



AiP74LVC1G3157
2-channel Analog
Multiplexer/Demultiplexer
Product Specification

Specification Revision History:

Version	Date	Description
2020-05-A1	2020-05	New
2021-09-A2	2021-09	Modify ambient temperature to -40°C~+105°C and add electrical characteristics of -40°C~+105°C
2021-10-A3	2021-10	Modify ordering information
2021-12-A4	2021-12	Modify ordering information
2022-03-A5	2022-03	Modify ordering information note 1



1、 General Description

The AiP74LVC1G3157 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 V_{CC} range from 1.65V to 5.5V.

Features:

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

Ordering Information:

Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP74LVC1G3157GB236.TR	SOT-23-6	CNXX	3000 PCS/reel	30000 PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing: 0.95mm
AiP74LVC1G3157GC363.TR	SOT-363	CNXX	3000 PCS/reel	30000 PCS/box	Dimensions of plastic enclosure: 2.1mm×1.3mm Pin spacing: 0.65mm

Note 1: "XX" refers to variable content, meaning year and package batch serial number.

Note 2: If the physical information is inconsistent with the ordering information, please refer to the actual product.



2、Block Diagram And Pin Description

2.1、Block Diagram

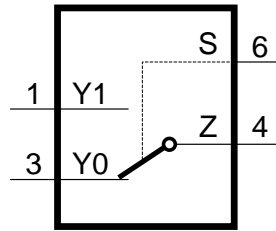


Figure 1. Logic symbol

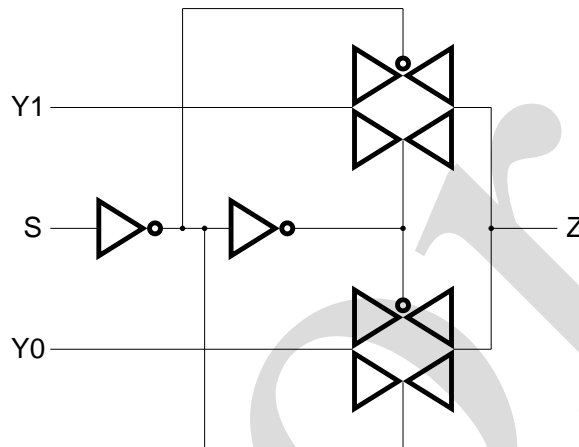
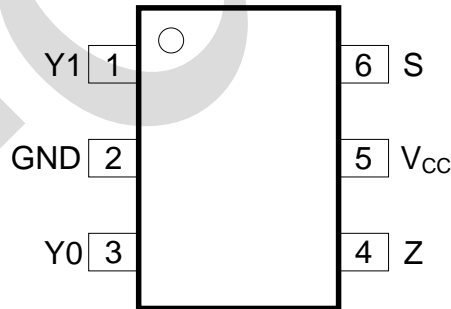


Figure 2. Logic diagram

2.2、Pin Configurations



2.3、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	V _{CC}	supply voltage
6	S	select input



2.4、Function Table

Input S	Channel on
L	Y0
H	Y1

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

3、Electrical Parameter

3.1、Absolute Maximum Ratings

($T_{amb}=25^{\circ}\text{C}$, 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}	$V_I < -0.5\text{V}$ or $V_I > V_{CC} + 0.5\text{V}$	-50	-	mA
switch clamping current	I_{SK}	$V_I < -0.5\text{V}$ or $V_I > V_{CC} + 0.5\text{V}$	-	± 50	mA
switch voltage	V_{SW}	enable and disable mode ^[2]	-0.5	$V_{CC} + 0.5$	V
switch current	I_{SW}	$V_{SW} > -0.5\text{V}$ or $V_{SW} < V_{CC} + 0.5\text{V}$	-	± 50	mA
supply current	I_{CC}	-	-	100	mA
ground current	I_{GND}	-	-100	-	mA
storage temperature	T_{stg}	-	-65	+150	$^{\circ}\text{C}$
total power dissipation	P_{tot}	-	-	250	mW
soldering temperature	T_L	10s	250		$^{\circ}\text{C}$

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.

3.2、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	-	V_{CC}	V
ambient temperature	T_{amb}	-	-40	-	+105	$^{\circ}\text{C}$
input transition rise and fall rate	$\Delta t/\Delta V$	$V_{CC}=1.65\text{V}$ to 2.7V ^[2]	-	-	20	ns/V
		$V_{CC}=2.7\text{V}$ 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.



3.3、Electrical Characteristics

3.3.1、DC Characteristics 1

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

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

Note:

[1] Typical values are measured at $T_{amb}=25^{\circ}\text{C}$.

