

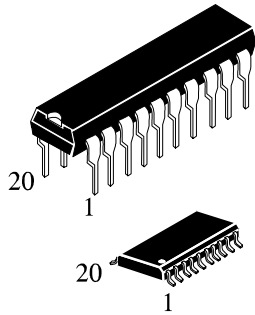
# OCTAL 3-STATE NONINVERTING BUS TRANSCEIVER

**IN74LV623**

Microcircuits IN74LV623 are pin-to-pin compatible with microcircuits of series 74HC623A, 74HCT623A. Input voltage levels are compatible with standard C-MOS levels

**Features:**

- Output voltage levels are compatible with input levels C-MOS, N-MOS and TTL microcircuits.
- Supply voltage range from 1.2 to 3.6 V.
- Maximum input current: 1.0 mA; 0.1 mA at T = 25 °C.
- Consumption current 8 mA.



N SUFFIX  
PLASTIC

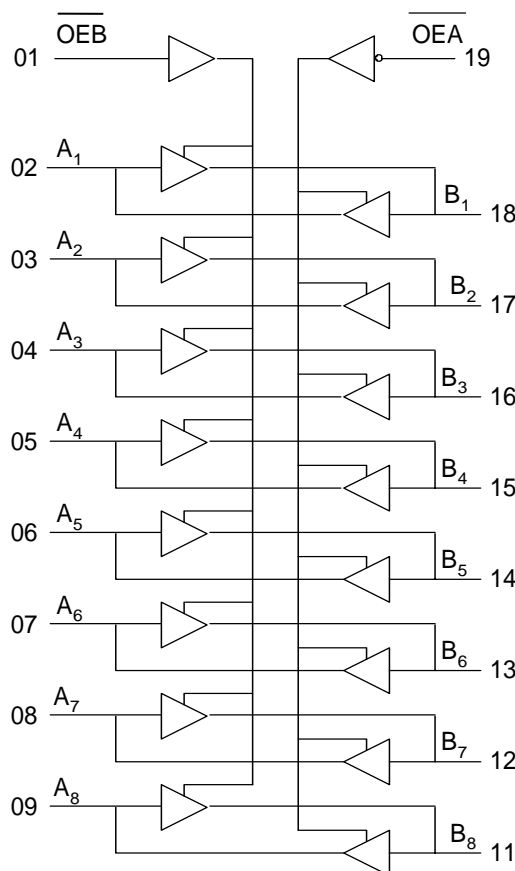
DW SUFFIX  
SOIC

**ORDERING INFORMATION**

IN74LV623N Plastic  
IN74LV623D SOIC

T<sub>A</sub> = -40° to 125° C for all packages

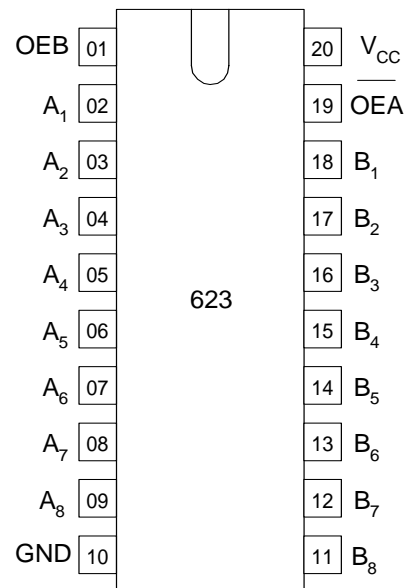
**Block diagram**



**Truth table**

Inputs		Inputs/Outputs	
OEB	OEA	A	B
L	L	A=B	Input
H	H	Input	B=A
L	H	Z	Z
H	H	A=B	B=A

**Pinout**



**Absolute maximum ratings\***

Symbol	Parameter	Value	Unit
$V_{CC}$	Supply voltage	from -0.5 to +5.0	V
$I_{IK}^{*1}$	Input diode current	$\pm 20$	mA
$I_{OK}^{*2}$	Output diode current	$\pm 50$	mA
$I_O^{*3}$	Output current source-drain	$\pm 35$	mA
$I_{CC}$	Supply output current	$\pm 70$	mA
$I_{GND}$	Common output current	$\pm 70$	mA
$P_D$	Dissipation power at free air change, Plastic DIP SOIC * <sup>4</sup>	750 500	mW
$T_{stg}$	Storage temperature	from -65 to +150	°C
$T_L$		260	°C

\* Under absolute maximum conditions operation of microcircuits is not guaranteed. Operation under maximum conditions is guaranteed.

