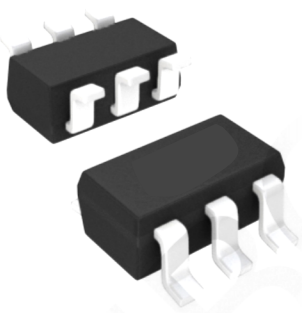
Description

The SN74LVC1G3157 provides one analog multiplexer/demultiplexer with one digital select input (S), two independent inputs/outputs (Y0, Y1) and a common input/output (Z).

Schmitt trigger action at the select input makes the circuit tolerant of slower input rise and fall times across the entire VCC range from 1.65V to 5.5V.

Feature

- Wide supply voltage range from 1.65 V to 5.5 V
- Very low ON resistance:
  7.5Ω (typical) at Vcc=2.7V
  6.5Ω (typical) at Vcc=3.3V
  6Ω(typical) at Vcc=5V
- Break-before-make switching
- CMOS low power consumption
- control input accepts voltages up to 5.5V
- Switch current capability of 32mA
- TTL interface compatibility at 3.3V
- Specked from -40 °C to +105 °C
- Packaging information: SOT-23-6/SOT-363



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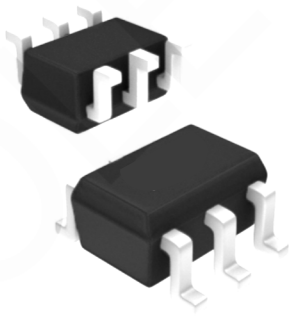


SOT-363

Applications

- Wearables and mobile devices
- Audio signal routing
- Home automation
- I2C/SPI/UART bus multiplexing
- Internet of things (IoT)
- Portable computing
- Portable medical equipment
- Remote radio unit
- Surveillance
- Wireless charging

Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
XBLW SN74LVC1G3157T236	SOT-23-6	CNXX	Tape	3000Pcs/Reel
XBLW SN74LVC1G3157T363	SOT-363	CNXX	Tape	3000Pcs/Reel

Block Diagram

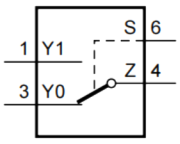


Figure 1. Logic symbol

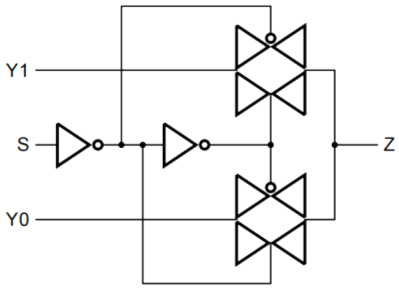
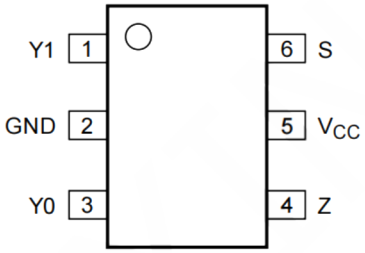


Figure 2.ICE Logic symbol

Pin Configurations



Pin Description

Pin No.	Pin Name	Description
1	Y1	independent input or output
2	GND	ground (0 V)
3	Y0	independent input or output
4	Z	common output or input
5	Vcc	supply voltage
6	S	select input

Function Table

Input S	Channel on
L	Y0
H	Y1

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

Electrical Parameter

Absolute Maximum Ratings

(Tamb=25°C, All voltage referenced to GND, unless otherwise specified)

Characteristic	Symbol	Conditions	Min.	Max.	Unit
supply voltage	V_{CC}	-	-0.5	+6.5	V
input voltage	V_I	-[1]	-0.5	+6.5	V
input clamping current	I_{IK}	V_I<-0.5V or V_i>Vcc+0.5V	-50	-	mA
switch clamping current	I_{SK}	V_I<-0.5V or V_i>Vcc+0.5V	-	±50	mA
switch voltage	V_{SW}	enable and disable mode[2]	-0.5	Vcc+0.5	V
switch current	I_{SW}	V_{SW}>-0.5V or V_{SW}<Vcc+0.5V	-	±50	mA
supply current	I_{CC}	-	-	100	mA
ground current	I_{GND}	-	-100	-	mA
storage temperature	T_{stg}	-	-65	+150	°C
total power dissipation	P_{tot}	-	-	250	mW
soldering temperature	T_L	10s	250		°C

Note:

[1] The minimum input voltage rating may be exceeded if the input current rating is observed.

[2] The minimum and maximum switch voltage ratings may be exceeded if the switch clamping current rating is observed.

Recommended Operating Conditions

Characteristic	Symbol	Conditions	Min.	Typ.	Max.	Unit
supply voltage	V_{CC}	-	1.65	-	5.5	V
input voltage	V_I	-	0	-	5.5	V
switch voltage	V_{SW}	enable and disable mode[1]	0	-	Vcc	V
ambient temperature	T_{amb}	-	-40	-	+105	°C
input transition rise and fall rate	$\Delta t/\Delta V$	Vcc=1.65V to 2.7V[2]	-	-	20	ns/V
		Vcc=2.7V to 5.5V[2]	-	-	10	ns/V

Note:

[1] To avoid sinking GND current from terminal Z when switch current flows in terminal Yn, the voltage drop across the bidirectional switch must not exceed 0.4V. If the switch current flows into terminal Z, no GND current will flow from terminal Yn. In this case, there is no limit for the voltage drop across the switch

[2] Applies to control signal levels.

ESD Ratings

Parameter		Defintion	Vaue	Unit
$V_{(ESD)}$	Electrostatic discharge	Human body model (HBM), per ANSI/ESDA/JEDEC JS-001, all pins (1)	±2000	V
		Charged device model (CDM), per JEDEC specification JESD22-C101, all pins (2)	±1000	

(1) JEDEC document JEP155 states that 500-V HBM allows safe manufacturing with a standard ESD control process.

(2) JEDEC document JEP157 states that 250-V CDM allows safe manufacturing with a standard ESD control process.

