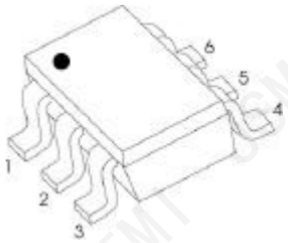
1、General Description

The 74LVC1G332GW,125-JSM provides single 3-input OR gate. The input 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
- Inputs accept voltages to 5.5 V
- ±24mA output drive at 3.0V
- High-impedance when V_{CC}=0V
- Temperature range:-40℃ to +125℃
- Packaging information: SOT363

2、Block Diagram And Pin Description

2.1、Block Diagram

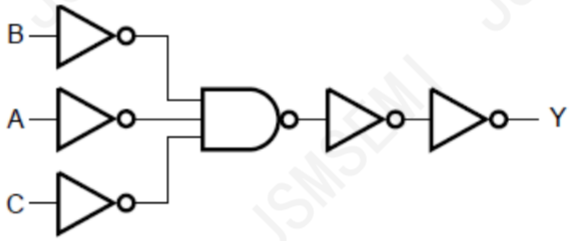
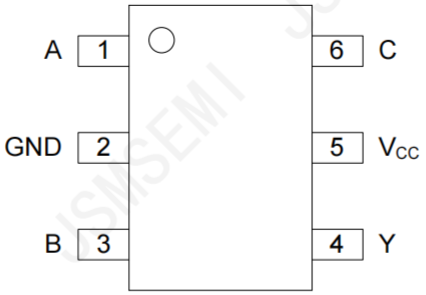


Figure 1. Logic symbol

Ordering Information

Order number	Marking	Package	Operation Temperature Range	MSL Grade	Ship, Quantity	Green
74LVC1G332GW,125-JSM	BEXX	SOT-363	-40 to 125°C	3	T&R,3000	Rohs

2.2、Pin Configurations



SOT363

2.3、Pin Description

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

2.4、Function Table

Input			Output
A	B	C	Y
H	X	X	H
X	H	X	H
X	X	H	H
L	L	L	L

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

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 voltage	V_I	-	-0.5	+6.5	V
output voltage	V_O	Active mode	-0.5	V_{CC}+0.5	V
		Power-down mode; V_{CC}=0V	-0.5	+6.5	V
supply current	I_{CC}	-	-	100	mA
ground current	I_{GND}	-	-100	-	mA
input clamping current	I_{IK}	$V_I < 0V$	-50	-	mA
output current	I_O	V_O=0V to V_{CC}	-	±50	mA
output clamping current	I_{OK}	$V_O > V_{CC}$ or $V_O < 0V$	-	±50	mA
storage temperature	T_{stg}	-	-65	+150	℃
soldering temperature	T_L	10s	260		℃

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	-	V_{CC}	V
		Power-down mode; V_{CC}=0V	0	-	5.5	V
ambient temperature	T_{amb}	-	-40	-	+125	℃

