

**Single pole double throw
analog switch**

SN74LVC1G3157

Product Data Sheet

**AOTE DCC
RELEASE**

◆ Summary :

SN74LVC1G3157 is a single pole double throw (SPDT) analog switch with a working voltage range of 1.8V to 5.5V.

SN74LVC1G3157 is capable of processing both analog and digital signals, and has the characteristics of high bandwidth (300MHz) and low conductivity (typical value of 4.5Ω). The application areas include signal switching, modulation or demodulation (modems), and the role of a multiplexer in analog-to-digital and digital to analog conversion systems.

◆ Product features

- Package: SOT23-6、 SC70-6
- High bandwidth: 300MHz
- Working voltage range: +1.8V~+5.5V
- Low on resistance, 4.5 Ω (typical value)
- Turn off and then turn on the switch
- TTL/CMOS compatible
- Working temperature range: -40°C~+125°C
- ESD protection exceeding JESD 22 standard
 - 1000-V human model
 - 100-V Mechanical Model (A115)
 - 1000-V Charged Device Model (JS-002)

◆ Applications

- Wearable devices
- Battery powered equipment
- Signal switching, chopping, modulation or demodulation
- Portable computer
- Mobile phone

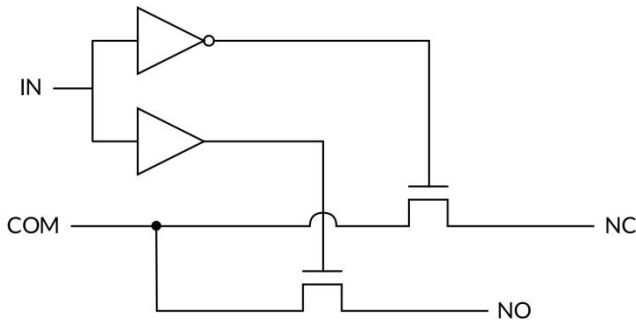
◆ Packaging and Order Description

Product Name	Order Model	Temperature Range (°C)	boxed type	screen printing	MSL(3)	Packing Specification
SN74LVC1G3157	SN74LVC1G3157DCKR	-40°C ~+125°C	SC70-6	3157	MSL3	Tape and Reel, 3000
	SN74LVC1G3157DBVR	-40°C ~+125°C	SOT23-6	CC5F	MSL3	Tape and Reel, 3000

Attention:

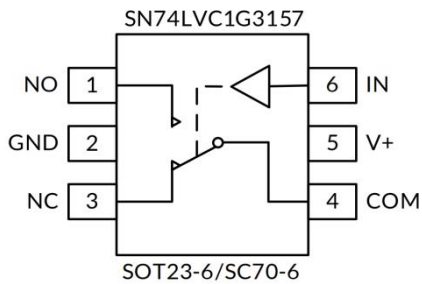
- (1) This information is the latest data for the current version. If these data are updated, they will be promptly updated on our official website without further notice.
- (2) Silk screen printing may have additional codes for internal control traceability of products (including data codes and supplier codes) or marking the place of origin.
- (3) MSL, Humidity sensitivity level classified according to JEDEC industry standards.
- (4) equivalent SOT363

◆ **Logic diagram**



◆ **On-product information:**

• **Footage image**



NOTE: NO, NC and COM terminals may be an input or output

Pin	Pin Name	Function Description
1	NO	Constant Beginning
2	GND	grounding
3	NC	Always closed end
4	COM	common terminal
5	V+	power supply
6	IN	Digital control pins

◆ **Menu**


LOGIC	NO	NC
0	OFF	ON
1	ON	OFF

◆ Absolute maximum rating Within the natural ventilation temperature range (unless otherwise specified)

	Parameter	Min	Max	Unit	
V+	power supply voltage	-0.3	6.0	V	
V _{IN}	input voltage	-0.3	6.0	V	
-	Analog, digital input voltage range	-0.3	(V+)+0.3V	V	
	NO, NC or COM continuous current	-300	+300	mA	
I _{PEAK}	NO, NC or COM continuous current	-500	+500	mA	
• current parameters					
θ _{JA}	Thermal resistance to the environment	SOT23-6	-	235	°C/W
		SC70-6	-	270	
• current parameters					
temperature parameter	Junction temperature, T _J	-	150	°C	
	Storage temperature range, T _{stg}	-65	150		

◆ ESD level

The following ESD information is only applicable to sensitive equipment operated within an ti-static protection zones

-	nominal value	Unit	 ESD sensitivity warning The scope of ESD damage can range from minor performance degradation to complete equipment failure. Precision integrated circuits may be more susceptible to damage as very small parameter changes can result in devices not meeting their published parameter specifications.
human model	±1000	V	
Charged Device Model	±1000		
Mechanical Model	±100		

Attention:

- (1) This only represents the limit values obtained by the product under testing conditions, and does not mean that the product can work normally under these conditions or other parameter conditions beyond the specifications. Exceeding the range specified by the absolute maximum rated value above will cause damage to the product, and it is impossible to predict the working state of the product outside of the above conditions. If the product operates under conditions other than those mentioned above for a long time, it may affect its performance.
- (2) If the input/output clamp current value meets the rated value, it is allowed to exceed the rated value of the input/output negative voltage.
- (3) The thermal impedance of the package is calculated according to JESD-51 standard:
- (4) The maximum power consumption is a function of T_J (MAX), R θ_{JA}, and T_A. The maximum power consumption at any ambient temperature is $P_o = (T_J (MAX) - T_A) / R_{\theta JA}$, which is suitable for packaging directly soldered to PCB.