Electrical Characteristics

DC Characteristics 1

(Tamb=-40℃ to +85℃, voltages are referenced to GND (ground=0V), unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.[1]	Max.	Unit
HIGH-level input voltage	V_{IH}	Vcc=1.65V to 1.95V	0.65Vcc		-	V
		Vcc=2.3V to 2.7V	1.7		-	V
		Vcc=3V to 3.6V	2.0		-	V
		Vcc=4.5V to 5.5V	0.7Vcc		-	V
LOW-level input voltage	V_{IL}	Vcc=1.65V to 1.95V	-		0.35Vcc	V
		Vcc=2.3V to 2.7V	-		0.7	V
		Vcc=3V to 3.6V	-		0.8	V
		Vcc=4.5V to 5.5V	-		0.3Vcc	V
input leakage current	I_I	pin S; Vi = 5.5 V or GND; Vcc = 0 V to 5.5 V[2]	-	±0.1	±1	uA
csurprpelnyt current	I_{CC}	Vi=5.5V or GND; VSW=GND or Vcc; Vcc=1.65V to 5.5V[2]	-	0.1	4	uA
additional supply current	ΔI_{CC}	pin S; Vi=Vcc-0.6V; Vcc=5.5V; VSW=GND or Vcc[2]	-	5	500	uA
input capacitance	C_I	-	-	2.5	-	pF
OFF-state capacitance	$C_{s(OFF)}$	-	-	6.0	-	pF
ON-state capacitance	$C_{s(ON)}$	-	-	18	-	pF
OFF-state	$I_{s(OFF)}$	Vcc=5.5V; see Figure 3[2]	-	±0.1	±0.2	uA
ON-state	$I_{s(ON)}$	Vcc=5.5V; see Figure 4[2]	-	±0.1	±1	uA

Note:

[1] Typical values are measured at Tamb=25℃

[2] These typical values are measured at Vcc=3.3V

DC Characteristics 2

(Tamb=-40°C to +105°C, voltages are referenced to GND (ground=0V), unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
HIGH-level input voltage	V_{IH}	Vcc=1.65V to 1.95V	0.65Vcc		-	V
		Vcc=2.3V to 2.7V	1.7		-	V
		Vcc=3V to 3.6V	2.0		-	V
		Vcc=4.5V to 5.5V	0.7Vcc		-	V
LOW-level input voltage	V_{IL}	Vcc=1.65V to 1.95V	-		0.35Vcc	V
		Vcc=2.3V to 2.7V	-		0.7	V
		Vcc=3V to 3.6V	-		0.8	V
		Vcc=4.5V to 5.5V	-		0.3Vcc	V
input leakage current	I_I	pin S; VI = 5.5 V or GND; Vcc = 0 V to 5.5 V[1]	-	-	±1	uA
OFF-state	$I_{S(OFF)}$	Vcc=5.5V; see Figure 3[1]	-	-	±0.5	uA
ON-state	$I_{S(ON)}$	Vcc=5.5V; see Figure 4[1]	-	-	±2	uA
csurprpelnyt current	I_{CC}	V_I=5.5V or GND; V_{SW}=GND or Vcc; Vcc=1.65V to 5.5V[1]	-	-	4	uA
additional supply current	ΔI_{CC}	pin S; V_I=V_{CC}-0.6V; Vcc=5.5V; V_{SW}=GND or Vcc[1]	-	-	500	uA

ON Resistance 1

(Tamb=-40°C to +85°C, voltages are referenced to GND (ground=0V), unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.[1]	Max.	Unit
ON resistance (peak)	$R_{ON(peak)}$	V_I=GND to Vcc; see Figure 5	I_{SW}=4mA; V_{CC}=1.65V～1.95V	-	34.0	130	Ω
			I_{SW}=8mA; V_{CC}=2.3V～2.7V	-	12.0	30	Ω
			I_{SW}=12mA; V_{CC}=2.7V	-	10.4	25	Ω
			I_{SW}=24mA; V_{CC}=3V～3.6V	-	7.8	20	Ω
			I_{SW}=32mA; V_{CC}=4.5V～5.5V	-	6.2	15	Ω
ON resistance (rail)	$R_{ON(rail)}$	V_I=GND; see Figure 5	I_{SW}=4mA; V_{CC}=1.65V～1.95V	-	8.2	18	Ω
			I_{SW}=8mA; V_{CC}=2.3V～2.7V	-	7.1	16	Ω
			I_{SW}=12mA; V_{CC}=2.7V	-	6.9	14	Ω
			I_{SW}=24mA; V_{CC}=3V～3.6V	-	6.5	12	Ω
			I_{SW}=32mA; V_{CC}=4.5V～5.5V	-	5.8	10	Ω
		V_I=Vcc; see Figure 5	I_{SW}=4mA; V_{CC}=1.65V～1.95V	-	10.4	30	Ω
			I_{SW}=8mA; V_{CC}=2.3V～2.7V	-	7.6	20	Ω
			I_{SW}=12mA; V_{CC}=2.7V	-	7.0	18	Ω
			I_{SW}=24mA; V_{CC}=3V～3.6V	-	6.1	15	Ω
			I_{SW}=32mA; V_{CC}=4.5V～5.5V	-	4.9	10	Ω
ON resistance (flatness)	$R_{ON(flat)}$	V_I=GND to Vcc[2]	I_{SW}=4mA; V_{CC}=1.65V～1.95V	-	26.0	-	Ω
			I_{SW}=8mA; V_{CC}=2.3V～2.7V	-	5.0	-	Ω
			I_{SW}=12mA; V_{CC}=2.7V	-	3.5	-	Ω
			I_{SW}=24mA; V_{CC}=3V～3.6V	-	2.0		Ω
			I_{SW}=32mA; V_{CC}=4.5V～5.5V	-	1.5	-	Ω

Note:

[1] Typical values are measured at Tamb=25°C and nominal Vcc.

[2] Flatness is defined as the difference between the maximum and minimum value of ON resistance measured at identical Vcc and temperature.

