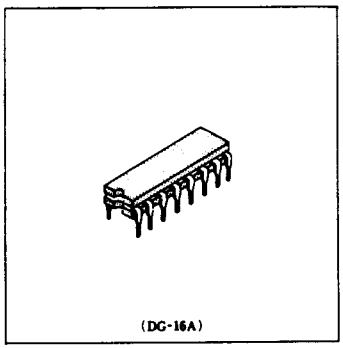
HD2916

Quadruple TTL-to-NMOS Clock Drivers

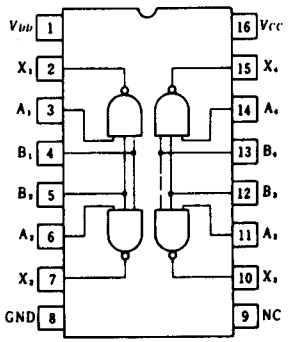
The HD2916, a clock driver for the MOS memory, basically possesses a NAND function. Its Input is a TTL level and its output becomes N MOS clock input level. It operates on two power supplies – V_{CC} (5V) and V_{DD} (12V). Assuming that a maximum of five units of 4K-bit N MOS memories may be connected, it is designed to drive a load capacity of 200pF at high speeds.



■ FEATURES

- TTL-MOS level converter
- Switching time: 50 ns (max.)
- Average power consumption: 600mW (max.)
- Load capacity drivable: 300pF
- Mounted with 4 circuits
- Applicable temperature: 10 to 65°C

■ PIN ARRANGEMENT



(Top View)

■ ABSOLUTE MAXIMUM RATINGS

Item	Symbol	HD2916	Unit
Supply Voltage	V_{CC}*	−0.5 to +7	V
	V_{DD}*	−0.5 to +15	V
Input Terminal Voltage	V_{IN}*	−0.5 to +5.5	V
Output Load Capacitance	C_L**	300	pF
Power Dissipation	P_T***	700	mW
Operating Temperature	T_{opr}	0 to +70	°C
Storage Temperature	T_{stg}	−50 to +150	°C

* With respect to GND
** Per circuit
*** Per package

■ RECOMMENDED OPERATING CONDITION

Item	Symbol	min	typ	max	Unit
Supply Voltage	V_{CC}	4.75	5.0	5.25	V
	V_{DD}	11.4	12.0	12.6	V
Operating Temperature	T_{opr}	10	25	55	°C
Input Voltage Level	V_{IH}	2.0	—	5.5	V
	V_{IL}	−0.5	—	0.8	V

■ ELECTRICAL CHARACTERISTICS (Ta = 10 to 55°C, V_{CC} = 5V ±5%, V_{DD} = 12V ±5%)

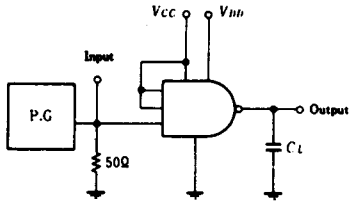
Item		Symbol	Test Condition	min	typ*	max	Unit
Input Current	A	I_{IH}	V_{IN} = 2.4V	—	—	40	μA
		I_{IL}	V_{IN} = 0.4V	—	−1	−2	mA
	B	I_{IH}	V_{IN} = 2.4V	—	—	80	μA
		I_{IL}	V_{IN} = 0.4V	—	−2	−4	mA
Output Voltage		V_{OH}	V_{IN} = 0.8V, I_{OH} = −50μA	V_{DD} − 0.7	V_{DD} − 0.4	—	V
		V_{OL}	V_{IN} = 2.0V, I_{OL} = 50μA	—	0.3	0.45	V
Supply Current		I_{DDH}	V_{IN} = 0V	—	13	20	mA
		I_{CCH}	V_{IN} = 0V	—	13	40	mA
		I_{DDL}	V_{IN} = 5V	—	—	39	mA
		I_{CCL}	V_{IN} = 5V	—	40	60	mA
Average Power Dissipation		P_{TA}	C_L = 300pF, f = 1MHz, t_w = 0.5μs, one circuit operation	—	300	600	mW

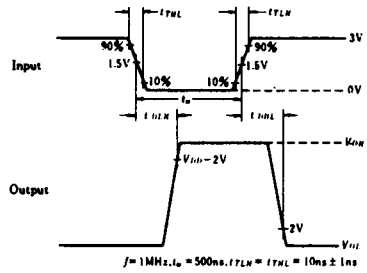
* V_{CC} = 5V, V_{DD} = 12V

■ SWITCHING CHARACTERISTICS (Ta=10 to 55°C, V_{CC}=5V ±5%, V_{DD}=12V ±5%)

