



U74HC2G125

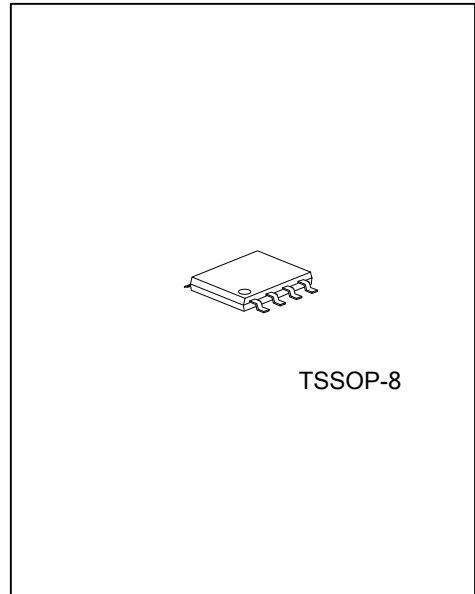
CMOS IC

DUAL BUFFER/LINE DRIVER; 3-STATE

DESCRIPTION

The **U74HC2G125** is a high speed, Si-gate CMOS device.

The **U74HC2G125** provides two non-inverting buffer/line drivers with 3-state output. The 3-state output is controlled by the output enable input (pin \overline{nOE}). A HIGH level at pin \overline{nOE} causes the output to assume a high-impedance OFF-state.



FEATURES

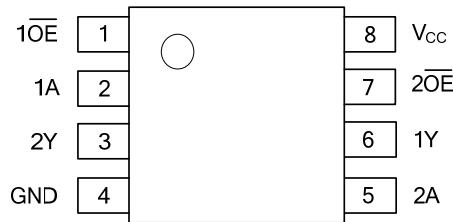
- * Wide supply voltage range from 2.0V to 6.0V
- * Symmetrical output impedance
- * High noise immunity
- * Low power consumption
- * Balanced propagation delays
- * Multiple package options
- * Specified from -40 °C to +125 °C

ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HC2G125L-P08-T	U74HC2G125G-P08-T	TSSOP-8	Tube
U74HC2G125L-P08-R	U74HC2G125G-P08-R	TSSOP-8	Tape Reel

<p>U74HC2G125L-P08-T</p> <p>(1)Packing Type (2)Package Type (3)Lead Free</p>	<p>(1) T: Tube, R: Tape Reel (2) P08: TSSOP-8 (3) L: Lead Free, G:Halogen Free</p>
--	--

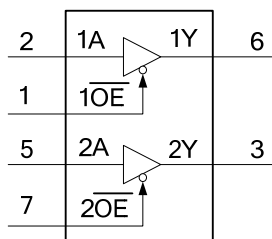
■ PIN CONFIGURATION



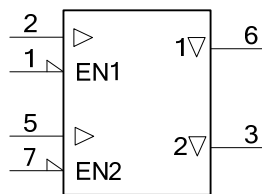
■ PIN CONFIGURATION

PIN No	SYMBOL	DESCRIPTION
1, 7	$\overline{1OE}$, $\overline{2OE}$	Output enable input (active LOW)
2, 5	1A, 2A	Data input
4	GND	Ground (0V)
6, 3	1Y, 2Y	Data output
8	V _{CC}	Supply voltage

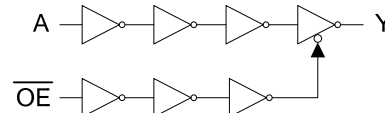
■ FUNCTIONAL DIAGRAM



LOGIC SYMBOL



IEC LOGIC SYMBOL



LOGIC DIAGRAM (one driver)