ON Resistance 2

(Tamb=-40°C to +105°C, voltages are referenced to GND (ground=0V), unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
ON resistance (peak)	$R_{ON(peak)}$	V_I=GND to Vcc; see Figure 5	I_{SW}=4mA; V_{CC}=1.65V～1.95V	-	-	195	Ω
			I_{SW}=8mA; V_{CC}=2.3V～2.7V	-	-	45	Ω
			I_{SW}=12mA; V_{CC}=2.7V	-	-	38	Ω
			I_{SW}=24mA; V_{CC}=3V～3.6V	-	-	30	Ω
			I_{SW}=32mA; V_{CC}=4.5V～5.5V	-	-	23	Ω
ON resistance (rail)	$R_{ON(rail)}$	V_I=GND; see Figure 5	I_{SW}=4mA; V_{CC}=1.65V～1.95V	-	-	27	Ω
			I_{SW}=8mA; V_{CC}=2.3V～2.7V	-	-	24	Ω
			I_{SW}=12mA; V_{CC}=2.7V	-	-	21	Ω
			I_{SW}=24mA; V_{CC}=3V～3.6V	-	-	18	Ω
			I_{SW}=32mA; V_{CC}=4.5V～5.5V	-	-	15	Ω
		V_I=Vcc; see Figure 5	I_{SW}=4mA; V_{CC}=1.65V～1.95V	-	-	45	Ω
			I_{SW}=8mA; V_{CC}=2.3V～2.7V	-	-	30	Ω
			I_{SW}=12mA; V_{CC}=2.7V	-	-	27	Ω
			I_{SW}=24mA; V_{CC}=3V～3.6V	-	-	23	Ω
			I_{SW}=32mA; V_{CC}=4.5V～5.5V	-	-	15	Ω

AC Characteristics 1

(Tamb=-40°C to +85°C, voltages are referenced to GND (ground=0V), unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.[1]	Max.	Unit
propagation delay	t_{pd}	Z to Yn or Yn to Z; see Figure 12[2][3]	V_{CC}=1.65V～1.95V			2	ns
			V_{CC}=2.3V～2.7V			1.2	ns
			V_{CC}=2.7V			1.0	ns
			V_{CC}=3V～3.6V			0.8	ns
			V_{CC}=4.5V～5.5V			0.6	ns
enable time	t_{en}	S to Yn; see Figure 13[4]	V_{CC}=1.65V～1.95V	3.1	8.7	20.8	ns
			V_{CC}=2.3V～2.7V	2.2	5.3	11.5	ns
			V_{CC}=2.7V	2.1	4.9	9.3	ns
			V_{CC}=3V～3.6V	1.8	4.0	7.6	ns
			V_{CC}=4.5V～5.5V	1.5	3.0	5.7	ns
disable time	t_{dis}	S to Yn; see Figure 13[5]	V_{CC}=1.65V～1.95V	3.0	6.0	11.4	ns
			V_{CC}=2.3V～2.7V	2.1	4.4	7.3	ns
			V_{CC}=2.7V	2.1	4.2	6.3	ns
			V_{CC}=3V～3.6V	1.7	3.6	5.3	ns
			V_{CC}=4.5V～5.5V	1.3	2.9	3.8	ns
break-befor emake time	t_{b-m}	see Figure 14[6]	V_{CC}=1.65V～1.95V	0.5			ns
			V_{CC}=2.3V～2.7V	0.5			ns
			V_{CC}=2.7V	0.5			ns
			V_{CC}=3V～3.6V	0.5			ns
			V_{CC}=4.5V～5.5V	0.5			ns

Note:

[1] Typical values are measured at Tamb=25°C and nominal Vcc.

[2] t_{pd} is the same as t_{PLH} and t_{PHL}.

[3] 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).

[4] t_{en} is the same as t_{PZH} and t_{PZL}.

[5] t_{dis} is the same as t_{PLZ} and t_{PHZ}.

[6] Break-before-make specified by design.

AC Characteristics 2

(Tamb=-40°C to +105°C, voltages are referenced to GND (ground=0V), unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.[1]	Max.	Unit
propagation delay	t_{pd}	Z to Yn or Yn to Z; see Figure 12[2][3]	Vcc=1.65V to 1.95V			3.0	ns
			Vcc=2.3V to 2.7V			2.0	ns
			Vcc=2.7V			1.5	ns
			Vcc=3V to 3.6V			1.5	ns
			Vcc=4.5V to 5.5V			1.0	ns
enable time	t_{en}	S to Yn; see Figure 13[4]	Vcc=1.65V to 1.95V	3.1		22.0	ns
			Vcc=2.3V to 2.7V	2.2		12.5	ns
			Vcc=2.7V	2.1		10.5	ns
			Vcc=3V to 3.6V	1.8		9.0	ns
			Vcc=4.5V to 5.5V	1.5		6.1	ns
disable time	t_{dis}	S to Yn; see Figure 13[5]	Vcc=1.65V to 1.95V	3.0		11.7	ns
			Vcc=2.3V to 2.7V	2.1		7.6	ns
			Vcc=2.7V	2.1		6.6	ns
			Vcc=3V to 3.6V	1.7		5.9	ns
			Vcc=4.5V to 5.5V	1.3		4.3	ns
break-befor emake time	t_{b-m}	see Figure 14[6]	Vcc=1.65V to 1.95V	0.5			ns
			Vcc=2.3V to 2.7V	0.5			ns
			Vcc=2.7V	0.5			ns
			Vcc=3V to 3.6V	0.5			ns
			Vcc=4.5V to 5.5V	0.5			ns

Note:

[1] Typical values are measured at Tamb=25°C and nominal Vcc.

[2] t_{pd} is the same as t_{PLH} and t_{PHL}.

[3] 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).

[4] t_{en} is the same as t_{PZH} and t_{PZL}.

[5] t_{dis} is the same as t_{PLZ} and t_{PHZ}.

[6] Break-before-make specified by design.

