

Features

- Operate from 2.0V to 5.5V
- Inputs Accept Voltages to 5.5V
- High Noise Immunity
- Low Power Dissipation
- ESD Protection Exceeds JESD 22
 - 2000-V Human-Body Model (A114-A)
 - 200-V Machine Model (A115-A)
 - 1000-V Charged-Device Model (C101)

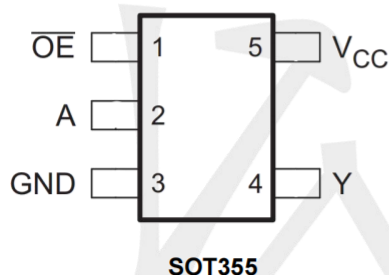
General Description

The is a single bus buffer/line driver with 3-state output. When the output enable ($\overline{OE}$) is high the output will be disabled. In contrast, when the $\overline{OE}$ is low, true data will pass from A input to the Y output. This device has power-down protective circuit to prevent the device from destruction when it is powered down.

Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
74AHC1G125SE-TP	SOT353	Tape and Reel,3000

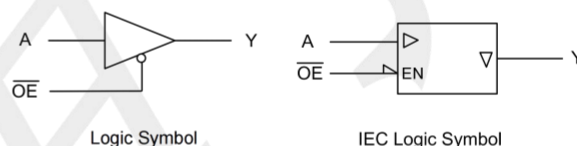
Pin Configuratio



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



Function Table

INPUT($\overline{OE}$)	INPUT(A)	OUTPUT(Y)
L	L	L
L	H	H
H	X	Z

Note: H: HIGH voltage level; L: LOW voltage level; X=don't care; Z=high-impedance OFF-state.

Absolute Maximum Ratings

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	Enable mode	V _{OUT}		-0.5 ~ V _{CC} + 0.5	V
	Disable mode			-0.5 ~ +6.5	V
	Power-down mode			-0.5 ~ +6.5	V
VCC or GND Current		I _{CC}	Output in the Power-off state	±100	mA
Continuous Output Current		I _{OUT}	V _{OUT} =0~V _{CC}	±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}	SOT353	280	°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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V _{CC}	Operating	2.0	--	5.5	V
Input Voltage	V _{IN}		0	--	5.5	V
Output Voltage	V _{OUT}	V _{CC} =1.65V ~ 5.5V; Enable mode	0	--	V _{CC}	V
		V _{CC} =1.65V ~ 5.5V; Disable mode	0	--	5.5	V
		V _{CC} =0V; Power-down mode	0	--	5.5	V
Input Transition Rise or Fall Rate	t _R /t _F	V _{CC} =1.65V ~ 2.7V	--	--	20	ns/V
		V _{CC} =2.7V ~ 5.5V	--	--	10	ns/V
Operating Temperature	T _A		-40	--	125	°C

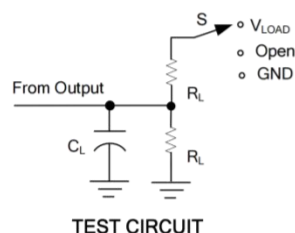
Electrical Characteristics (unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions	TA=25°C			TA=-40°C~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	V _{IH}	V _{CC} =1.65V ~ 1.95V	0.65×V _{CC}	--	--	0.65×V _{CC}	--	--	V
		V _{CC} =2.3V ~ 2.7V	1.7	--	--	1.7	--	--	V
		V _{CC} =3V ~ 3.6V	2	--	--	2	--	--	V
		V _{CC} =4.5V ~ 5.5V	0.7×V _{CC}	--	--	0.7×V _{CC}	--	--	V
Low-Level Input Voltage	V _{IL}	V _{CC} =1.65V ~ 1.95V	--	--	0.35×V _{CC}	--	--	0.35×V _{CC}	V
		V _{CC} =2.3V ~ 2.7V	--	--	0.7	--	--	0.7	V
		V _{CC} =3V ~ 3.6V	--	--	0.8	--	--	0.8	V
		V _{CC} =4.5V ~ 5.5V	--	--	0.35×V _{CC}	--	--	0.35×V _{CC}	V
High-Level Output Voltage	V _{OH}	V _{CC} =1.65 ~ 5.5V, I _{OH} =-100μA	V _{CC} -0.1	--	--	V _{CC} -0.1	--	--	V
		V _{CC} =1.65V, I _{OH} =-4mA	1.2	--	--	0.95	--	--	V
		V _{CC} =2.3V, I _{OH} =-8mA	1.9	--	--	1.7	--	--	V
		V _{CC} =2.7V, I _{OH} =-12mA	2.2	--	--	1.9	--	--	V
		V _{CC} =3.0V, I _{OH} =-24mA	2.3	--	--	2	--	--	V
		V _{CC} =4.5V, I _{OH} =-32mA	3.8	--	--	3.4	--	--	V
Low-Level Output Voltage	V _{OL}	V _{CC} =1.65 ~ 5.5V, I _{OL} =100μA	--	--	0.1	--	--	0.1	V
		V _{CC} =1.65V, I _{OL} =4mA	--	--	0.45	--	--	0.7	V
		V _{CC} =2.3V, I _{OL} =8mA	--	--	0.3	--	--	0.45	V
		V _{CC} =3.0V, I _{OL} =16mA	--	--	0.4	--	--	0.6	V
		V _{CC} =3.0V, I _{OL} =24mA	--	--	0.55	--	--	0.8	V
		V _{CC} =4.5V, I _{OL} =32mA	--	--	0.55	--	--	0.8	V
Input Leakage Current	I _{I(LEAK)}	V _{CC} =0 ~ 5.5V, V _{IN} =5.5V or GND	--	±0.1	±5	--	--	±5	μA
Power OFF Leakage Current	I _{OFF}	V _{CC} =0V, V _{IN} or V _{OUT} =5.5V	--	±0.1	±10	--	--	±10	μA
Quiescent Supply Current	I _Q	V _{CC} =1.65 ~ 5.5V, V _{IN} =V _{CC} or GND, I _{OUT} =0A	--	±0.1	10	--	--	±10	μA
Additional Quiescent Supply Current Per Input Pin	ΔI _Q	V _{CC} =3 ~ 5.5V, One input at V _{CC} -0.6V, Other inputs at V _{CC} or GND	--	5	500	--	--	500	μA

