

# All Silicon Delay Line

SERIES: 3D7005

5 Taps



## DESCRIPTION

The 3D7000\* series delay line is a completely silicon delay line, which features unique circuits to compensate for temperature and power supply variations. It offers 5 & 10 equally spaced taps providing delays from 5 ns to 500 ns. This series comes in a standard 14 pin DIP package, which is compatible with other standard Hybrid delay lines. It is also offered in a 16 pin SOIC package for surface mount technology to reduce P.C. board area.

The 3D7000\* series is designed to produce both leading and trailing edge delay time with equal precision. Each tap capable of driving up to ten 74LS type loads.

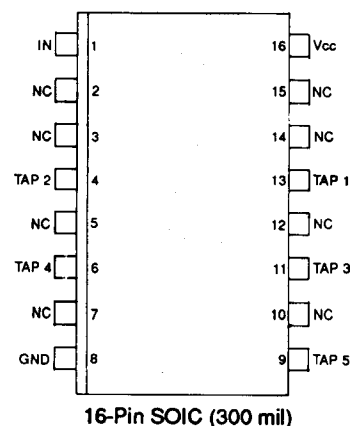
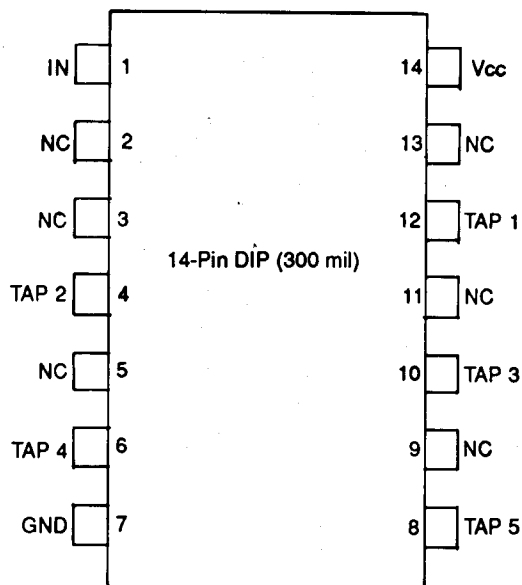
## FEATURES

- High operating frequency (100 MHz).
- Very low ground-bounce noise.
- Voltage & temperature compensated.
- Auto-insertable.
- TTL/CMOS compatible, Low power CMOS.
- Vapor phase, IR and wave solderable.

## SPECIFICATIONS

- Standard 14 pin DIP & 16 pin SOIC.
- Leading & trailing edge accuracy.
- Delay tolerance:  $\pm 5\%$  or  $\pm 2$  ns, whichever is greater (others on request).
- Custom delays available: Any increment from 5 to 50 ns not listed.
- Minimum input pulse width: 20% of total delay.
- Delay time vs. Vcc: 1.5 ns or 2% for 5 Vdc  $\pm 5\%$ .
- Temperature coefficient of delay:  $\pm 1$  ns or  $\pm 3\%$ , whichever is greater (0 to 70°C). (Others on request.)

## PIN DESCRIPTION



## TABLE

Part Number	Total Delay (ns)	Delay/Tap (ns)	Max Operating Freq (MHz)	Part Number	Total Delay (ns)	Delay/Tap (ns)	Max Operating Freq (MHz)
3D7005-25	25	5	67	3D7005-80	80	16	19
3D7005-30	30	6	55	3D7005-100	100	20	16
3D7005-35	35	7	43	3D7005-125	125	25	15
3D7005-40	40	8	41	3D7005-150	150	30	11
3D7005-45	45	9	37	3D7005-200	200	40	8
3D7005-50	50	10	33	3D7005-225	225	45	7
3D7005-60	60	12	28	3D7005-250	250	50	6
3D7005-75	75	15	22				

\*Patent Pending

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ABSOLUTE MAXIMUM RATINGS					
SYMBOL	PARAMETER	MIN	MAX	UNITS	NOTES
V <sub>dd</sub>	DC Supply Voltage	-0.3	7.0	V	
V <sub>in</sub>	Input Pin Voltage	-0.3	V <sub>dd</sub> + 0.3	V	
I <sub>in</sub>	Input Pin Current	-10.0	10.0	mA	25C
T <sub>strg</sub>	Storage Temperature	-55	150	C	
T <sub>lead</sub>	Lead Temperature		300	C	10 sec