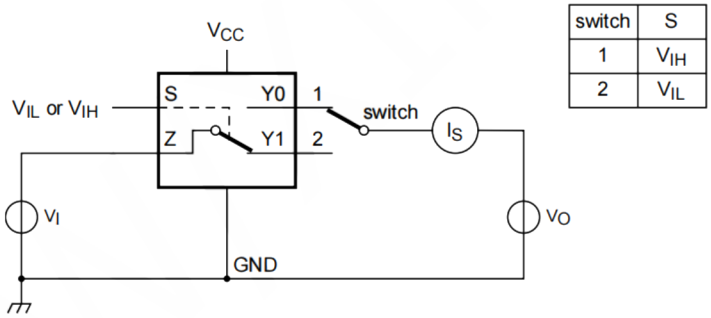
Additional AC Characteristics

(Tamb=25°C, voltages are referenced to GND (ground=0V), unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
total harmonic distortion	THD	f_i=600Hz~20kHz; R_L=600Ω; C_L=50pF; V_I=0.5V(p-p); see Figure 16	Vcc=1.65V		0.260		%
			Vcc=2.3V		0.078		%
			Vcc=3.0V		0.078		%
			Vcc=4.5V		0.078		%
-3 dB frequency response	$f_{(-3dB)}$	R_L=50Ω; see Figure 17	Vcc=1.65V		200		MHz
			Vcc=2.3V		300		MHz
			Vcc=3.0V		300		MHz
			Vcc=4.5V		300		MHz
isolation (OFF-state)	α_{iso}	R_L=50Ω; C_L=5pF; f_i=10MHz; see Figure 18	Vcc=1.65V		-42		dB
			Vcc=2.3V		-42		dB
			Vcc=3.0V		-40		dB
			Vcc=4.5V		-40		dB
charge injection	Q_{inj}	C_L=0.1nF; V_{gen}=0V; R_{gen}=0Ω; f_i=1MHz; R_L=1MΩ; see Figure 19	Vcc=1.8V		3.3		pc
			Vcc=2.5V		4.1		pc
			Vcc=3.3V		5.0		pc
			Vcc=4.5V		6.4		pc
			Vcc=5.5V		7.5		pc

Testing Circuit

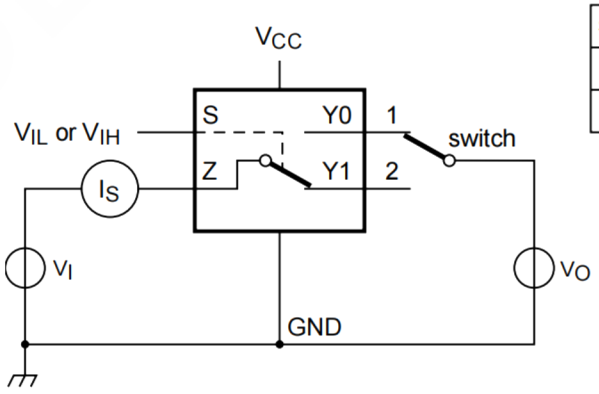
DC Testing Circuit



switch	S
1	V_{IH}
2	V_{IL}

V_I = V_{CC} or GND and V_O = GND or V_{CC}.

Figure 3. Test circuit for measuring OFF-state leakage current

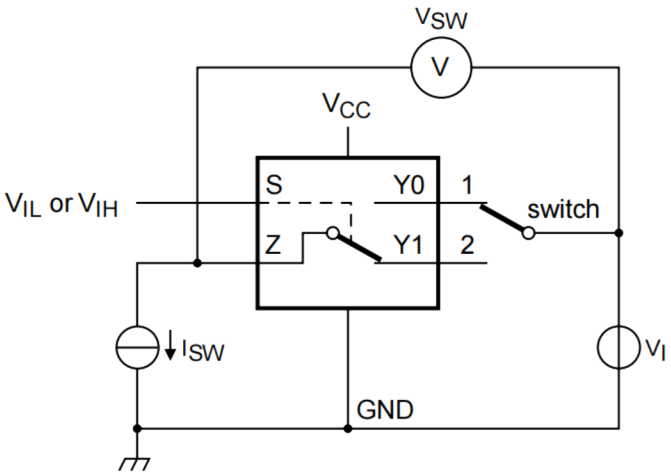


switch	S
1	V_{IH}
2	V_{IL}

V_I = V_{CC} or GND and V_O = open circuit.

Figure 4. Test circuit for measuring ON-state leakage current

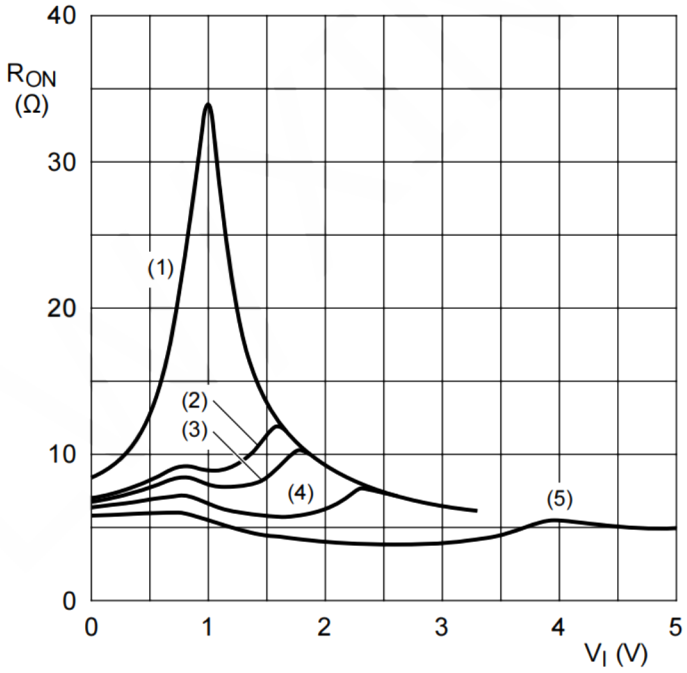
ON Resistance Test Circuit And Graphs



switch	S
1	V_{IL}
2	V_{IH}

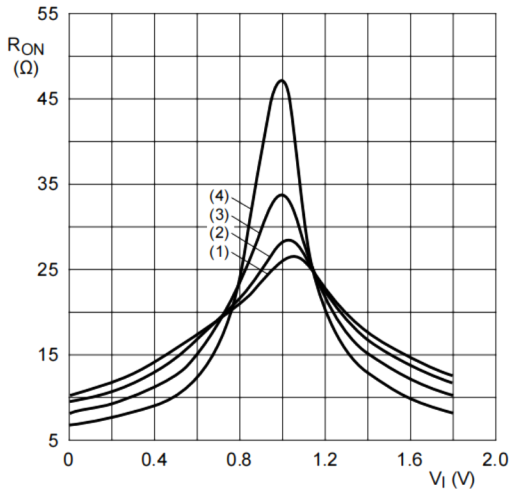
$R_{ON} = V_{SW} / I_{SW}$

Figure 5. Test circuit for measuring ON resistance



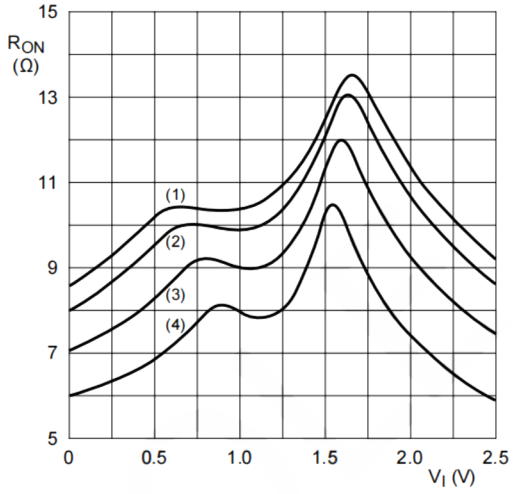
(1) V_{CC} = 1.8 V
(2) V_{CC} = 2.5 V
(3) V_{CC} = 2.7 V
(4) V_{CC} = 3.3 V
(5) V_{CC} = 5.0 V