3.3、Electrical Characteristics

3.3.1、DC Characteristics 1

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

Parameter	Sym	V_{CC}	Conditions	Min.	Typ.	Max.	Unit
HIGH-level input voltage	V_{IH}	1.65V to 1.95V	-	0.65×V_{CC}	-	-	V
		2.3V to 2.7V	-	1.7	-	-	V
		2.7V to 3.6V	-	2.0	-	-	V
		4.5V to 5.5V	-	0.7×V_{CC}	-	-	V
LOW-level input voltage	V_{IL}	1.65V to 1.95V	-	-	-	0.35×V_{CC}	V
		2.3V to 2.7V	-	-	-	0.7	V
		2.7V to 3.6V	-	-	-	0.8	V
		4.5V to 5.5V	-	-	-	0.3×V_{CC}	V
HIGH-level output voltage	V_{OH}	1.65V to 5.5V	I_O=-100uA	V_{CC}-0.1	-	-	V
		1.65V	I_O =-4mA	1.2	1.54	-	V
		2.3V	I_O =-8mA	1.9	2.15	-	V
		2.7V	I_O =-12mA	2.2	2.50	-	V
		3.0V	I_O =-24mA	2.3	2.62	-	V
		4.5V	I_O =-32mA	3.8	4.11	-	V
LOW-level output voltage	V_{OL}	1.65V to 5.5V	I_O=100uA	-	-	0.10	V
		1.65V	I_O =4mA	-	0.07	0.45	V
		2.3V	I_O =8mA	-	0.12	0.30	V
		2.7V	I_O =12mA	-	0.17	0.40	V
		3.0V	I_O =24mA	-	0.33	0.55	V
		4.5V	I_O =32mA	-	0.39	0.55	V
input leakage current	I_I	0V to 5.5V	V_I=5.5V or GND	-	-	±1	uA
power-off leakage current	I_{OFF}	0V	V_I or V_O=5.5V	-	-	±2	uA
supply current	I_{CC}	1.65V to 5.5V	V_I=V_{CC} or GND; I_O=0A	-	-	4	uA
additional supply current	ΔI_{CC}	2.7V to 5.5V	per input pin; V_I= V_{CC}-0.6V; I_O=0A	-	-	500	uA

Note: All typical values are measured at T_{amb}=25℃.

3.3.2、DC Characteristics 2

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

Parameter	Sym	V_{CC}	Conditions	Min.	Typ.	Max.	Unit
HIGH-level input voltage	V_{IH}	1.65V to 1.95V	-	0.65×V_{CC}	-	-	V
		2.3V to 2.7V	-	1.7	-	-	V
		2.7V to 3.6V	-	2.0	-	-	V
		4.5V to 5.5V	-	0.7×V_{CC}	-	-	V
LOW-level input voltage	V_{IL}	1.65V to 1.95V	-	-	-	0.35×V_{CC}	V
		2.3V to 2.7V	-	-	-	0.7	V
		2.7V to 3.6V	-	-	-	0.8	V
		4.5V to 5.5V	-	-	-	0.3×V_{CC}	V
HIGH-level output voltage	V_{OH}	1.65V to 5.5V	I_O=-100uA	V_{CC}-0.1	-	-	V
		1.65V	I_O =-4mA	0.95	-	-	V
		2.3V	I_O =-8mA	1.7	-	-	V
		2.7V	I_O =-12mA	1.9	-	-	V
		3.0V	I_O =-24mA	2.0	-	-	V
		4.5V	I_O =-32mA	3.4	-	-	V
LOW-level output voltage	V_{OL}	1.65V to 5.5V	I_O=100uA	-	-	0.10	V
		1.65V	I_O =4mA	-	-	0.70	V
		2.3V	I_O =8mA	-	-	0.45	V
		2.7V	I_O =12mA	-	-	0.60	V
		3.0V	I_O =24mA	-	-	0.80	V
		4.5V	I_O =32mA	-	-	0.80	V
input leakage current	I_I	0V to 5.5V	V_I=5.5V or GND	-	-	±1	uA
power-off leakage current	I_{OFF}	0V	V_I or V_O=5.5V	-	-	±2	uA
supply current	I_{CC}	1.65V to 5.5V	V_I=V_{CC} or GND; I_O=0A	-	-	4	uA
additional supply current	ΔI_{CC}	2.7V to 5.5V	per input pin; V_I= V_{CC}-0.6V; I_O=0A	-	-	500	uA

3.3.3、AC Characteristics 1

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

Parameter	Symbol	V_{CC}	Conditions	Min.	Typ.	Max.	Unit
A B C to Y propagation delay	t_{PLH}, t_{PHL}	1.65V to 1.95V	see Figure 3	-	4.7	17.2	ns
		2.3V to 2.7V		-	3.0	6.2	ns
		2.7V		-	3.0	6.0	ns
		3.0V to 3.6V		-	2.6	4.8	ns
		4.5V to 5.5V		-	1.9	3.5	ns

Note: Typical values are measured at T_{amb}=25℃ and V_{CC}=1.8V, 2.5V, 2.7V, 3.3V and 5.0V respectively.

