

**Bilateral Switch**

**CJ74LVC1G66**      Logic

**1 Introduction**

The CJ74LVC1G66 provides one single pole, single-throw analog switch function. It has two input/output terminals (Y and Z) and an active HIGH enable input pin (E). When E is LOW, the analog switch is turned off.

**2 Available Packages**

PART NUMBER	PACKAGE
CJ74LVC1G66	SOT-23-5L
	SOT-353

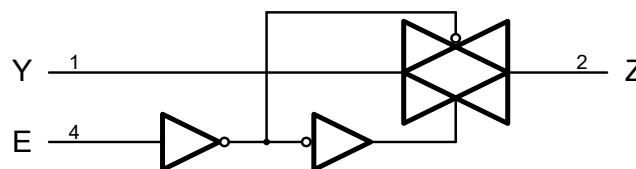
**Note:** For all available packages, please refer to the part Orderable Information.

**3 Features**

- Wide supply voltage range from 1.65 V to 5.5 V
- Very low ON resistance:
- Switch current capability of 32 mA
- CMOS low power consumption
- Specified from -40°C to +125°C

**4 Applications**

- Wireless Devices
- Audio and Video Signal Routing
- Portable Computing
- Wearable Devices
- Signal Gating, Chopping, Modulation or Demodulation (Modem)
- Signal Multiplexing for Analog-to-Digital and Digital-to-Analog Conversion Systems



Logic diagram

**5 Orderable Information**

DEVICE	PACKAGE	OP TEMP	ECO PLAN	MSL	PACKING OPTION	SORT
CJ74LVC1G66M5N	SOT-23-5L	-40~125°C	RoHS & Green	Level 3 168HR	Tape and Reel 3000 Units / Reel	Active
CJ74LVC1G66R5N	SOT-353	-40~125°C	RoHS & Green	Level 3 168HR	Tape and Reel 3000 Units / Reel	Active

**Note:**

**ECO PLAN:** For the RoHS and Green certification standards of this product, please refer to the official report provided by JSCJ.

**MSL:** Moisture Sensitivity Level. Determined according to JEDEC industry standard classification.

**SORT:** Specifically defined as follows:

Active: Recommended for new products;

Customized: Products manufactured to meet the specific needs of customers;

Preview: The device has been released and has not been fully mass produced. The sample may or may not be available;

NoRD: It is not recommended to use the device for new design. The device is only produced for the needs of existing customers;

Obsolete: The device has been discontinued.

## 6 Pin Configuration and Marking Information

### 6.1 Pin Configuration

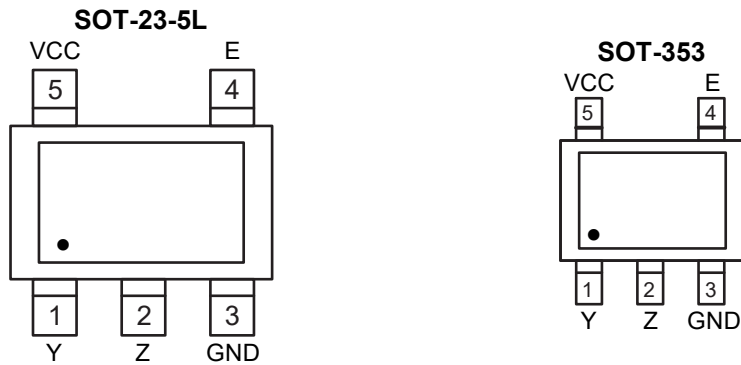


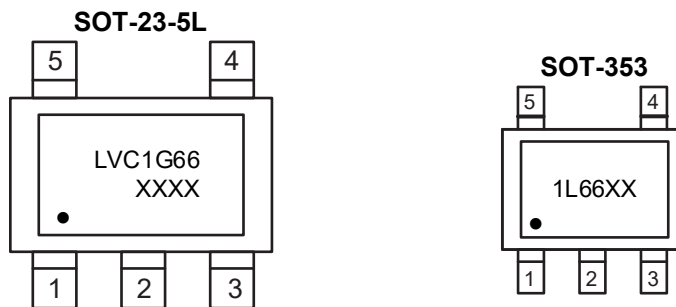
Figure 6-1 Pin configuration

### 6.2 Pin Function

PIN		I/O <sup>(1)</sup>	DESCRIPTION
No.	NAME		
1	Y	I/O	Independent input or output
2	Z	I/O	Independent output or input
3	GND	G	Ground (0V)
4	E	I	Enable input (active HIGH)
5	VCC	P	Supply voltage

(1) I-Input, O-Output, P-Power, G-Ground

### 6.3 Marking Information



XXXX or XX: Code, indicates weekly record information.

## 7 Specifications

### 7.1 Absolute Maximum Ratings

Voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CC}$	Supply voltage	-	-0.5	+6.5	V
$I_{IK}$	Input clamping current	$V_I < -0.5V$ or $V_I > V_{CC} + 0.5V$	-50	-	mA
$V_I$	Input voltage	-	-0.5	+6.5	V
$I_{SK}$	Switch clamping current	$V_I < -0.5V$ or $V_I > V_{CC} + 0.5V$	-50	-	mA
$V_{SW}$	Switch voltage	Enable and disable mode	-0.5	$V_{CC} + 0.5$	V
$I_{SW}$	Switch current	$V_{SW} > -0.5V$ or $V_{SW} < V_{CC} + 0.5V$	-	$\pm 50$	mA
$I_{CC}$	Supply current	-	-	100	mA
$I_{GND}$	Ground current	-	-100	-	mA
$T_{stg}$	Storage temperature	-	-65	+150	°C
$P_{tot}$	Total power dissipation	-	-	250	mW
$T_L$	Soldering temperature	10s	-	260	°C

**Note:** Absolute maximum ratings indicate sustained limits beyond which damage to the device may occur. All voltage parameters are absolute voltages referenced to GND. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions.