◆ Recommended working conditions (Within the natural ventilation temperature range)

Symbol	Parameter	Min	Max	Unit
V _{CC}	Working voltage range	1.8	5.5	V
T _A	Working temperature range under natural ventilation conditions	-40	125	°C

◆ Typical electrical parameters

 The test conditions are: V₊=5.0V, T_A=-40 ° C~125 ° C (unless otherwise specified)

Parameter	Symbol	Test conditions	V ₊	T _A	Min	Typ	Max	Unit
• analog switch								
Analog signal range	V _{NO} , V _{NC} , V _{COM}	-		Full temperature	0	-	V ₊	V
on-resistance	R _{ON}	V _{NO} or V _{NC} = V ₊ /2, I _{COM} = -10mA, Switch ON, See Figure 4	5V	+25°C	-	4.5	-	Ω
				Full temperature		-	8.5	
			3.3V	+25°C		7	--	
				Full temperature		-	10.5	
Difference in conduction resistance between channels	ΔR _{ON}	V _{NO} or V _{NC} = V ₊ /2, I _{COM} = -10mA, Switch ON, See Figure 4	5V	+25°C	-	0.15	-	Ω
				Full temperature		-	0.4	
			3.3V	+25°C		0.15	--	
				Full temperature		-	0.4	
Flatness of conducting resistance	R _{FLAT(ON)}	0 ≤ (V _{NO} or V _{NC}) ≤ V ₊ /2, I _{COM} = -10mA, Switch ON, See Figure 4	5V	+25°C	-	2	-	Ω
				Full temperature		-	3.3	
			3.3V	+25°C		3	-	
				Full temperature		-	4.3	
NC,NO turn off leakage current	I _{NC(OFF)} , I _{NO(OFF)}	V _{NO} or V _{NC} = 0.3V, V ₊ /2 V _{COM} = V ₊ /2, 0.3V See Figure 5	1.8V- 5.5V	Full temperature	-	-	1	μA
NC,NO, COM Conducting leakage current	I _{NC(ON)} , I _{NO(ON)} , I _{COM(ON)}	V _{NO} or V _{NC} = 0.3V, V ₊ /2 V _{COM} = V ₊ /2, 0.3V See Figure 5	1.8V- 5.5V	Full temperature	-	-	1	μA

• Digital control input								
Input high voltage	V _{INH}	-	5V 3.3V	Full temperature	1.5 1.3	-	-	V
Input low voltage	V _{INL}	-	5V 3.3V	Full temperature	-	-	0.6 0.5	°C
Input leakage current	I _{IN}	V _{IN} = V _{IO} or 0	1.8V- 5.5V	Full temperature	-	-	1	μA

(1) All unused input ports of the device must be kept at VCC or GND to ensure proper operation of the device.

(2) The limit value is 100% production testing conducted at 25°C. Ensure the limitation of the working temperature range by utilizing the correlation of statistical quality control (SQC) methods.

(3) Typical values represent the most likely parameter specifications determined during characterization. The actual typical values may vary over time and will also depend on the application and configuration.

◆ Typical electrical parameters (Test conditions: V₊=5.0V, T_A=-40 °C~125 °C (unless otherwise specified))

Parameter	symbol	Test conditions	V ₊	T _A	Min	Typ	Max	Unit
• Dynamic characteristics								
Startup time	t _{ON}	V _{COM} = V ₊ , R _L = 300Ω, C _L = 35pF, See Figure 8	5V 3.3V	+25°C	-	30 40	-	ns
turn-off time	t _{OFF}	V _{COM} = V ₊ , R _L = 300Ω, C _L = 35pF, See Figure 8	5V 3.3V	+25°C	-	25 30	-	ns
First break, then close time delay	t _{BBM}	V _{NO1} = V _{NC1} = V _{NO2} = V _{NC2} = 3V R _L = 300Ω, C _L = 35pF, See Figure 9	5V 3.3V	+25°C	-	5 8	-	Ω
Turn off isolation	O _{ISO}	R _L = 50Ω, Switch OFF, f = 10MHz, f = 1MHz See Figure 11	-	+25°C +25°C	-	-52 -71	-	dB
-3dB broadband	BW	Switch ON, R _L = 50Ω See Figure 10	-	+25°C	-	300	-	MHz
NC.NO turn off capacitor	C _{NC(OFF)} C _{NO(OFF)}	V _{NC} or V _{NO} = V ₊ /2 or GND, Switch OFF, See Figure 7	-	+25°C	-	5	-	pF
NC.NO,COM Conductive capacitor	C _{NC(ON)} C _{NO(ON)} C _{com(ON)}	V _{NC} or V _{NO} = V ₊ /2 or GND, Switch ON, See Figure 7	-	+25°C	-	15	-	pF
• Power requirements								
Power supply voltage range	V ₊	-		Full temperature	1.8	-	5.5	V
power current	I ₊	V _{IN} = GND or V ₊	5.5V	Full temperature	-	-	1	μA

◆ **Typical parameter curve**

Note: The charts and tables provided later in this document are statistical summaries based on a limited number of samples and are for reference only.

