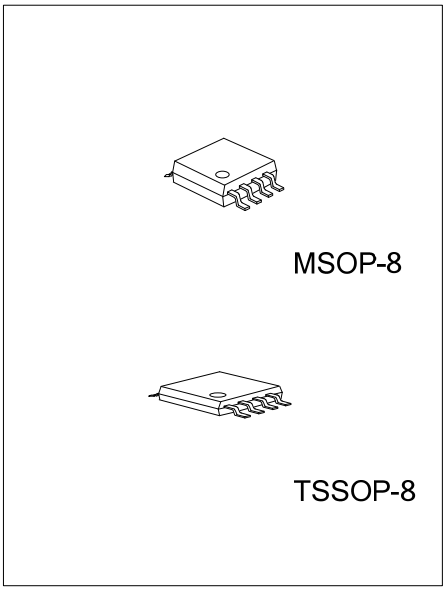
U74LVC2G125

CMOS IC

DUAL BUS BUFFER GATE WITH 3-STATE OUTPUTS



■ DESCRIPTION

The **U74LVC2G125** consists of two bus buffers with 3-state output controlled by enable input ($n\overline{OE}$), when $n\overline{OE}$ is high, the output is disable.

Inputs can be driven from either 3.3V or 5V devices, so the device can be used in a mix 3.3V/5V system.

This device is full specified for partial power-down protective circuit, preventing the backflow current through the device when it is powered down.

■ FEATURES

* Operation Voltage Range: 1.65~5.5V
* Low Power Dissipation
* Input Accept Voltage to 5.5V

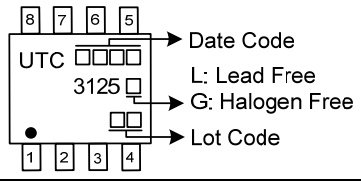
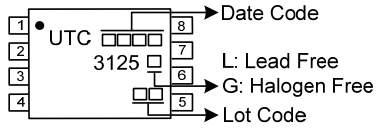
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC2G125L-SM1-R	U74LVC2G125G-SM1-R	MSOP-8	Tape Reel
U74LVC2G125L-P08-R	U74LVC2G125G-P08-R	TSSOP-8	Tape Reel

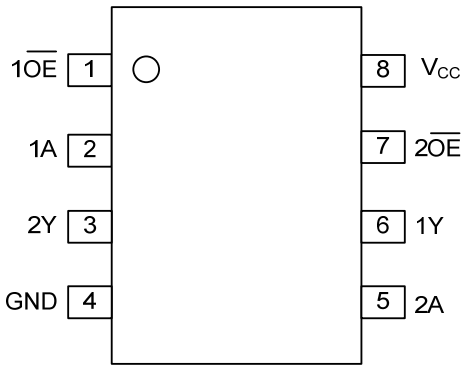
U74LVC2G125G-SM1-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) SM1: MSOP-8, P08: TSSOP-8
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

MSOP-8	TSSOP-8
	

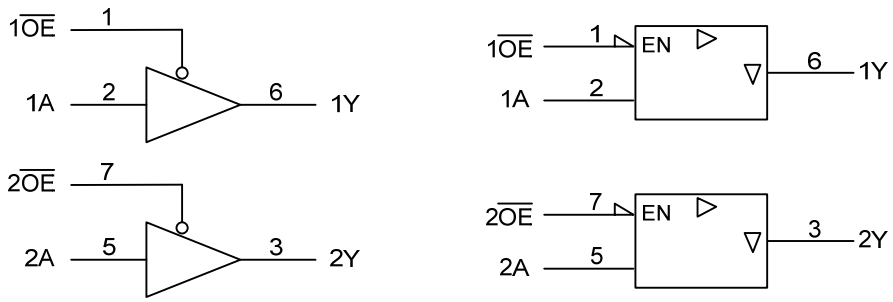
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

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

■ LOGIC DIAGRAM (positive logic)



■ ABSOLUTE MAXIMUM RATING (Unless otherwise specified)(Note 1)

PARAMETER		SYMBOL	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	V_{OUT}	-0.5~6.5	V
	Power-down mode	V_{OUT}	-0.5~6.5	V
Input Clamp Current (V_{IN}<0)		I_{IK}	-50	mA
Output Clamp Current (V_{OUT}<0)		I_{OK}	-50	mA
Output Current		I_{OUT}	±50	mA
V_{CC} or GND Current		I_{CC}	±100	mA
Power Dissipation		P_D	500	mW
Storage Temperature		T_{STG}	-65 ~ +150	°C

Note 1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.
2. 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}	Operating	1.65		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}=1.65~2.7V	0		20	ns/V
		V_{CC}=2.7~5.5V	0		10	ns/V
Operating Temperature	T_A		-40		+125	°C