### 7.2 Recommended Operating Conditions

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{CC}$	Supply voltage	-	1.65	-	5.5	V
$V_I$	Input voltage	-	0	-	5.5	V
$V_{SW}$	Switch voltage	-	0	-	$V_{CC}$	V
$T_{amb}$	Ambient temperature	-	-40	-	+125	°C

### 7.3 Electrical Characteristics

#### 7.3.1 DC Characteristics 1

T<sub>amb</sub>=-40°C to +85°C, voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP. <sup>(1)</sup>	MAX.	UNIT
V <sub>IH</sub>	HIGH-level input voltage	V <sub>CC</sub> =1.65V to 1.95V	0.65xV <sub>CC</sub>	-	-	V
		V <sub>CC</sub> =2.3V to 2.7V	1.7	-	-	V
		V <sub>CC</sub> =2.7V to 3.6V	2.0	-	-	V
		V <sub>CC</sub> =4.5V to 5.5V	0.7xV <sub>CC</sub>	-	-	V
V <sub>IL</sub>	LOW-level input voltage	V <sub>CC</sub> =1.65V to 1.95V	-	-	0.35xV <sub>CC</sub>	V
		V <sub>CC</sub> =2.3V to 2.7V	-	-	0.7	V
		V <sub>CC</sub> =2.7V to 3.6V	-	-	0.8	V
		V <sub>CC</sub> =4.5V to 5.5V	-	-	0.3xV <sub>CC</sub>	V
I <sub>I</sub>	Input leakage current	Pin E; V <sub>I</sub> =5.5V or GND; V <sub>CC</sub> =0V to 5.5V <sup>(2)</sup>	-	±0.1	±1	µA
I <sub>(S)OFF</sub>	OFF-state leakage current	V <sub>CC</sub> =5.5V; See Figure 8-4 <sup>(2)</sup>	-	±0.1	±0.2	µA
I <sub>(S)ON</sub>	ON-state leakage current	V <sub>CC</sub> =5.5V; See Figure 8-5 <sup>(2)</sup>	-	±0.1	±1	µA
I <sub>CC</sub>	Supply current	V <sub>I</sub> =5.5V or GND; V <sub>SW</sub> =GND or V <sub>CC</sub> ; V <sub>CC</sub> =1.65V to 5.5V <sup>(2)</sup>	-	0.1	4	µA
ΔI <sub>CC</sub>	Additional supply current	Pin E; V <sub>I</sub> =V <sub>CC</sub> -0.6V; V <sub>SW</sub> =GND or V <sub>CC</sub> ; V <sub>CC</sub> =5.5V <sup>(2)</sup>	-	5	500	µA
C <sub>I</sub>	Input capacitance	-	-	2.0	-	pF
C <sub>S(OFF)</sub>	OFF-state capacitance	-	-	6.5	-	pF
C <sub>S(ON)</sub>	ON-state capacitance	-	-	11	-	pF

(1) All typical values are measured at T<sub>amb</sub>=25°C.

(2) These typical values are measured at V<sub>CC</sub>=3.3V.

#### 7.3.2 DC Characteristics 2

T<sub>amb</sub>=-40°C to +125°C, voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V <sub>IH</sub>	HIGH-level input voltage	V <sub>CC</sub> =1.65V to 1.95V	0.65xV <sub>CC</sub>	-	-	V
		V <sub>CC</sub> =2.3V to 2.7V	1.7	-	-	V
		V <sub>CC</sub> =2.7V to 3.6V	2.0	-	-	V
		V <sub>CC</sub> =4.5V to 5.5V	0.7xV <sub>CC</sub>	-	-	V
V <sub>IL</sub>	LOW-level input voltage	V <sub>CC</sub> =1.65V to 1.95V	-	-	0.35xV <sub>CC</sub>	V
		V <sub>CC</sub> =2.3V to 2.7V	-	-	0.7	V
		V <sub>CC</sub> =2.7V to 3.6V	-	-	0.8	V
		V <sub>CC</sub> =4.5V to 5.5V	-	-	0.3xV <sub>CC</sub>	V
I <sub>I</sub>	Input leakage current	Pin E; V <sub>I</sub> =5.5V or GND; V <sub>CC</sub> =0V to 5.5V <sup>(1)</sup>	-	-	±1	µA
I <sub>(S)OFF</sub>	OFF-state leakage current	V <sub>CC</sub> =5.5V; See Figure 8-4 <sup>(1)</sup>	-	-	±0.5	µA
I <sub>(S)ON</sub>	ON-state leakage current	V <sub>CC</sub> =5.5V; See Figure 8-5 <sup>(1)</sup>	-	-	±2	µA
I <sub>CC</sub>	Supply current	V <sub>I</sub> =5.5V or GND; V <sub>SW</sub> =GND or V <sub>CC</sub> ; V <sub>CC</sub> =1.65V to 5.5V <sup>(1)</sup>	-	-	4	µA

$\Delta I_{CC}$	Additional supply current	Pin E; $V_I=V_{CC}-0.6V$ ; $V_{SW}=GND$ or $V_{CC}$ ; $V_{CC}=5.5V^{(1)}$	-	-	500	$\mu A$
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(1) These typical values are measured at  $V_{CC}=3.3V$ .