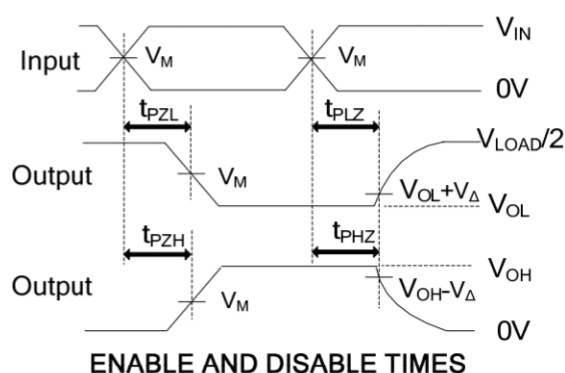
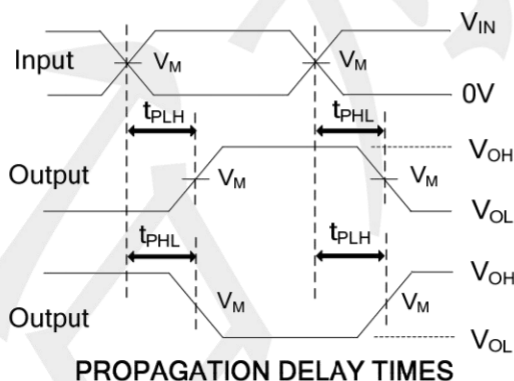
SWITCHING CHARACTERISTICS (unless otherwise specified)

PARAMETER	SYMBOL	TEST Conditions		TA=25°C			TA=-40°C~+125°C			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay From Input A to Output Y	t _{PLH} / t _{PHL}	CL=30pF	V _{CC} =1.8±0.15V, R _L =1KΩ	1	12	19	--	--	21	nS
			V _{CC} =2.5±0.2V, R _L =500Ω	0.5	8	15	--	--	17	nS
		CL=50pF RL=500Ω	V _{CC} =2.7V	0.5	6	12	--	--	14	nS
			V _{CC} =3.3±0.3V	0.5	5	9	--	--	11	nS
			V _{CC} =5±0.5V	0.5	3	7	--	--	9	nS
3-State Output Enable Time From Input OE to Output Y	t _{PZH} / t _{PZL}	CL=30pF	V _{CC} =1.8±0.15V, R _L =1KΩ	1	10	19	--	--	21	nS
			V _{CC} =2.5±0.2V, R _L =500Ω	0.5	7	15	--	--	17	nS
		CL=50pF RL=500Ω	V _{CC} =2.7V	0.5	6	12	--	--	14	nS
			V _{CC} =3.3±0.3V	0.5	5	9	--	--	11	nS
			V _{CC} =5±0.5V	0.5	4	7	--	--	9	nS
3-State Output Disable Time From Input $\overline{\text{OE}}$ to Output Y	t _{PLZ} / t _{PHZ}	CL=30pF	V _{CC} =1.8±0.15V, R _L =1KΩ	1	5	10	--	--	12	nS
			V _{CC} =2.5±0.2V, R _L =500Ω	0.5	4	8	--	--	10	nS
		CL=50pF RL=500Ω	V _{CC} =2.7V	0.5	4	7	--	--	9	nS
			V _{CC} =3.3±0.3V	0.5	3	6	--	--	8	nS
			V _{CC} =5±0.5V	0.5	3	5	--	--	7	nS