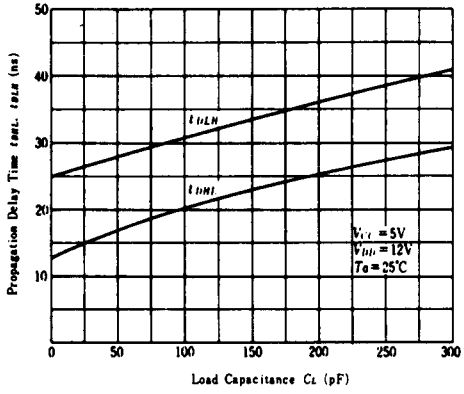
Item	Symbol	Test Condition	min	typ	max	Unit
Output Delay Time	t_{DLH}	C_L=200pF f=1MHz t_w=0.5μs	—	—	50	ns
	t_{DHL}		—	—	50	ns

● TEST CIRCUIT & WAVEFORMS

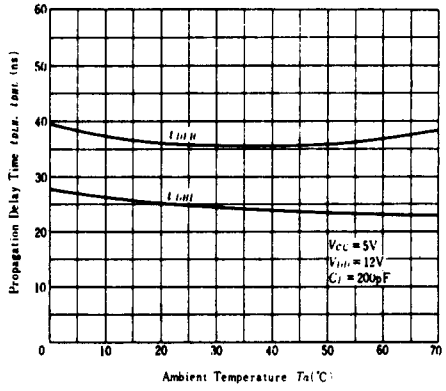




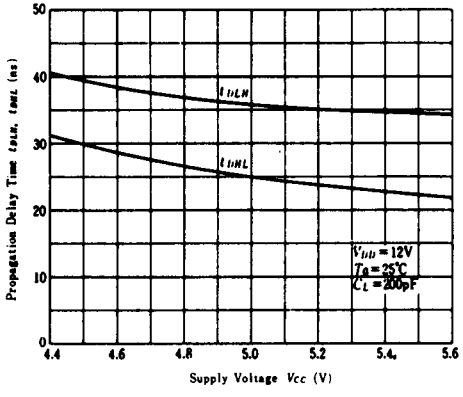
PROPAGATION DELAY TIME vs. LOAD CAPACITANCE



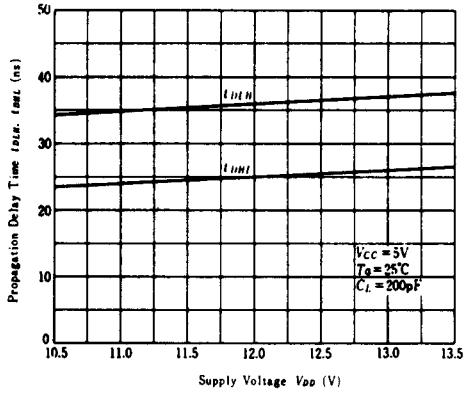
PROPAGATION DELAY TIME vs. AMBIENT TEMPERATURE



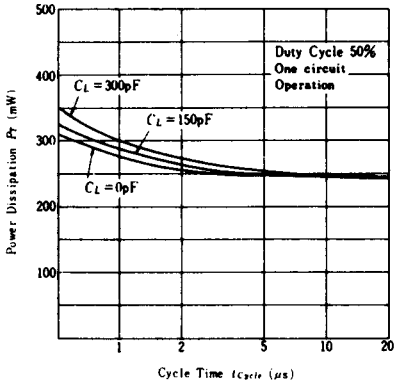
PROPAGATION DELAY TIME vs. SUPPLY VOLTAGE



PROPAGATION DELAY TIME vs. SUPPLY VOLTAGE



POWER DISSIPATION
vs. CYCLE TIME



■ITEMS REQUIRING CARE WHEN USING THE HD2916

When measuring or mounting the HD2916, consider the following:

1. At the time of "H" level output, if a short circuit occurs between the output terminal and the other terminal (the GND terminal or input terminal), the element will breakdown.
2. When measuring the input/output characteristic of the circuit, do not place the input level in the vicinity of the threshold voltage (about 1.5V) for more than 10 seconds. If this caution is neglected, the element may breakdown.