■ FUNCTION TABLE

Control	Input	Output
\overline{nOE}	nA	nY
L	L	L
L	H	H
H	X	Z

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

■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		-0.5		+7.0	V
Input Voltage	V_I		-0.5		+7.0	V
Input Clamping Current	I_{IK}	$V_I < -0.5V$ or $V_I > V_{CC} + 0.5V$			± 20	mA
Output Clamping Current	I_{OK}	$V_O < -0.5V$ or $V_O > V_{CC} + 0.5V$			± 20	mA
Output Current	I_O	$V_O = -0.5V \sim (V_{CC} + 0.5V)$			35	mA
Supply Current	I_{CC}				70	mA
Ground Current	I_{GND}		-70			mA
Power Dissipation	P_D				300	mW
Storage Temperature	T_{STG}		-65		+150	°C

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

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2	5	6	V
Input Voltage	V_I		0		V_{CC}	V
Output Voltage	V_O		0		V_{CC}	V
Input Transition Rise and Fall Rate	$\Delta t/\Delta V$	$V_{CC}=2V$			625	ns/V
		$V_{CC}=4.5V$		1.67	139	
		$V_{CC}=6V$			83	
Ambient Temperature	T_A		-40	+25	+125	°C

Note: Voltages are referenced to GND (ground=0V).

■ ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-level Input Voltage	V_{IH}	$V_{CC}=2V$	1.5	1.2		V
		$V_{CC}=4.5V$	3.15	2.4		V
		$V_{CC}=6V$	4.2	3.2		V
Low-level Input Voltage	V_{IL}	$V_{CC}=2V$		0.8	0.5	V
		$V_{CC}=4.5V$		2.1	1.35	V
		$V_{CC}=6V$		2.8	1.8	V
Output Voltage HIGH-Level	V_{OH}	$V_{CC}=2V, I_{OH}=-20\mu A$	1.9	2.0		V
		$V_{CC}=4.5V, I_{OH}=-20\mu A$	4.4	4.5		V
		$V_{CC}=6V, I_{OH}=-20\mu A$	5.9	6.0		V
		$V_{CC}=4.5V, I_{OH}=-6mA$	3.84	4.32		V
		$V_{CC}=6V, I_{OH}=-7.8mA$	5.34	5.81		V
Output Voltage LOW-Level	V_{OL}	$V_{CC}=2V, I_{OL}=20\mu A$		0	0.1	V
		$V_{CC}=4.5V, I_{OL}=20\mu A$		0	0.1	V
		$V_{CC}=6V, I_{OL}=20\mu A$		0	0.1	V
		$V_{CC}=4.5V, I_{OL}=6mA$		0.15	0.33	V
		$V_{CC}=6V, I_{OL}=7.8mA$		0.16	0.33	V
Input Leakage Current	I_I	$V_{CC}=6V, V_I = V_{CC}$ or GND			± 1	μA
OFF-state output current	I_{OZ}	$V_{CC}=6V, V_I = V_{IH}$ or $V_{IL}, V_O = V_{CC}$ or GND			0.25	μA
Quiescent Supply Current	I_{CC}	$V_{CC}=6V, V_I = V_{CC}$ or GND, $I_{OUT}=0$			1	μA

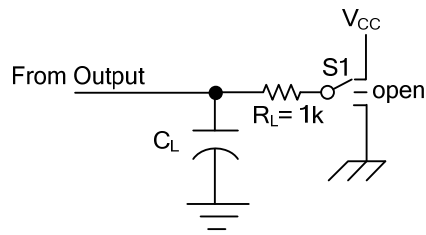
■ SWITCHING CHARACTERISTICS ($t_r = t_f \leq 6\text{ns}$, $C_L = 50\text{pF}$, $T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (nA) to output(nY)	t_{PLH} / t_{PHL}	$V_{CC}=2V$		35	115	ns
		$V_{CC}=4.5V$		11	23	ns
		$V_{CC}=5V, C_L=15\text{pF}$		10		ns
		$V_{CC}=6V$		8	20	ns
Enable time from \overline{nOE} to nY	t_{PZL} / t_{PZH}	$V_{CC}=2V$		40	115	ns
		$V_{CC}=4.5V$		11	23	ns
		$V_{CC}=6V$		8	20	ns
Disable time from \overline{nOE} to nY	t_{PLZ} / t_{PHZ}	$V_{CC}=2V$		24	125	ns
		$V_{CC}=4.5V$		12	25	ns
		$V_{CC}=6V$		10	21	ns
Transition time	t_{THL} / t_{TLH}	$V_{CC}=2V$		18	75	ns
		$V_{CC}=4.5V$		6	15	ns
		$V_{CC}=6V$		5	13	ns

