

Features

- Operate from 1.65V to 5.5V
- Low Power Current: $I_{CC}=10\mu A$ (Max.)
- $\pm 24mA$ Output Drive ($V_{CC}=3.0V$)
- Power Down Protection
- ESD Protection Exceeds JESD 22
 - 2000-V Human-Body Model (A114-A)
 - 200-V Machine Model (A115-A)
 - 1000-V Charged-Device Model (C101)

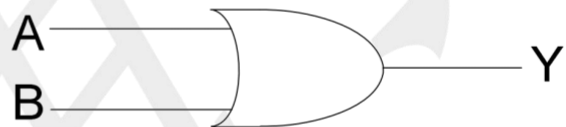
General Description

The TP74LVC2G32 is a dual 2-input OR gate which performs the function $Y=A+B$ or $Y=\overline{A} * \overline{B}$. It is designed for 1.65V to 5.5V operation.

Applications

- AV Receiver
- Audio Dock: Portable
- Blu-ray Player and Home Theater
- Embedded PC
- Personal Digital Assistant(PDA)
- Power: Telecom/Server AC/DC Supply: Single Controller: Analog and Digital
- Solid State Drive(SSD): Client and Enterprise
- Wireless Headset, Keyboard, and Mouse

Logic Diagram

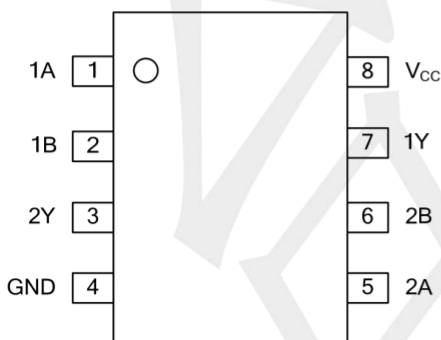


Logic symbol

Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
TP74LVC2G32S8	SOP-8	Tape and Reel,3000
TP74LVC2G32M8	MSOP-8	Tape and Reel,3000
TP74LVC2G32V8	VSSOP-8	Tape and Reel,3000

Pin Configuratio



SOP-8 / MSOP-8 / VSSOP-8

Function Table

INPUTS		OUTPUT
A	B	Y
L	L	L
L	H	H
H	L	H
H	H	H

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

Absolute Maximum Ratings (unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	VCC		-0.5 ~ +6.5	V
Input Voltage	VIN		-0.5 ~ +6.5	V
Output Voltage	VOUT		-0.5 ~ +6.5	V
VCC or GND Current	ICC	Output in the Power-off state	±100	mA
Continuous Output Current	IOUT	VOUT=0~VCC	±50	mA
Input Clamp Current	I _{IK}	VIN<0	-50	mA
Output Clamp Current	I _{OK}	VOUT<0	-50	mA
Storage Temperature Range	TSTG		-65 ~ +150	°C
Junction to Ambient	θ_{JA}	SOP-8	150	°C/W
		MSOP-8	220	°C/W
		VSSOP-8	240	°C/W

Note:1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

SWITCHING CHARACTERISTICS (unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation delay from input (A or B) to output (Y)	t_{PLH} / t_{PHL}	$V_{CC}=1.8\pm 0.15V, R_L=1K\Omega$	$C_L=30pF$	2.4	--	8	ns
		$V_{CC}=2.5\pm 0.2V, R_L=500\Omega$		1	--	4.4	
		$V_{CC}=3.3\pm 0.3V, R_L=500\Omega$	$C_L=50pF$	1	--	3.8	
		$V_{CC}=5\pm 0.5V, R_L=500\Omega$		1	--	3.2	

OPERATING CHARACTERISTICS (f=10MHz, TA =25°C , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	$V_{CC}=1.8V$	--	17	--	pF
		$V_{CC}=2.5V$	--	17	--	
		$V_{CC}=3.3V$	--	17	--	
		$V_{CC}=5V$	--	19	--	