[2] These typical values are measured at $V_{CC}=3.3\text{V}$



3.3.2、DC Characteristics 2

($T_{amb}=-40^{\circ}\text{C}$ to $+105^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified)

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

3.3.3、ON Resistance 1

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

Parameter	Symbol	Conditions	Min.	Typ. ^[1]	Max.	Unit	
ON resistance (peak)	$R_{ON(peak)}$	$V_I=\text{GND}$ to V_{CC} ; see Figure 5	$I_{sw} = 4\text{mA}$; $V_{CC}=1.65\text{V}$ to 1.95V	-	34.0	130	Ω
			$I_{sw}=8\text{mA}$; $V_{CC}=2.3\text{V}$ to 2.7V	-	12.0	30	Ω
			$I_{sw}=12\text{mA}$; $V_{CC}=2.7\text{V}$	-	10.4	25	Ω
			$I_{sw}=24\text{mA}$; $V_{CC}=3\text{V}$ to 3.6V	-	7.8	20	Ω
			$I_{sw}=32\text{mA}$; $V_{CC}=4.5\text{V}$ to 5.5V	-	6.2	15	Ω
ON resistance (rail)	$R_{ON(rail)}$	$V_I=\text{GND}$; see Figure 5	$I_{sw} = 4\text{mA}$; $V_{CC}=1.65\text{V}$ to 1.95V	-	8.2	18	Ω
			$I_{sw}=8\text{mA}$; $V_{CC}=2.3\text{V}$ to 2.7V	-	7.1	16	Ω
			$I_{sw}=12\text{mA}$; $V_{CC}=2.7\text{V}$	-	6.9	14	Ω
			$I_{sw}=24\text{mA}$; $V_{CC}=3\text{V}$ to 3.6V	-	6.5	12	Ω
			$I_{sw}=32\text{mA}$; $V_{CC}=4.5\text{V}$ to 5.5V	-	5.8	10	Ω



		$V_I=V_{CC}$; see Figure 5	$I_{sw} = 4 \text{ mA};$ $V_{CC}=1.65\text{V to }1.95\text{V}$	-	10.4	30	Ω
			$I_{sw}=8\text{mA};$ $V_{CC}=2.3\text{V to }2.7\text{V}$	-	7.6	20	Ω
			$I_{sw}=12\text{mA};$ $V_{CC}=2.7\text{V}$	-	7.0	18	Ω
			$I_{sw}=24\text{mA};$ $V_{CC}=3\text{V to }3.6\text{V}$	-	6.1	15	Ω
			$I_{sw}=32\text{mA};$ $V_{CC}=4.5\text{V to }5.5\text{V}$	-	4.9	10	Ω
ON resistance (flatness)	$R_{ON(\text{flat})}$	$V_I=\text{GND to }V_{CC}^{[2]}$	$I_{sw} = 4 \text{ mA};$ $V_{CC}=1.65\text{V to }1.95\text{V}$	-	26.0	-	Ω
			$I_{sw}=8\text{mA};$ $V_{CC}=2.3\text{V to }2.7\text{V}$	-	5.0	-	Ω
			$I_{sw}=12\text{mA};$ $V_{CC}=2.7\text{V}$	-	3.5	-	Ω
			$I_{sw}=24\text{mA};$ $V_{CC}=3\text{V to }3.6\text{V}$	-	2.0	-	Ω
			$I_{sw}=32\text{mA};$ $V_{CC}=4.5\text{V to }5.5\text{V}$	-	1.5	-	Ω

Note:

[1] Typical values are measured at $T_{\text{amb}}=25^\circ\text{C}$ 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.

3.3.4、ON Resistance 2

($T_{\text{amb}}=-40^\circ\text{C}$ to $+105^\circ\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified)

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



		$V_I=V_{CC}$; see Figure 5	$I_{sw}=32mA$; $V_{CC}=4.5V$ to $5.5V$	-	-	15	Ω
			$I_{sw} = 4 mA$; $V_{CC}=1.65V$ to $1.95V$	-	-	45	Ω
			$I_{sw}=8mA$; $V_{CC}=2.3V$ to $2.7V$	-	-	30	Ω
			$I_{sw}=12mA$; $V_{CC}=2.7V$	-	-	27	Ω
			$I_{sw}=24mA$; $V_{CC}=3V$ to $3.6V$	-	-	23	Ω
			$I_{sw}=32mA$; $V_{CC}=4.5V$ to $5.5V$	-	-	15	Ω

3.3.5、 AC Characteristics 1

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

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

Note:

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

[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.



3.3.6、 AC Characteristics 2

($T_{amb}=-40^{\circ}\text{C}$ to $+105^{\circ}\text{C}$, 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]}	$V_{CC}=1.65\text{V to }1.95\text{V}$	-	-	3.0	ns
			$V_{CC}=2.3\text{V to }2.7\text{V}$	-	-	2.0	ns
			$V_{CC}=2.7\text{V}$	-	-	1.5	ns
			$V_{CC}=3\text{V to }3.6\text{V}$	-	-	1.5	ns
			$V_{CC}=4.5\text{V to }5.5\text{V}$	-	-	1.0	ns
enable time	t_{en}	S to Yn; see Figure 13 ^[4]	$V_{CC}=1.65\text{V to }1.95\text{V}$	3.1	-	22.0	ns
			$V_{CC}=2.3\text{V to }2.7\text{V}$	2.2	-	12.5	ns
			$V_{CC}=2.7\text{V}$	2.1	-	10.5	ns
			$V_{CC}=3\text{V to }3.6\text{V}$	1.8	-	9.0	ns
			$V_{CC}=4.5\text{V to }5.5\text{V}$	1.5	-	6.1	ns
disable time	t_{dis}	S to Yn; see Figure 13 ^[5]	$V_{CC}=1.65\text{V to }1.95\text{V}$	3.0	-	11.7	ns
			$V_{CC}=2.3\text{V to }2.7\text{V}$	2.1	-	7.6	ns
			$V_{CC}=2.7\text{V}$	2.1	-	6.6	ns
			$V_{CC}=3\text{V to }3.6\text{V}$	1.7	-	5.9	ns
			$V_{CC}=4.5\text{V to }5.5\text{V}$	1.3	-	4.3	ns
break-before make time	t_{b-m}	see Figure 14 ^[6]	$V_{CC}=1.65\text{V to }1.95\text{V}$	0.5	-	-	ns
			$V_{CC}=2.3\text{V to }2.7\text{V}$	0.5	-	-	ns
			$V_{CC}=2.7\text{V}$	0.5	-	-	ns
			$V_{CC}=3\text{V to }3.6\text{V}$	0.5	-	-	ns
			$V_{CC}=4.5\text{V to }5.5\text{V}$	0.5	-	-	ns