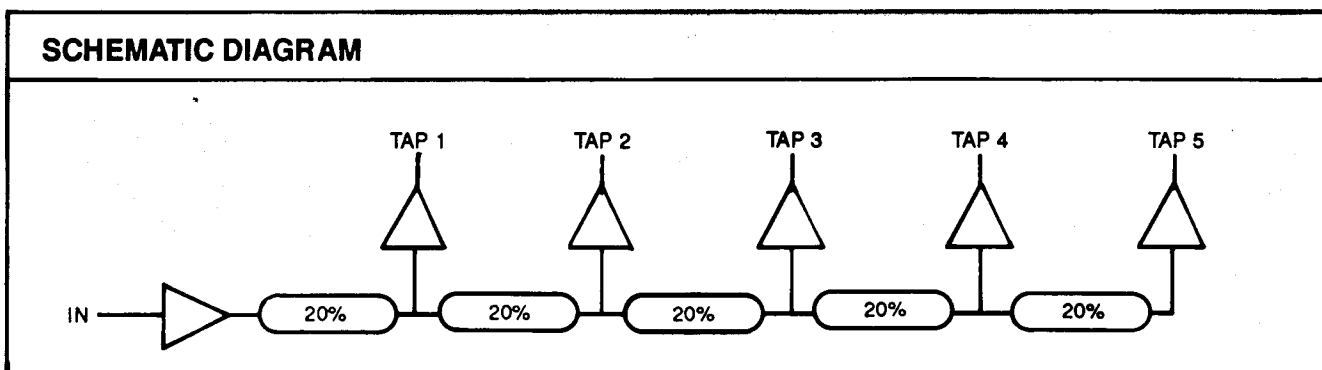
OPERATING CONDITIONS					
SYMBOL	PARAMETER	MIN	MAX	UNITS	NOTES
V <sub>dd</sub>	DC Supply Voltage	4.75	5.25	V	
*I <sub>dd</sub>	Static Supply		5	mA	
V <sub>ss</sub>	Circuit Ground	0.0	0.0	V	
T <sub>a</sub>	Ambient Temperature	0.0	70.0	C	
V <sub>ih</sub>	High Level Input Voltage	2.0		V	
V <sub>il</sub>	Low Level Input Voltage		0.8	V	
I <sub>oh</sub>	High Level Output Current		-4.0	mA	V <sub>cc</sub> =Min V <sub>oh</sub> =2.4
I <sub>ol</sub>	Low Level Output Current		4.0	mA	V <sub>cc</sub> =Min V <sub>ol</sub> =0.4
I <sub>i</sub>	Input Leakage Current	-1.0	1.0	μA	0V ≤ V <sub>i</sub> ≤ V <sub>DD</sub>
I <sub>iH</sub>	High Level Input Current		10	μA	V <sub>i</sub> = V <sub>DD</sub>
I <sub>iL</sub>	Low Level Input Current		-250	μA	V <sub>i</sub> = 0

\*I<sub>DD</sub> (Dynamic) = C<sub>LD</sub> (n) VF

Where: C<sub>LD</sub> = Average capacitance load/tap; n = # taps; V = V<sub>DD</sub> max.; F = Frequency

Input Capacitance = 10.0 pf typical.

Output Load Capacitance = 25 pf Max.



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## TEST CONDITIONS

### INPUT:

**Ambient Temperature:**  $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$   
**Supply Voltage ( $V_{CC}$ ):**  $5.0\text{V} \pm 0.1\text{V}$   
**Input Pulse:** High =  $3.0\text{V} \pm 0.1\text{V}$   
 Low =  $0.0\text{V} \pm 0.1\text{V}$   
**Source Impedance:** 50 ohm Max.  
**Rise and Fall Time:** 3.0 ns Max. (measured between 0.6V and 2.4V)  
**Pulse Width:**  $1.5 \times$  total delay  
**Period:**  $10 \times$  total delay

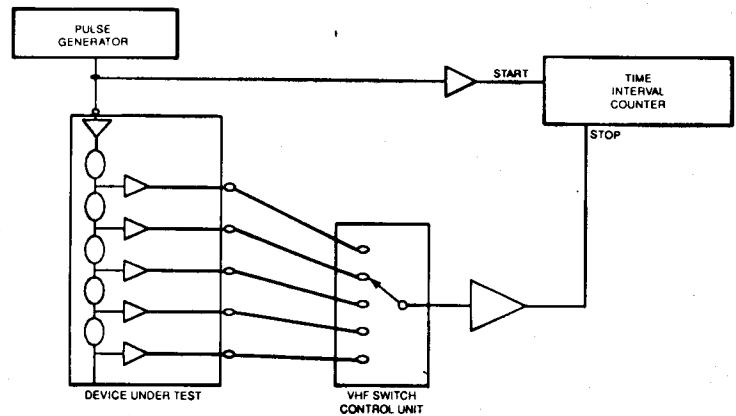
### OUTPUT:

Each output is loaded with the equivalent of one 74F04 input gate. Delay is measured at the 1.5V level on the rising and falling edge.