### 7.3.3 ON Resistance 1

$T_{amb}=-40^{\circ}C$  to  $+85^{\circ}C$ , voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP. <sup>(1)</sup>	MAX.	UNIT
$R_{ON(peak)}$	ON resistance (peak)	$V_I=GND$ to $V_{CC}$ ; See Figure 8-4	$I_{SW}=4mA$ ; $V_{CC}=1.65V$ to $1.95V$	-	34.0	130	$\Omega$
			$I_{SW}=8mA$ ; $V_{CC}=2.3V$ to $2.7V$	-	12.0	30	$\Omega$
			$I_{SW}=12mA$ ; $V_{CC}=2.7V$	-	10.4	25	$\Omega$
			$I_{SW}=24mA$ ; $V_{CC}=3V$ to $3.6V$	-	7.8	20	$\Omega$
			$I_{SW}=32mA$ ; $V_{CC}=4.5V$ to $5.5V$	-	6.2	15	$\Omega$
$R_{ON(rail)}$	ON resistance (rail)	$V_I=GND$ ; See Figure 8-4	$I_{SW}=4mA$ ; $V_{CC}=1.65V$ to $1.95V$	-	8.2	18	$\Omega$
			$I_{SW}=8mA$ ; $V_{CC}=2.3V$ to $2.7V$	-	7.1	16	$\Omega$
			$I_{SW}=12mA$ ; $V_{CC}=2.7V$	-	6.9	14	$\Omega$
			$I_{SW}=24mA$ ; $V_{CC}=3V$ to $3.6V$	-	6.5	12	$\Omega$
			$I_{SW}=32mA$ ; $V_{CC}=4.5V$ to $5.5V$	-	5.8	10	$\Omega$
		$V_I=V_{CC}$ ; See Figure 8-4	$I_{SW}=4mA$ ; $V_{CC}=1.65V$ to $1.95V$	-	10.4	30	$\Omega$
			$I_{SW}=8mA$ ; $V_{CC}=2.3V$ to $2.7V$	-	7.6	20	$\Omega$
			$I_{SW}=12mA$ ; $V_{CC}=2.7V$	-	7.0	18	$\Omega$
			$I_{SW}=24mA$ ; $V_{CC}=3V$ to $3.6V$	-	6.1	15	$\Omega$
			$I_{SW}=32mA$ ; $V_{CC}=4.5V$ to $5.5V$	-	4.9	10	$\Omega$
$R_{ON(flatness)}$	ON resistance (flatness)	$V_I=GND$ to $V_{CC}^{(2)}$	$I_{SW}=4mA$ ; $V_{CC}=1.65V$ to $1.95V$	-	26.0	-	$\Omega$
			$I_{SW}=8mA$ ; $V_{CC}=2.3V$ to $2.7V$	-	5.0	-	$\Omega$
			$I_{SW}=12mA$ ; $V_{CC}=2.7V$	-	3.5	-	$\Omega$
			$I_{SW}=24mA$ ; $V_{CC}=3V$ to $3.6V$	-	2.0	-	$\Omega$
			$I_{SW}=32mA$ ; $V_{CC}=4.5V$ to $5.5V$	-	1.5	-	$\Omega$

(1) Typical values are measured at  $T_{amb}=25^{\circ}C$  and nominal  $V_{CC}$ .

(2) Flatness is defined as the difference between the maximum and minimum value of ON resistance measured at identical  $V_{CC}$  and temperature.

### 7.3.4 ON Resistance 2

$T_{amb}=-40^{\circ}C$  to  $+125^{\circ}C$ , voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
$R_{ON(peak)}$	ON resistance (peak)	$V_I=GND$ to $V_{CC}$ ; See Figure 8-4	$I_{SW}=4mA$ ; $V_{CC}=1.65V$ to $1.95V$	-	-	195	$\Omega$
			$I_{SW}=8mA$ ; $V_{CC}=2.3V$ to $2.7V$	-	-	45	$\Omega$
			$I_{SW}=12mA$ ; $V_{CC}=2.7V$	-	-	38	$\Omega$
			$I_{SW}=24mA$ ; $V_{CC}=3V$ to $3.6V$	-	-	30	$\Omega$
			$I_{SW}=32mA$ ; $V_{CC}=4.5V$ to $5.5V$	-	-	23	$\Omega$

R <sub>ON(rail)</sub>	ON resistance (rail)	V <sub>I</sub> =GND; See Figure 8-4	I <sub>SW</sub> =4mA; V <sub>CC</sub> =1.65V to 1.95V	-	-	27	Ω
			I <sub>SW</sub> =8mA; V <sub>CC</sub> =2.3V to 2.7V	-	-	24	Ω
			I <sub>SW</sub> =12mA; V <sub>CC</sub> =2.7V	-	-	21	Ω
			I <sub>SW</sub> =24mA; V <sub>CC</sub> =3V to 3.6V	-	-	18	Ω
			I <sub>SW</sub> =32mA; V <sub>CC</sub> =4.5V to 5.5V	-	-	15	Ω
		V <sub>I</sub> =V <sub>CC</sub> ; See Figure 8-4	I <sub>SW</sub> =4mA; V <sub>CC</sub> =1.65V to 1.95V	-	-	45	Ω
			I <sub>SW</sub> =8mA; V <sub>CC</sub> =2.3V to 2.7V	-	-	30	Ω
			I <sub>SW</sub> =12mA; V <sub>CC</sub> =2.7V	-	-	27	Ω
			I <sub>SW</sub> =24mA; V <sub>CC</sub> =3V to 3.6V	-	-	23	Ω
			I <sub>SW</sub> =32mA; V <sub>CC</sub> =4.5V to 5.5V	-	-	15	Ω

