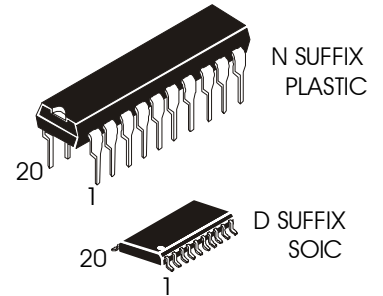


# IN74LV245

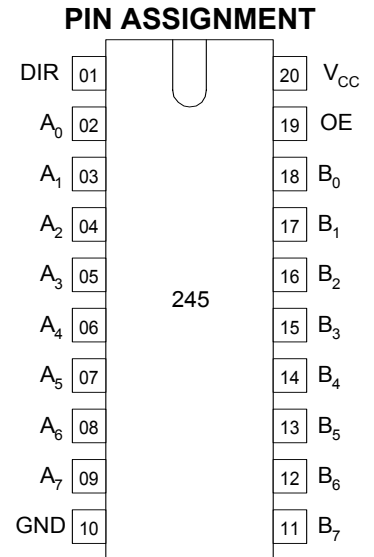
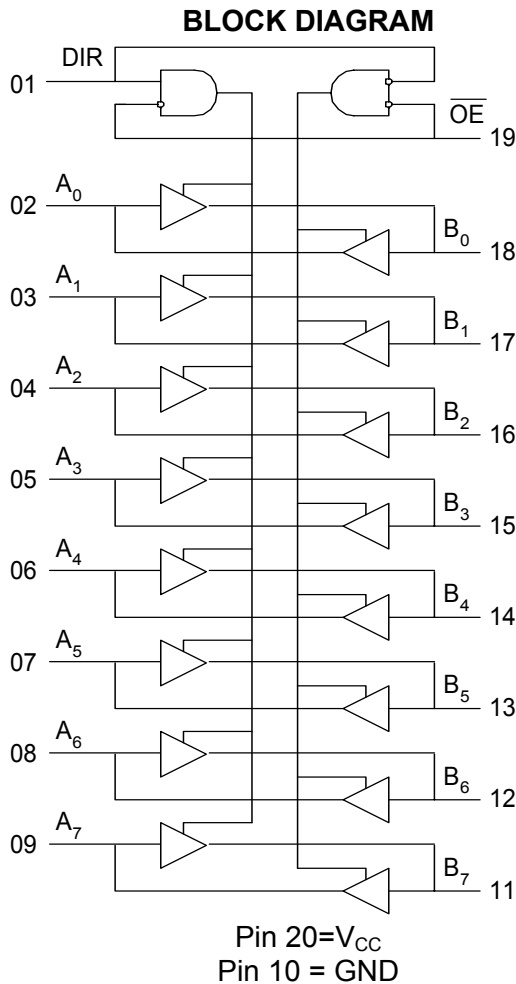
## OCTAL BUS TRANSCEIVER (3-STATE)

By pinning IN74LV245 are compatible with IN74HC245A and IN74HCT245A series. Input voltage levels are compatible with standard CMOS levels.

- Output voltage levels are compatible with input levels of CMOS, NMOS and TTL ICs
- Supply voltage range: 2.0 to 3.2 V
- Low input current: 1.0  $\mu\text{A}$ ; 0.1  $\mu\text{A}$  at  $T = 25^\circ\text{C}$
- Output current 8 mA
- Latch current value: not less 150 mA at  $T = 125^\circ\text{C}$
- ESD acceptable values: not less than 2000 V as per HBM and not less 200 V as per MM
- 



**ORDERING INFORMATION**  
 IN74LV245N Plastic DIP  
 IN74LV245D SOIC  
 $T_A = -40^\circ$  to  $125^\circ\text{C}$   
 for all packages



**FUNCTION TABLE**

Inputs		Inputs/Outputs	
$\overline{\text{OE}}$	DIR	A	B
L	L	A=B	input
L	H	input	B=A
H	X	Z	Z

## IN74LV245

### ABSOLUTE MAXIMUM RATINGS\*

Symbol	Parameter	Rating	Unit
$V_{CC}$	Supply voltage	-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 source or sink current	$\pm 35$	mA
$I_{CC}$	$V_{CC}$ current	$\pm 70$	mA
$I_{GND}$	GND current	$\pm 70$	mA
$P_D$	Power dissipation per package: Plastic DIP SOIC *4	750 500	mW
Tstg	Storage temperature range	-65 to +150	$^{\circ}C$

\* In absolute maximum ratings modes functioning is not guaranteed. Upon lifting the absolute maximum ratings functioning is guaranteed at the recommended operating conditions.

