



SN74LVC2G07

Dual Buffer (Open-drain)

Product Specification

Specification Revision History:

Version	Date	Description
2017-05-A1	2017-05	New
2023-04-B1	2023-04	Update the template
2023-10-B2	2023-10	Additional package



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1、 General Description

The SN74LVC2G07 provides two non-inverting buffers.

The output of this device is an open drain and can be connected to other open-drain outputs to implement active-LOW wired-OR or active-HIGH wired-AND functions.

Inputs can be driven from either 3.3V or 5V devices. This feature allows the use of this device in a mixed 3.3V and 5V environment.

Features:

- Wide supply voltage range from 1.65V to 5.5V
- 5V tolerant inputs for interfacing with 5V logic
- -24mA output drive ($V_{CC}=3.0V$)
- CMOS low power consumption
- Specified from -40°C to +125°C
- Packaging information: SOT-23-6/SOT-363/XSON6

Ordering Information:

Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
SN74LVC2G07DB	SOT-23-6	BGXX	3000 PCS/reel	30000 PCS/box	Dimensions of plastic enclosure: 2.9mm×1.6mm Pin spacing: 0.95mm
SN74LVC2G07DC	SOT-363	BGXX	3000 PCS/reel	30000 PCS/box	Dimensions of plastic enclosure: 2.1mm×1.3mm Pin spacing: 0.65mm
SN74LVC2G07DR	XSON6	BGXX	5000 PCS/reel	25000 PCS/box	Dimensions of plastic enclosure: 1.45mm×1.0mm Pin spacing: 0.5mm
SN74LVC2G07DS	XSON6	BGXX	5000 PCS/reel	25000 PCS/box	Dimensions of plastic enclosure: 1.0mm×1.0mm Pin spacing :0.35mm

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

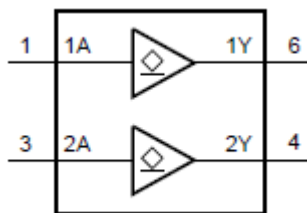


Figure 1. Logic symbol

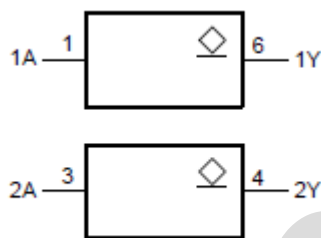


Figure 2. IEC logic symbol

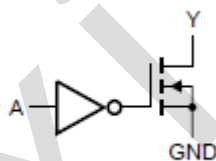
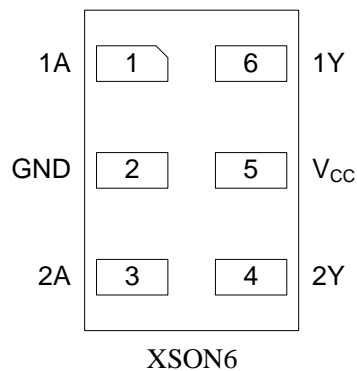
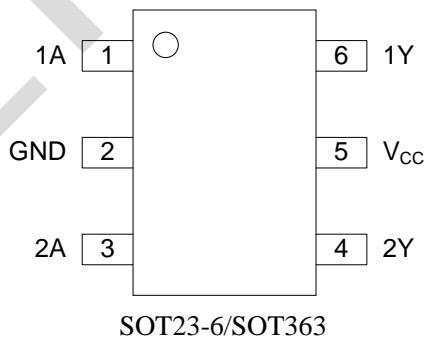


Figure 3. Logic diagram (one driver)

2.2、Pin Configurations





2.3、Pin Description

Pin No.	Pin Name	Description
1	1A	data input
2	GND	ground (0V)
3	2A	data input
4	2Y	data output
5	V _{CC}	supply voltage
6	1Y	data output

2.4、Function Table

Input	Output
nA	nY
L	L
H	Z

Note: H=HIGH voltage level; L=LOW voltage level; Z=high-impedance OFF-state.