### 7.3.5 AC Characteristics 1

T<sub>amb</sub>=-40°C to +85°C, voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP. <sup>(1)</sup>	MAX.	UNIT	
t <sub>PHL</sub> , t <sub>PLH</sub>	Propagation delay	Y to Z or Z to Y; See Figure 8-11 <sup>(2)</sup>	V <sub>CC</sub> =1.65V to 1.95V	-	0.8	2.0	ns
			V <sub>CC</sub> = 2.3V to 2.7V	-	0.4	1.2	ns
			V <sub>CC</sub> =2.7V	-	0.4	1.0	ns
			V <sub>CC</sub> =3.0V to 3.6V	-	0.3	0.8	ns
			V <sub>CC</sub> =4.5V to 5.5V	-	0.2	0.6	ns
t <sub>PZH</sub> , t <sub>PZL</sub>	Enable time	E to Y or Z; See Figure 8-12	V <sub>CC</sub> =1.65V to 1.95V	1.0	5.3	12	ns
			V <sub>CC</sub> = 2.3V to 2.7V	1.0	3.0	6.5	ns
			V <sub>CC</sub> =2.7V	1.0	2.6	6.0	ns
			V <sub>CC</sub> =3.0V to 3.6V	1.0	2.5	5.0	ns
			V <sub>CC</sub> =4.5V to 5.5V	1.0	1.9	4.2	ns
t <sub>PLZ</sub> , t <sub>PHZ</sub>	Disable time	E to Y or Z; See Figure 8-12	V <sub>CC</sub> =1.65V to 1.95V	1.0	4.2	10	ns
			V <sub>CC</sub> = 2.3V to 2.7V	1.0	2.4	6.9	ns
			V <sub>CC</sub> =2.7V	1.0	3.6	7.5	ns
			V <sub>CC</sub> =3.0V to 3.6V	1.0	3.4	6.5	ns
			V <sub>CC</sub> =4.5V to 5.5V	1.0	2.5	5.0	ns

(1) Typical values are measured at T<sub>amb</sub>=25°C and nominal V<sub>CC</sub>.

(2) Propagation delay is the calculated RC time constant of the typical ON resistance of the switch and the specified capacitance when driven by an ideal voltage source (zero output impedance).

7.3.6 AC Characteristics 2

T<sub>amb</sub>=-40°C to +125°C, voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
t <sub>PHL</sub> , t <sub>PLH</sub>	Propagation delay	Y to Z or Z to Y; See Figure 8-11 <sup>(1)</sup>	V <sub>CC</sub> =1.65V to 1.95V	-	-	3.0	ns
			V <sub>CC</sub> = 2.3V to 2.7V	-	-	2.0	ns
			V <sub>CC</sub> =2.7V	-	-	1.5	ns
			V <sub>CC</sub> =3.0V to 3.6V	-	-	1.5	ns
			V <sub>CC</sub> =4.5V to 5.5V	-	-	1.0	ns
t <sub>PZH</sub> , t <sub>PZL</sub>	Enable time	E to Y or Z; See Figure 8-12	V <sub>CC</sub> =1.65V to 1.95V	1.0	-	15.5	ns
			V <sub>CC</sub> = 2.3V to 2.7V	1.0	-	8.5	ns
			V <sub>CC</sub> =2.7V	1.0	-	8.0	ns
			V <sub>CC</sub> =3.0V to 3.6V	1.0	-	6.5	ns
			V <sub>CC</sub> =4.5V to 5.5V	1.0	-	5.5	ns
t <sub>PLZ</sub> , t <sub>PHZ</sub>	Disable time	E to Y or Z; See Figure 8-12	V <sub>CC</sub> =1.65V to 1.95V	1.0	-	13	ns
			V <sub>CC</sub> = 2.3V to 2.7V	1.0	-	9.0	ns
			V <sub>CC</sub> =2.7V	1.0	-	9.5	ns
			V <sub>CC</sub> =3.0V to 3.6V	1.0	-	8.5	ns
			V <sub>CC</sub> =4.5V to 5.5V	1.0	-	6.5	ns

(1) Propagation delay is the calculated RC time constant of the typical ON resistance of the switch and the specified capacitance when driven by an ideal voltage source (zero output impedance).

7.3.7 Additional AC Characteristics

T<sub>amb</sub>=-25°C, voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
THD	Total harmonic distortion	R <sub>L</sub> =10kΩ; C <sub>L</sub> =50pF; f <sub>i</sub> =1kHz; See Figure 8-5	V <sub>CC</sub> =1.65V	-	0.032	-	%
			V <sub>CC</sub> =2.3V	-	0.008	-	%
			V <sub>CC</sub> =3.0V	-	0.006	-	%
			V <sub>CC</sub> =4.5V	-	0.001	-	%
		R <sub>L</sub> =10kΩ; C <sub>L</sub> =50pF; f <sub>i</sub> =10kHz; See Figure 8-5	V <sub>CC</sub> =1.65V	-	0.068	-	%
			V <sub>CC</sub> =2.3V	-	0.009	-	%
			V <sub>CC</sub> =3.0V	-	0.008	-	%
			V <sub>CC</sub> =4.5V	-	0.006	-	%
f <sub>(-3dB)</sub>	-3dB frequency response	R <sub>L</sub> =600Ω; C <sub>L</sub> =50pF; See Figure 8-6	V <sub>CC</sub> =1.65V	-	135	-	MHz
			V <sub>CC</sub> =2.3V	-	145	-	MHz
			V <sub>CC</sub> =3.0V	-	150	-	MHz
			V <sub>CC</sub> =4.5V	-	155	-	MHz
	R <sub>L</sub> =50Ω; C <sub>L</sub> =5pF; See Figure 8-6	V <sub>CC</sub> =1.65V	-	>500	-	MHz	
		V <sub>CC</sub> =2.3V	-	>500	-	MHz	
		V <sub>CC</sub> =3.0V	-	>500	-	MHz	