Figure 6. Typical ON resistance as a function of input voltage; Tamb=25°C



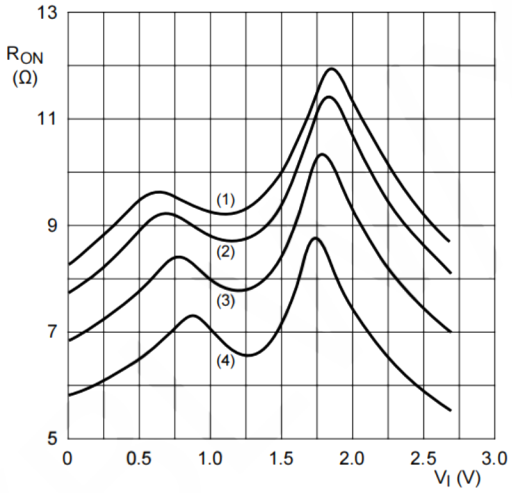
(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C
(4) T_{amb} = -40 °C

Figure 7.ON resistance as a function of input voltage; Vcc = 1.8 V



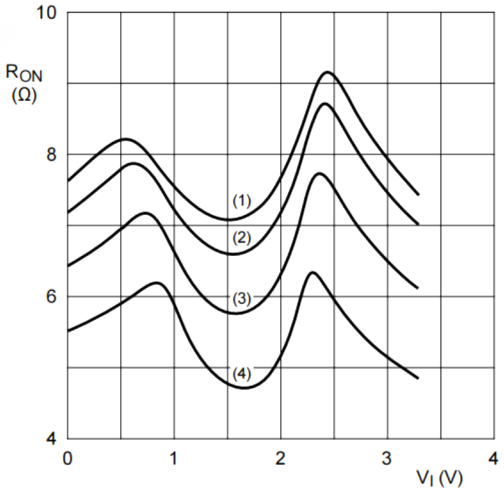
(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C
(4) T_{amb} = -40 °C

Figure 8.ON resistance as a function of input voltage; VCC = 2.5 V



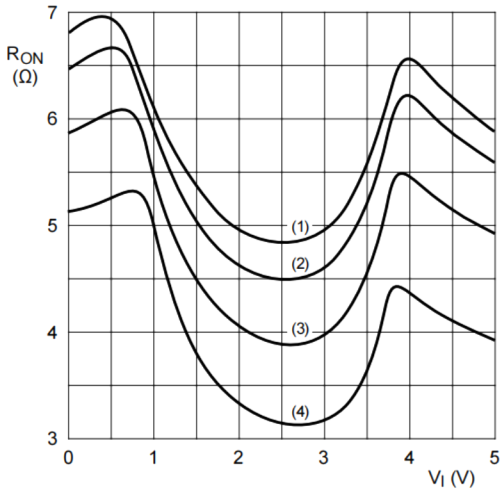
(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C
(4) T_{amb} = -40 °C

Figure 9.ON resistance as a function of input voltage; VCC = 2.7 V



(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C
(4) T_{amb} = -40 °C

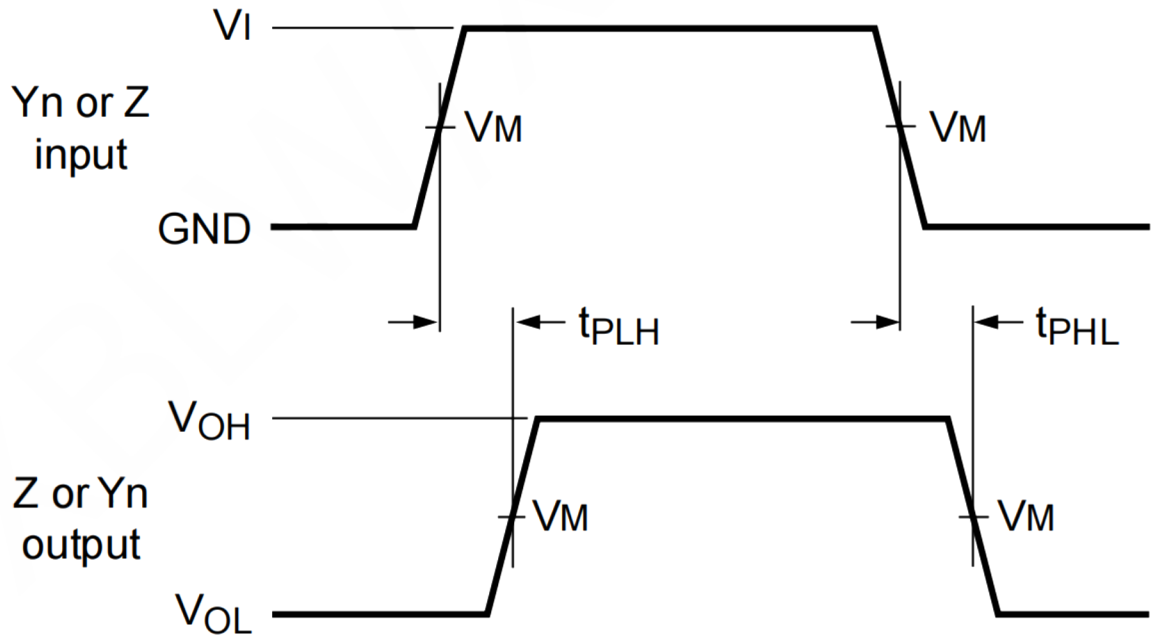
Figure .ON resistance as a function of input voltage; VCC = 3.3 V