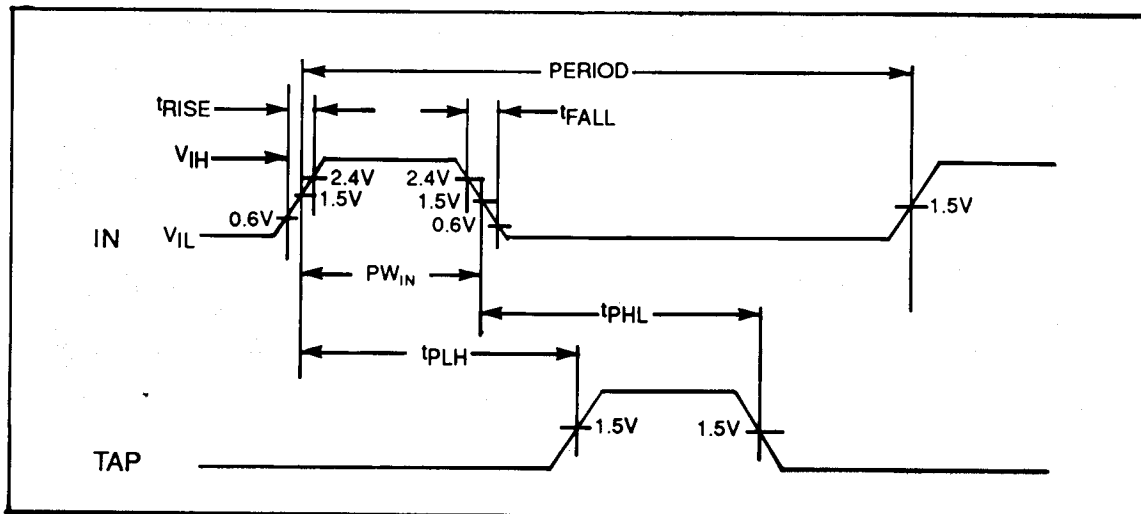
### NOTE:

Above conditions are for test only and do not restrict the operation of the device under other data sheet conditions.

## TEST CIRCUIT



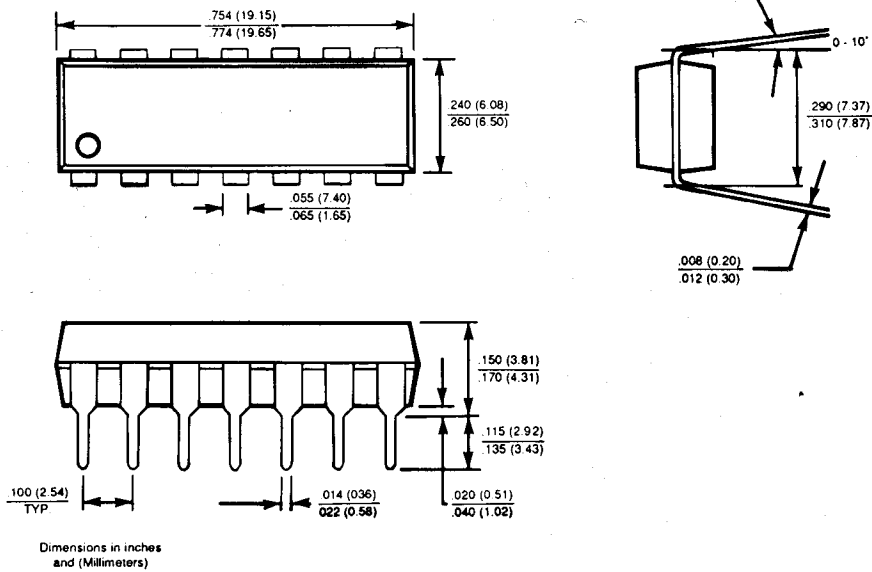
## TIMING DIAGRAM



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## PACKAGES

### 14-PIN DIP (300 MIL)



### 16-PIN SOIC (300 MIL)

