

Features

- Operate from 1.65V to 5.5V
- Inputs accept voltages up to 5.5V
- Low Power Consumption, ICC = 10 μ A (Max.)
- I_{OFF} supports partial-power-down mode
- ESD Protection Exceeds JESD 22
 - 2000-V Human-Body Model (A114-A)
 - 200-V Machine Model (A115-A)
 - 1000-V Charged-Device Model (C101)
- VSSOP-8 Package Available

General Description

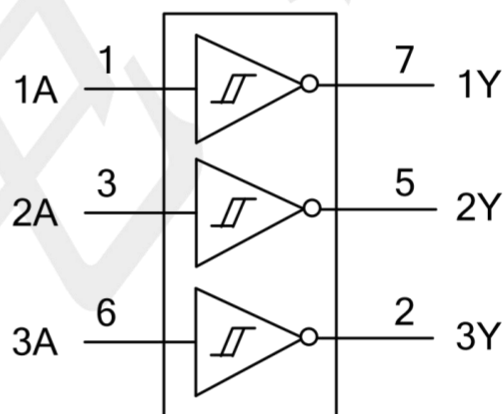
The is designed as three independent Inverters with Schmitt-trigger action. it may have different input threshold levels for positive-going (VT+) and negative-going (VT-) signals.

This device has power-down protective circuit, preventing device destruction when it is powered down.

Applications

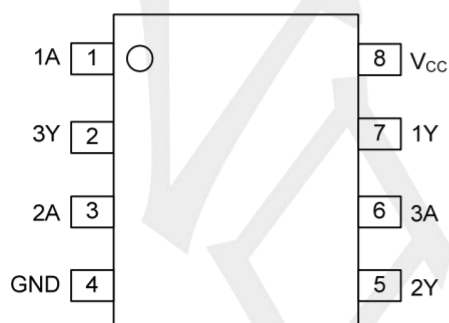
- AV Receiver
- Audio Dock:Portable
- Blu-ray Player and Home Theater
- Embedded PC
- Personal Digital Assistant(PDA)
- Power:Telecom/Server AC/DC Supply:Single Controller:Analog and Digital

Logic Diagram



Logic symbol

Pin Configuratio



VSSOP-8

Function Table

INPUT(A)	OUTPUT(Y)
H	L
L	H

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

Absolute Maximum Ratings

(Unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	V _{CC}		-0.5 ~ +6.5	V
Input Voltage	V _{IN}		-0.5 ~ +6.5	V
Output Voltage	V _{OUT}	Output in the high or low state	-0.5 ~ +6.5	V
		Output in the power-off state	-0.5 ~ V _{CC} +0.5	V
V _{CC} or GND Current	I _{CC}		±100	mA
Continuous Output Current	I _{OUT}		±50	mA
Input Clamp Current	I _{IK}	V _{IN} < 0	-50	mA
Output Clamp Current	I _{OK}	V _{OUT} < 0	-50	mA
Storage Temperature Range	T _{STG}		-65 ~ +150	°C
Junction to Ambient	θ _{JA}		240	°C/W

Note: 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.

Recommended Operating Conditions

(Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V _{CC}		1.65	--	5.5	V
Input Voltage	V _{IN}		0	--	5.5	V
Output Voltage	V _{OUT}	High or low state	0	--	V _{CC}	V
Operating Temperature (Note)	T _A		-40	--	+125	°C

Electrical Characteristics (unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Positive-Going Input Threshold Voltage	V_{T+}	$V_{CC}=1.65V$	0.7	--	1.4	V
		$V_{CC}=2.3V$	1.0	--	1.8	V
		$V_{CC}=3V$	1.3	--	2.2	V
		$V_{CC}=4.5V$	1.9	--	3.1	V
		$V_{CC}=5.5V$	2.2	--	3.7	V
Negative-Going Input Threshold Voltage	V_{T-}	$V_{CC}=1.65V$	0.3	--	0.7	V
		$V_{CC}=2.3V$	0.4	--	1.15	V
		$V_{CC}=3V$	0.6	--	1.5	V
		$V_{CC}=4.5V$	1.0	--	2	V
		$V_{CC}=5.5V$	1.2	--	2.5	V
Hysteresis Voltage ($V_{T+}-V_{T-}$)	ΔV_T	$V_{CC}=1.65V$	0.3	--	0.8	V
		$V_{CC}=2.3V$	0.25	--	1.1	V
		$V_{CC}=3V$	0.4	--	1.2	V
		$V_{CC}=4.5V$	0.6	--	1.5	V
		$V_{CC}=5.5V$	0.7	--	1.7	V
High-Level Output Voltage	V_{OH}	$V_{CC}=1.65V \sim 4.5V, I_{OH}=-100\mu A$	$V_{CC}-0.1$	--	--	V
		$V_{CC}=1.65V, I_{OH}=-4mA$	1.2	--	--	V
		$V_{CC}=2.3V, I_{OH}=-8mA$	1.9	--	--	V
		$V_{CC}=3V, I_{OH}=-16mA$	2.4	--	--	V
		$V_{CC}=3V, I_{OH}=-24mA$	2.3	--	--	V
		$V_{CC}=4.5V, I_{OH}=-32mA$	3.8	--	--	V
Low-Level Output Voltage	V_{OL}	$V_{CC}=1.65V \sim 4.5V, I_{OL}=100\mu A$	--	--	0.1	V
		$V_{CC}=1.65V, I_{OL}=4mA$	--	--	0.45	V
		$V_{CC}=2.3V, I_{OL}=8mA$	--	--	0.3	V
		$V_{CC}=3V, I_{OL}=16mA$	--	--	0.4	V
		$V_{CC}=3V, I_{OL}=24mA$	--	--	0.55	V
		$V_{CC}=4.5V, I_{OL}=32mA$	--	--	0.55	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=0V \sim 5.5V, V_{IN}=5.5V$ or GND	--	--	± 5	μA
Power OFF Leakage Current	I_{OFF}	$V_{CC}=0V, V_{IN}$ or $V_{OUT}=5.5V$	--	--	± 10	μA
Quiescent Supply Current	I_{CC}	$V_{CC}=1.65V \sim 5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0A$	--	--	10	μA
Additional Quiescent Supply Current Per Input Pin	ΔI_{CC}	$V_{CC}=3V \sim 5.5V$, One input at $V_{CC}-0.6V$, Other inputs at V_{CC} or GND	--	--	500	μA
Input Capacitance	C_I	$V_{CC}=3.3V, V_{IN}=V_{CC}$ or GND	--	4.5	--	pF