			$V_{CC}=4.5V$	-	>500	-	MHz
		$R_L=50\Omega; C_L=10pF;$ See Figure 8-6	$V_{CC}=1.65V$	-	200	-	MHz
			$V_{CC}=2.3V$	-	350	-	MHz
			$V_{CC}=3.0V$	-	410	-	MHz
			$V_{CC}=4.5V$	-	440	-	MHz
$\alpha_{iso}$	Isolation (OFF-state)	$R_L=600\Omega; C_L=50pF; f_i=1MHz;$ See Figure 8-7	$V_{CC}=1.65V$	-	-46	-	dB
			$V_{CC}=2.3V$	-	-46	-	dB
			$V_{CC}=3.0V$	-	-46	-	dB
			$V_{CC}=4.5V$	-	-46	-	dB
		$R_L=50\Omega; C_L=5pF; f_i=1MHz;$ See Figure 8-7	$V_{CC}=1.65V$	-	-37	-	dB
			$V_{CC}=2.3V$	-	-37	-	dB
			$V_{CC}=3.0V$	-	-37	-	dB
			$V_{CC}=4.5V$	-	-37	-	dB
$V_{ct}$	Crosstalk voltage	Between digital input and switch; $R_L=600\Omega; C_L=50pF; f_i=1MHz;$ $t_r=t_f=2ns;$ See Figure 8-8	$V_{CC}=1.65V$	-	69	-	mV
			$V_{CC}=2.3V$	-	87	-	mV
			$V_{CC}=3.0V$	-	156	-	mV
			$V_{CC}=4.5V$	-	302	-	mV
$Q_{inj}$	Charge injection	$C_L=0.1nF; V_{gen}=0V; R_{gen}=0\Omega;$ $f_i=1MHz; R_L=1M\Omega;$ See Figure 8-9	$V_{CC}=1.8V$	-	3.3	-	pC
			$V_{CC}=2.5V$	-	4.1	-	pC
			$V_{CC}=3.3V$	-	5.0	-	pC
			$V_{CC}=4.5V$	-	6.4	-	pC
			$V_{CC}=5.5V$	-	7.5	-	pC

## 8 Detailed Description

### 8.1 Overview

The CJ74LVC1G66 provides one single pole, single-throw analog switch function. It has two input/output terminals (Y and Z) and an active HIGH enable input pin (E). When E is LOW, the analog switch is turned off.

### 8.2 Functional Block Diagram

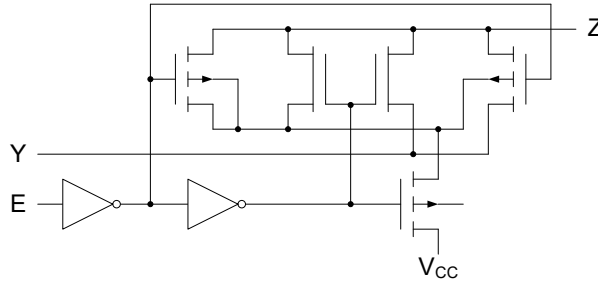


Figure 8-1 Logic diagram

### 8.3 Function Table<sup>(1)</sup>

INPUT E	SWITCH
L	OFF-state
H	ON-state

(1) H=HIGH voltage level; L=LOW voltage level; X=don't care; Z=high-impedance OFF-state.

### 8.4 Testing Circuit

#### 8.4.1 DC Testing Circuit

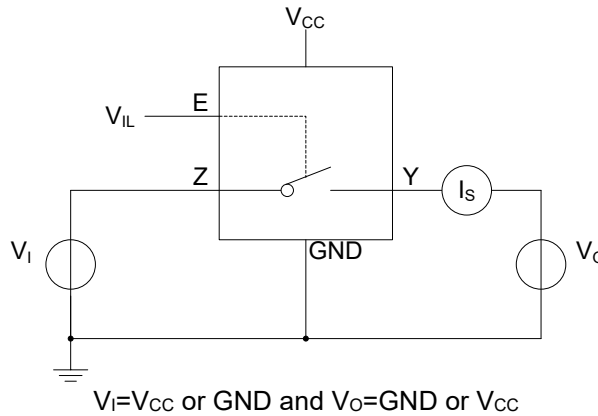
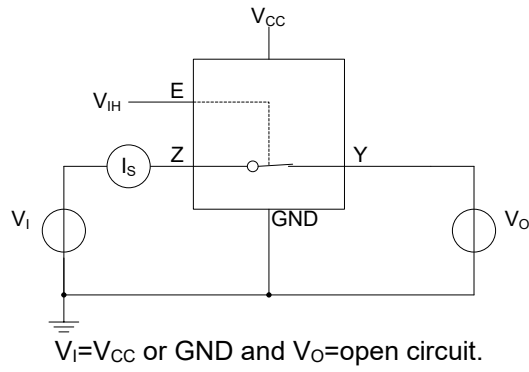
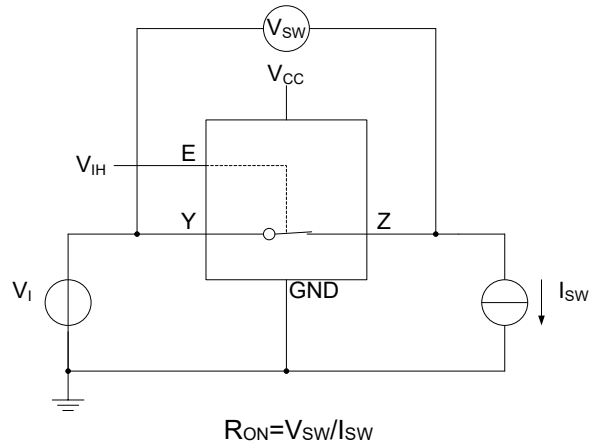


Figure 8-2 Test circuit for measuring OFF-state leakage current



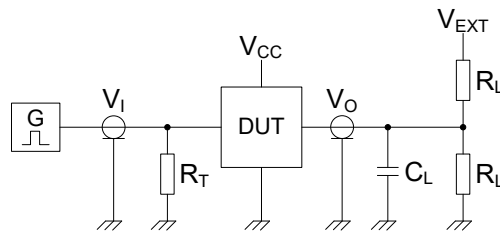
**Figure 8-3 Test circuit for measuring ON-state leakage current**

**8.4.2 ON Resistance Test Circuit**



**Figure 8-4 Test circuit for measuring ON resistance**

**8.4.3 AC Testing Circuit**



Definitions for test circuit:

$R_L$  = Load resistance.