(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C
(4) T_{amb} = -40 °C

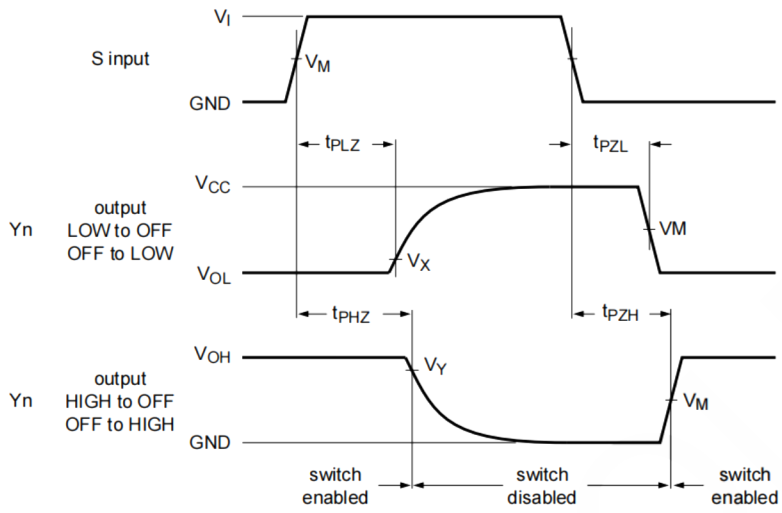
Figure .ON resistance as a function of input voltage; V_{CC} = 5.0 V

AC Testing Waveforms



Measurement points are given in Table 10.
Logic levels: V_{OL} and V_{OH} are typical output voltage levels that occur with the output load.

Figure .12.Input (Yn or Z) to output (Z or Yn) propagation delays



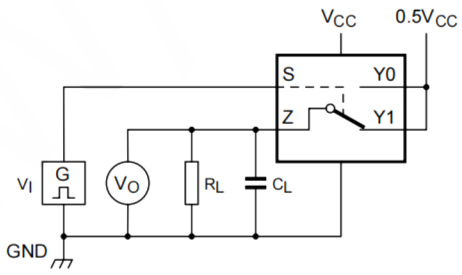
Logic levels: V_{OL} and V_{OH} are typical output voltage levels that occur with the output load.

Figure .13.Enable and disable times

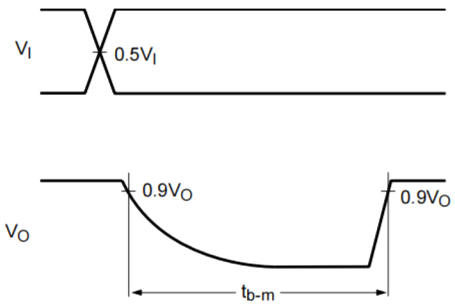
Measurement Points

Supply voltage	Input	Output		
V_{CC}	V_M	V_M	V_X	V_Y
1.65 V to 5.5 V	0.5 × V_{CC}	0.5 × V_{CC}	V_{OL} + 0.3 V	V_{OH} - 0.3 V

AC Testing Circuit

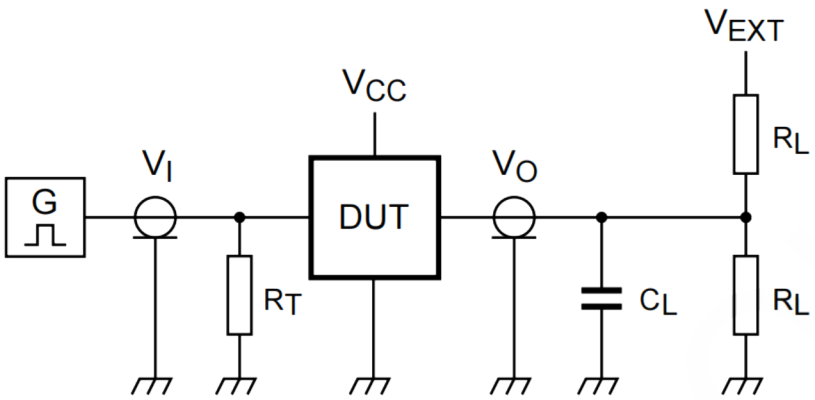


a. Test circuit



b. Input and output measurement points

Figure .14.Test circuit for measuring break-before-make timing



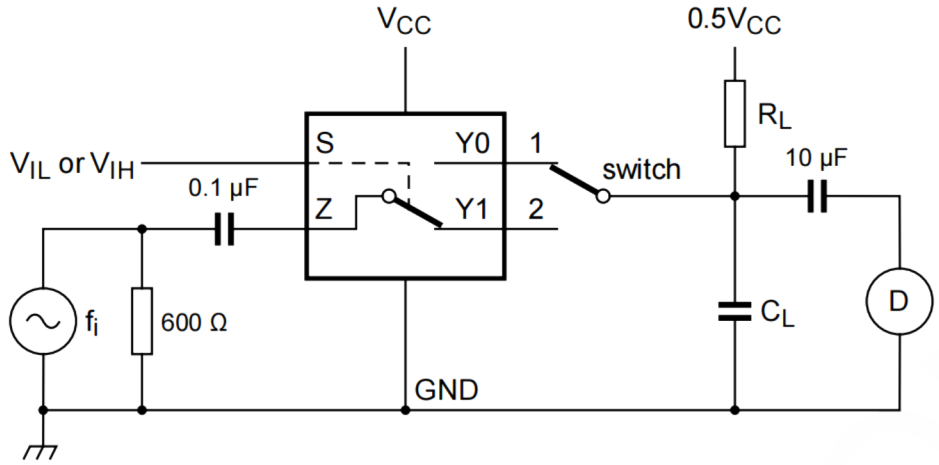
Definitions test circuit:
R_T = Termination resistance should be equal to output impedance Z_o of the pulse generator;
C_L = Load capacitance including jig and probe capacitance;
R_L = Load resistance;
V_{EXT} = External voltage for measuring switching times.

