DN74LS245 N 74LS245

Octal Bus Transceivers (with 3-state Outputs)

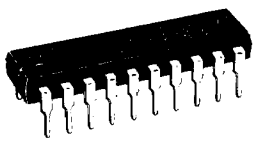
■ Description

DN74LS245 contains eight bus transmitter/receiver circuits with non-inverted outputs.

■ Features

- Bidirectional transfer or separation capability for two 8-bit data
- Low input load coefficient (pnp input)
- Hysteresis for input/output A and output/input B (width = 400mV typical)
- High fan-out (I_{OL} = 24mA, I_{OH} = −15mA)
- Wide operating temperature range (Ta = −20 to +75°C)

P-3

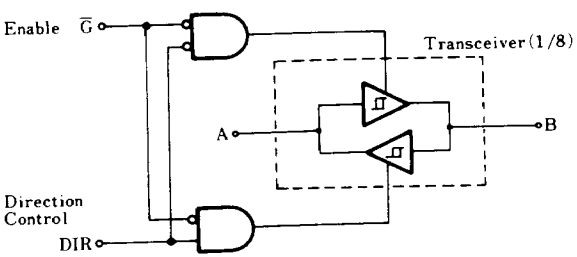


20-pin plastic DIL package

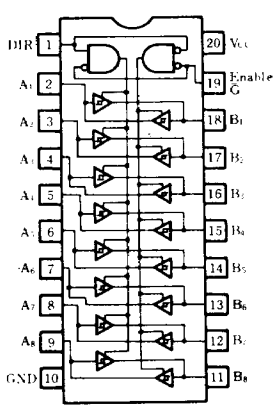
P-6

20-pin Panaflat package (SO-20D)

■ Logic diagram (1/2)



Pin configuration (top view)



■ Absolute maximum ratings

Parameter		Sym.	Rating		Unit
Input voltage	DIR, $\overline{G}$	V_I	−0.5	7.0	V
	A, B		−0.5	5.5	

* Refer to the family ratings for other parameters.

■ Recommended operating conditions

Parameter	Sym	Min	Typ	Max	Unit
Supply voltage	V_{CC}	4.75	5.00	5.25	V
Output current	I_{OH}			−15	mA
	I_{OL}			24	mA
Operating temperature range	Topr	−20	25	75	℃

■ DC characteristics ($Ta = -20 \sim +75℃$)

Parameter		Sym	Test conditions		Min	Typ*	Max	Unit
Input threshold voltage		V_{IH}			2.0			V
		V_{IL}					0.8	V
Output voltage		V_{OH1}	$V_{CC}=4.75V$, $V_{IH}=2V$, $V_{IL}=0.8V$	$I_{OH}=-3mA$	2.4	3.4		V
		V_{OH2}		$I_{OH}=-15mA$	2.0			V
		V_{OL1}	$V_{CC}=4.75V$, $V_{IH}=2V$, $V_{IL}=0.8V$	$I_{OL}=12mA$			0.4	V
		V_{OL2}		$I_{OL}=24mA$			0.5	V
Input current		I_{IH}	$V_{CC}=5.25V$, $V_{IH}=2.7V$				20	μA
		I_{IL}	$V_{CC}=5.25V$, $V_{IH}=0.4V$				−0.2	mA
	A or B	I_{I1}	$V_{CC}=5.25V$	$V_I=5.5V$			0.1	mA
	DIR or $\overline{G}$	I_{I2}		$V_I=7V$			0.1	mA
Output current		I_{OZH}	$V_{CC}=5.25V$, $\overline{G}=2V$	$V_O=2.7V$			20	μA
		I_{OZL}		$V_O=0.4V$			−200	μA
Hysteresis		$V_T^+-V_T^-$	$V_{CC}=4.75V$		0.2	0.4		V
Output short circuit current**		I_{OS}	$V_{CC}=5.25V$, $V_O=0V$		−15		−130	mA
Input clamp voltage		V_{IK}	$V_{CC}=4.75V$, $I_I=-18mA$				−1.5	V
Supply current		I_{CCH}	$V_{CC}=5.25V$,			48	70	mA
		I_{CCL}	$V_{CC}=5.25V$,			62	90	mA
		I_{CCZ}	$V_{CC}=5.25V$,			64	95	mA