\*<sup>1</sup> If  $V_I < -0.5V$  or  $V_I > V_{CC} + 0.5 V$ .

\*<sup>2</sup> If  $V_O < -0.5V$  or  $V_O > V_{CC} + 0.5 V$ .

\*<sup>3</sup> If  $-0.5V < V_O < V_{CC} + 0.5 V$ .

\*<sup>4</sup> Under operation in the temperature range from 65°C to 125°C value of dissipation power drops down - to 10 mW/°C for Plastic DIP  
- to 7 mW/°C for SOIC

**Maximum conditions**

Symbol	Parameter	Min	Max	Unit	
$V_{CC}$	Supply voltage	1.2	3.6	V	
$V_{IN}$	Input voltage	0	$V_{CC}$	V	
$V_{OUT}$	Output voltage	0	$V_{CC}$	V	
$T_A$	Operation temperature. For all packages	-40	125	°C	
$t_{LH}, t_{HL}$	Period of signal rise and fall edges (Figure 1)	$V_{CC}=1.2 B$	0	1000	ns
		$V_{CC}=2.0 B$		700	
		$V_{CC}=3.0 B$		500	
		$V_{CC}=3.6 B$		400	

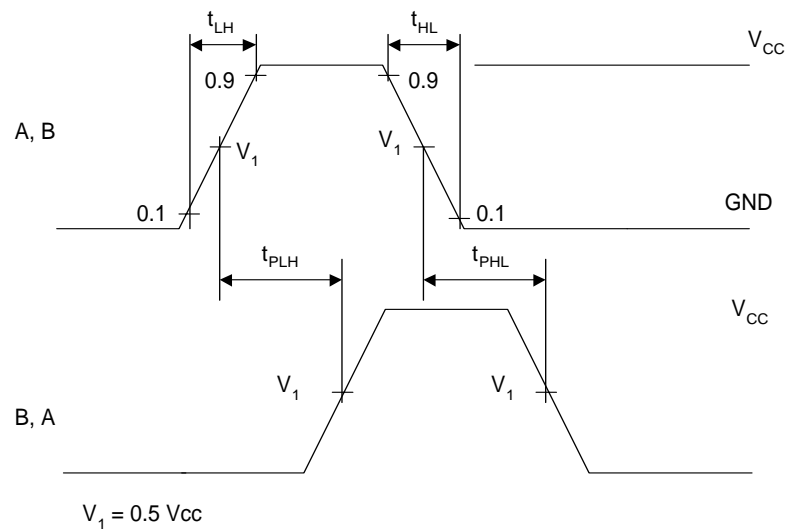
## DC electrical characteristics

Symbol	Parameter	Test conditions	V <sub>CC</sub> , V	Value						Unit
				25°C		From -40°C to 85°C		From -40°C to 125°C		
				min	max	min	max	min	max	
V <sub>IH</sub>	High input voltage	V <sub>O</sub> = V <sub>CC</sub> -0.1 V	1.2	0.9	-	0.9	-	0.9	-	V
			2.0	1.4	-	1.4	-	1.4	-	
			3.0	2.1	-	2.1	-	2.1	-	
			3.6	2.5	-	2.5	-	2.5	-	
V <sub>IL</sub>	Low input voltage	V <sub>O</sub> = 0.1 V	1.2	-	0.3	-	0.3	-	0.3	V
			2.0	-	0.6	-	0.6	-	0.6	
			3.0	-	0.9	-	0.9	-	0.9	
			3.6	-	1.1	-	1.1	-	1.1	
V <sub>OH</sub>	High output voltage	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> I <sub>O</sub> = -50 mA	1.2	1.11	-	1.1	-	1.1	-	V
			2.0	1.91	-	1.9	-	1.9	-	
			3.0	2.91	-	2.9	-	2.9	-	
			3.6	3.51	-	3.5	-	3.5	-	
			V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> I <sub>O</sub> = -8 mA	3.0	2.48	-	2.34	-	2.20	-
V <sub>OL</sub>	Low output voltage	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> I <sub>O</sub> = 50 mA	1.2	-	0.09	-	0.1	-	0.1	V
			2.0	-	0.09	-	0.1	-	0.1	
			3.0	-	0.09	-	0.1	-	0.1	
			3.6	-	0.09	-	0.1	-	0.1	
			V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> I <sub>O</sub> = 8 mA	3.0	-	0.33	-	0.4	-	0.5
I <sub>I</sub>	Input current	V <sub>I</sub> = V <sub>CC</sub> or 0 V	3.6	-	±0.1	-	±1.0	-	±1.0	uA
I <sub>OZ</sub>	Output current in «off» state	Outputs in the third state V <sub>I</sub> = V <sub>IL</sub> or V <sub>IH</sub> V <sub>O</sub> = V <sub>CC</sub> or 0 V	3.6	-	±0.5	-	±5	-	±10	uA
I <sub>CC</sub>	Consumption current	V <sub>I</sub> = V <sub>CC</sub> or 0 V I <sub>O</sub> = 0 mA	3.6	-	8.0	-	80	-	160	uA