Figure .15.Test circuit for measuring switching times

Tese data

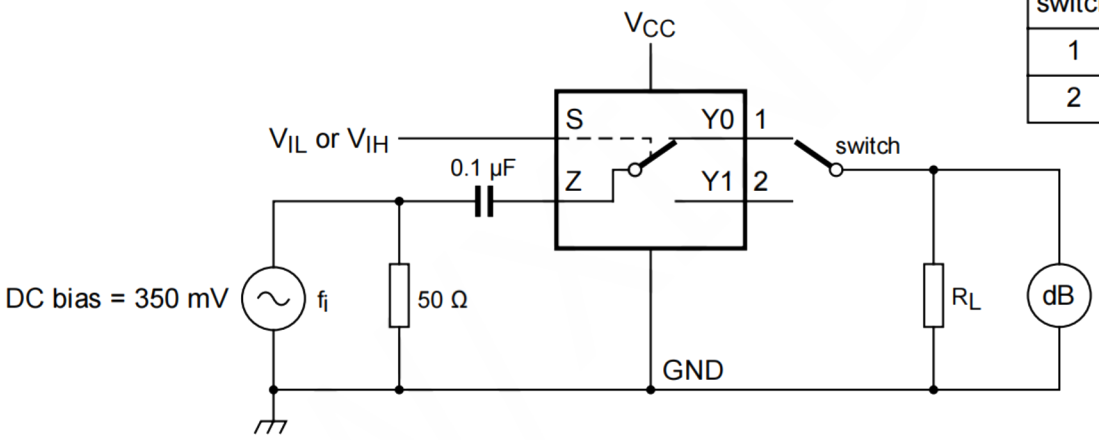
Supply voltage	Input		Load		V_{EXT}		
V_{CC}	V_I	t_r, t_f	C_L	R_L	t_{PLH}, t_{PHL}	t_{PZH}, t_{PHZ}	t_{PZL}, t_{PLZ}
1.65 V to 1.95 V	V_{CC}	≤ 2.0 ns	50 pF	500 Ω	open	GND	2 × V_{CC}
2.3 V to 2.7 V	V_{CC}	≤ 2.0 ns	50 pF	500 Ω	open	GND	2 × V_{CC}
2.7 V	V_{CC}	≤ 2.5 ns	50 pF	500 Ω	open	GND	2 × V_{CC}
3 V to 3.6 V	V_{CC}	≤ 2.5 ns	50 pF	500 Ω	open	GND	2 × V_{CC}
4.5 V to 5.5 V	V_{CC}	≤ 2.5 ns	50 pF	500 Ω	open	GND	2 × V_{CC}

Additional AC Testing Circuit



switch	S
1	V_{IL}
2	V_{IH}

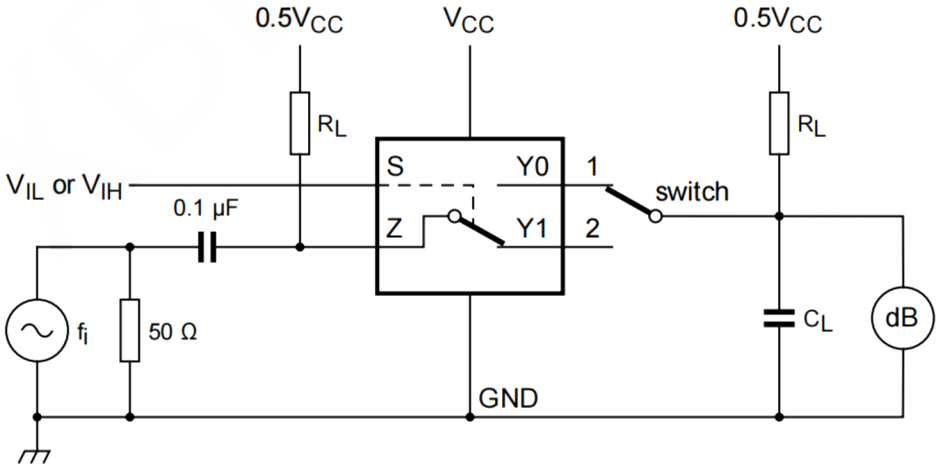
Figure .16.Test circuit for measuring total harmonic distortion



switch	S
1	V_{IL}
2	V_{IH}

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

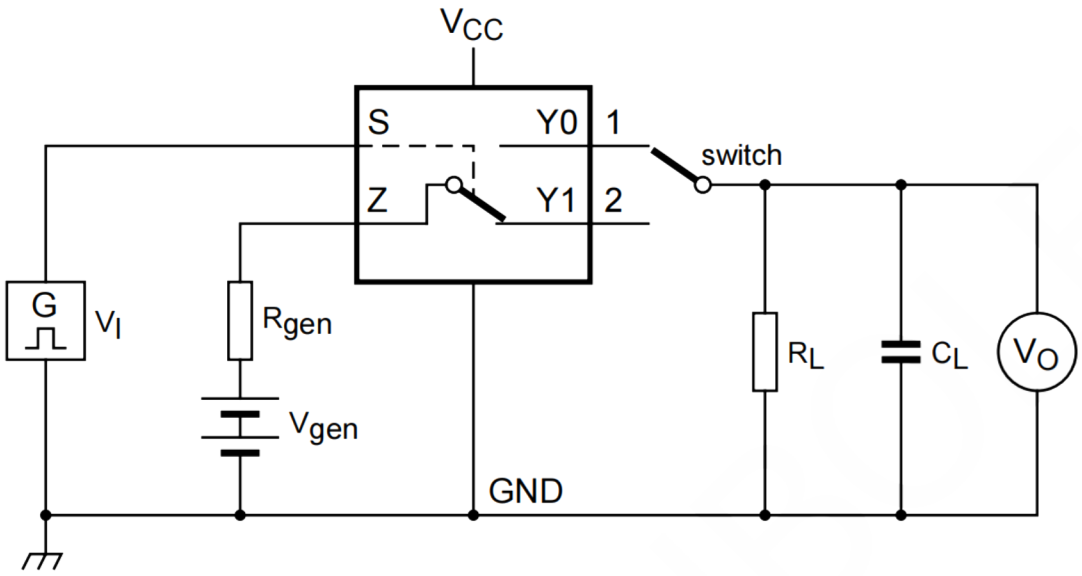
Figure .17.Test circuit for measuring the frequency response when switch is in ON-state



switch	S
1	V_{IH}
2	V_{IL}

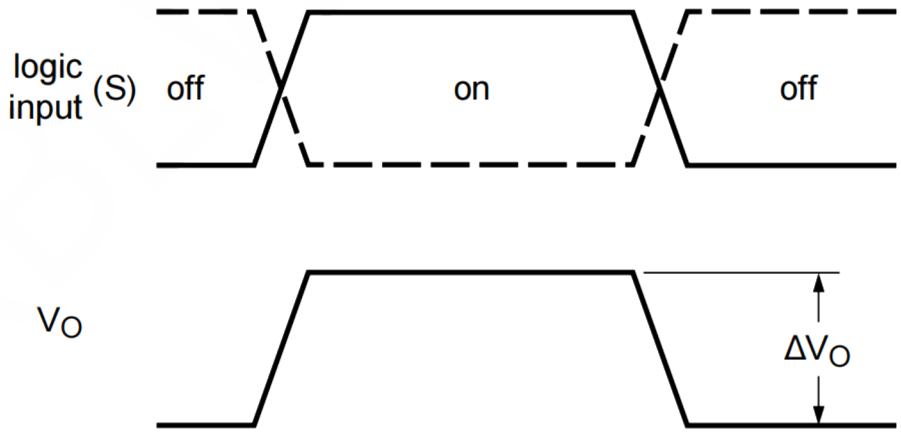
Adjust f_i voltage to obtain 0 dBm level at input.