$C_L$  = Load capacitance including jig and probe capacitance.

$R_T$  = Termination resistance should be equal to the output impedance  $Z_o$  of the pulse generator.

$V_{EXT}$  = External voltage for measuring switching times.

**Figure 8-5 Test circuit for measuring switching times**

8.4.4 AC Testing Circuit

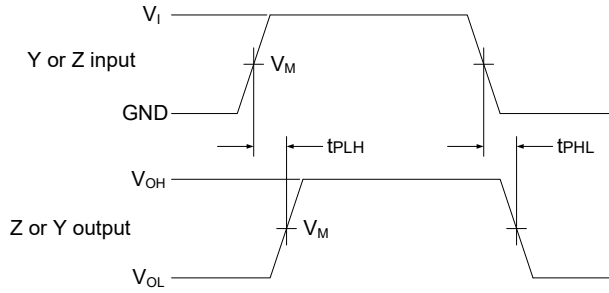


Figure 8-6 Input (Y or Z) to output (Z or Y) propagation delays

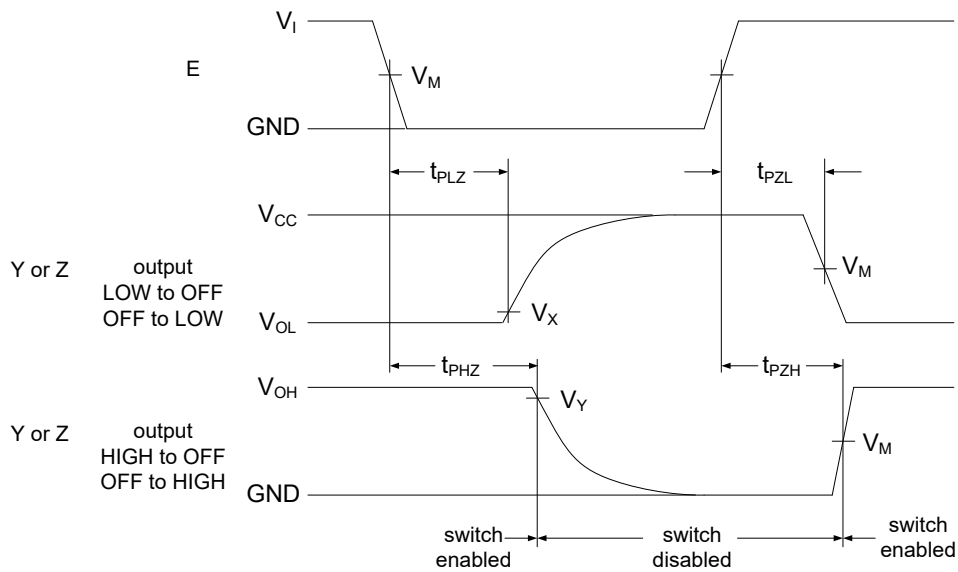
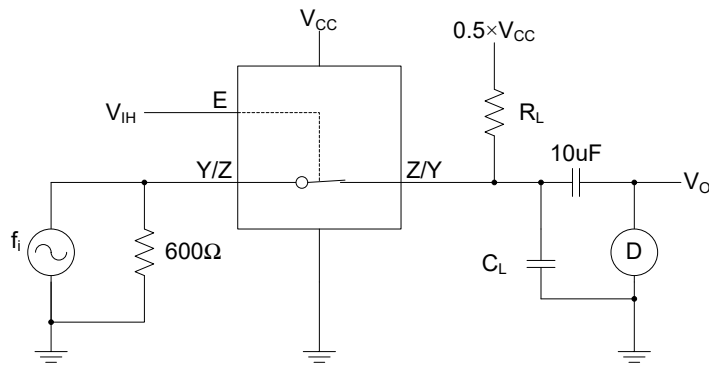


Figure 8-7 Enable and disable times

8.4.5 Additional AC Testing Circuit



Test conditions:

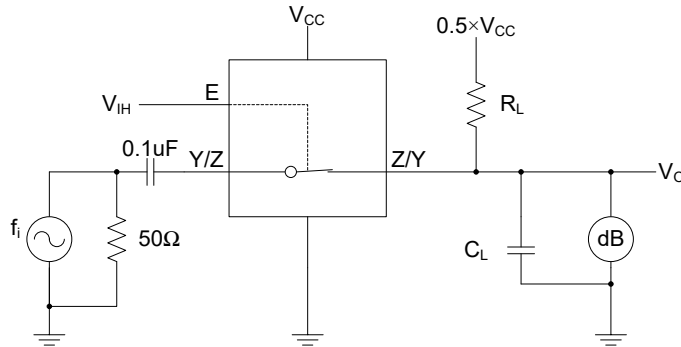
$V_{CC}=1.65V$ :  $V_i=1.4V$  (p-p).

$V_{CC}=2.3V$ :  $V_i=2V$  (p-p).

$V_{CC}=3V$ :  $V_i=2.5V$  (p-p).