**AC electrical characteristics** ( $C_L=50$  pF,  $t_{LH} = t_{HL} = 6.0$  ns)

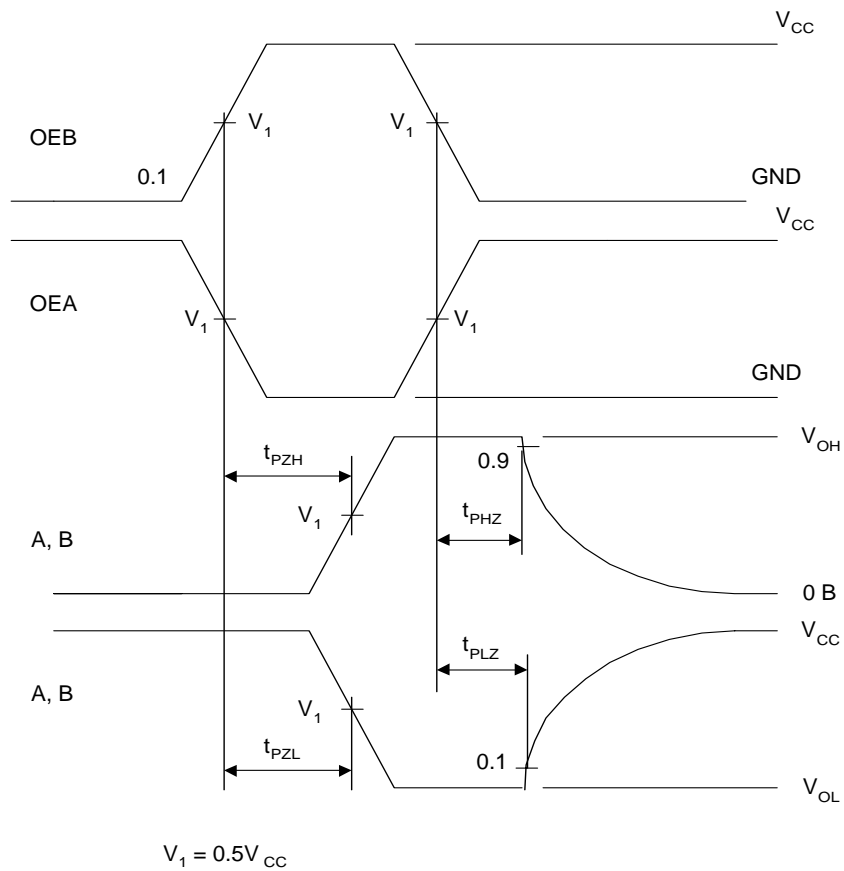
Symbol	Parameter	Test conditions	$V_{CC}$ , V	Value						Unit
				25°C		From -40°C to 85°C		From -40°C to 125°C		
				min	max	min	max	min	max	
$t_{PHL}$ , $t_{PLH}$ from A to B; from B to A	Propagation delay time in «on» and «off» states	Fig. 1	1.2	-	100	-	125	-	140	ns
			2.0	-	23	-	28	-	34	
			3.0	-	14	-	18	-	21	
$t_{PHZ}$ $t_{PLZ}$ from OE to Y	Propagation delay time when switching from high, low levels into «off» state	Fig. 2	1.2	-	120	-	140	-	160	ns
			2.0	-	30	-	37	-	43	
			3.0	-	20	-	24	-	28	
$t_{PZH}$ $t_{PZL}$ from OE to Y	Propagation delay time when switching from «off» state into high, low levels	Fig.2	1.2	-	120	-	140	-	160	ns
			2.0	-	28	-	35	-	43	
			3.0	-	17	-	21	-	26	
$t_{THL}$ , $t_{TLH}$	Transition time when switching on, off	Fig. 1	1.2	-	60	-	75	-	90	ns
			2.0	-	16	-	20	-	24	
			3.0	-	10	-	13	-	15	
$C_I$	Input capacitance		3.0	-	7	-	-	-	-	pF
$C_{PD}$	Dynamic capacitance (for one channel)	$V_I = 0$ V or $V_{CC}$	3.0	-	50	-	-	-	-	

