



U74LVC2G125B

CMOS IC

DUAL BUS BUFFER GATE WITH 3-STATE OUTPUTS

DESCRIPTION

The **U74LVC2G125B** consists of two bus buffers with 3-state output controlled by enable input (\overline{nOE}), when \overline{nOE} 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

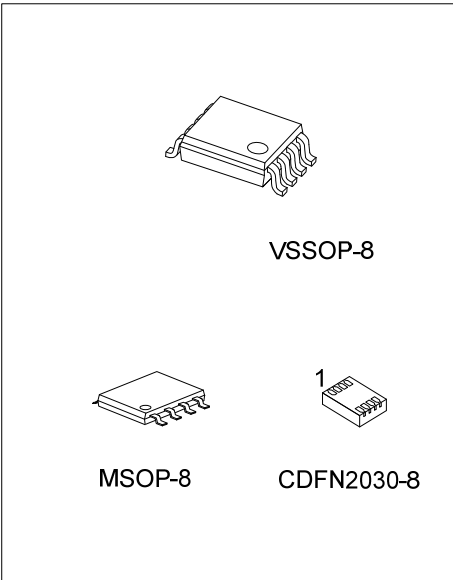
ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC2G125BL-SM2-R	U74LVC2G125BG-SM2-R	MSOP-8	Tape Reel
U74LVC2G125BL-V08-R	U74LVC2G125BG-V08-R	VSSOP-8	Tape Reel
U74LVC2G125BL-CK08-2030-R	U74LVC2G125BG-CK08-2030-R	CDFN2030-8	Tape Reel

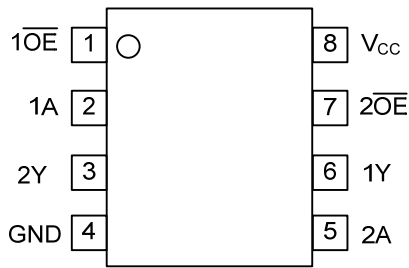
<p>U74LVC2G125BG-SM2-R</p>	<p>(1) R: Tape Reel (2) SM2: MSOP-8, V08: VSSOP-8 CK08-2030: CDFN2030-8 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING

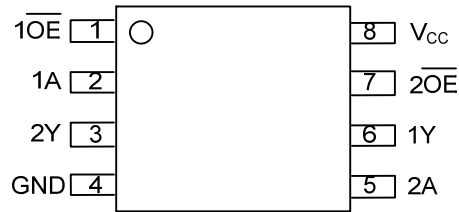
MSOP-8	VSSOP-8
CDFN2030-8	-
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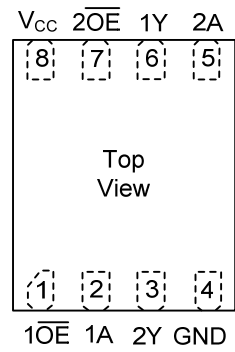
■ PIN CONFIGURATION



MSOP-8



VSSOP-8

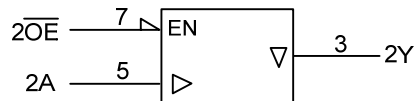
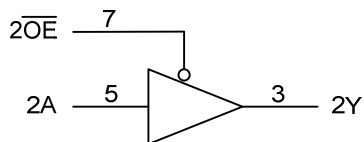
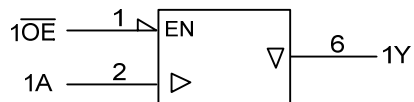
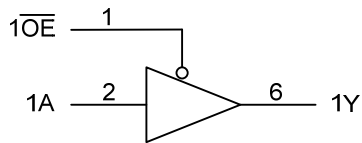


CDFN2030-8

■ FUNCTION TABLE (each gate)

INPUT		OUTPUT
$\overline{1OE}$	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	CONDITIONS	RATINGS	UNIT
Supply Voltage	V _{CC}		-0.5~6.5	V
Input Voltage (Note 2)	V _{IN}		-0.5~6.5	V
Output Voltage (Note 2)	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	I _{IK}	V _{IN} <0	-50	mA
Output Clamp Current	I _{OK}	V _{OUT} <0	-50	mA
Output Current	I _{OUT}	V _{OUT} =0 ~ V _{CC}	±50	mA
V _{CC} or GND Current	I _{CC}		±100	mA
Power Dissipation	P _D		500	mW
Electrostatic Discharge	V _(ESD)	Human-Body Model (HBM) Per JESD22-A114/115	2000	V
Storage Temperature	T _{STG}		-65 ~ +150	°C

Notes: 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.

■ RECOMMENDED OPERATING CONDITIONS (Unless otherwise specified)

PARAMETER	SYMBOL	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} =1.65V~2.7V	0		20	ns/V
		V _{CC} =2.7V~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

■ STATIC CHARACTERISTICS (Cont.) (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
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
Input Leakage Current	I _{I(LEAK)}	V _{CC} =0V~ 5.5V, V _{IN} =5.5V or GND			±5	μA
Output OFF-State Current	I _{OZ}	V _{CC} = 3.6V, V _{OUT} =V _{CC} or GND			±10	μA
Power OFF Leakage Current	I _{OFF(LEAK)}	V _{CC} = 0V, V _{IN} or V _{OUT} =5.5V			±10	μA
Quiescent Supply Current	I _Q	V _{CC} =1.65V~5.5V, V _{IN} =V _{CC} or GND, I _{OUT} =0			10	μA
Additional Quiescent Supply Current	Δ I _Q	V _{CC} = 2.3V ~ 5.5V, One input at V _{CC} -0.6V, other inputs at V _{CC} or GND			500	μA

