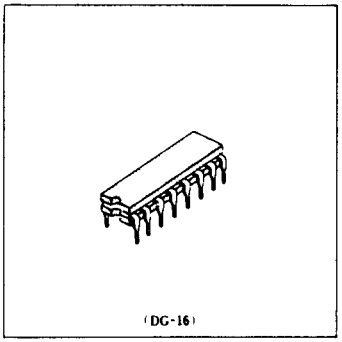
HD2912

Quadruple TTL-to-MOS Clock Drivers

The HD2912, a clock driver for the MOS memory, has basically the NAND function. Its input is a TTL level and its output becomes and N MOS clock input level. It operates on two power supplies – V_{CC} (5V) and V_{DD} (12V). It anticipates taking as its load a maximum of ten units of 4K-bit N MOS memories and can drive a load capacity of 400 pF at high speed.

- TTL-MOS level converter circuit
- Switching time: 50 ns (max.)
- Load capacity drivable: 600pF
- Mounted with 4 circuits
- Applicable temperature: 0 to 70°C



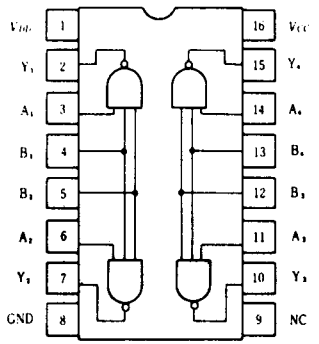
(DG-16)

■ABSOLUTE MAXIMUM RATINGS

Item	Symbol	HD2912	Unit
Supply Voltage	V_{CC}*	7.0	V
	V_{DD}*	18.0	V
Input Voltage	V_{in}*	5.5	V
Load Capacitance	C_L**	600	pF
Power Dissipation	P_T***	800	mW
Operating Temperature	T_{opr}	0 to +70	°C
Storage Temperature	T_{stg}	−65 to +150	°C

* With respect GND
** per circuit
*** per package

■PIN ARRANGEMENT



(Top View)

■RECOMMENDED OPERATING CONDITIONS

Item	Symbol	min	typ	max	Unit
Supply Voltage	V_{CC}	4.75	5.0	5.25	V
	V_{DD}	11.4	12	12.6	V
Operating Temperature	T_{opr}	0	25	70	°C
Load Capacitance	C_L	100	—	600	pF
Damping Resistance	R_D	10	—	—	Ω

■ELECTRICAL CHARACTERISTICS (Ta=0 to +70°C, V_{CC}=5V ±5%, V_{DD}=12V ±5%)

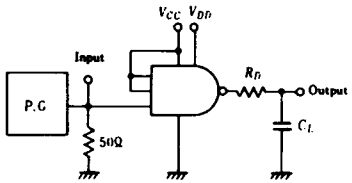
Item		Symbol	Test Condition	min	typ*	max	Unit
Input Voltage		V_{IL}		2.0	—	—	V
		V_{IH}		—	—	0.8	V
Output Voltage		V_{OL}	V_{in}=2V, I_{OL}=0.1mA	—	0.45	0.6	V
		V_{OH}	V_{in}=0.8V, I_{OH}=−0.1mA	V_{DD}−0.9	11.5	—	V
Input Current	A	I_{IL}	V_{in}=0.4V	—	−1	−1.6	mA
	B	I_{IL}		—	−2	−3.2	mA
	A	I_{IH}	V_{in}=2.4V	—	—	40	μA
	B	I_{IH}		—	—	80	μA
		I_I	V_{in}=5.5V	—	—	1	mA
Power Supply Current		I_{DDH}	V_{in}=0V	—	16	24	mA
		I_{DDL}	V_{in}=5V	—	—	0.5	mA
		I_{CCH}	V_{in}=0V	—	12	18	mA
		I_{CCL}	V_{in}=5V	—	67	100	mA
Input Clamp Voltage		V_I	I_{in}=−12mA	—	—	−1.5	V

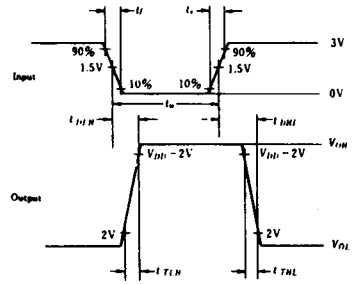
* V_{CC}=5V, V_{DD}=12V

■ SWITCHING CHARACTERISTICS (Ta=0 to +70°C, V_{CC}=5V, V_{DD}=12V)

Item	Symbol	Test Condition	min	typ	max	Unit
Rising Delay Time	t_{DLH}	C_L=300pF R_D=0Ω	—	35	50	ns
Falling Delay Time	t_{DHL}		—	25	45	ns
Rise Time	t_{TLH}		—	12	25	ns
Fall Time	t_{THL}		—	12	25	ns