3、Electrical Parameter

3.1、Absolute Maximum Ratings

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

Parameter	Symbol	Conditions	Min.	Max.	Unit
supply voltage	V _{CC}	-	-0.5	+6.5	V
input clamping current	I _{IK}	V _I < 0V	-	-50	mA
input voltage	V _I	-	-0.5	+6.5	V
output clamping current	I _{OK}	V _O < 0V	-	-50	mA
output voltage	V _O	Active mode	-0.5	+6.5	V
		Power-down mode	-0.5	+6.5	V
output current	I _O	V _O =0V to 6.5V	-	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	260		°C

Note: When V_{CC}=0V (Power-down mode), the output voltage can be 5.5V in normal operation.



3.2、Recommended Operating Conditions

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
supply voltage	V_{CC}	-	1.65	-	5.5	V
input voltage	V_I	-	0	-	5.5	V
output voltage	V_O	Active mode	0	-	5.5	V
		Power-down mode; $V_{CC}=0V$	0	-	5.5	V
ambient temperature	T_{amb}	-	-40	-	+125	°C

3.3、Electrical Characteristics

3.3.1、DC 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.	Max.	Unit	
HIGH-level input voltage	V_{IH}	$V_{CC}=1.65V$ to $1.95V$	$0.65 \times V_{CC}$	-	-	V	
		$V_{CC}=2.3V$ to $2.7V$	1.7	-	-	V	
		$V_{CC}=2.7V$ to $3.6V$	2.0	-	-	V	
		$V_{CC}=4.5V$ to $5.5V$	$0.7 \times V_{CC}$	-	-	V	
LOW-level input voltage	V_{IL}	$V_{CC}=1.65V$ to $1.95V$	-	-	$0.35 \times V_{CC}$	V	
		$V_{CC}=2.3V$ to $2.7V$	-	-	0.7	V	
		$V_{CC}=2.7V$ to $3.6V$	-	-	0.8	V	
		$V_{CC}=4.5V$ to $5.5V$	-	-	$0.3 \times V_{CC}$	V	
LOW-level output voltage	V_{OL}	$V_I = V_{IH}$ or V_{IL}	$I_O=100\mu A$; $V_{CC}=1.65V$ to $5.5V$	-	-	0.10	V
			$I_O=4mA$; $V_{CC}=1.65V$	-	-	0.45	V
			$I_O=8mA$; $V_{CC}=2.3V$	-	-	0.30	V
			$I_O=12mA$; $V_{CC}=2.7V$	-	-	0.40	V
			$I_O=24mA$; $V_{CC}=3.0V$	-	-	0.55	V
			$I_O=32mA$; $V_{CC}=4.5V$	-	-	0.55	V
input leakage current	I_I	$V_I=5.5V$ or GND; $V_{CC}=0V$ to $5.5V$	-	-	± 1	μA	
OFF-state output current	I_{OZ}	$V_I=V_{IH}$ or V_{IL} ; $V_O=V_{CC}$ or GND; $V_{CC}=5.5V$	-	-	± 2	μA	
power-off leakage current	I_{OFF}	V_I or $V_O=5.5V$; $V_{CC}=0V$	-	-	± 2	μA	
supply current	I_{CC}	$V_I=5.5V$ or GND; $I_O=0A$; $V_{CC}=1.65V$ to $5.5V$	-	-	4	μA	
additional supply current	ΔI_{CC}	per pin; $V_I=V_{CC}-0.6V$; $I_O=0A$; $V_{CC}=2.3V$ to $5.5V$	-	-	500	μA	
input capacitance	C_I	-	-	2.5	-	pF	

Note: All typical values are measured at $V_{CC}=3.3V$ and $T_{amb}=25^{\circ}C$.