Note:

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

[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.



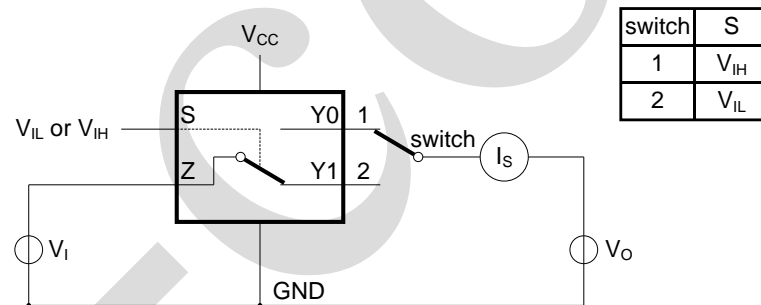
3.3.7. Additional AC Characteristics

($T_{amb}=25^{\circ}C$, voltages are referenced to GND (ground=0V), unless otherwise specified)

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

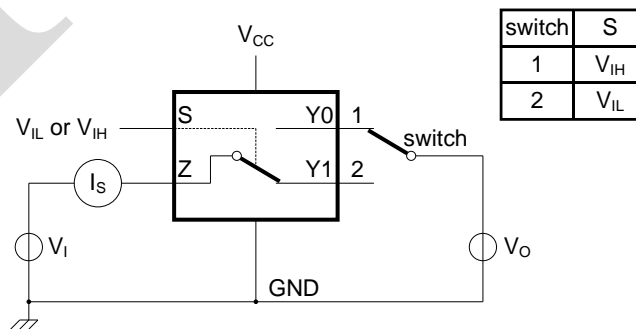
4. Testing Circuit

4.1. DC Testing Circuit



$V_I=V_{CC}$ or GND and $V_o=GND$ or V_{CC} .

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



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

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



4.2、ON Resistance Test Circuit And Graphs

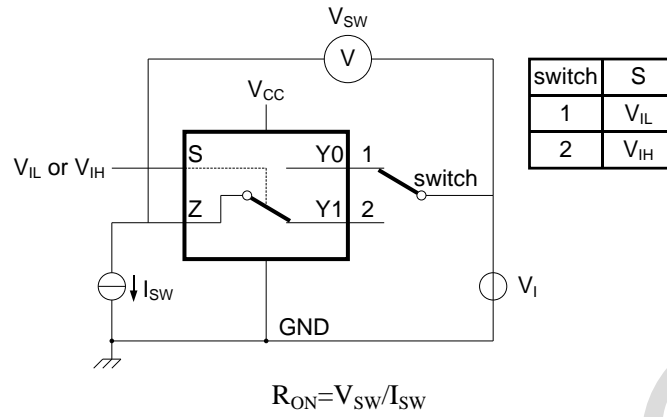
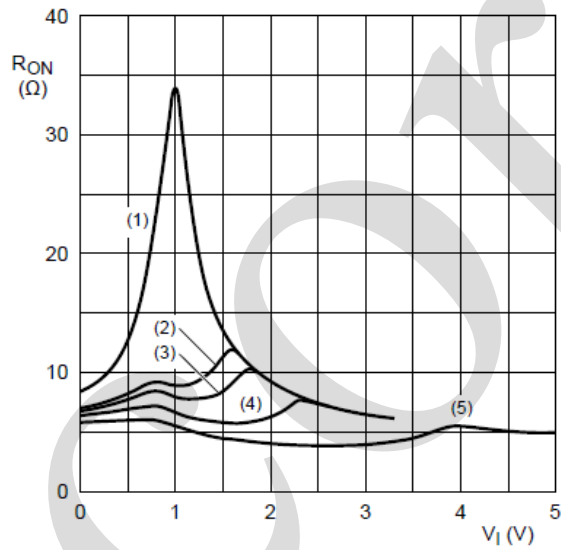
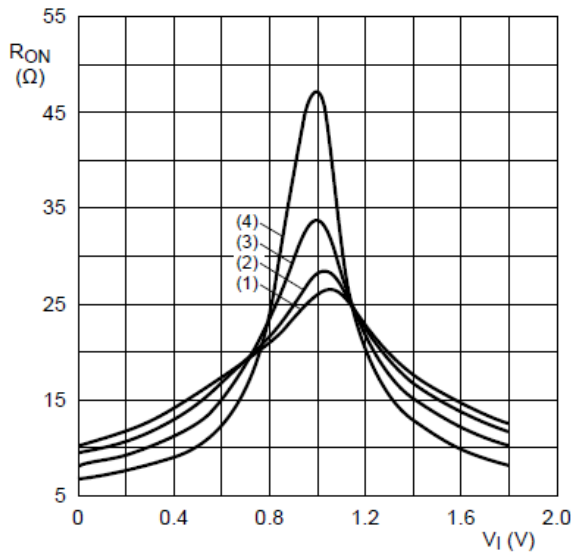