■ STATIC CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V_{IH}	V_{CC} = 1.65V ~ 1.95V	0.65× V_{CC}			V
		V_{CC} = 2.3V ~ 2.7V	1.7			V
		V_{CC} = 2.7V ~ 3.6V	2			V
		V_{CC} = 4.5V ~ 5.5V	0.7× V_{CC}			V
Low-Level Input Voltage	V_{IL}	V_{CC} = 1.65V~1.95V			0.35× V_{CC}	V
		V_{CC} = 2.3V ~ 2.7V			0.7	V
		V_{CC} = 2.7V ~ 3.6V			0.8	V
		V_{CC} = 4.5V ~5.5V			0.3×V_{CC}	V
High-Level Output Voltage	V_{OH}	V_{CC} = 1.65V ~ 5.5V, I_{OH}=-100μA	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} = 2.7V, I_{OH}=-12mA	2.2			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 ~ 5.5V, I_{OL}=100μA			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} = 2.7V, I_{OL}=12mA			0.4	V
		V_{CC} = 3V, I_{OL}=24mA			0.55	V
		V_{CC} = 4.5V, I_{OL}=32mA			0.55	V

■ STATIC CHARACTERISTICS (Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Leakage Current	$I_{I(LEAK)}$	V_{CC}= 5.5V, V_{IN}=5.5V or GND		±0.1	±5	μA
Output OFF-State Current	I_{OZ}	V_{CC}= 3.6V, V_{OUT}=V_{CC} or GND		±0.1	±10	μA
Power OFF Leakage Current	$I_{OFF(LEAK)}$	V_{CC}= 0V, V_{IN} or V_{OUT} =5.5V		±0.1	±10	μA
Quiescent Supply Current	I_Q	V_{CC}= 5.5V, V_{IN}=V_{CC} or GND, I_{OUT}=0		0.1	10	μA
Additional Quiescent Supply Current	ΔI_Q	V_{CC}= 2.3V ~ 5.5V, One input at V_{CC}-0.6V, other inputs at V_{CC} or GND		5	500	μA
Input Capacitance	C_{IN}	V_{IN}=V_{CC} or GND		2		pF

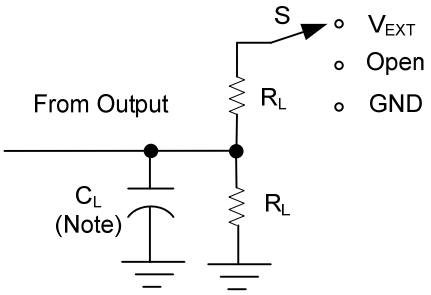
■ DYNAMIC CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay From Input (A) to Output(Y)	t_{PLH}/t_{PHL}	V_{CC} =1.8V±0.15	1	3.7	9.1	ns
		V_{CC} =2.5V±0.2	0.5	2.5	4.8	
		V_{CC} =2.7V	1	2.7	4.8	
		V_{CC} =3.3V±0.3	0.5	2.3	4.3	
		V_{CC} =5V±0.5	0.5	1.9	3.7	
Propagation Delay From Input (n$\overline{OE}$) to Output(Y)	t_{PZL}/t_{PZH}	V_{CC} =1.8V±0.15	1.5	4.3	9.9	ns
		V_{CC} =2.5V±0.2	1	2.8	5.6	
		V_{CC} =2.7V	1.5	3.3	5.7	
		V_{CC} =3.3V±0.3	0.5	2.4	4.7	
		V_{CC} =5V±0.5	0.5	2	3.8	
Propagation Delay From Input (n$\overline{OE}$) to Output(Y)	t_{PLZ}/t_{PHZ}	V_{CC} =1.8V±0.15	1	3.5	11.6	ns
		V_{CC} =2.5V±0.2	0.5	1.8	5.8	
		V_{CC} =2.7V	1	2.7	4.8	
		V_{CC} =3.3V±0.3	1	2.7	4.6	
		V_{CC} =5V±0.5	0.5	1.8	3.4	

■ OPERATING CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	Output Enable, f=10MHz		18		pF
		Output Disable, f=10MHz		5		

■ TEST CIRCUIT AND WAVEFORMS



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

Note: C_L includes probe and jig capacitance.

V_{CC}	V_{IN}	t_R, t_F	V_M	V_{EXT}	C_L	R_L	$V_\triangle$
1.8V±0.15V	V_{CC}	≤2ns	$V_{CC}/2$	$2\times V_{CC}$	30pF	1KΩ	0.15V
2.5V±0.2V	V_{CC}	≤2ns	$V_{CC}/2$	$2\times V_{CC}$	30pF	500Ω	0.15V
2.7V	2.7V	≤2.5ns	1.5V	6V	50pF	500Ω	0.3V
3.3V±0.3V	2.7 V	≤2.5ns	1.5V	6V	50pF	500Ω	0.3V
5V±0.5V	V_{CC}	≤2.5ns	$V_{CC}/2$	$2\times V_{CC}$	50pF	500Ω	0.3V