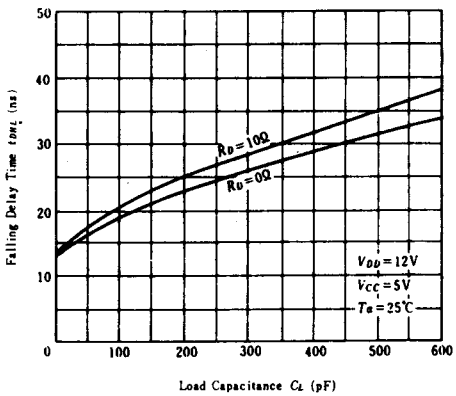
● TEST CIRCUIT AND WAVEFORMS



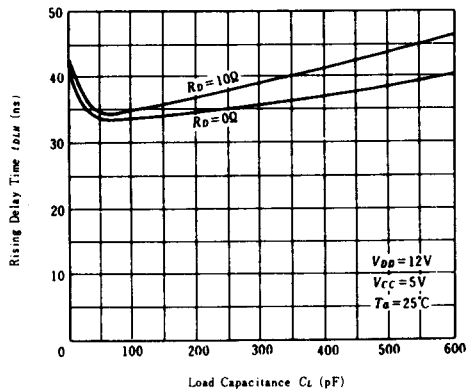


t_w = 250ns, $t_{w(L)}$ = 350ns, t_f = t_r = 10 ± 1ns

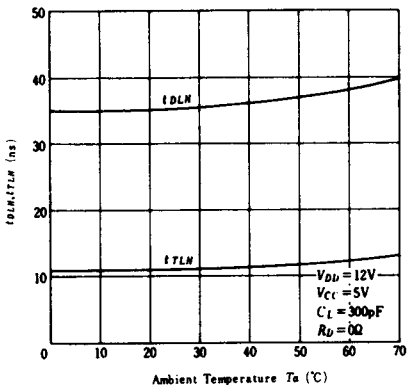
FALLING DELAY TIME vs. LOAD CAPACITANCE (1)



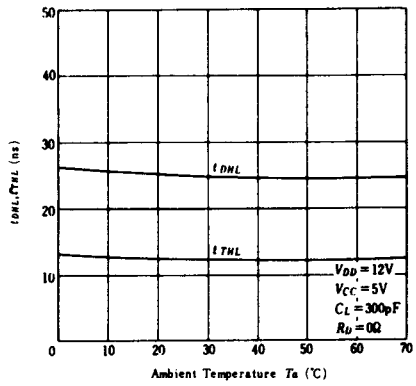
RISING DELAY TIME vs. LOAD CAPACITANCE (2)



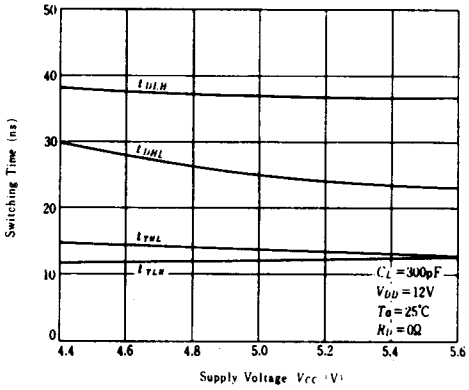
RISE TIME AND RISING DELAY TIME vs. AMBIENT TEMPERATURE



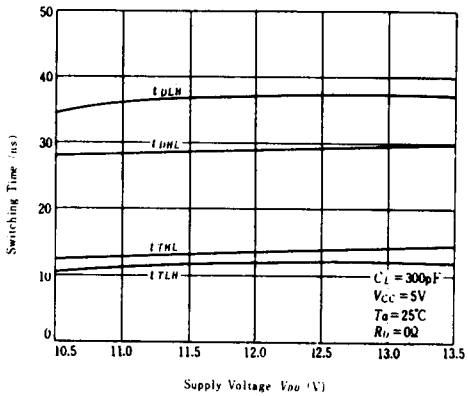
FALL TIME AND FALLING DELAY TIME vs. AMBIENT TEMPERATURE



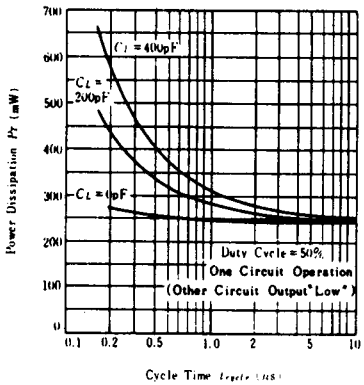
SWITCHING TIME vs. SUPPLY VOLTAGE (1)



SWITCHING TIME vs. SUPPLY VOLTAGE (2)



POWER DISSIPATION vs. CYCLE TIME



■ITEMS REQUIRING CARE WHEN USING THE HD2912

When measuring or mounting the HD2912, 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.
3. If its load capacity is less than a certainalue (100pF), sometimes this element cannot fully provide its function. Take note of this fact when designing a system.
4. When mounting this element, it is recommended providing the output terminal with a damping resistor (R_D) or a diode terminating circuit.