Figure 5. Test circuit for measuring ON resistance



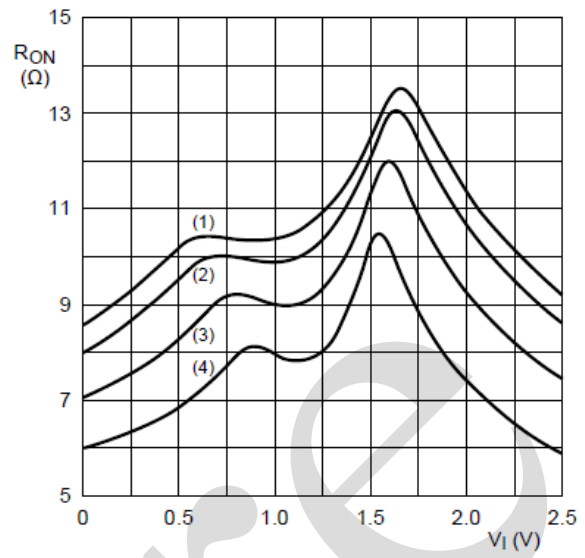
- (1) V_{CC}=1.8V.
- (2) V_{CC}=2.5V.
- (3) V_{CC}=2.7V.
- (4) V_{CC}=3.3V.
- (5) V_{CC}=5.0V.

Figure 6. Typical ON resistance as a function of input voltage; T_{amb}=25°C



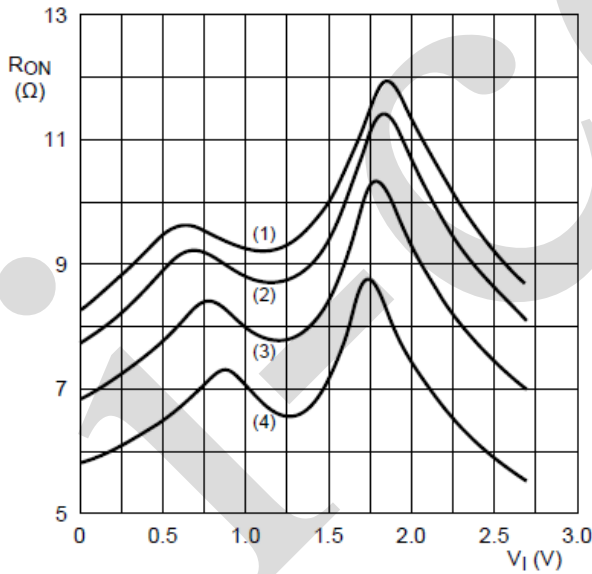
- (1) $T_{amb}=105^{\circ}\text{C}$.
- (2) $T_{amb}=85^{\circ}\text{C}$.
- (3) $T_{amb}=25^{\circ}\text{C}$.
- (4) $T_{amb}=-40^{\circ}\text{C}$.

Figure 7. ON resistance as a function of input voltage; $V_{CC}=1.8\text{V}$



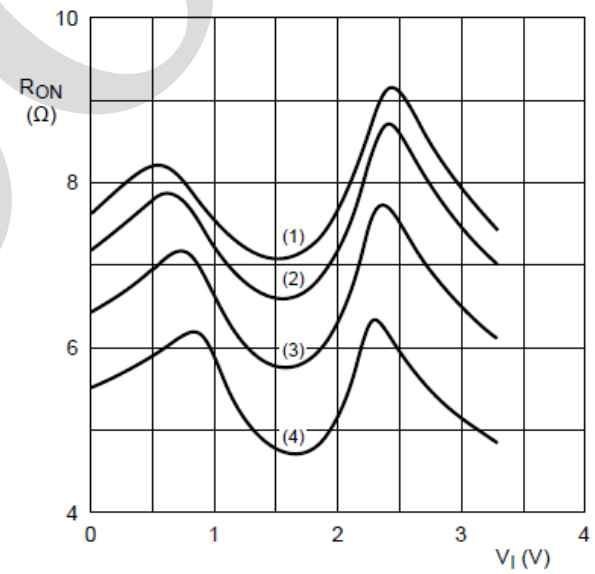
- (1) $T_{amb}=105^{\circ}\text{C}$.
- (2) $T_{amb}=85^{\circ}\text{C}$.
- (3) $T_{amb}=25^{\circ}\text{C}$.
- (4) $T_{amb}=-40^{\circ}\text{C}$.