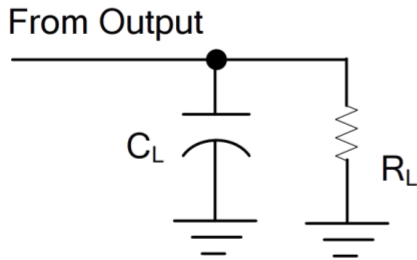
Recommended Operating Conditions(unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	VCC	Operating	1.65	--	5.5	V
		Data retention only	1.5	--	--	
High-Level Input Voltage	VIH	V _{CC} =1.65V~1.95V	0.65× V _{CC}	--	--	V
		V _{CC} =2.3V~2.7V	1.7	--	--	
		V _{CC} =3V~3.6V	2	--	--	
		V _{CC} =4.5V~5.5V	0.7× V _{CC}	--	--	
Low-Level Input Voltage	VIL	V _{CC} =1.65V~1.95V	--	--	0.35× V _{CC}	V
		V _{CC} =2.3V~2.7V	--	--	0.7	
		V _{CC} =3V~3.6V	--	--	0.8	
		V _{CC} =4.5V~5.5V	--	--	0.3× V _{CC}	
Input Voltage	VIN		0	--	5.5	V
Output Voltage	VOUT		0	--	VCC	V
High-level Output Current	IOH	V _{CC} =1.65V	--	--	-4	mA
		V _{CC} =2.3V	--	--	-8	
		V _{CC} =3V	--	--	-16	
		V _{CC} =4.5V	--	--	-24	
Low-level Output Current	IOL	V _{CC} =1.65V	--	--	4	mA
		V _{CC} =2.3V	--	--	8	
		V _{CC} =3V	--	--	16	
		V _{CC} =4.5V	--	--	24	
Input Transition Rise or Fall Rate	t _R / t _F	V _{CC} =1.8±0.15V, 2.5±0.2V	--	--	20	ns/V
		V _{CC} =3.3±0.3V	--	--	10	
		V _{CC} =5.0±0.5V	--	--	5	
Operating Temperature	T _A		-40	--	+125	°C

Electrical Characteristics ($V_{CC}=3.3V$, unless otherwise specified)

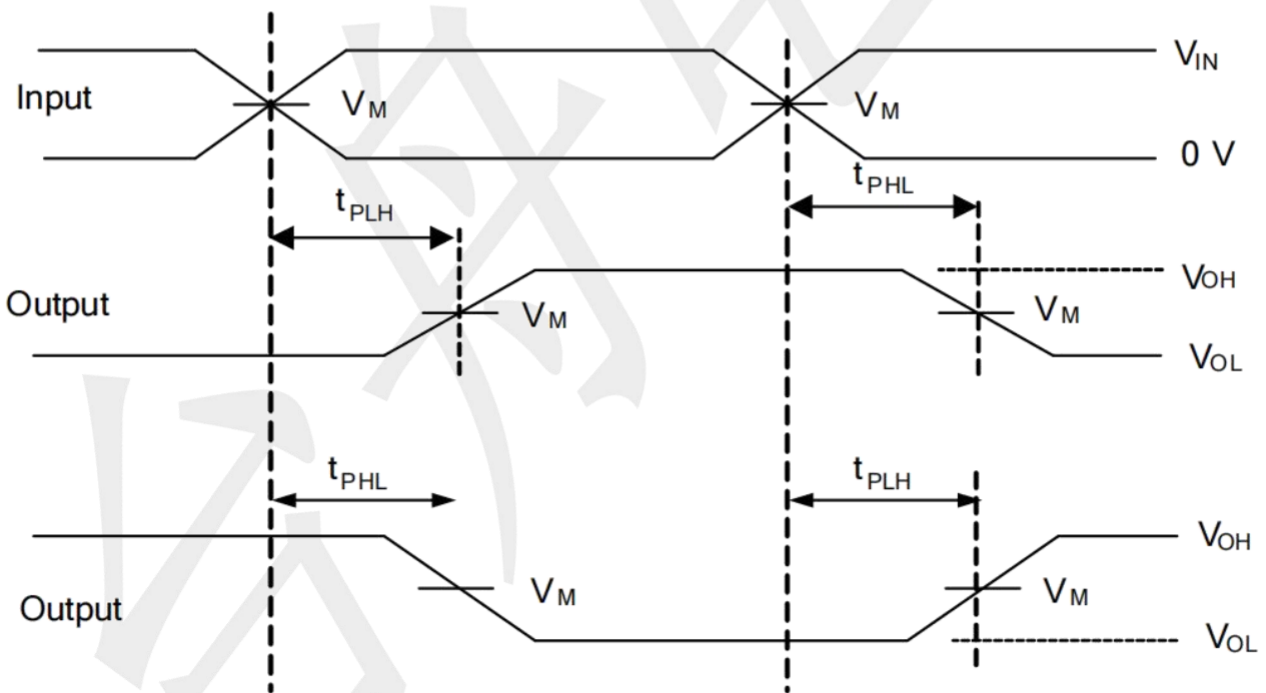
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Output Voltage	V_{OH}	$V_{CC}=1.65V$ to $5.5V$, $I_{OH}=-100\mu A$	V_{CC} -0.1	--	--	V
		$V_{CC}=1.65V$, $I_{OH}=-4mA$	1.2	--	--	
		$V_{CC}=2.3V$, $I_{OH}=-8mA$	1.9	--	--	
		$V_{CC}=3V$, $I_{OH}=-16mA$	2.4	--	--	
		$V_{CC}=3V$, $I_{OH}=-24mA$	2.3	--	--	
		$V_{CC}=4.5V$, $I_{OH}=-32mA$	3.8	--	--	
Low-Level Output Voltage	V_{OL}	$V_{CC}=1.65V$ ~ $5.5V$, $I_{OL}=100\mu A$	--	--	0.1	V
		$V_{CC}=1.65V$, $I_{OL}=4mA$	--	--	0.45	
		$V_{CC}=2.3V$, $I_{OL}=8mA$	--	--	0.3	
		$V_{CC}=3V$, $I_{OL}=16mA$	--	--	0.4	
		$V_{CC}=3V$, $I_{OL}=24mA$	--	--	0.55	
		$V_{CC}=4.5V$, $I_{OL}=32mA$	--	--	0.55	
Input Leakage Current	$I_{I(LEAK)}$	$V_{IN} = 5.5V$ or GND, $V_{CC} = 0$ to $5.5V$	--	--	± 5	μA
OFF-state Current	I_{OFF}	V_{IN} or $V_O = 5.5V$, $V_{CC} = 0V$	--	--	± 10	μA
Quiescent Current	Supply I_Q	$V_{IN} = 5.5V$ or GND, $I_{OUT} = 0$, $V_{CC} = 1.65V$ to $5.5V$	--	--	10	μA
Additional quiescent Supply Current	I_Q	One input at $V_{CC} - 0.6V$; other inputs at V_{CC} or GND; $V_{CC}=3V$ to $5.5V$	--	--	500	μA
Input Capacitance	C_{IN}	$V_{IN} = V_{CC}$ or GND, $V_{CC}=3.3V$	--	5	--	pF

TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT

V_{CC}	INPUTS		V_M	C_L	R_L
	V_{IN}	t_R, t_F			
$1.8V \pm 0.15V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	30pF	1K Ω
$2.5V \pm 0.2V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	30pF	500 Ω
$3.3V \pm 0.3V$	3V	$\leq 2.5ns$	1.5V	50pF	500 Ω
$5V \pm 0.5V$	V_{CC}	$\leq 2.5ns$	$V_{CC}/2$	50pF	500 Ω



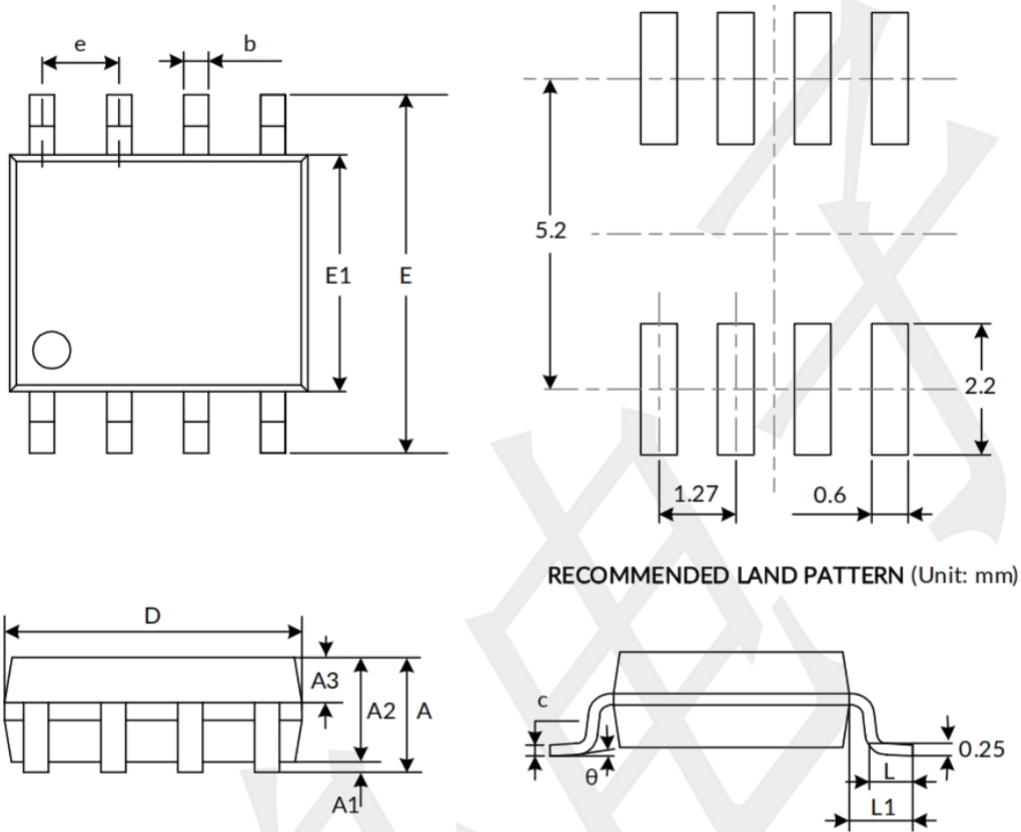
PROPAGATION DELAY TIMES

Notes: 1. C_L includes probe and jig capacitance.