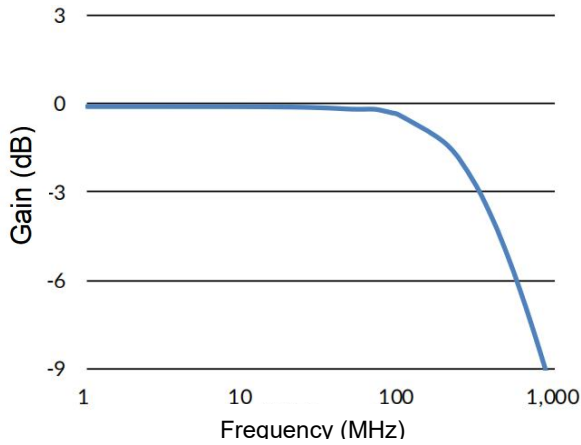


Figure 1. Relationship between bandwidth and frequency, V+=3V

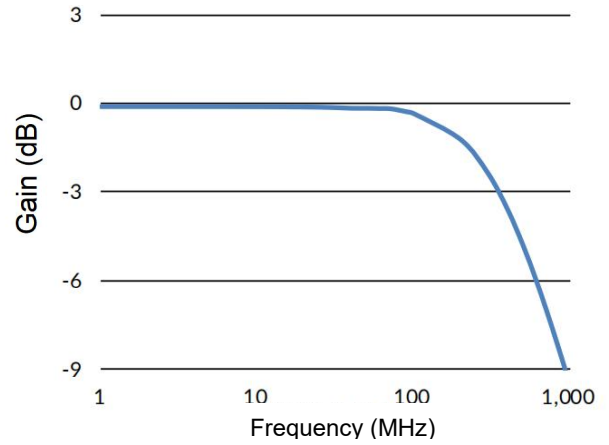


Figure 2. Relationship between bandwidth and frequency,

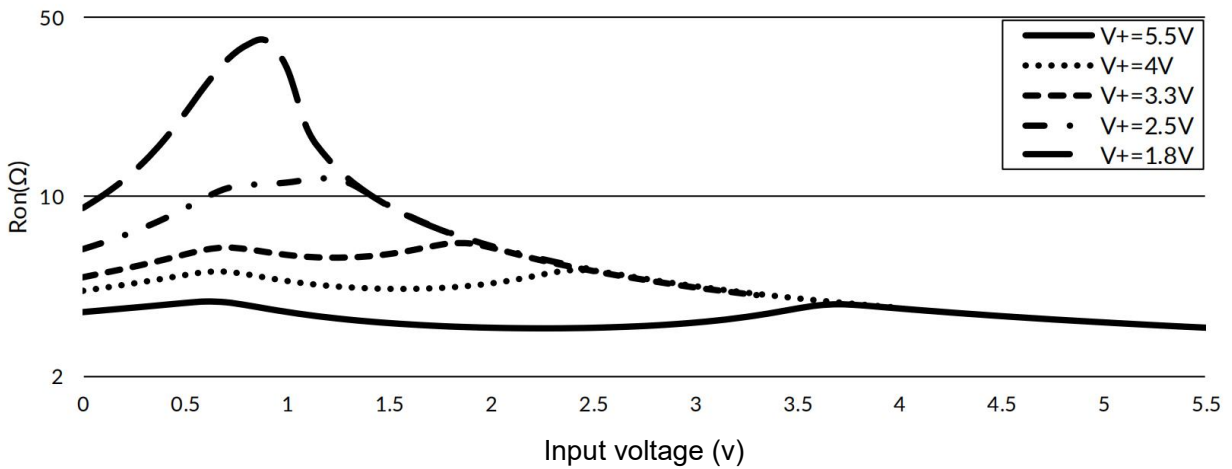


Figure 3. Typical values of on resistance (Ron) as a function of input voltage, ViN=0VtoV+

◆ **Parameter measurement information**

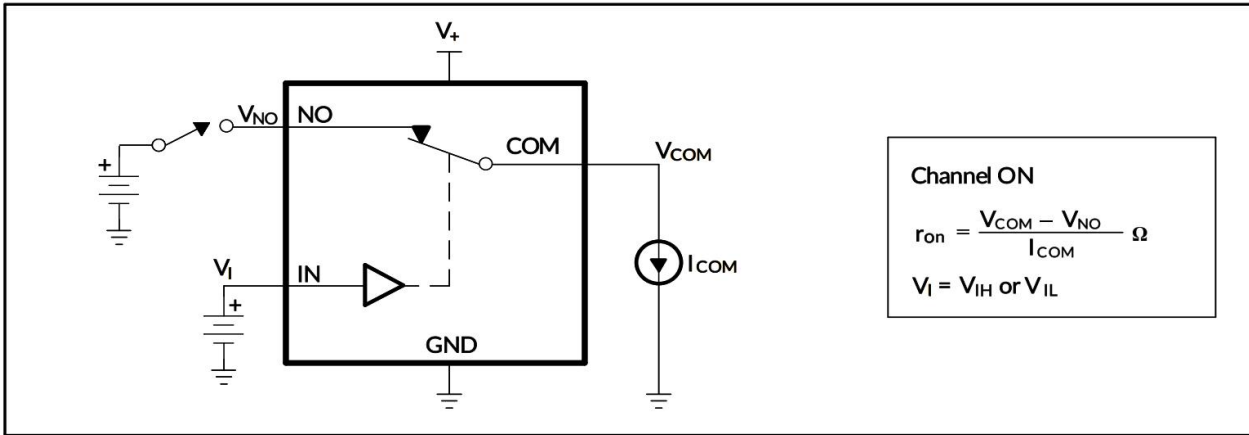


Figure 4. Conducting resistance (Ron)

