
HD151005

Octal Inverter Buffers/Drivers With Open Drain High Voltage Outputs

HITACHI

ADE-205-594 (Z)
1st. Edition
Dec. 2000

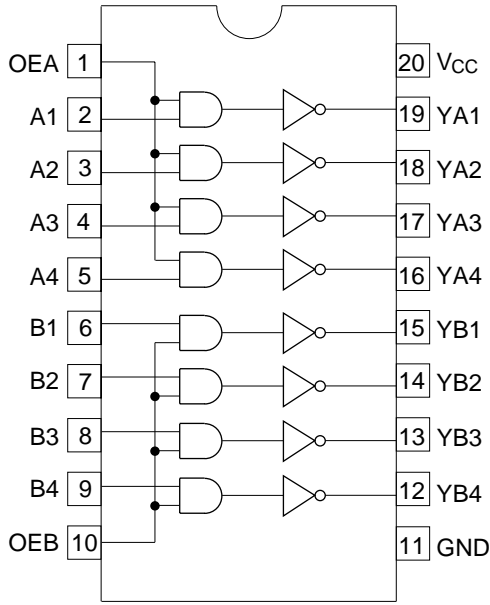
Description

The HD151005 features octal inverter buffers and drivers with open drain high voltage outputs with N channel power MOSFET.

Features

- Wired connection available with open drain outputs
- Output voltage: 30 V Max
- Output current: 100 mA Max
- Ensures V_{OL} 0.4 V when the output current is 48 mA
- Low power dissipation: 10 μ A

Pin Arrangement



(Top view)

Function Table

Inputs		Outputs		Inputs		Outputs	
OEA	A	YA		OEB	B	YB	
H	L	Z		H	L	Z	
H	H	L		H	H	L	
L	X	Z		L	X	Z	

H : High level
 L : Low level
 Z : High impedance
 X : Irrelevant

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit
Supply voltage	V_{CC}	0.5 to 7.0	V
Input voltage	V_{IN}	-0.5 to $V_{CC} + 0.5$	V
Input Current	I_{IN}	-10 to +0.1	mA
Output voltage	V_{OUT}	-0.5 to +30	V
Output Current	I_{OUT}	+100	mA/Unit
Power Dissipation	P_T	835 (FP), 1375 (DP)	mW
Storage Temperature Range	T_{stg}	-65 to +150	$^\circ\text{C}$

Note: 1. The absolute maximum ratings are values which must not individually be exceeded, and furthermore, no two of which may be realized at the same time.

Recommended Operating Conditions

Item	Symbol	Min	Typ	Max	Unit
Supply Voltage	V_{CC}	4.5	5.0	5.5	V
Input Voltage	V_{IN}	0	—	V_{CC}	V
Output Voltage	V_{OUT}	—	—	24	V
Output Current	I_{OL}	0	48	100	mA
Operating Temperature	T_{opr}	0	25	70	$^\circ\text{C}$
Input Voltage	V_{IH}	$0.7 \times V_{CC}$	—	—	V
	V_{IL}	—	—	$0.3 \times V_{CC}$	V
Input Rise and Fall Time *1	t_r, t_f	0	—	500	ns

Note: 1. This item guarantees maximum limit when one input switches.
Waveform: Refer to test circuit of switching characteristics.

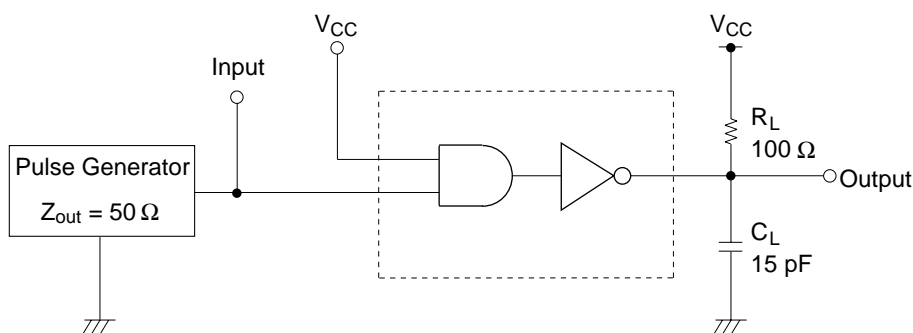
Electrical Characteristics ($T_a = 0$ to $+70^\circ\text{C}$)

Item	Symbol	V_{CC} (V)	Min	Max	Unit	Conditions
Output voltage	V_{OL1}	4.5	—	0.2	V	$I_{OL} = 24$ mA, $V_I = V_{IH}$
	V_{OL2}	4.5	—	0.4	V	$I_{OL} = 48$ mA, $V_I = V_{IH}$
	V_{OL3}	4.5	—	0.8	V	$I_{OL} = 100$ mA, $V_I = V_{IH}$
Output Current	I_O	5.5	—	5	μA	$V_O = 30$ V, $V_I = 0$ V
	$I_{O(off)}$	0	—	5	μA	$V_O = 30$ V
Input voltage	V_{IH}	5.0	3.5	—	V	$V_O = 0.4$ V, $I_O \geq 48$ mA
	V_{IL}	5.0	—	1.5	V	$V_O = 30$ V, $I_O \leq 5$ mA
Input Current	I_I	5.5	—	± 1	μA	$V_I = 0$ V or V_{CC}
	$I_{I(off)}$	0	—	± 1	μA	$V_I = 5.5$ V
Power Supply Current	I_{CC}	5.5	—	10	μA	$V_I = 0$ V or V_{CC} , No Load