Figure 8. ON resistance as a function of input voltage; $V_{CC}=2.5\text{V}$



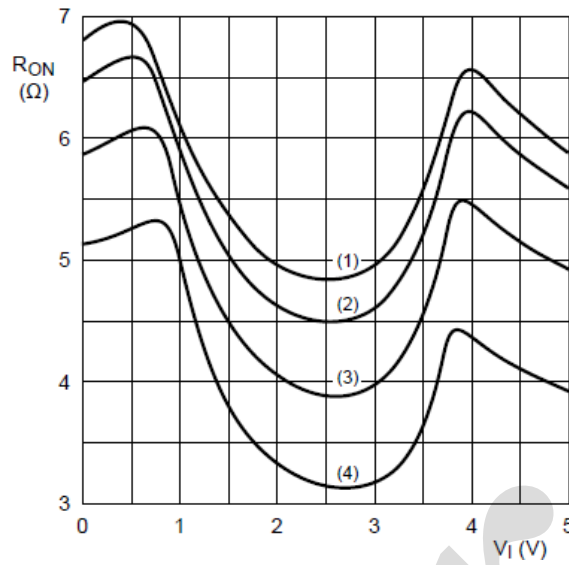
- (1) $T_{amb}=105^{\circ}\text{C}$.
- (2) $T_{amb}=85^{\circ}\text{C}$.
- (3) $T_{amb}=25^{\circ}\text{C}$.
- (4) $T_{amb}=-40^{\circ}\text{C}$.

Figure 9. ON resistance as a function of input voltage; $V_{CC}=2.7\text{V}$



- (1) $T_{amb}=105^{\circ}\text{C}$.
- (2) $T_{amb}=85^{\circ}\text{C}$.
- (3) $T_{amb}=25^{\circ}\text{C}$.
- (4) $T_{amb}=-40^{\circ}\text{C}$.

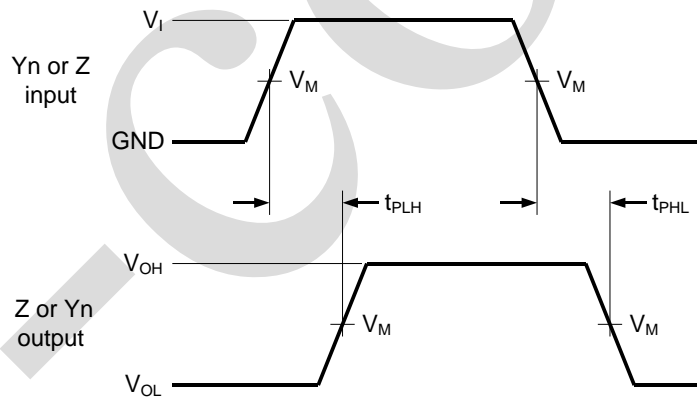
Figure 10. ON resistance as a function of input voltage; $V_{CC}=3.3\text{V}$



- (1) $T_{amb}=105^{\circ}\text{C}$.
- (2) $T_{amb}=85^{\circ}\text{C}$.
- (3) $T_{amb}=25^{\circ}\text{C}$.
- (4) $T_{amb}=-40^{\circ}\text{C}$.

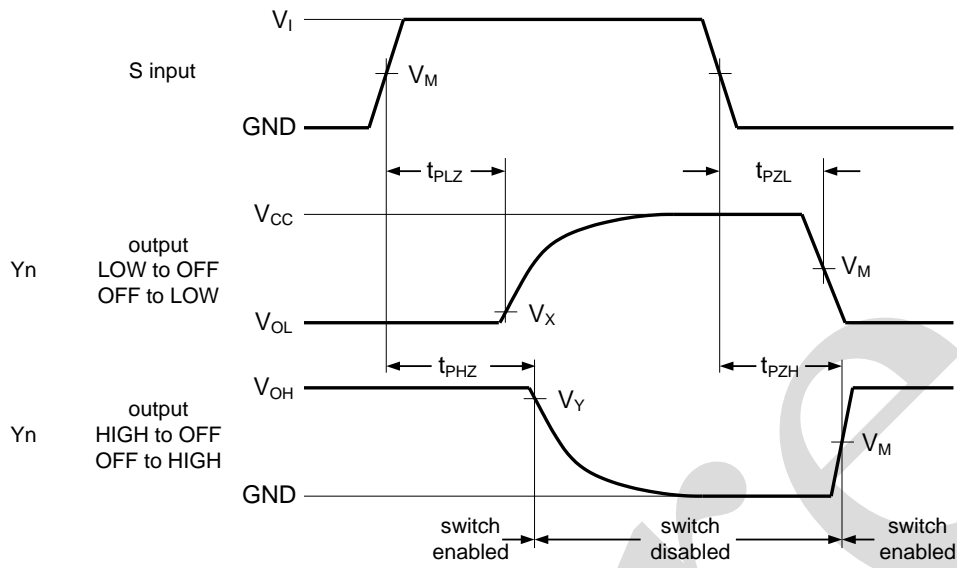
Figure 11. ON resistance as a function of input voltage; $V_{CC}=5.0\text{V}$

4.3. AC Testing Waveforms



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



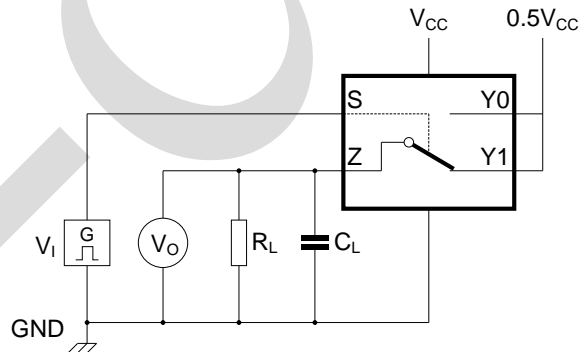
Logic levels: V_{OL} and V_{OH} are typical output voltage levels that occur with the output load.