OPERATING CHARACTERISTICS

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

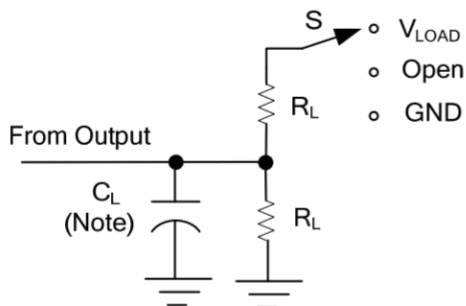
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C _{PD}	V _{CC} =1.8V	--	17	--	pF
		V _{CC} =2.5V	--	18	--	pF
		V _{CC} =3.3V	--	19	--	pF
		V _{CC} =5V	--	22	--	pF

DYNAMIC CHARACTERISTICS

(TA=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay From input (A) to output(Y)	t _{PD}	V _{CC} =1.8±0.15V, C _L =30pF, R _L =1kΩ	1.0	--	13	ns
		V _{CC} =2.5±0.2V, C _L =30pF, R _L =500Ω	0.5	--	8.5	ns
		V _{CC} =3.3±0.3V, C _L =50pF, R _L =500Ω	0.5	--	8.0	ns
		V _{CC} =5±0.5V, C _L =50pF, R _L =500Ω	0.5	--	6.3	ns

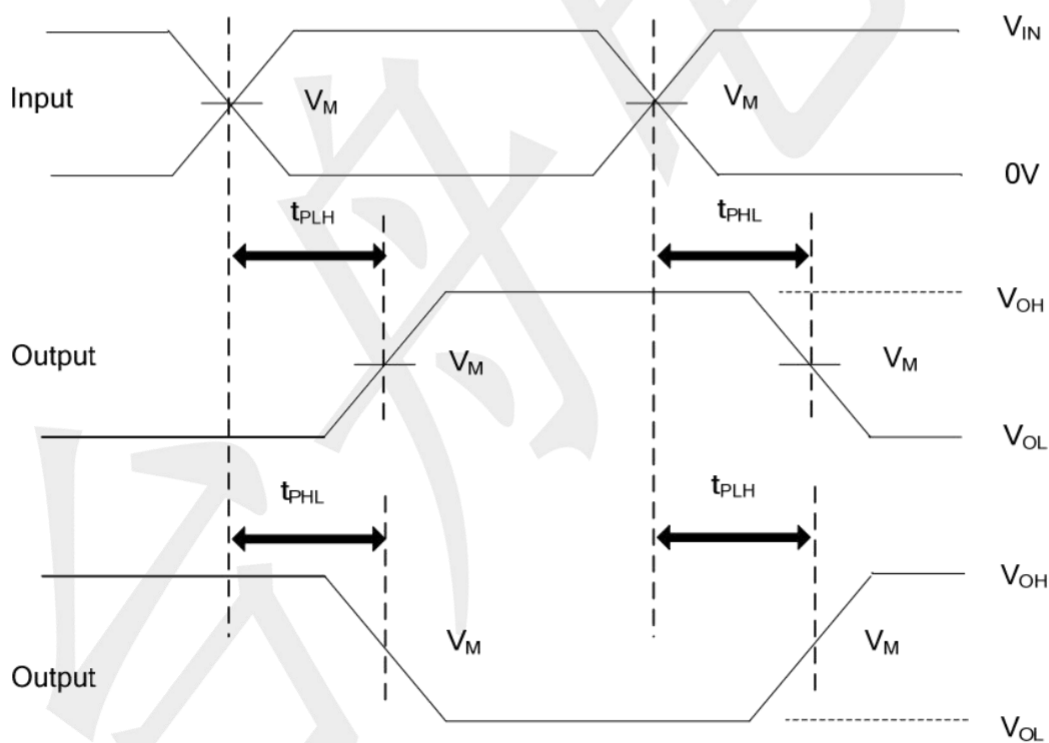
TEST CIRCUIT AND WAVEFORMS



TEST	S
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	V_{LOAD}
t_{PHZ}/t_{PZH}	GND

Note: C_L includes probe and jig capacitance.