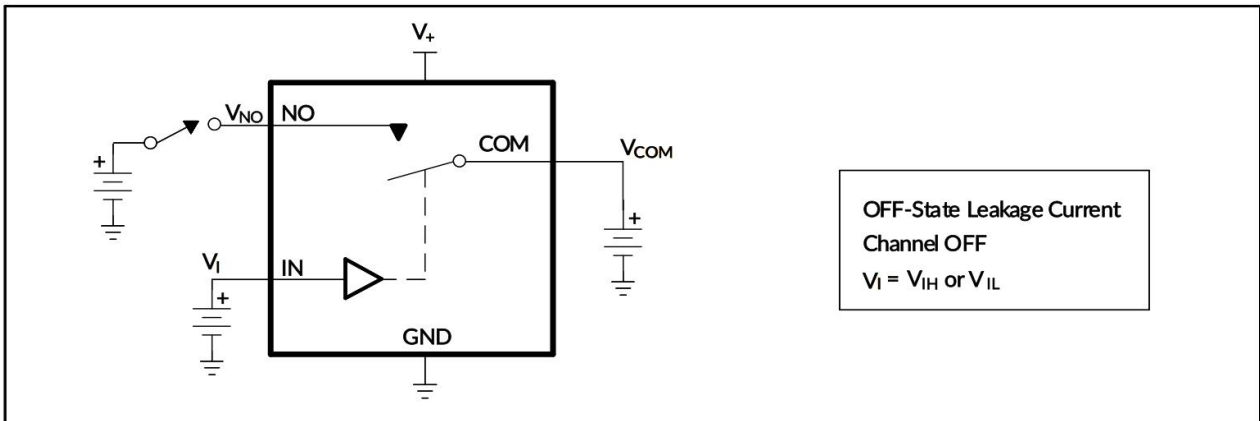


Figure 5. Turn off leakage current (IcoM (oFF), INo (oFF))

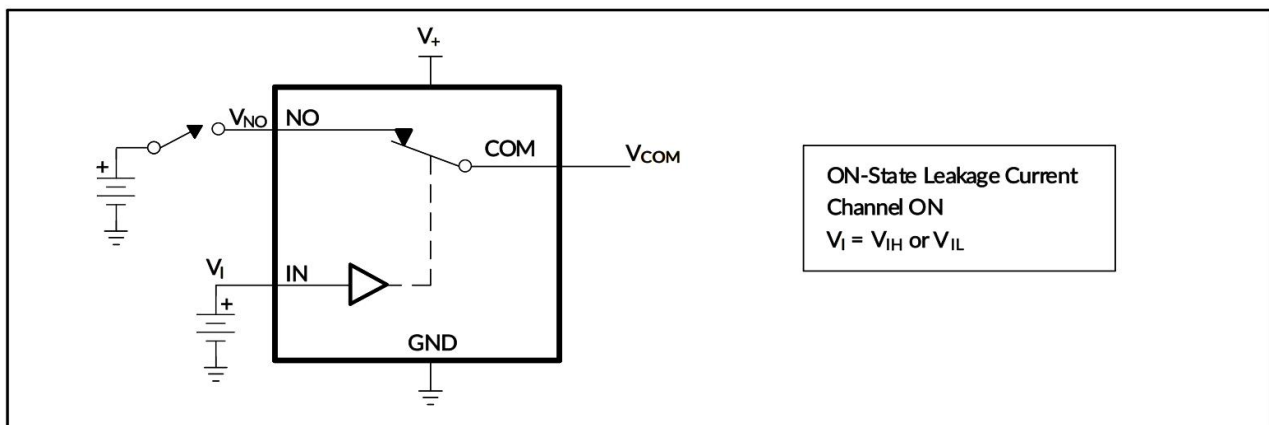


Figure 6. Conducting leakage current (IcoM (oN), INo (oN))

◆ **Parameter measurement information**

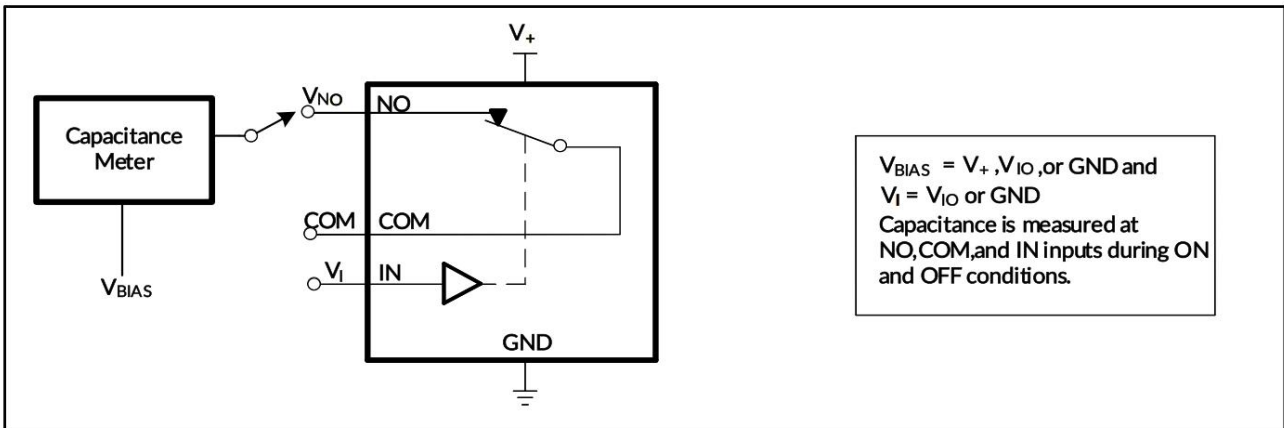


Figure 7. Capacitor (C_I , $C_{COM(OFF)}$, $C_{COM(ON)}$, $C_{NO(OFF)}$, $C_{NO(ON)}$)