2. All input pulses are supplied by generators having the following characteristics: $P_{RR} \leq 10MHz$, $Z_o = 50\Omega$.

Package information

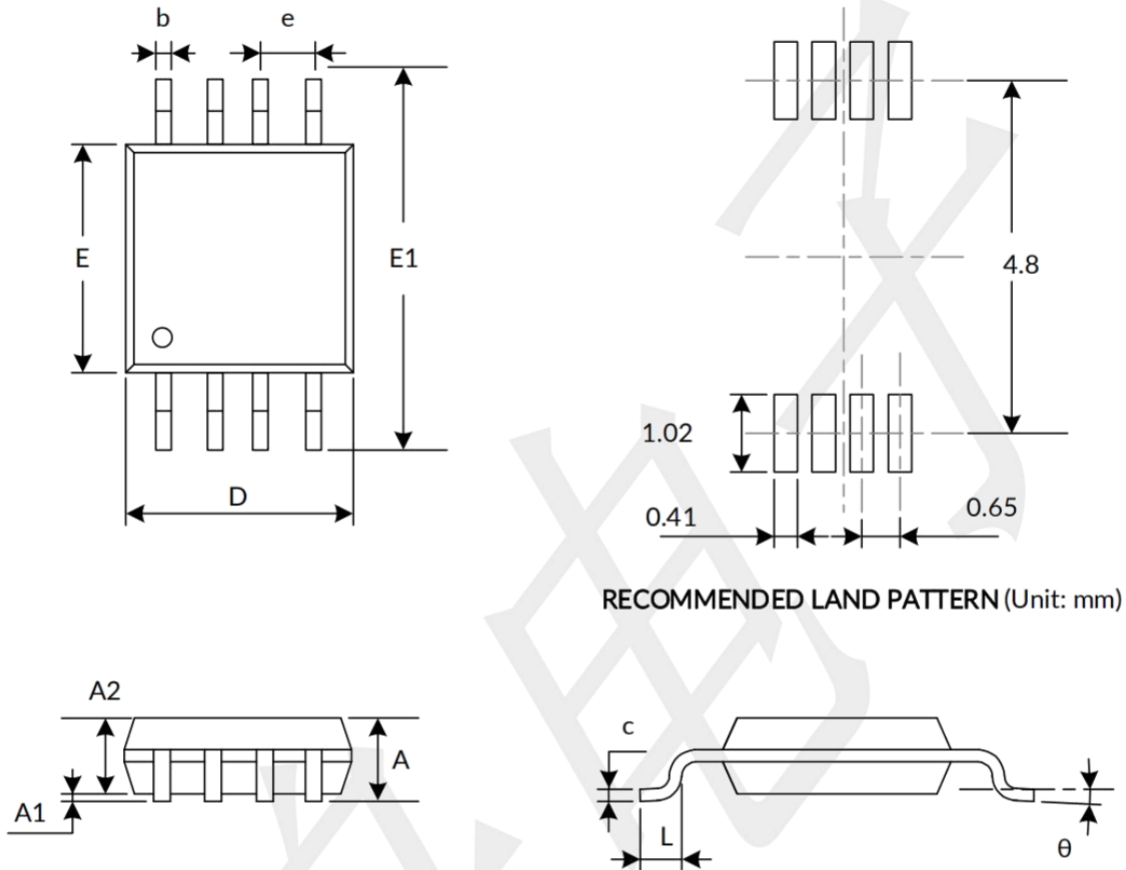
SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A		1.750		0.069
A1	0.100	0.250	0.004	0.010
A2	1.250	1.500	0.049	0.059
A3	0.600	0.700	0.024	0.028
b	0.360	0.490	0.014	0.019
c	0.190	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
E1	3.800	4.000	0.150	0.157
E	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.000	0.016	0.039
L1	1.050 (REF)		0.041 (REF)	
θ	0°	8°	0°	8°