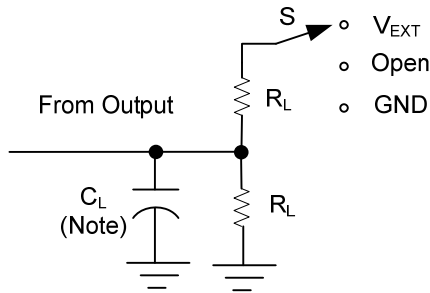
■ DYNAMIC CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay From Input (nA) to Output (nY)	t _{PLH} /t _{PHL}	V _{CC} =1.8V±0.15V	1		9.1	ns
		V _{CC} =2.5V±0.2V	0.5		4.8	ns
		V _{CC} =2.7V	1		4.8	ns
		V _{CC} =3.3V±0.3V	0.5		4.3	ns
		V _{CC} =5V±0.5V	0.5		3.7	ns
Propagation Delay From Input (nOE) to Output (nY)	t _{PZL} /t _{PZH}	V _{CC} =1.8V±0.15V	1.5		9.9	ns
		V _{CC} =2.5V±0.2V	1		5.6	ns
		V _{CC} =2.7V	1.5		5.7	ns
		V _{CC} =3.3V±0.3V	0.5		4.7	ns
		V _{CC} =5V±0.5V	0.5		3.8	ns
Propagation Delay From Input (nOE) to Output (nY)	t _{PLZ} /t _{PHZ}	V _{CC} =1.8V±0.15V	1		11.6	ns
		V _{CC} =2.5V±0.2V	0.5		5.8	ns
		V _{CC} =2.7V	1		4.8	ns
		V _{CC} =3.3V±0.3V	1		4.6	ns
		V _{CC} =5V±0.5V	0.5		3.4	ns

■ OPERATING CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C _{IN}	V _{IN} =V _{CC} or GND		2		pF
Power Dissipation Capacitance	C _{PD}	Output Enable, f=10MHz		18		pF
		Output Disable, f=10MHz		5		pF

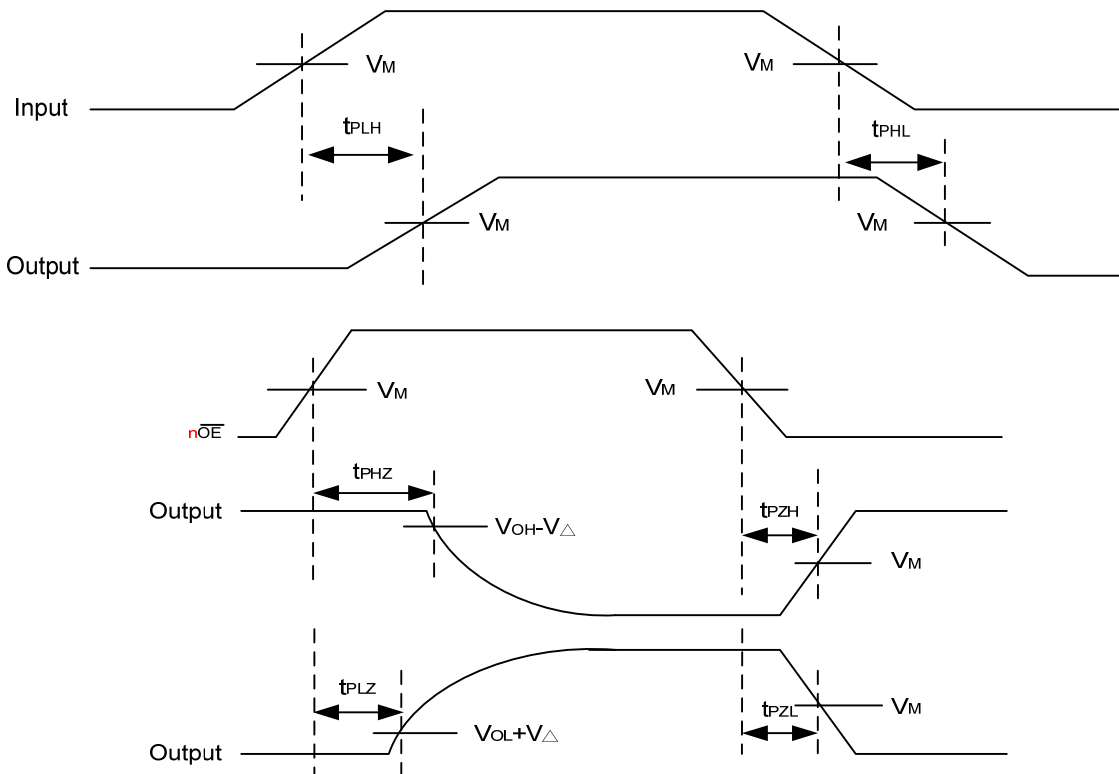
TEST CIRCUIT AND WAVEFORMS



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_{Δ}
$1.8V \pm 0.15V$	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
2.7V	2.7V	$\leq 2.5ns$	1.5V	6V	50pF	500 Ω	0.3V
$3.3V \pm 0.3V$	2.7V	$\leq 2.5ns$	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



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