■ CAPACITIVE CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

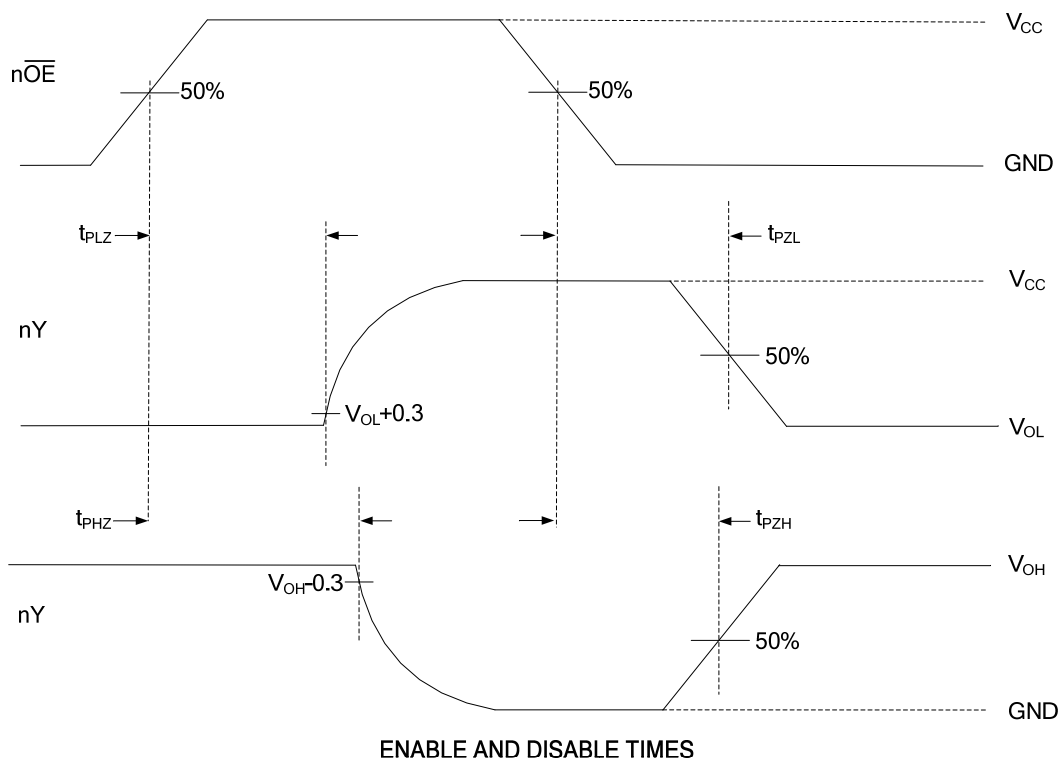
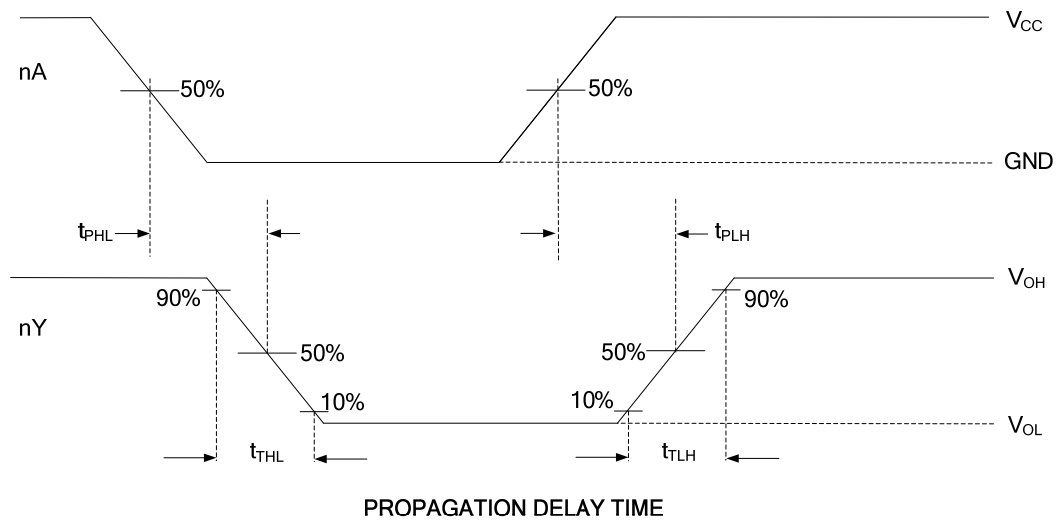
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C_i			1.0		pF
Output Capacitance	C_o			1.5		pF
Power Dissipation Capacitance	C_{PD}	per buffer; $V_i = \text{GND to } V_{CC}$	output enabled		11	pF
			output disabled		1	pF