Figure 13. Enable and disable times

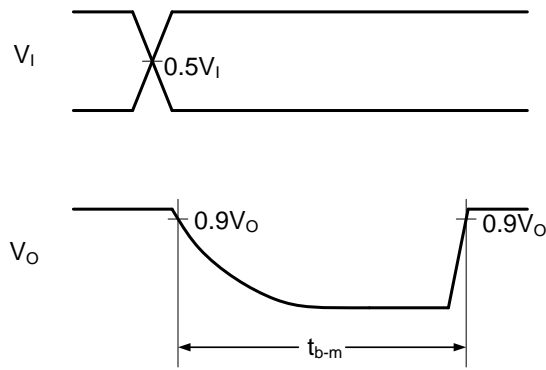
4.4. Measurement Points

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

4.5. AC Testing Circuit

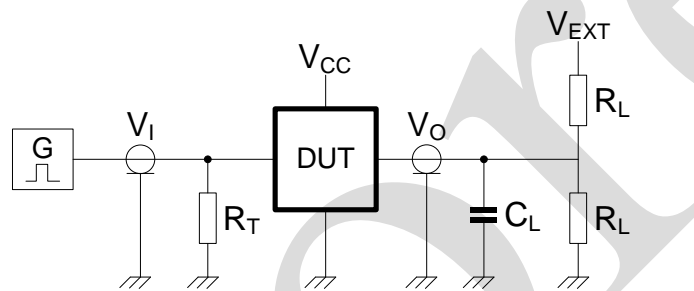


a. Test circuit



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

4.6. Test Data

Supply voltage	Input		Load		V_{EXT}		
	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}	$\leq 2.0ns$	50pF	500 Ω	open	GND	$2 \times V_{CC}$
2.3V to 2.7V	V_{CC}	$\leq 2.0ns$	50pF	500 Ω	open	GND	$2 \times V_{CC}$
2.7V	V_{CC}	$\leq 2.5ns$	50pF	500 Ω	open	GND	$2 \times V_{CC}$
3V to 3.6V	V_{CC}	$\leq 2.5ns$	50pF	500 Ω	open	GND	$2 \times V_{CC}$
4.5V to 5.5V	V_{CC}	$\leq 2.5ns$	50pF	500 Ω	open	GND	$2 \times V_{CC}$



4.7. Additional AC Testing Circuit

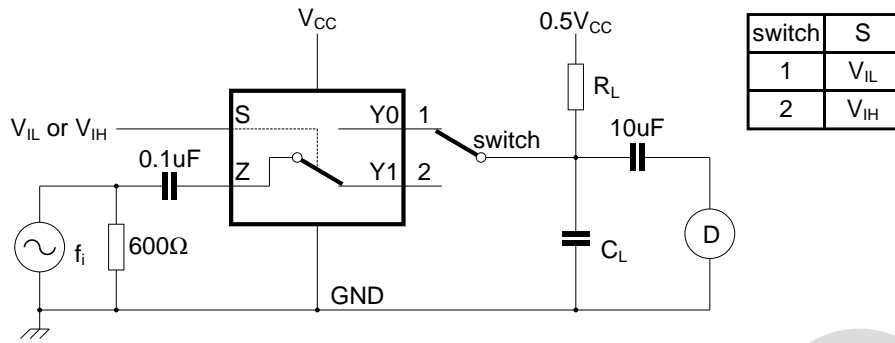
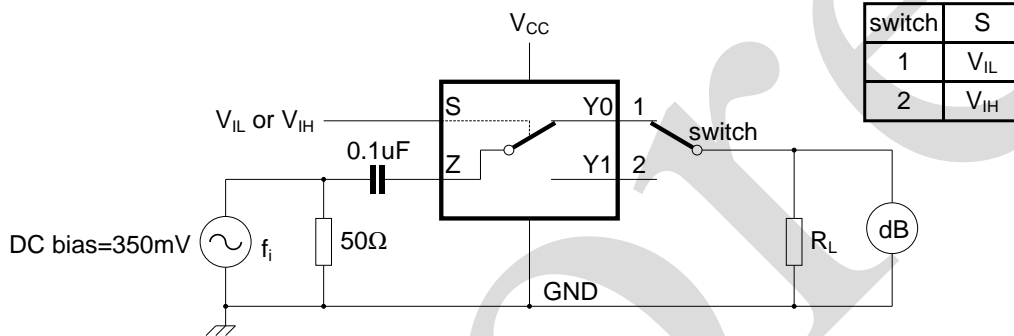
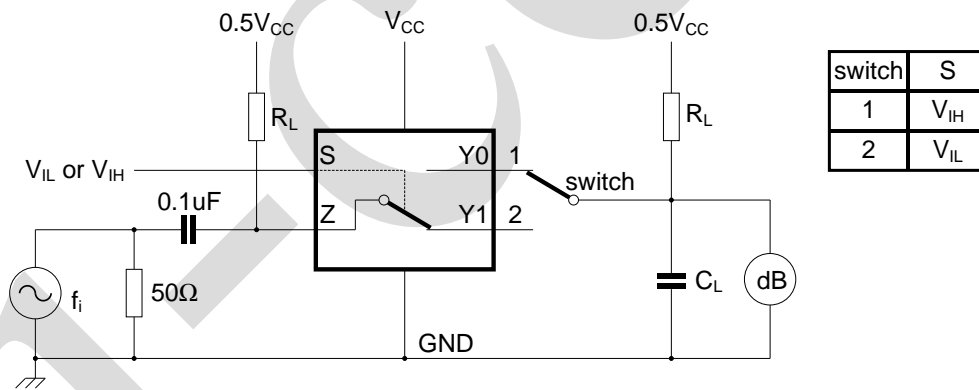