3.3.2、DC Characteristics 2

($T_{amb} = -40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$, 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	$0.65 \times V_{CC}$	-	-	V	
		$V_{CC}=2.3\text{V}$ to 2.7V	1.7	-	-	V	
		$V_{CC}=2.7\text{V}$ to 3.6V	2.0	-	-	V	
		$V_{CC}=4.5\text{V}$ to 5.5V	$0.7 \times V_{CC}$	-	-	V	
LOW-level input voltage	V_{IL}	$V_{CC}=1.65\text{V}$ to 1.95V	-	-	$0.35 \times V_{CC}$	V	
		$V_{CC}=2.3\text{V}$ to 2.7V	-	-	0.7	V	
		$V_{CC}=2.7\text{V}$ to 3.6V	-	-	0.8	V	
		$V_{CC}=4.5\text{V}$ to 5.5V	-	-	$0.3 \times V_{CC}$	V	
LOW-level output voltage	V_{OL}	$V_I = V_{IH}$ or V_{IL}	$I_O=100\mu\text{A}$; $V_{CC}=1.65\text{V}$ to 5.5V	-	-	0.10	V
			$I_O=4\text{mA}$; $V_{CC}=1.65\text{V}$	-	-	0.70	V
			$I_O=8\text{mA}$; $V_{CC}=2.3\text{V}$	-	-	0.45	V
			$I_O=12\text{mA}$; $V_{CC}=2.7\text{V}$	-	-	0.60	V
			$I_O=24\text{mA}$; $V_{CC}=3.0\text{V}$	-	-	0.80	V
			$I_O=32\text{mA}$; $V_{CC}=4.5\text{V}$	-	-	0.80	V
input leakage current	I_I	$V_I=5.5\text{V}$ or GND; $V_{CC}=0\text{V}$ to 5.5V	-	-	± 1	μA	
OFF-state output current	I_{OZ}	$V_I=V_{IH}$ or V_{IL} ; $V_O=V_{CC}$ or GND; $V_{CC}=5.5\text{V}$	-	-	± 2	μA	
power-off leakage current	I_{OFF}	V_I or $V_O=5.5\text{V}$; $V_{CC}=0\text{V}$	-	-	± 2	μA	
supply current	I_{CC}	$V_I=5.5\text{V}$ or GND; $I_O=0\text{A}$; $V_{CC}=1.65\text{V}$ to 5.5V	-	-	4	μA	
additional supply current	ΔI_{CC}	per pin; $V_I=V_{CC}-0.6\text{V}$; $I_O=0\text{A}$; $V_{CC}=2.3\text{V}$ to 5.5V	-	-	500	μA	



3.3.3、AC 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.	Min.	
nA to nY propagation delay	t _{PLZ} , t _{PZL}	see Figure 5	V _{CC} =1.65V to 1.95V	-	12.3	18.4	ns
			V _{CC} =2.3V to 2.7V	-	8.4	12.6	ns
			V _{CC} =2.7V	-	8.1	12.1	ns
			V _{CC} =3.0V to 3.6V	-	9.1	13.7	ns
			V _{CC} =4.5V to 5.5V	-	5.3	7.9	ns

Note:

[1] Typical values are measured at $T_{amb}=25^{\circ}\text{C}$ and $V_{CC}=1.8\text{V}$, 2.5V , 2.7V , 3.3V and 5.0V respectively.

3.3.4、AC Characteristics 2

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
nA to nY propagation delay	t _{PLZ} , t _{PZL}	see Figure 5	V _{CC} =1.65V to 1.95V	-	-	23.0	ns
			V _{CC} =2.3V to 2.7V	-	-	16.1	ns
			V _{CC} =2.7V	-	-	15.2	ns
			V _{CC} =3.0V to 3.6V	-	-	17.3	ns
			V _{CC} =4.5V to 5.5V	-	-	10.0	ns

4、Testing Circuit

4.1、AC Testing Circuit

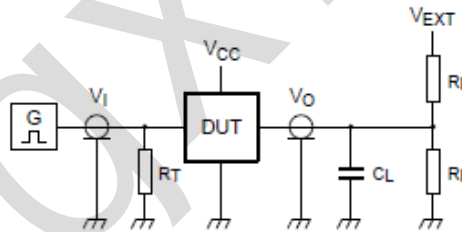


Figure 4. Test circuit for measuring switching times

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.