3.3.4、AC Characteristics 2

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

Parameter	Symbol	V_{CC}	Conditions	Min.	Typ.	Max.	Unit
A B C to Y propagation delay	t_{PLH}, t_{PHL}	1.65V to 1.95V	see Figure 3	-	-	21.5	ns
		2.3V to 2.7V		-	-	7.8	ns
		2.7V		-	-	7.5	ns
		3.0V to 3.6V		-	-	6.2	ns
		4.5V to 5.5V		-	-	4.4	ns

4、Testing Circuit

4.1、AC Testing Circuit

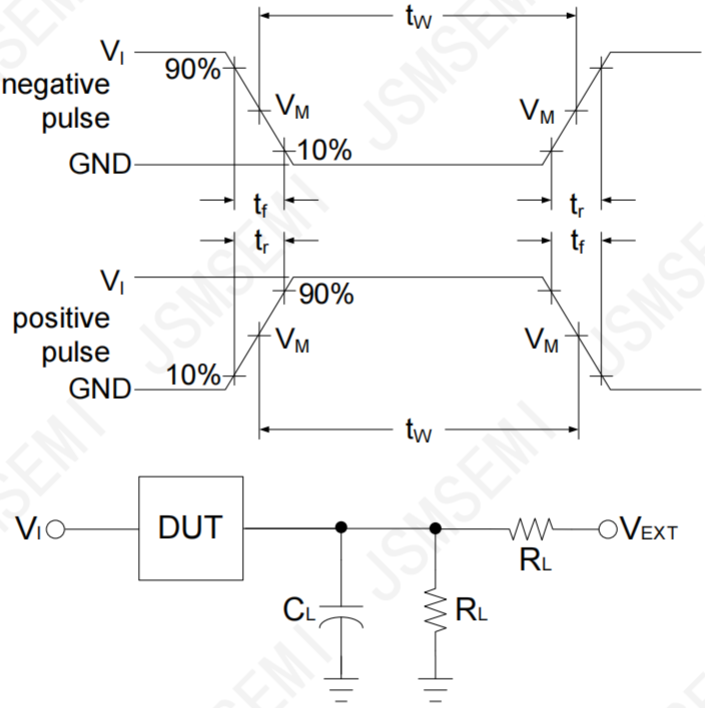


Figure 2. AC Testing Circuit

Definitions for test circuit:

R_L=Load resistance.

C_L=Load capacitance including jig and probe capacitance.

4.2、Test Data

Supply voltage	Input		Load		V_{EXT}
V_{CC}	V_I	$t_r = t_f$	C_L	R_L	t_{PLH}/t_{PHL}
1.65V to 1.95V	V_{CC}	≤ 3ns	30pF	1kΩ	Open
2.3V to 2.7V	V_{CC}	≤ 3ns	30pF	500Ω	Open
2.7V	V_{CC}	≤ 3ns	50pF	500Ω	Open
3.0V to 3.6V	V_{CC}	≤ 3ns	50pF	500Ω	Open
4.5V to 5.5V	V_{CC}	≤ 3ns	50pF	500Ω	Open