Figure 16. Test circuit for measuring total harmonic distortion



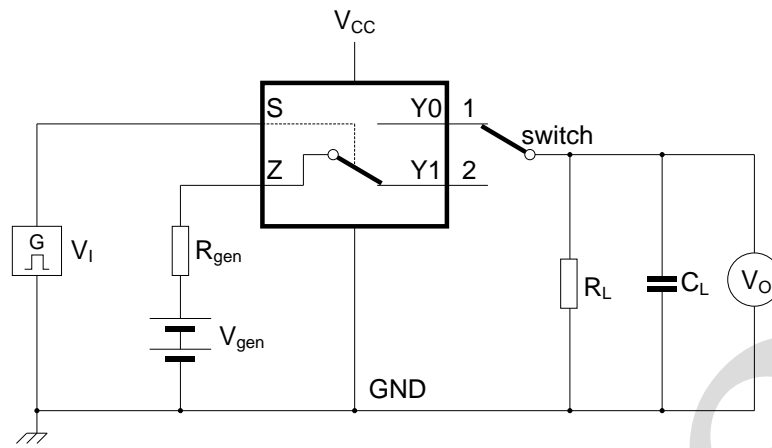
Adjust f_i voltage to obtain 0dBm level at output. Increase f_i frequency until dB meter reads -3dB.

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

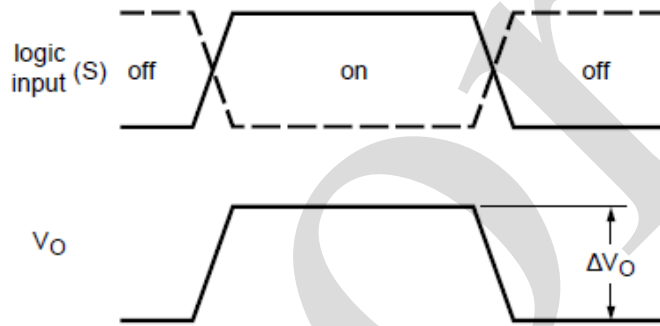


Adjust f_i voltage to obtain 0dBm level at input.

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



a. Test circuit



b. Input and output pulse definitions

$$Q_{inj} = \Delta V_o \times C_L$$

ΔV_o = output voltage variation.

R_{gen} = generator resistance.

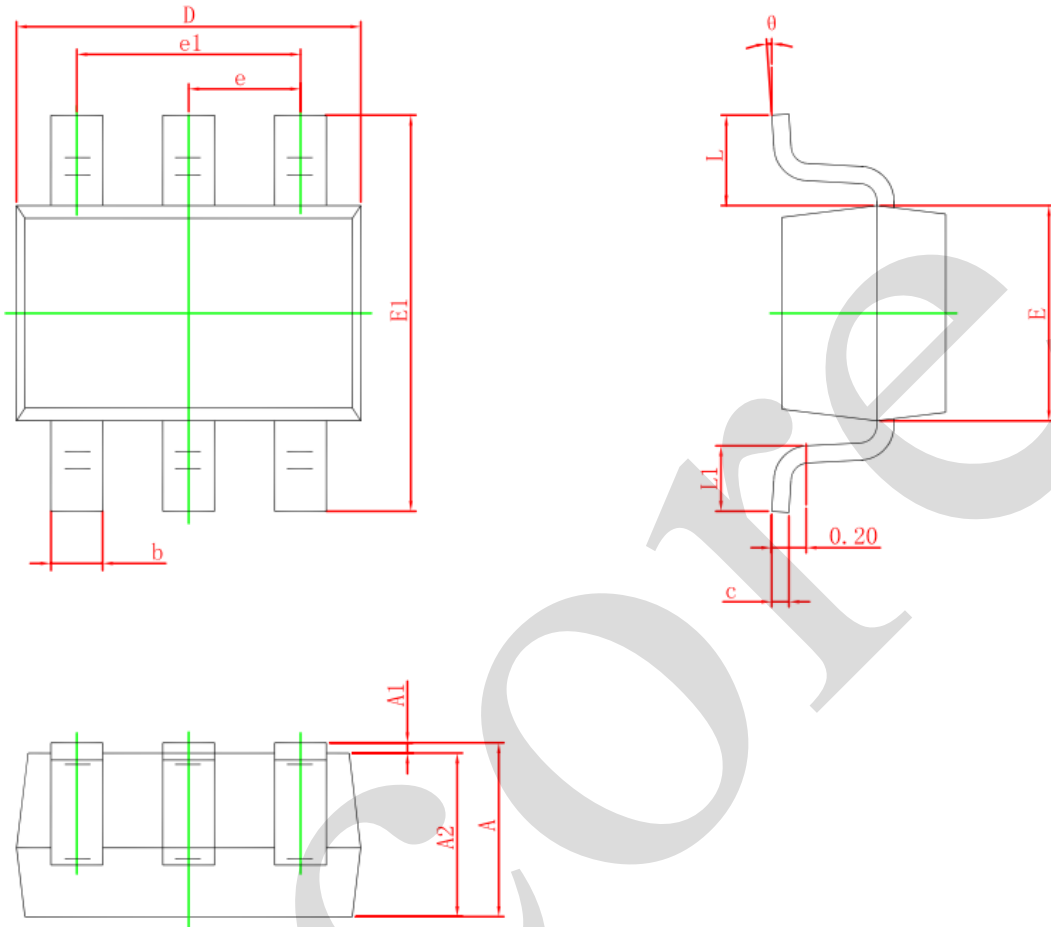
V_{gen} = generator voltage.