4.2、AC Testing Waveforms

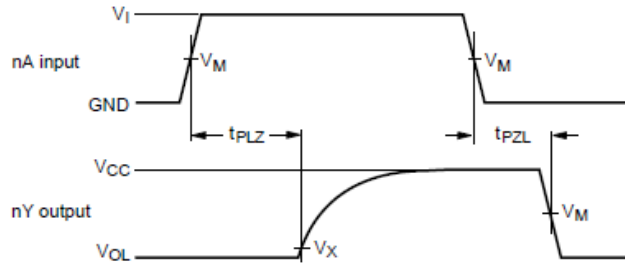


Figure 5. The input nA to output nY propagation delays

4.3、Measurement Points

Supply voltage	Input		Output	
	V_M	V_X	V_M	V_X
1.65V to 1.95V	$0.5 \times V_{CC}$	$V_{OL} + 0.15V$	$0.5 \times V_{CC}$	$V_{OL} + 0.15V$
2.3V to 2.7V	$0.5 \times V_{CC}$	$V_{OL} + 0.15V$	$0.5 \times V_{CC}$	$V_{OL} + 0.15V$
2.7V	1.5V	$V_{OL} + 0.3V$	1.5V	$V_{OL} + 0.3V$
3.0V to 3.6V	1.5V	$V_{OL} + 0.3V$	1.5V	$V_{OL} + 0.3V$
4.5V to 5.5V	$0.5 \times V_{CC}$	$V_{OL} + 0.3V$	$0.5 \times V_{CC}$	$V_{OL} + 0.3V$