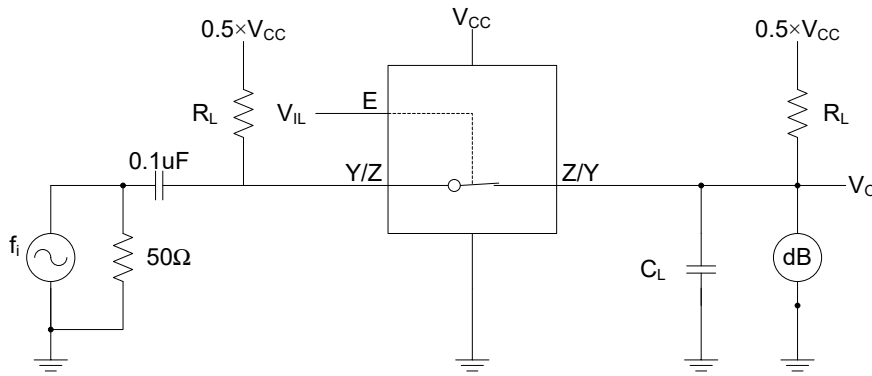
$V_{CC}=4.5V$ :  $V_i=4V$  (p-p).

Figure 8-8 Test circuit for measuring total harmonic distortion



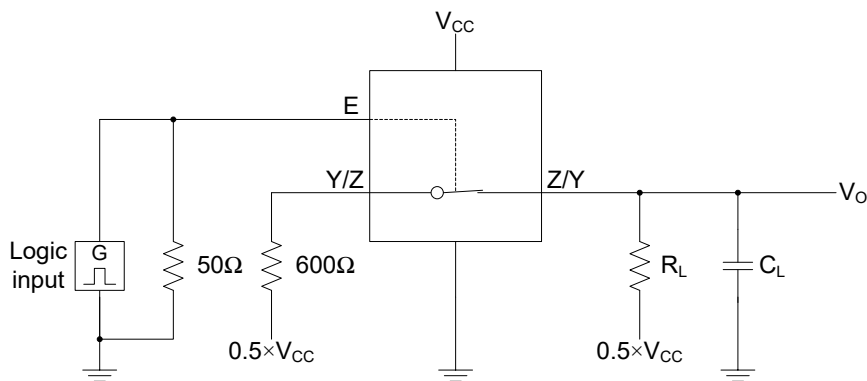
Adjust  $f_i$  voltage to obtain 0dBm level at output. Increase  $f_i$  frequency until dB meter reads -3dB.

**Figure 8-9 Test circuit for measuring the frequency response when switch is in ON-state**

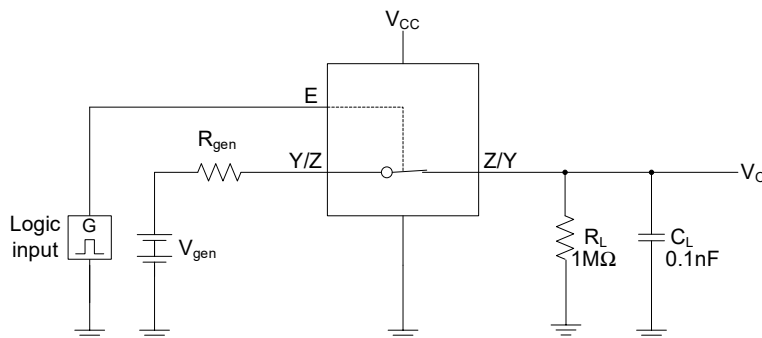


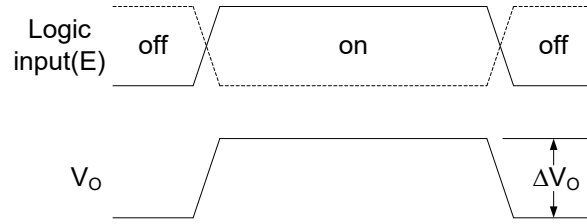
Adjust  $f_i$  voltage to obtain 0dBm level at input.

**Figure 8-10 Test circuit for measuring isolation (OFF-state)**



**Figure 8-11 Test circuit for measuring crosstalk between digital input and switch**





$Q_{inj} = \Delta V_O \times C_L$ .  
 $\Delta V_O$  = output voltage variation.  
 $R_{gen}$  = generator resistance.  
 $V_{gen}$  = generator voltage.

Figure 8-12 Test circuit for measuring charge injection

8.4.6 Measurement Points

SUPPLY VOLTAGE	INPUT	OUTPUT		
$V_{CC}$	$V_M$	$V_M$	$V_X$	$V_Y$
1.65V to 1.95V	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$	$V_{OL} + 0.15V$	$V_{OH} - 0.15V$
2.3V to 2.7V	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$	$V_{OL} + 0.15V$	$V_{OH} - 0.15V$
2.7V	1.5V	1.5V	$V_{OL} + 0.3V$	$V_{OH} - 0.3V$
3V to 3.6V	1.5V	1.5V	$V_{OL} + 0.3V$	$V_{OH} - 0.3V$
4.5V to 5.5V	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$	$V_{OL} + 0.3V$	$V_{OH} - 0.3V$