V_{CC}	Inputs		V_M	V_{LOAD}	C_L	R_L	V_{Δ}
	V_{IN}	t_R, t_F					
$1.8V \pm 0.15V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	30pF	1K Ω	0.15V
$2.5V \pm 0.2V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 \times V_{CC}$	30pF	500 Ω	0.15V
$3.3V \pm 0.3V$	3V	$\leq 2.5ns$	1.5V	6V	50pF	500 Ω	0.3V
$5V \pm 0.5V$	V_{CC}	$\leq 2.5ns$	$V_{CC}/2$	$2 \times V_{CC}$	50pF	500 Ω	0.3V



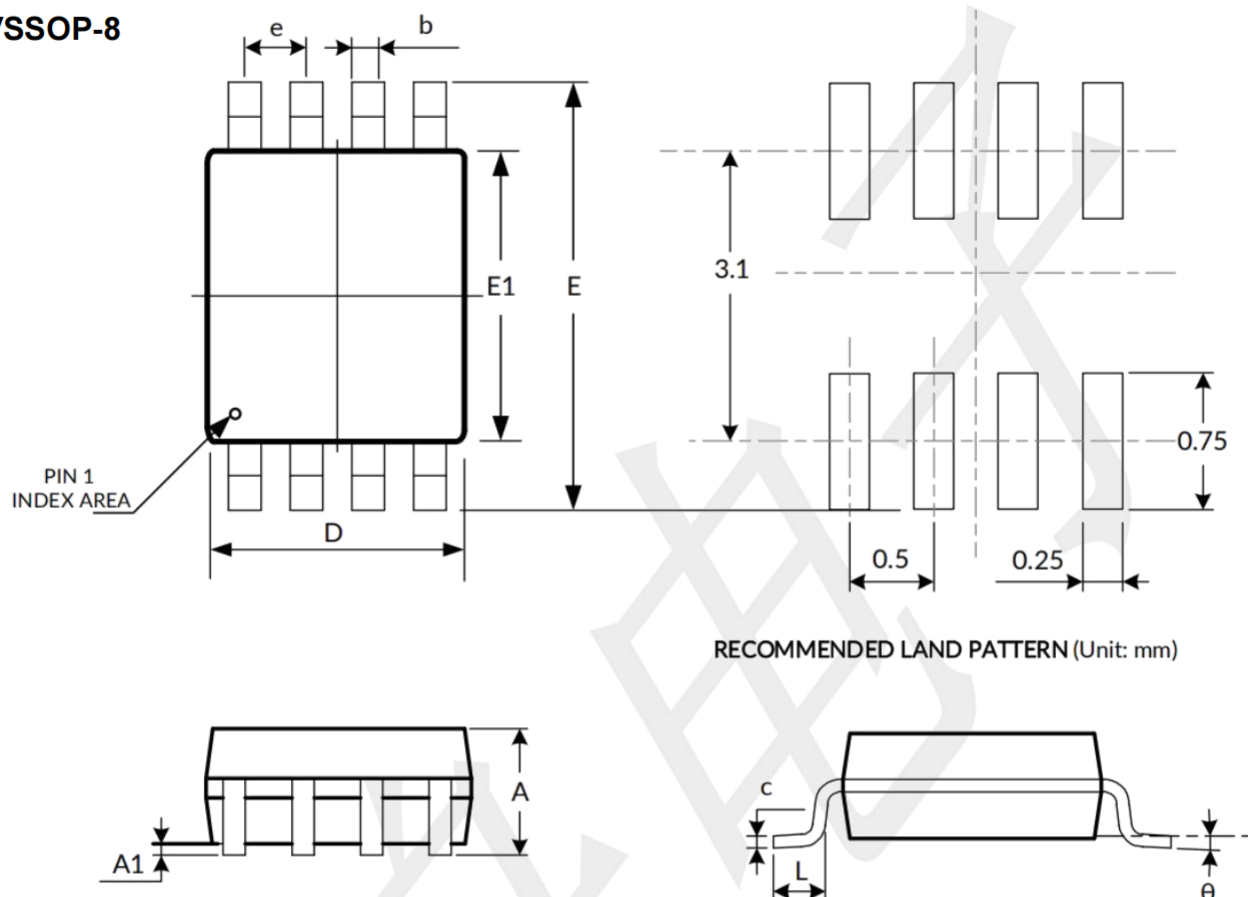
PROPAGATION DELAY TIMES

Notes: 1. C_L includes probe and jig capacitance.

2. All input pulses are supplied by generators having the following characteristics: PRR $\leq 10MHz$, $Z_O = 50\Omega$.

Package information

VSSOP-8



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°