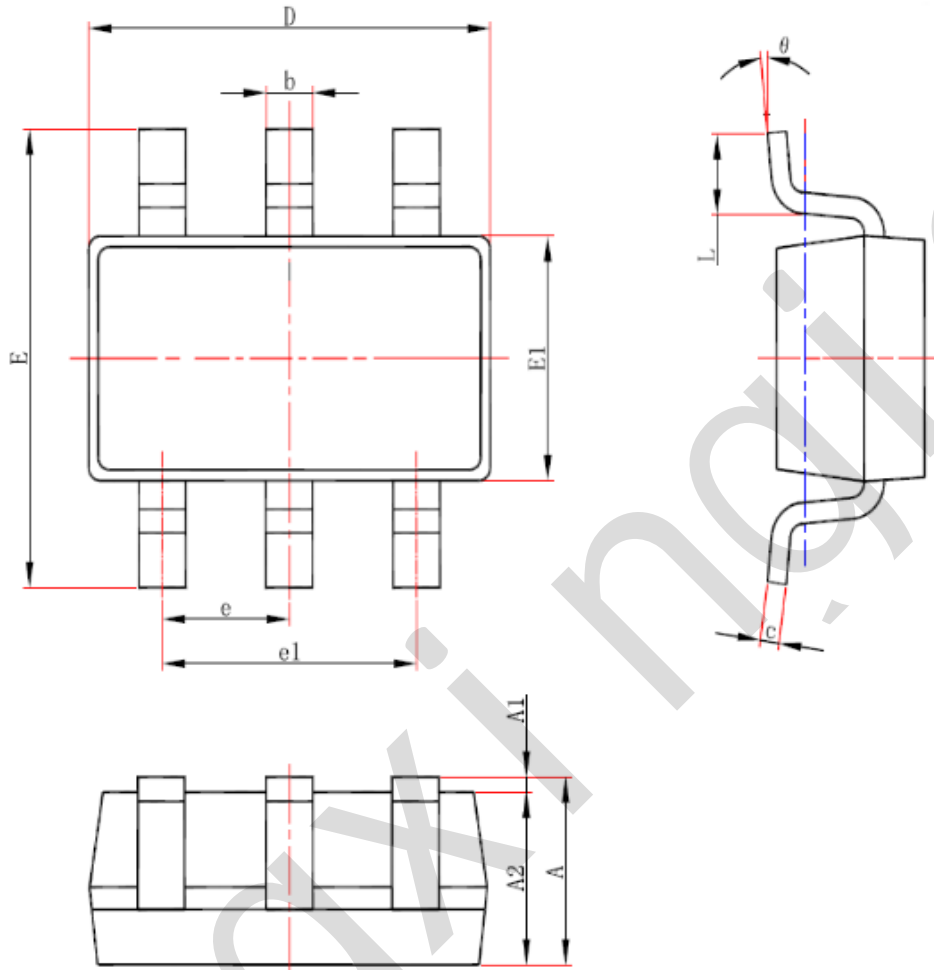
4.4、Test Data

Supply voltage	Input		Load		V_{EXT}
	V_I	$t_r = t_f$	C_L	R_L	
1.65V to 1.95V	V_{CC}	$\leq 3ns$	30pF	1k Ω	$2 \times V_{CC}$
2.3V to 2.7V	V_{CC}	$\leq 3ns$	30pF	500 Ω	$2 \times V_{CC}$
2.7V	2.7V	$\leq 3ns$	50pF	500 Ω	6V
3.0V to 3.6V	2.7V	$\leq 3ns$	50pF	500 Ω	6V
4.5V to 5.5V	V_{CC}	$\leq 3ns$	50pF	500 Ω	$2 \times V_{CC}$



5、Package Information

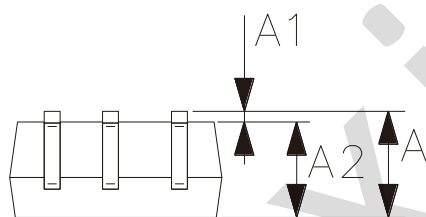
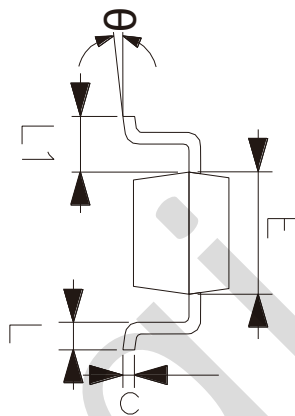
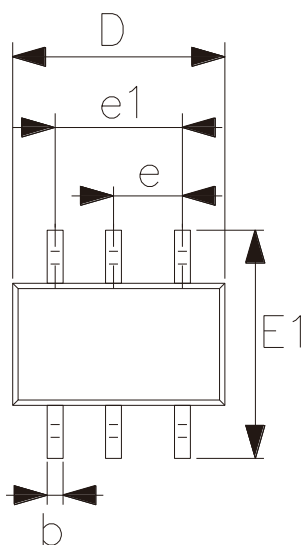
5.1、SOT-23-6



Symbol	Dimensions (mm)	
	Min.	Max.
A	-	1.25
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	
e1	1.80	2.00
L	0.30	0.60
θ	0°	8°