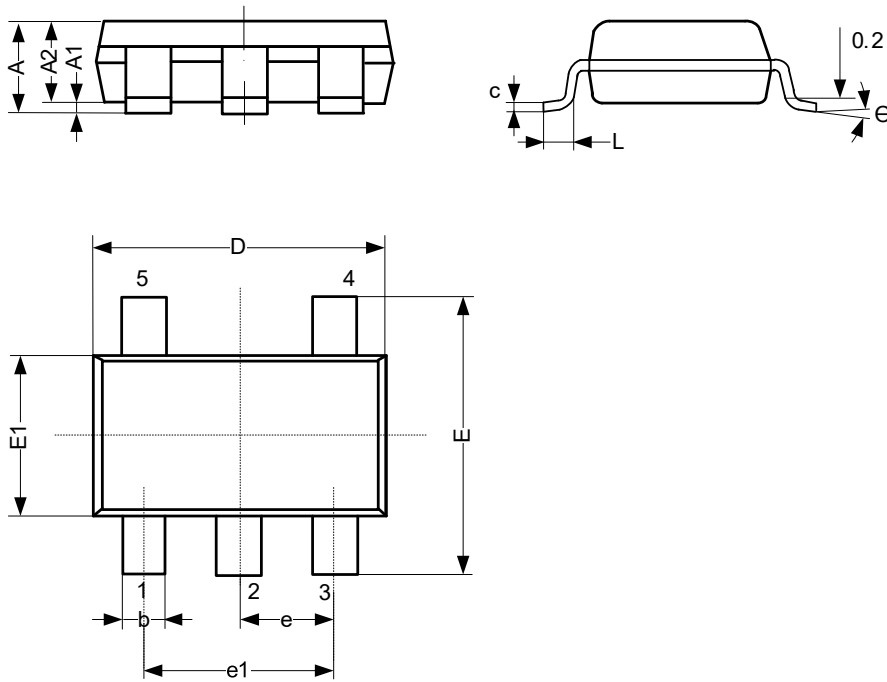
8.4.7 Test Data

SUPPLY VOLTAGE	INPUT		LOAD		$V_{EXT}$		
$V_{CC}$	$V_I$	$t_r, t_f$	$C_L$	$R_L$	$t_{PLH}, t_{PHL}$	$t_{PZH}, t_{PHZ}$	$t_{PZL}, t_{PLZ}$
1.65V to 1.95V	$V_{CC}$	$\leq 2.0ns$	30pF	1kΩ	Open	GND	$2 \times V_{CC}$
2.3V to 2.7V	$V_{CC}$	$\leq 2.0ns$	30pF	500Ω	Open	GND	$2 \times V_{CC}$
2.7V	2.7V	$\leq 2.5ns$	50pF	500Ω	Open	GND	$2 \times V_{CC}$
3V to 3.6V	2.7V	$\leq 2.5ns$	50pF	500Ω	Open	GND	$2 \times V_{CC}$
4.5V to 5.5V	$V_{CC}$	$\leq 2.5ns$	50pF	500Ω	Open	GND	$2 \times V_{CC}$

9 Mechanical Information

9.1 SOT-23-5L Mechanical Information

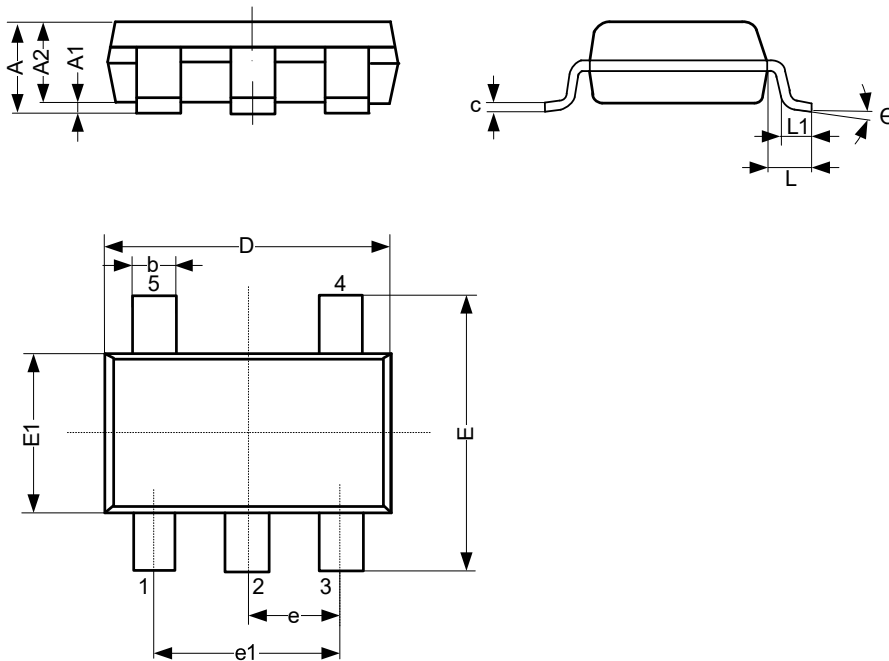
9.1.1 SOT-23-5L Outline Dimensions



SYMBOL	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	-	-	1.26
A1	0.00	-	0.12
A2	1.00	-	1.20
b	0.30	-	0.50
c	0.10	-	0.20
D	2.82	-	3.02
E	2.60	-	3.00
E1	1.50	-	1.70
e	0.95 BSC		
e1	1.80	-	2.00
L	0.30	-	0.60
Θ	0°	-	8°
Unit: mm			

9.2 SOT-353 Mechanical Information

9.2.1 SOT-353 Outline Dimensions



SYMBOL	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.90	-	1.10
A1	0.00	-	0.10
A2	0.90	-	1.00
b	0.15	-	0.35
c	0.11	-	0.175
D	2.00	-	2.20
E	2.15	-	2.45
E1	1.15	-	1.35
e	0.65 BSC		
e1	1.20	-	1.40
L	-	0.525	-
L1	0.26	-	0.46
θ	0°	-	8°
Unit: mm			

## 10 Notes and Revision History

### 10.1 Associated Product Family and Others

To view other products of the same type or IC products of other types, click the official website of JSCJ -- <https://www.jscj-elec.com> for more details.

### 10.2 Notes

#### Electrostatic Discharge Caution



This IC may be damaged by ESD. Relevant personnel shall comply with correct installation and use specifications to avoid ESD damage to the IC. If appropriate measures are not taken to prevent ESD damage, the hazards caused by ESD include but are not limited to degradation of integrated circuit performance or complete damage of integrated circuit. For some precision integrated circuits, a very small parameter change may cause the whole device to be inconsistent with its published specifications.

# DISCLAIMER

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