TEST CIRCUIT AND WAVEFORMS



		V _{CC}	INPUTS		V _M	V _{LOAD}	V _A	C _L	R _L
			V _{IN}	t _R , t _F					
TEST	S	1.8V±0.15V	V _{CC}	≤2ns	V _{CC} /2	2 x V _{CC}	0.15V	30pF	1KΩ
	Open	2.5V±0.2V	V _{CC}	≤2ns	V _{CC} /2	2 x V _{CC}	0.15V	30pF	500Ω
		2.7V	2.7V	≤2.5ns	1.5V	6V	0.3V	50pF	500Ω
		3.3V±0.3V	2.7V	≤2.5ns	1.5V	6V	0.3V	50pF	500Ω
		5V±0.5V	V _{CC}	≤2.5ns	V _{CC} /2	2 x V _{CC}	0.3V	50pF	500Ω
		t _{DZ} /t _{D7}	V _{I,LOAD}						



Note: C_L includes probe and jig capacitance.

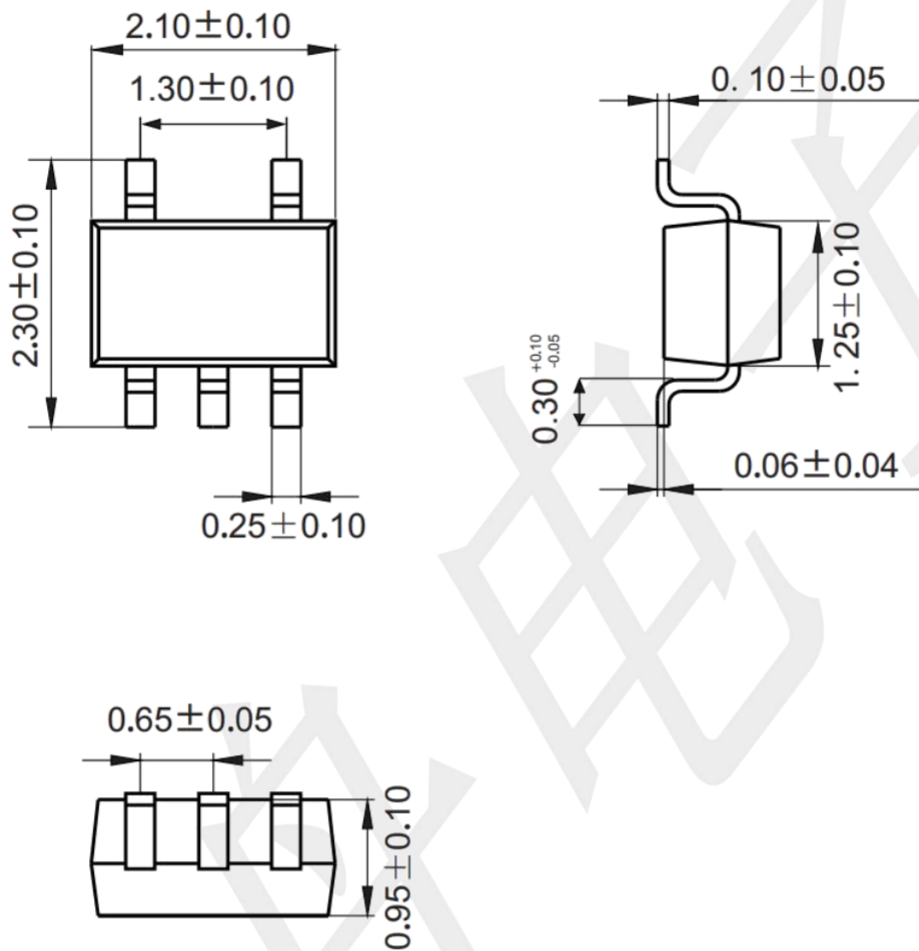
All input pulses are supplied by generators having the following characteristics: $P_{RR} \leq 10\text{MHz}$, $Z_0 = 50\Omega$.

Notes: 1. C_L includes probe and jig capacitance.

2. All input pulses are supplied by generators having the following characteristics: $P_{RR} \leq 10\text{MHz}$, $Z_0 = 50\Omega$.

Package information

SOT353 (Unit: mm)



Mounting Pad Layout (unit: mm)