Package information

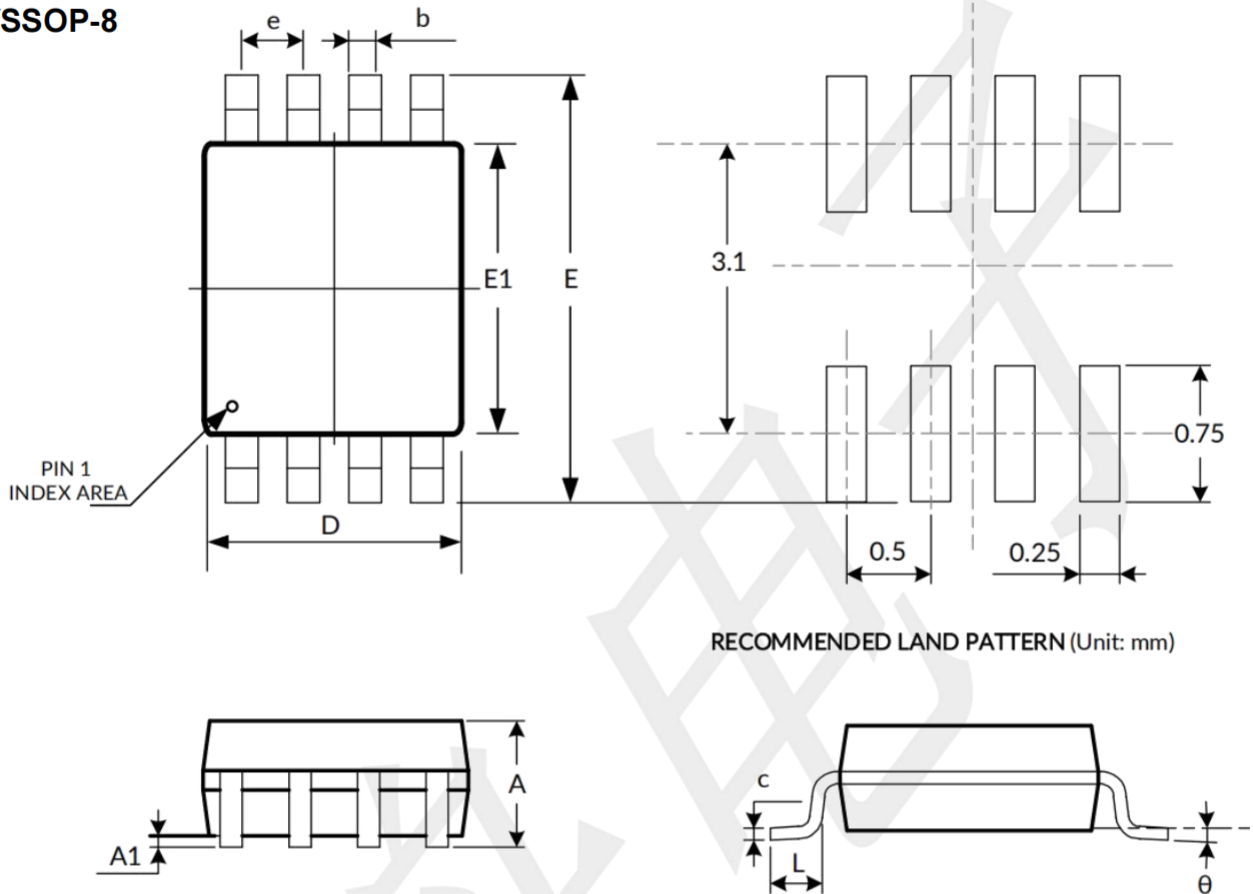
MSOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
e	0.650(BSC)		0.026(BSC)	
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
L	0.400	0.800	0.016	0.031
θ	0°	6°	0°	6°

Package information

VSSOP-8



RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.600	0.900	0.024	0.085
A1	0.000	0.100	0.000	0.004
b	0.170	0.250	0.007	0.010
c	0.100	0.200	0.004	0.008
D	1.900	2.100	0.075	0.083
e	0.500 (BSC)		0.020 (BSC)	
E	3.000	3.200	0.118	0.126
E1	2.200	2.400	0.087	0.095
L	0.200	0.350	0.008	0.014
θ	0°	6°	0°	6°