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

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

\*3 Provided  $-0.5 V < V_O < V_{CC} + 0.5 V$ .

\*4 When operating in the temperature range of  $70^{\circ}C$  to  $125^{\circ}C$  power dissipation value decreases:

- for Plastic DIP by  $12 mW/^{\circ}C$

- for SOIC by  $8 mW/^{\circ}C$

### RECOMMENDED OPERATING 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
$T_A$	Operating ambient temperature range. For all package types	-40	125	$^{\circ}C$
$t_{LH}, t_{HL}$	Input rise and fall times	0	1000 700 500 400	ns
	$V_{CC} = 1.2 V$			
	$V_{CC} = 2.0 V$			
	$V_{CC} = 3.0 V$			
	$V_{CC} = 3.6 V$			

# IN74LV245

## DC CHARACTERISTICS

Symbol	Parameter	Test conditions	V <sub>CC</sub> , V	Limits						Unit
				25°C		-40°C to 85°C		125°C		
				min	max	min	max	min	max	
V <sub>IH</sub>	HIGH level 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 level output 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 level output voltage	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> I <sub>O</sub> = -50 μA	1.2	1.1	-	1.0	-	1.0	-	V
			2.0	1.92	-	1.9	-	1.9	-	
			3.0	2.92	-	2.9	-	2.9	-	
			3.6	3.52	-	3.5	-	3.5	-	
V <sub>OH</sub>	HIGH level output voltage	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
V <sub>OL</sub>	LOW level output voltage	V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> I <sub>O</sub> = 50 μA	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	-	0.09	-	0.09	
V <sub>OL</sub>	LOW level output voltage	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	V
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	μA
I <sub>OZ</sub>	OFF-state current	3-state outputs 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	μA
I <sub>CC</sub>	Supply current	V <sub>I</sub> = V <sub>CC</sub> or 0 V I <sub>O</sub> = 0 μA	3.6	-	8.0	-	80	-	160	μA

## IN74LV245

### AC CHARACTERISTICS ( $C_L=50$ pF, $t_{LH} = t_{HL} = 6.0$ ns)

Symbol	Parameter	Test conditions	$V_{CC}$ , V	Limits						Unit
				25°C		-40°C to 85°C		125°C		
				min	max	min	max	min	max	
$t_{PHL}$ , $t_{PLH}$ from An to Bn, from Bn to An	Propagation delay	Figure 1	1.2	-	100	-	125	-	140	ns
			2.0	-	23	-	28	-	34	
			3.0	-	14	-	18	-	21	
$t_{PHZ}$ , $t_{PLZ}$ from OE, DIR to An, Bn	3-state output enable time	Figure 2	1.2	-	120	-	140	-	160	ns
			2.0	-	30	-	37	-	43	
			3.0	-	20	-	24	-	28	
$t_{PZH}$ , $t_{PZL}$ from OE to An, Bn	3-state output disable time	Figure 2	1.2	-	120	-	140	-	160	ns
			2.0	-	28	-	35	-	43	
			3.0	-	17	-	21	-	26	
$t_{THL}$ , $t_{TLH}$	HIGH-to-LOW and LOW-to-HIGH transition time	Figure 1	1.2	-	60	-	75	-	90	ns
			2.0	-	15	-	20	-	24	
			3.0	-	10	-	13	-	15	
$C_I$	Input capacitance	For inputs 01,19	3.0	-	7	-	-	-	-	pF
$C_{I/O}$	Input capacitance	For inputs/outputs 02-09, 11-18	3.0	-	20	-	-	-	-	
$C_{PD}$	Power dissipation capacitance (per one channel)	$V_I = 0$ V or $V_{CC}$	3.0	-	50	-	-	-	-	