- Time diagram of control of AC characteristics  $t_{PLH}$ ,  $t_{PHL}$



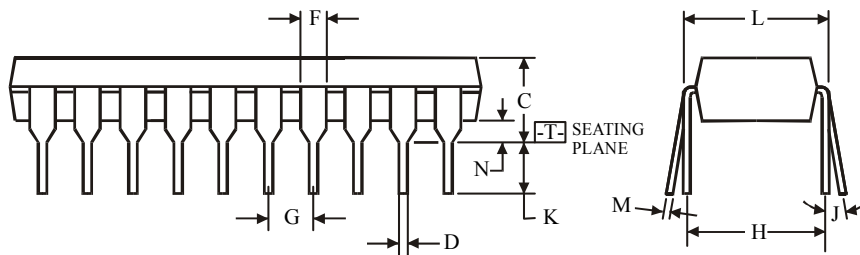
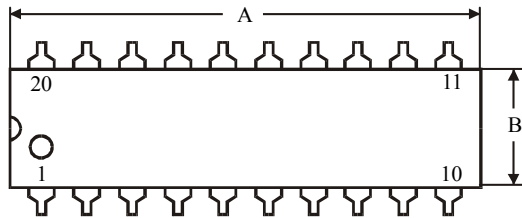
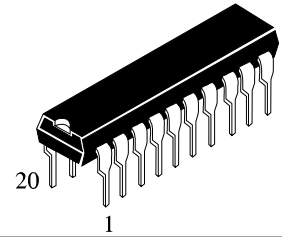
**Fig. 1**

- Time diagram of control of AC characteristics  $t_{PLZ}$ ,  $t_{PHZ}$ ,  $t_{PZL}$ ,  $t_{PZH}$



**Fig. 2**

**N SUFFIX PLASTIC DIP**  
(MS - 001AD)



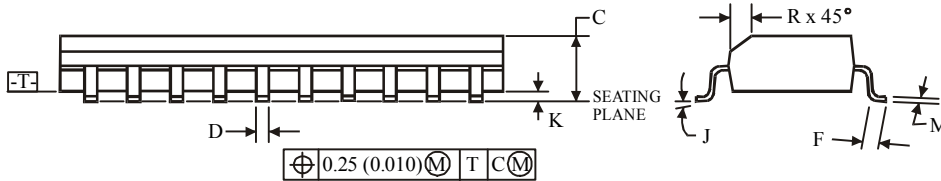
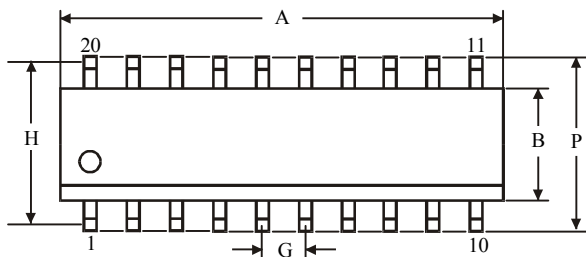
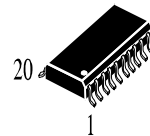
$\oplus 0.25 (0.010) \text{M} \text{T}$

**NOTES:**

- Dimensions "A", "B" do not include mold flash or protrusions.  
Maximum mold flash or protrusions 0.25 mm (0.010) per side.

Symbol	Dimension, mm	
	MIN	MAX
A	24.89	26.92
B	6.1	7.11
C		5.33
D	0.36	0.56
F	1.14	1.78
G	2.54	
H	7.62	
J	0°	10°
K	2.92	3.81
L	7.62	8.26
M	0.2	0.36
N	0.38	

**D SUFFIX SOIC**  
(MS - 013AC)



$\oplus 0.25 (0.010) \text{M} \text{T} \text{C} \text{M}$

**NOTES:**

- Dimensions A and B do not include mold flash or protrusion.
- Maximum mold flash or protrusion 0.15 mm (0.006) per side for A; for B - 0.25 mm (0.010) per side.

Symbol	Dimension, mm	
	MIN	MAX
A	12.6	13
B	7.4	7.6
C	2.35	2.65
D	0.33	0.51
F	0.4	1.27
G	1.27	
H	9.53	
J	0°	8°
K	0.1	0.3
M	0.23	0.32
P	10	10.65
R	0.25	0.75