Switching Characteristics ($T_a = 25^\circ\text{C}$, $V_{CC} = 5$ V)

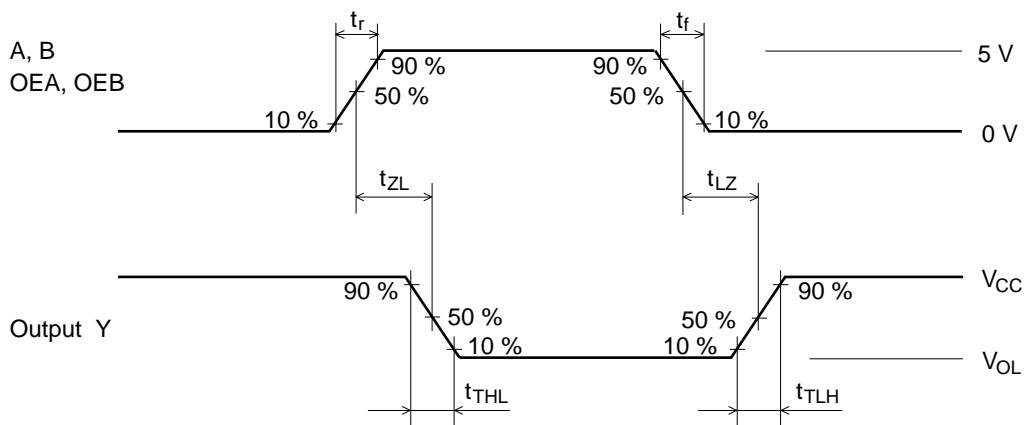
Item	Symbol	Min	Typ	Max	Unit	Conditions
Propagation Delay Time	t_{ZL}	—	15	30	ns	See next page
	t_{LZ}	—	20	30	ns	See next page
Transition Time	t_{THL}	—	10	30	ns	See next page
	t_{TLH}	—	15	30	ns	See next page
Input Capacitance	C_{IN}	—	7	15	pF	See next page
Power Dissipation Capacitance	C_{PD}	—	30	—	pF	See next page

Test Circuit



Note: 1. C_L includes probe and jig capacitance.

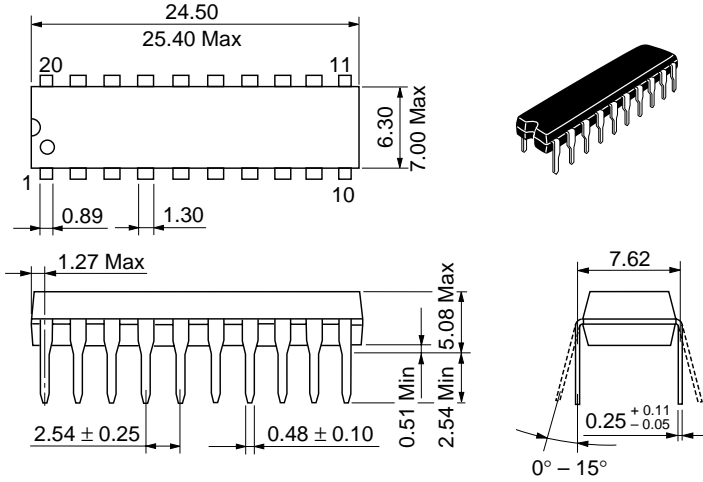
Waveforms-1



Notes: 1. $t_r = 5 \text{ ns}$, $t_f = 5 \text{ ns}$
 2. Input waveforms: PRR = 1 MHz, duty cycle 50%

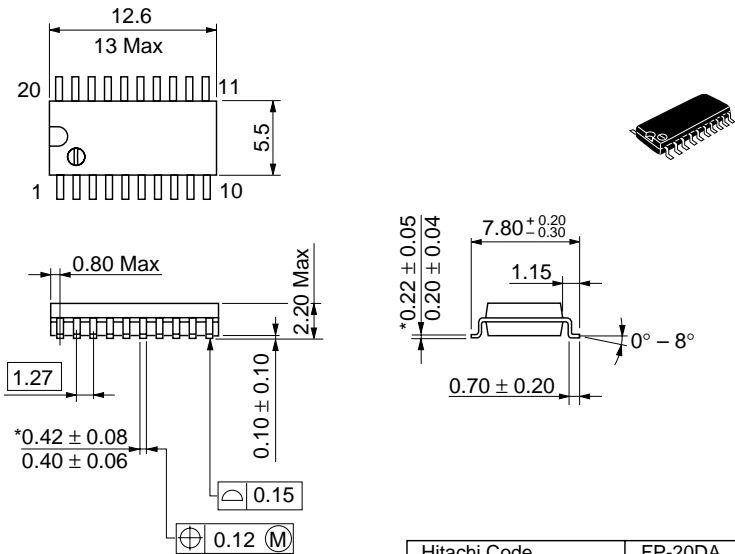
Package Dimensions

Unit: mm



Hitachi Code	DP-20N
JEDEC	—
EIAJ	Conforms
Mass (reference value)	1.26 g

Unit: mm



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-20DA
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.31 g

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