Figure 19. Test circuit for measuring charge injection



5、Package Information

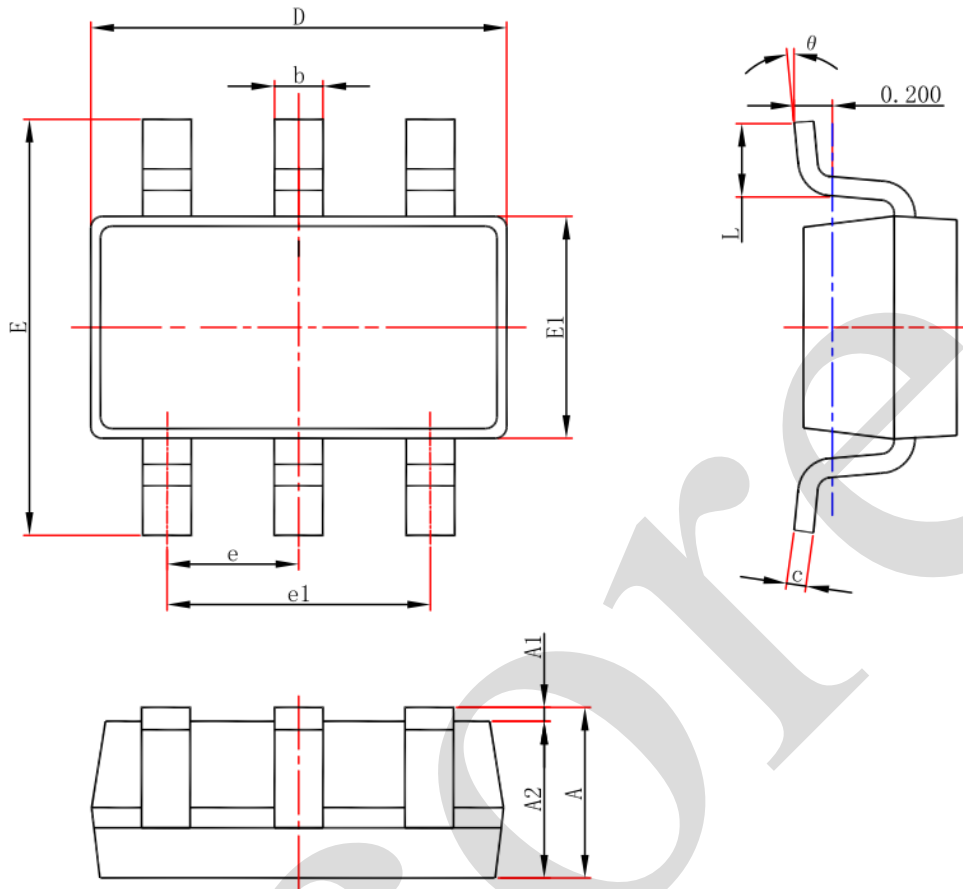
5.1、SOT363



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	0.080	0.150	0.003	0.006
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°



5.2、SOT-23-6



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
θ	0°	8°	0°	8°



6、 Statements And Notes

6.1、 The name and content of Hazardous substances or Elements in the product

Part name	Hazardous substances or Elements									
	Lead and lead compounds	Mercury and mercury compounds	Cadmium and cadmium compounds	Hexavalent chromium compounds	Polybrominated biphenyls	Polybrominated biphenyl ethers	Dibutyl phthalate	Butylbenzyl phthalate	Di-2-ethylhexyl phthalate	Diisobutyl phthalate
Lead frame	○	○	○	○	○	○	○	○	○	○
Plastic resin	○	○	○	○	○	○	○	○	○	○
Chip	○	○	○	○	○	○	○	○	○	○
The lead	○	○	○	○	○	○	○	○	○	○
Plastic sheet installed	○	○	○	○	○	○	○	○	○	○
explanation	○: Indicates that the content of hazardous substances or elements in the detection limit of the following the SJ/T11363-2006 standard. ×: Indicates that the content of hazardous substances or elements exceeding the SJ/T11363-2006 Standard limit requirements.									

6.2、 Notion

Recommended carefully reading this information before the use of this product;

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