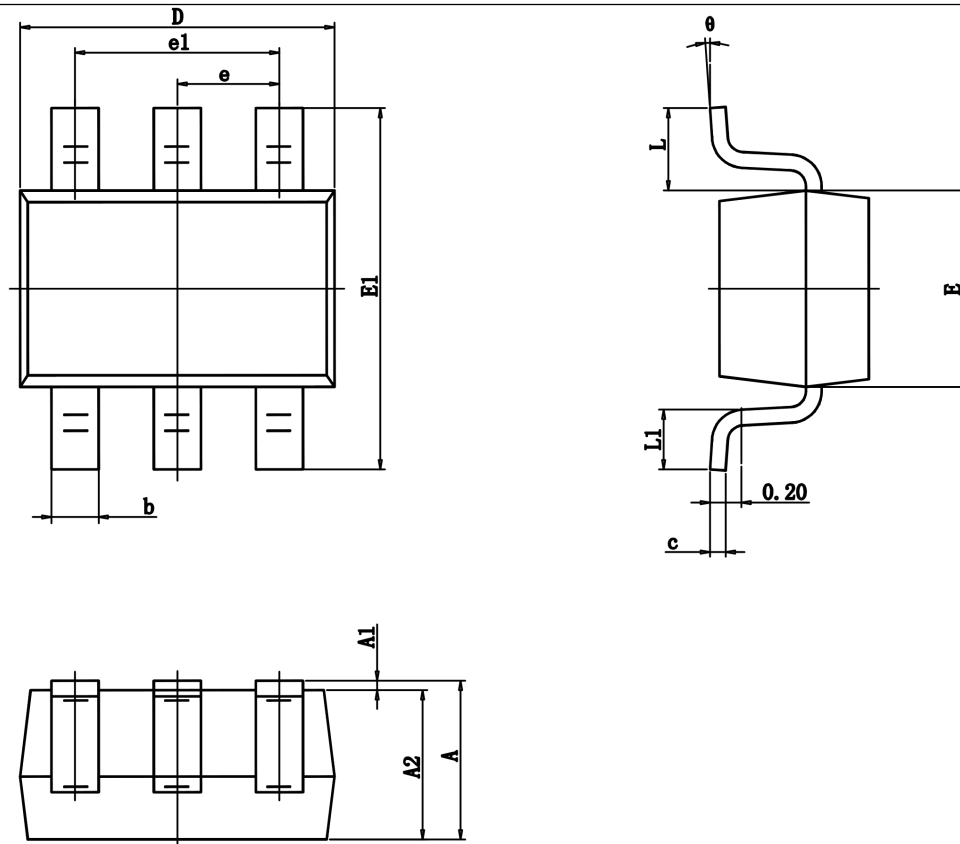
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Symbol	Parameter	Conditions	Min	Typ	Max	Unit
AC Electronics Characteristics						
t_{ON}	turn-On Time	$V_A=1.5V, C_L=50pF, R_L=50\Omega$		470		ns
t_{OFF}	turn-Off Time	$V_A=1.5V, C_L=50pF, R_L=50\Omega$		120		ns
t_{BBM}	break-before-make time	$V_A=1.5V, C_L=50pF, R_L=50\Omega$		600		ns
BW	-3dB Bandwidth	$C_L=0pF$		800		MHz
OIRR	off isolation	$f=10\text{ KHz}$		-80		dB
		$f=240\text{ MHz}$		-31		dB
X_{TALK}	crosstalk	$f=10\text{ KHz}$		-82		dB
		$f=240\text{ MHz}$		-26		dB
THD	total harmonic distortion	$f=20\text{Hz to } 20\text{KHz}$ $V_A=600\text{mVpp}, R_L=32\Omega$		-80		dB
Capacitance						
C_{ON}	On Capacitance	$f=100\text{KHz}$		12		pF
C_{OFF}	Off Capacitance	$f=100\text{KHz}$		4		pF

10. Package Outline

SOT363

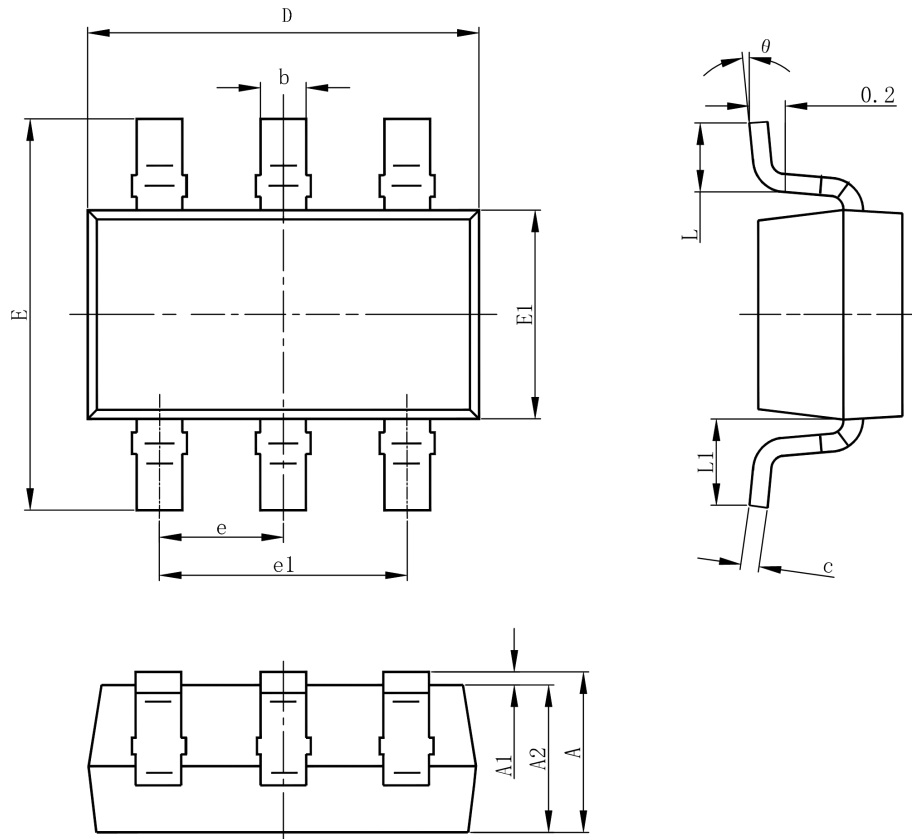


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.110	0.175	0.004	0.007
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP.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

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SOT23-6L



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
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
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°

11. Revision History

Table 7. Revision history

Document ID	Release Date	Data sheet status	Change notice	Supersedes
74LVC1G3157 Rev.1.0	Oct 30, 2023	Product datasheet		