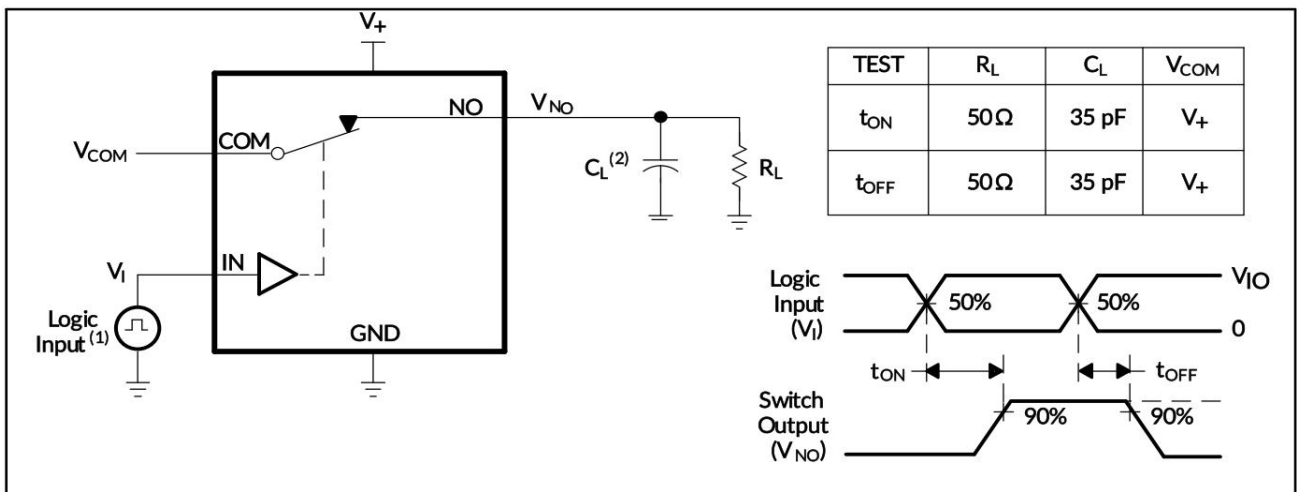


Figure 8. Startup (t_{ON}) and Shutdown Time (t_{OFF})

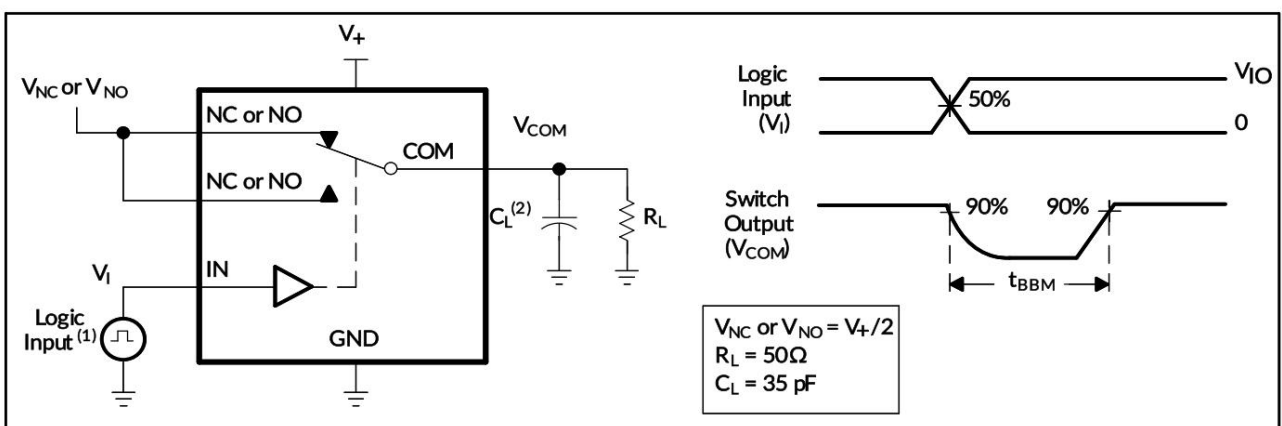


Figure 9. Time of first breaking and then closing (t_{gBM})

◆ Parameter measurement information

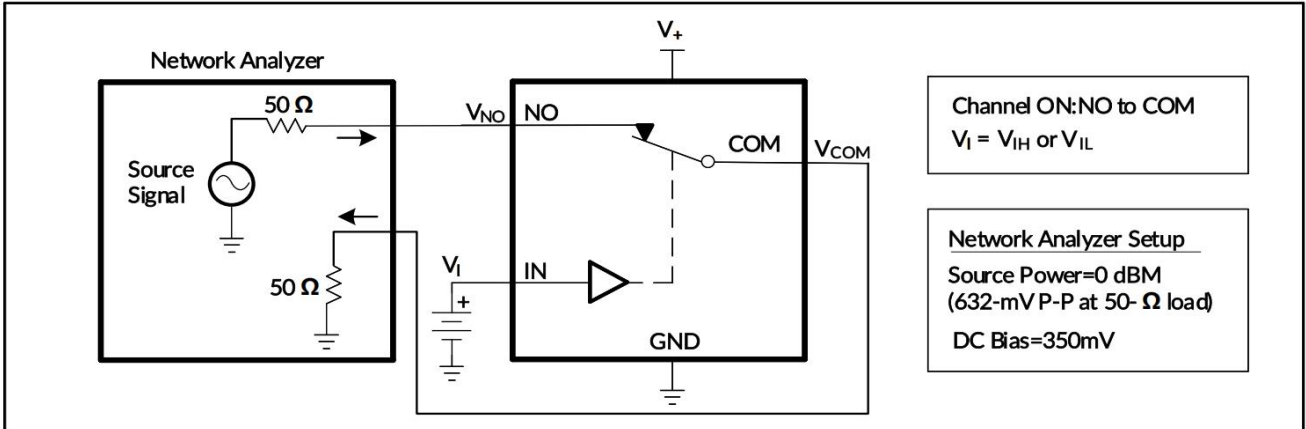


Figure 10. Bandwidth (BW)