# IN74LV245

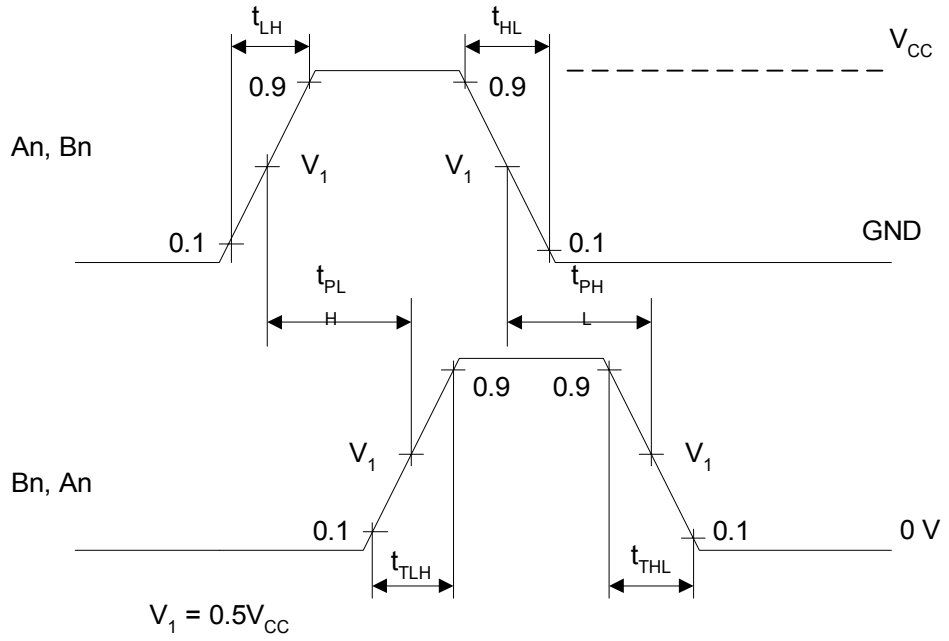


Figure 1 -Time diagram of AC parameters control  $t_{PLH}$ ,  $t_{PHL}$ .