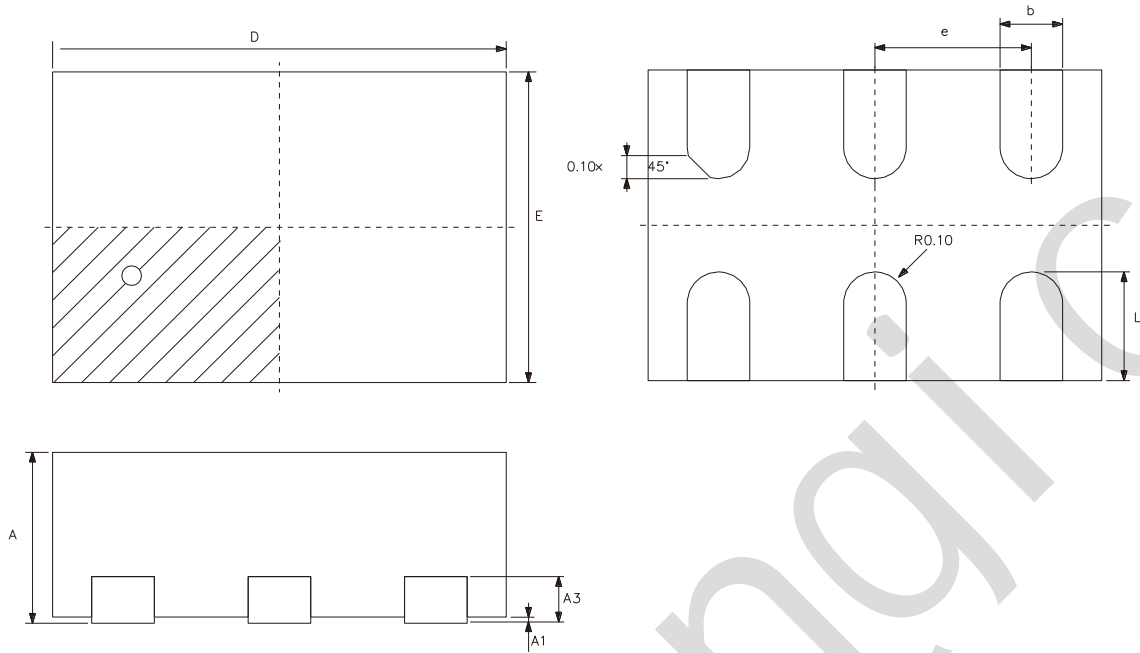
5.2、SOT-363



Symbol	Dimensions (mm)	
	Min.	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
E1	2.15	2.45
E	1.15	1.35
e	0.65	
e1	1.20	1.40
L	0.26	0.46
L1	0.525	
θ	0°	8°



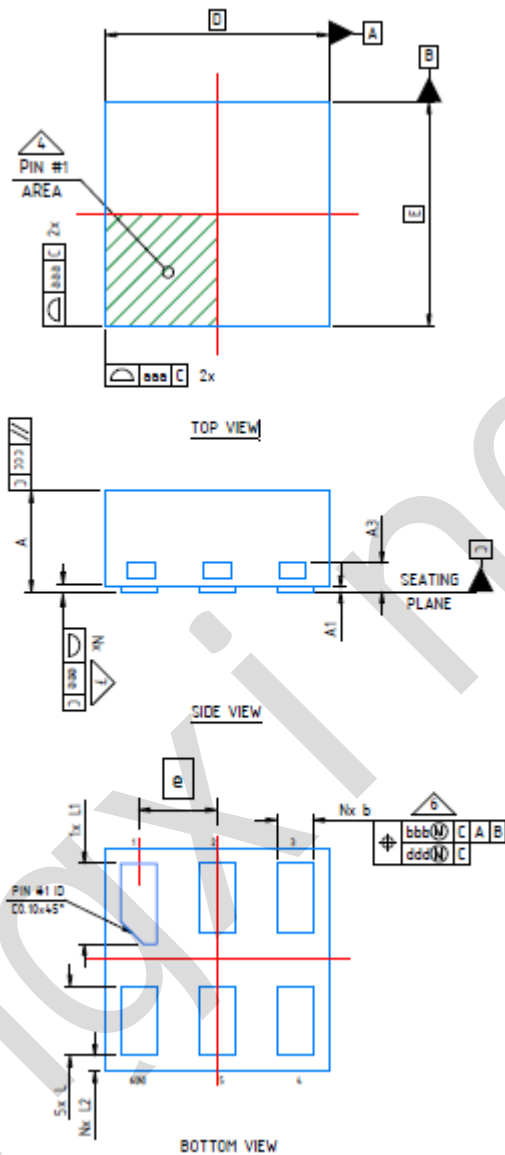
5.3、XSON6(1*1.45*0.55-0.5)



Symbol	Dimensions (mm)	
	Min.	Max.
A	0.51	0.60
A1	0.00	0.05
A3	0.15	
b	0.15	0.25
D	1.45	
E	1.00	
e	0.50	
L	0.25	0.45



5.4、XSON6(1*1*0.45-0.35)



Symbol	Dimensions (mm)	
	Min.	Max.
A	0.41	0.50
A1	0.00	0.05
A3	0.127	
b	0.11	0.21
D	1.00	
E	1.00	
e	0.35	
L	0.26	0.36



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L1	0.31	0.41
L2	0.02	0.12

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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	<p>○: Indicates that the content of hazardous substances or elements in the detection limit of the following the SJ/T11363-2006 standard.</p> <p>×: Indicates that the content of hazardous substances or elements exceeding the SJ/T11363-2006 Standard limit requirements.</p>									

6.2、 Notes

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