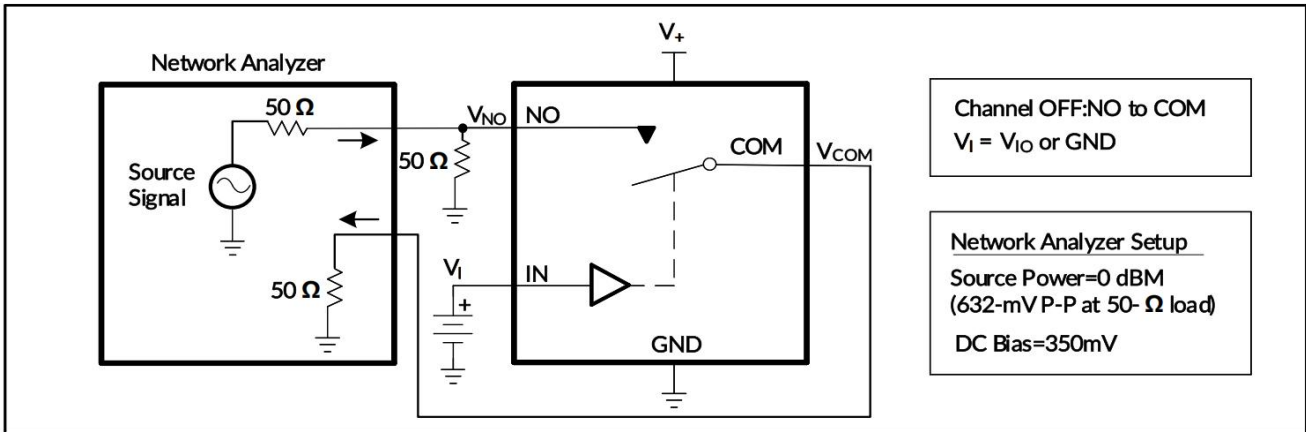


Figure 11. Off isolation (Oiso)