TEST CIRCUIT AND WAVEFORMS

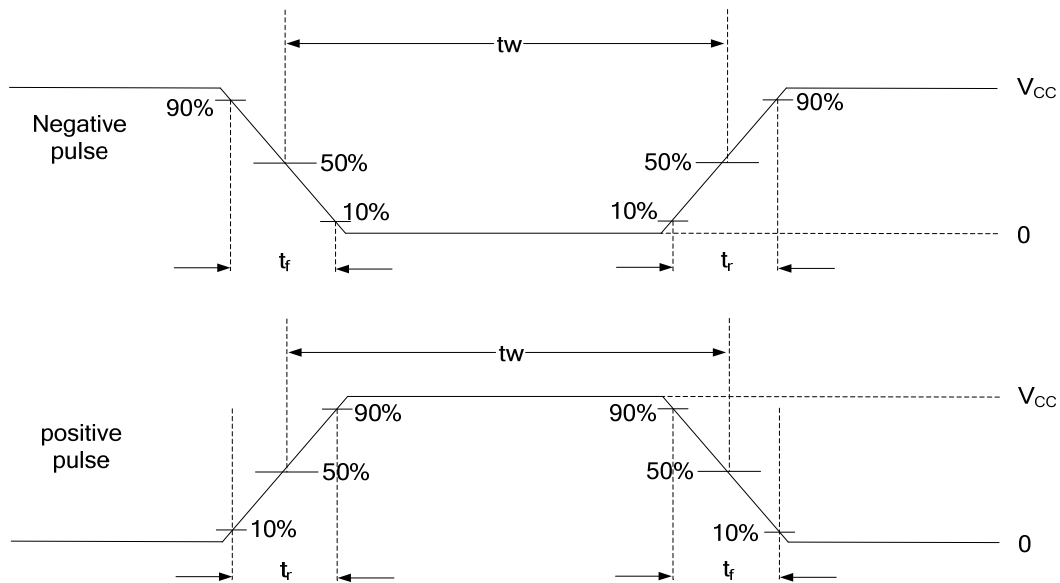


TEST CIRCUIT

S1 position		
t_{PHL}, t_{PLH}	t_{PZH}, t_{PHZ}	t_{PZL}, t_{PLZ}
open	GND	V_{CC}



■ TEST CIRCUIT AND WAVEFORMS (Cont.)



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.