Figure .18.Test circuit for measuring isolation (OFF-state)



a. Test circuit

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



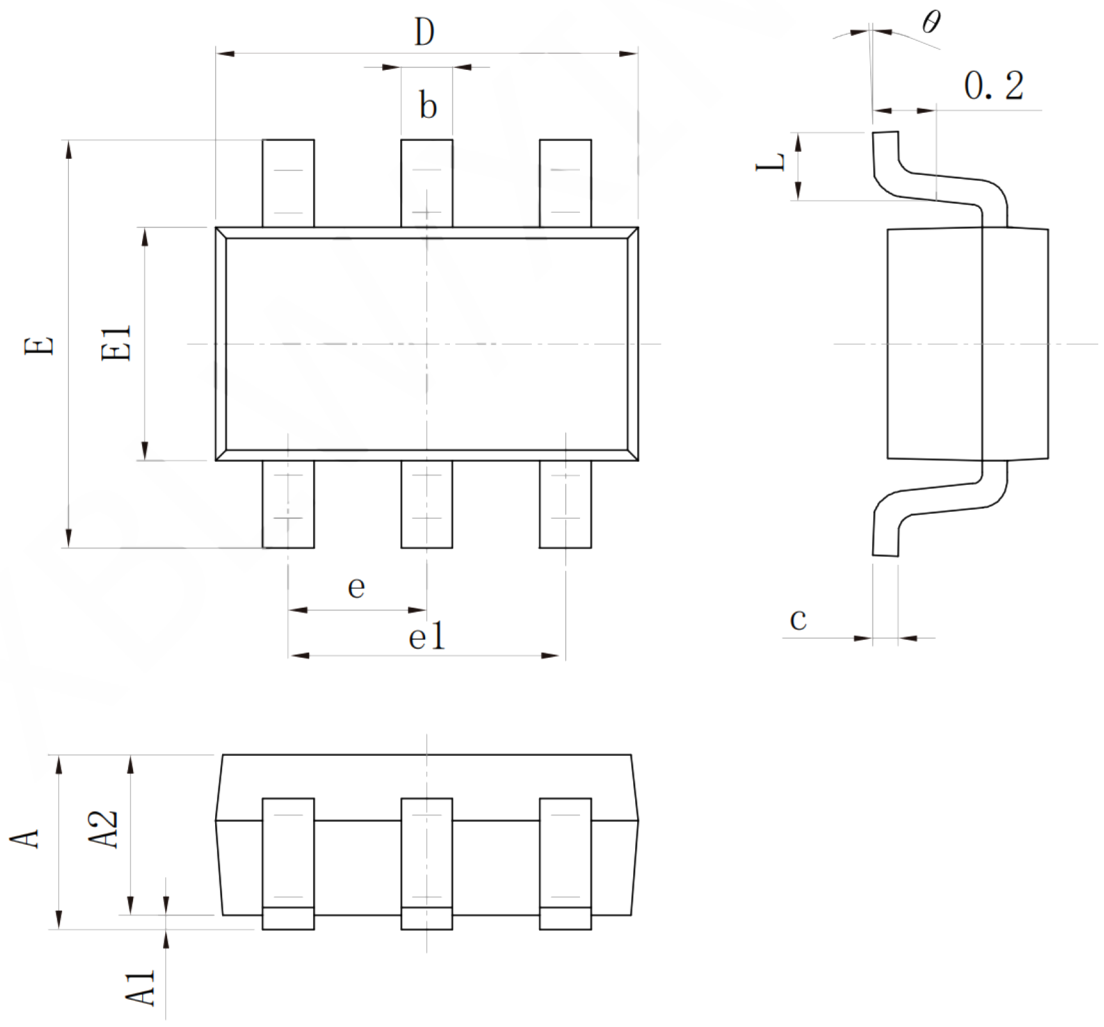
b. Input and output pulse definitions

Figure .19.Test circuit for measuring charge injection

Package Information

- SOT23-6

SIZE / SYMBOL	Dimensions In Millimeters		SIZE / SYMBOL	Dimensions In Inches	
	MIN(mm)	MAX(mm)		MIN(mm)	MAX(mm)
A	1.050	1.250	A	0.041	0.049
A1	0.000	0.100	A1	0.000	0.004
A2	1.050	1.150	A2	0.041	0.045
b	0.300	0.500	b	0.012	0.020
c	0.100	0.200	c	0.004	0.008
D	2.820	3.020	D	0.111	0.119
E	1.500	1.700	E	0.059	0.067
E1	2.650	2.950	E1	0.104	0.116
e	0.950(BSC)		e	0.037(BSC)	
e1	1.800	2.000	e1	0.071	0.079
L	0.300	0.600	L	0.012	0.024
θ	0°	8°	θ	0°	8°



• SOT-363

Size / Symbol	Dimensions In Millimeters		Size / Symbol	Dimensions In Inches	
	Min(mm)	Max(mm)		Min(in)	Max(in)
A	0.900	1.100	A	0.035	0.043
A1	0.000	0.100	A1	0.000	0.004
A2	0.900	1.000	A2	0.035	0.039
b	0.150	0.350	b	0.006	0.014
c	0.080	0.150	C	0.003	0.006
D	2.000	2.200	D	0.079	0.087
E	1.150	1.350	E	0.045	0.053
E1	2.150	2.450	E1	0.085	0.096
e	0.650(TYP)		e	0.026(TYP)	
e1	1.200	1.400	e1	0.047	0.055
L	0.525(REF)		L	0.021(REF)	
L1	0.260	0.460	L1	0.010	0.018
θ	0°	8°	θ	0°	8°