4.3、AC Testing Waveforms

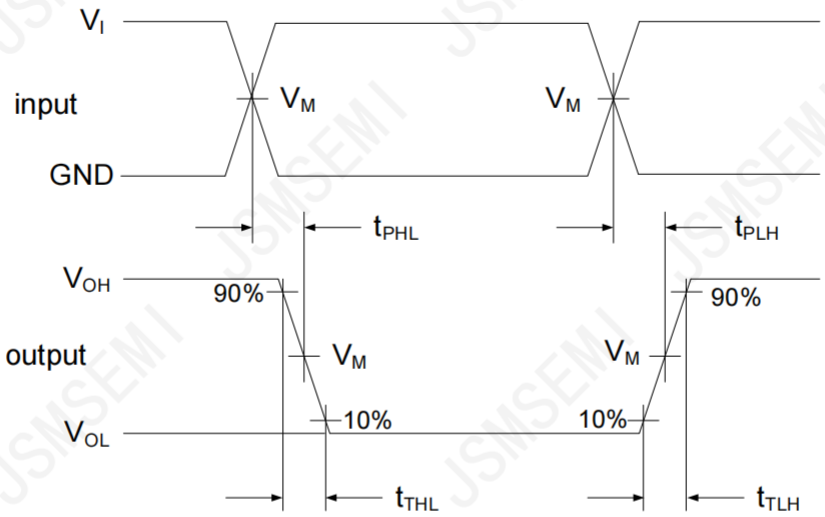


Figure 3. The data input (A) to output (Y) propagation delays

4.4、Measurement Points

Supply voltage	Input	Output
V_{CC}	V_M	V_M
1.65V to 1.95V	$0.5\times V_{CC}$	$0.5\times V_{CC}$
2.3V to 2.7V	$0.5\times V_{CC}$	$0.5\times V_{CC}$
2.7V	$0.5\times V_{CC}$	$0.5\times V_{CC}$
3.0V to 3.6V	$0.5\times V_{CC}$	$0.5\times V_{CC}$
4.5V to 5.5V	$0.5\times V_{CC}$	$0.5\times V_{CC}$

5、Package Information

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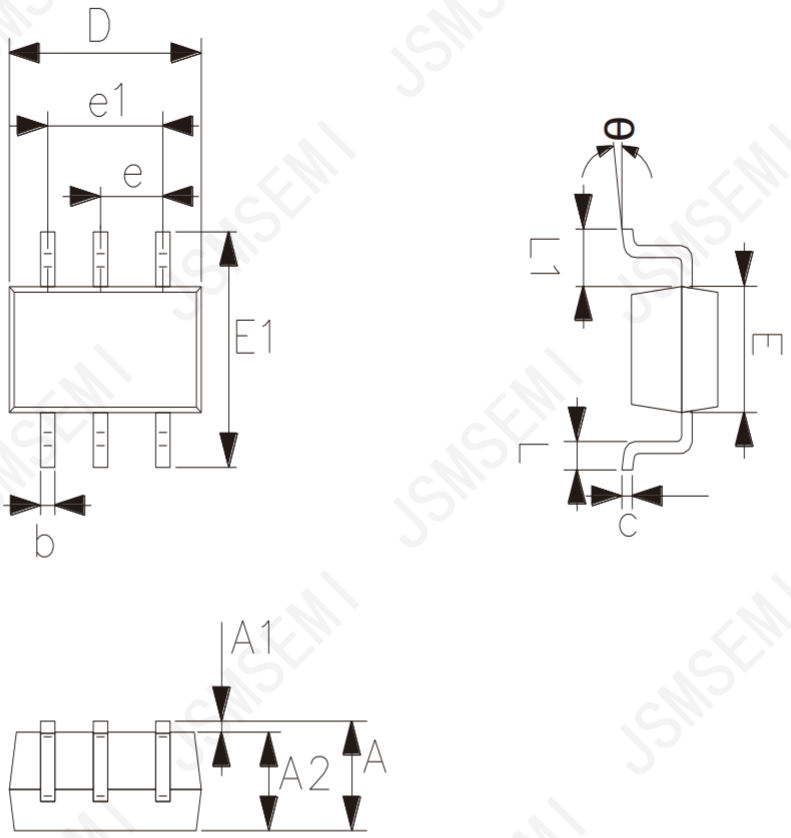

2023/12/A	Dimensions In Millimeters	
Symbol	Min.	Max.
A	0.90	1.10
A1	0.00	0.10
A2	0.90	1.00
b	0.15	0.35
c	0.11	0.175
D	2.00	2.20
E1	2.15	2.45
E	1.15	1.35
e	0.65	
e1	1.20	1.40
L	0.26	0.46
L1	0.525	
θ	0°	8°

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.									

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