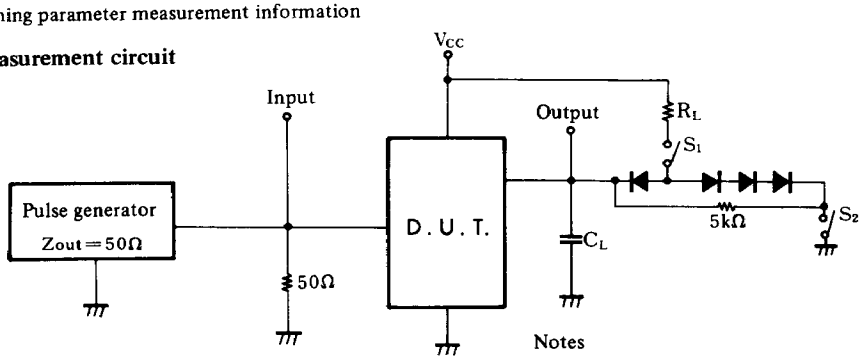
* When constant at V_{CC} = 5V, Ta = 25°C.
** Only one output at a time short circuited to GND. Also, short circuit time to GND within 1 second.

■ Switching characteristics ($V_{CC}=5V$, $Ta=25℃$)

Parameter	Sym	Test conditions	Min	Typ	Max	Unit
Propagation delay time	t_{PLH}	$C_L=45pF$, $R_L=667Ω$		8	12	ns
	t_{PHL}			8	12	ns
Output enable time	t_{ZH}			25	40	ns
	t_{ZL}			27	40	ns
Output disable time	t_{HZ}	$C_L=5pF$, $R_L=667Ω$		15	25	ns
	t_{LZ}			15	25	ns

※ Switching parameter measurement information

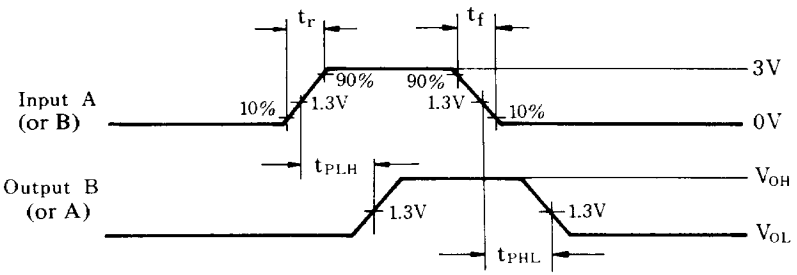
1. Measurement circuit



Notes
1. C_L includes probe and tool floating capacitance.
2. Diodes are all MA161 or equivalent.

2. Waveforms

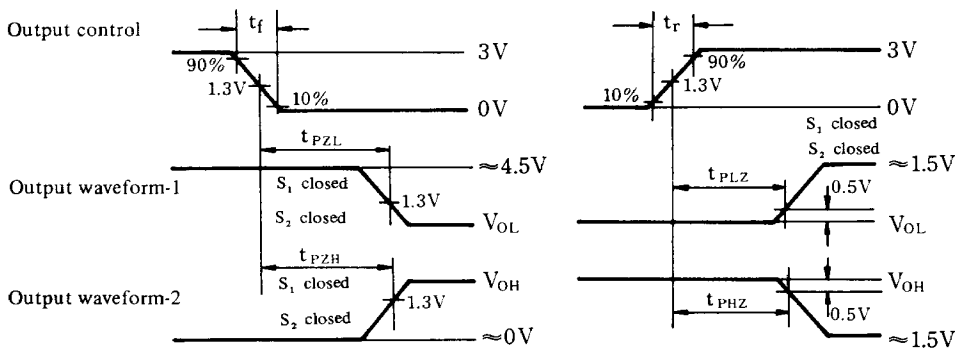
Waveforms-1



Notes

1. Input waveform ; $t_r \leqq 15ns$, $t_f \leqq 6ns$, PRR=1MHz, duty cycle 50%

Waveforms-2



Notes

1. Input waveform: $t_r \leqq 15ns$, $t_f \leqq 6ns$, PRR = 1MHz, duty cycle = 50%.
2. Except when the output is disabled by the output control, output waveform-1 occurs as a result of internal conditions such as a LOW voltage level.
3. Except when the output is disabled by the output control, output waveform-2 occurs as a result of internal conditions such as a HIGH voltage level.
4. When measuring t_{PLH} and t_{PHL}, S_1 and S_2 are closed.

■ Truth tables

Enable $\bar{G}$	Direction Control DIR	Operation
L	L	B data to A bus
L	H	A data to A bus
H	×	Isolation

Notes

1. H: HIGH voltage level.
2. L: LOW voltage level.
3. X: Either HIGH or LOW; doesn't matter.