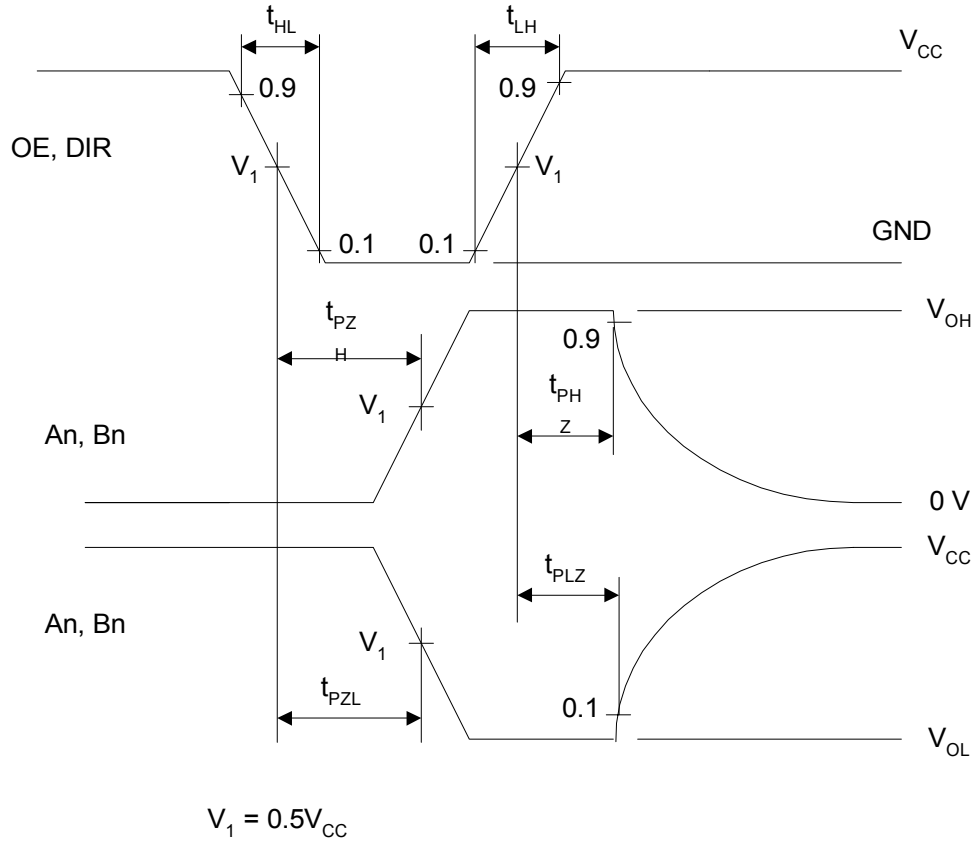
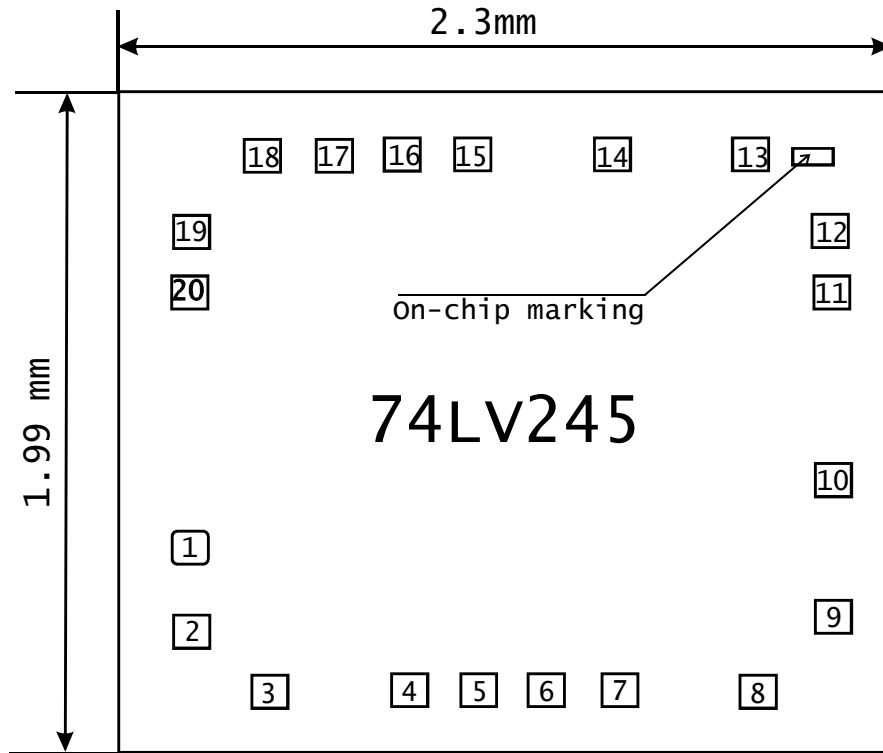


Figure 2 - Time diagram of  $t_{PLZ}$ ,  $t_{PHZ}$ ,  $t_{PZL}$ ,  $t_{PZH}$ . AC parameters control

# IN74LV245

## Drawing of the chip



Pads allocation Table

Pad number	coordinates (counted from lower left corner), mm		Pad size, mm
	X	Y	
01	0.140	0.573	0.108 x 0.108
02	0.140	0.315	0.108 x 0.108
03	0.370	0.140	0.108 x 0.108
04	0.790	0.140	0.108 x 0.108
05	1.000	0.140	0.108 x 0.108
06	1.200	0.140	0.108 x 0.108
07	1.417	0.140	0.108 x 0.108
08	1.833	0.140	0.108 x 0.108
09	2.060	0.354	0.108 x 0.108
10	2.060	0.760	0.108 x 0.108
11	2.060	1.340	0.108 x 0.108
12	2.060	1.520	0.108 x 0.108
13	1.833	1.750	0.108 x 0.108
14	1.415	1.750	0.108 x 0.108
15	1.000	1.750	0.108 x 0.108
16	0.790	1.750	0.108 x 0.108
17	0.580	1.750	0.108 x 0.108
18	0.370	1.750	0.108 x 0.108
19	0.140	1.544	0.108 x 0.108
20	0.140	1.375	0.108 x 0.108