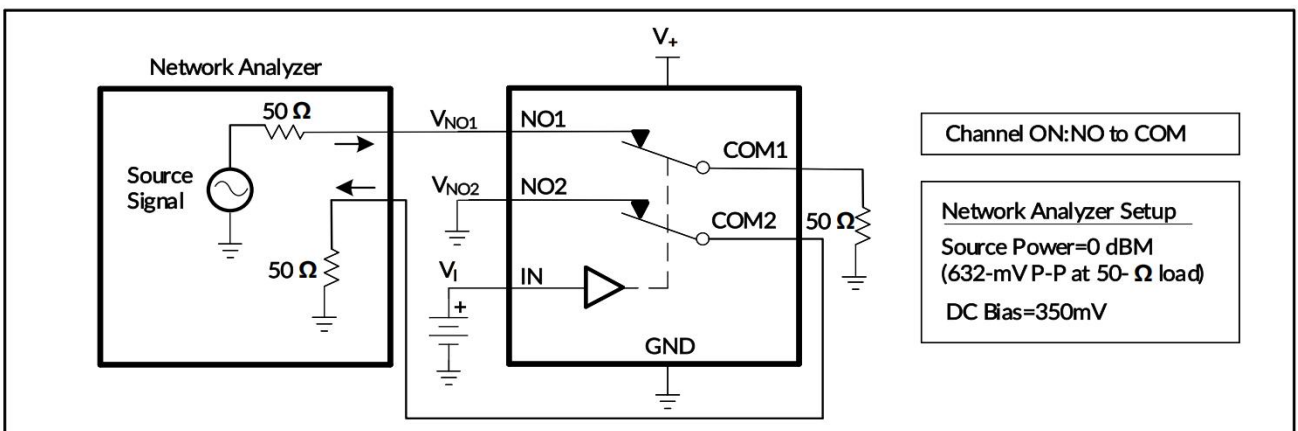
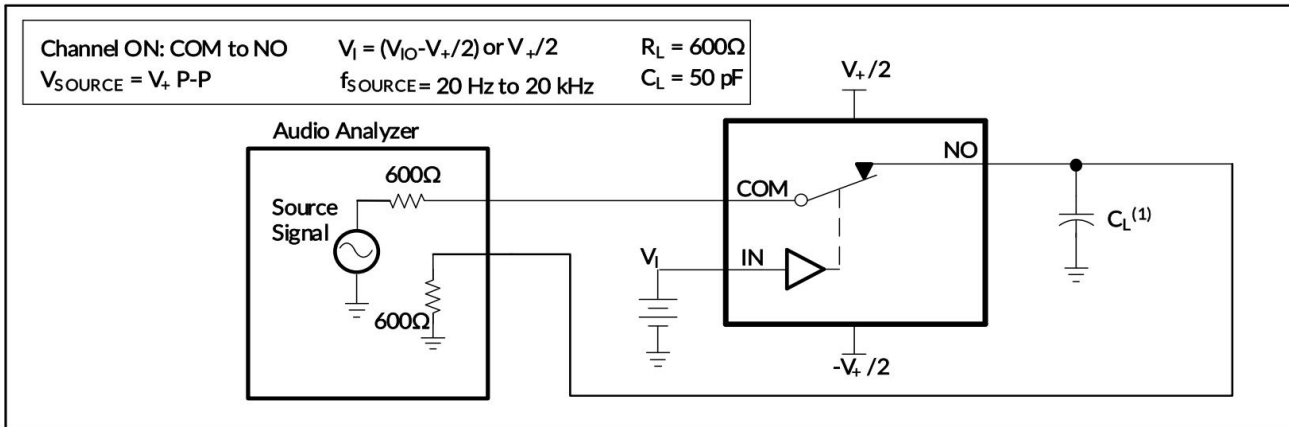
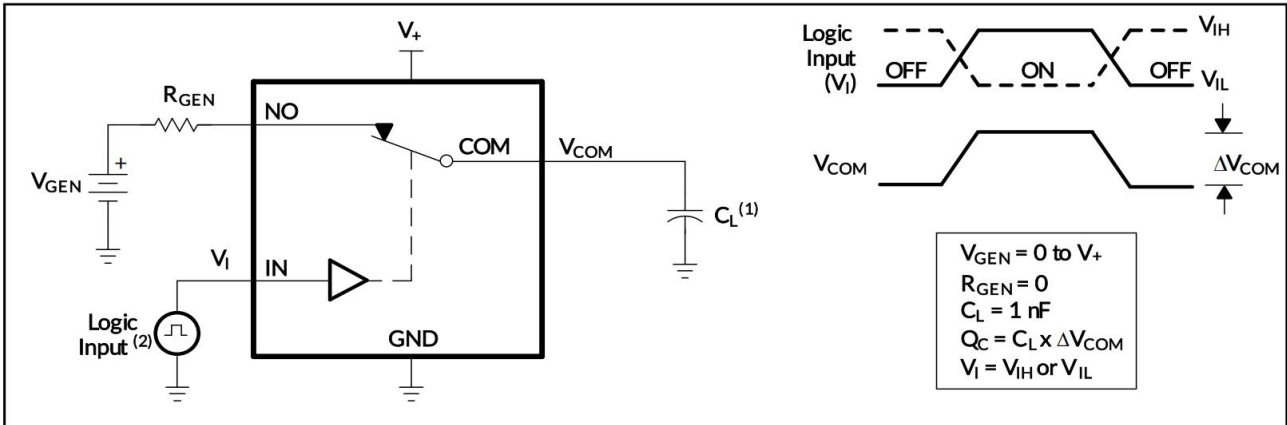


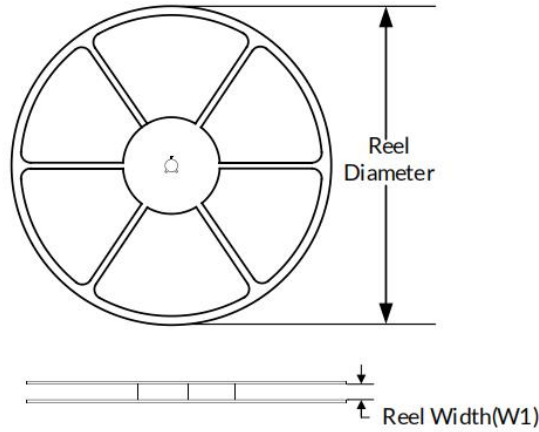
Figure 12. Crosstalk (XTALK)

◆ **Parameter measurement information**

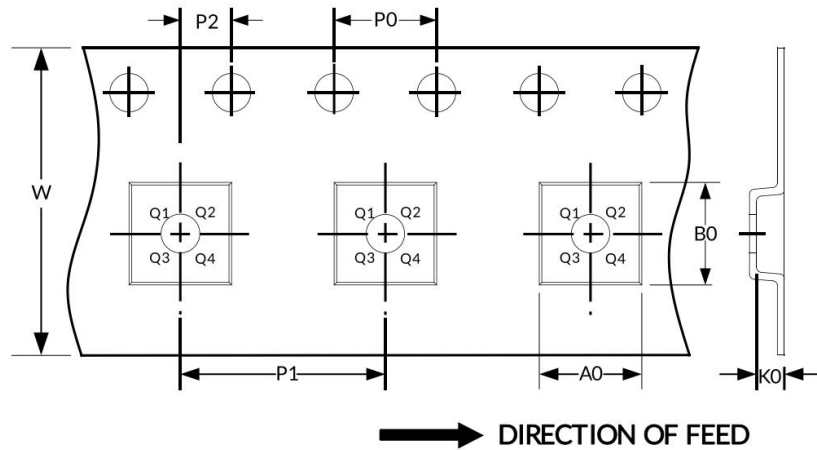


◆ **Packaging specifications size**

REEL DIMENSIONS



TAPE DIMENSION



Attention: The pictures are for reference only. Please use the physical object as the standard

◆ **Key parameter table**

Package Type	Reel Diameter	Reel Width (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
SC70-6	7"	9.5	2.40	2.50	1.20	4.0	4.0	2.0	8.0	Q3
SOT23-6	7"	9.5	3.17	3.23	1.37	4.0	4.0	2.0	8.0	Q3

Attention:

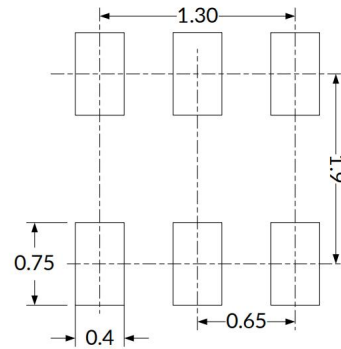
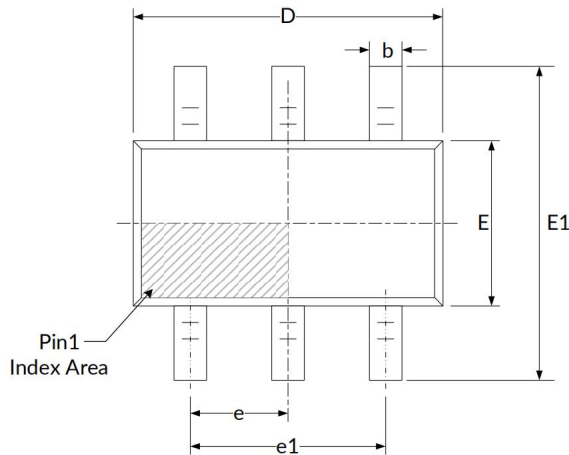
- 1.All dimensions are nominal sizes.
- 2.Excluding plastic wrap or metal protrusions with a maximum of 0.15 millimeters on each side.

◆ **Packaging specifications and dimensions**

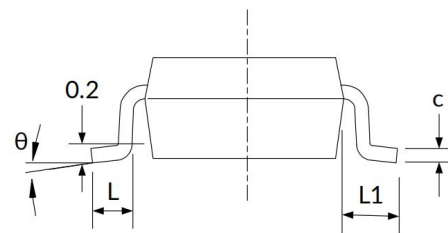
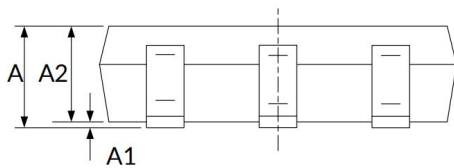
Attention:

1. Excluding plastic wrap or metal protrusions with a maximum of 0.15mm on each side.
2. BSC (Basic Center Spacing), where the "basic" spacing is the nominal spacing.
3. This image is subject to change without prior notice

SC70-6



RECOMMENDED LAND PATTERN (Unit: mm)

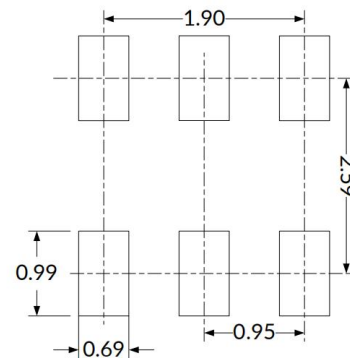
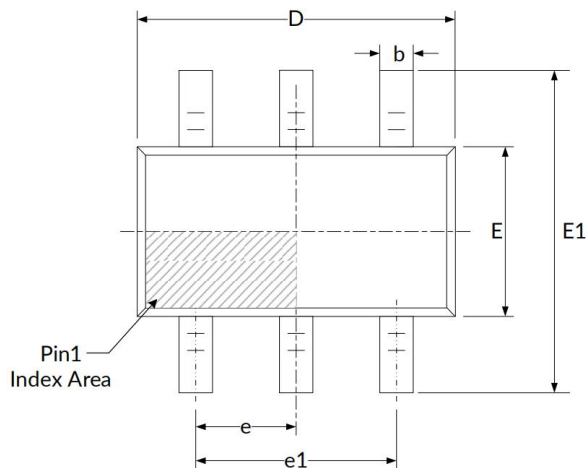
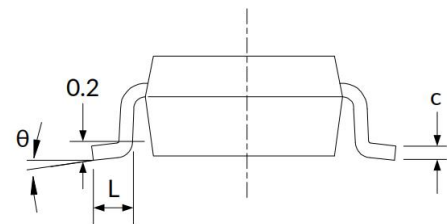
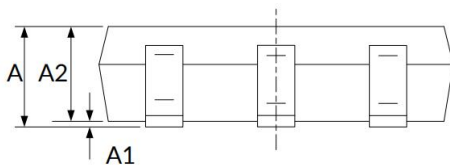


Symbol	Dimensions (in millimeters)		Dimensions (in inches)	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
C	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 (BSC)		0.026 (BSC)	
e1	1.300(BSC)		0.051 (BSC)	
L	0.260	0.460	0.010	0.018
L1	0.525		0.021	
θ	0°	8°	0°	8°

◆ Packaging specifications and dimensions

Attention:

4. Excluding plastic wrap or metal protrusions with a maximum of 0.15mm on each side.
5. BSC (Basic Center Spacing), where the "basic" spacing is the nominal spacing.
6. This image is subject to change without prior notice

SOT23-6

RECOMMENDED LAND PATTERN (Unit: mm)


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
E	1.500	1.700	0.059	0.067
E1	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°

◆ Attention

- AOTE implements dynamic technical updates. Specifications are subject to change. Refer to the official website for the latest version.
- Users must strictly adhere to specified conditions. Failures caused by misuse (overload, high temperature, incompatible circuits) are excluded from warranty.
- Contact technical support for customized validation in critical applications (medical devices, industrial control).
- This document is valid until December 31, 2026 Updates will be notified on the official website.
- For further clarification on technical specifications or application solutions, please contact us through official channels: