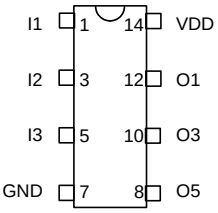
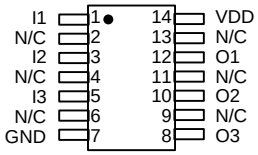
TRIPLE, HCMOS-INTERFACED FIXED DELAY LINE (SERIES MDU3C)

FEATURES

- Three independent delay lines
- Fits standard 14-pin DIP socket
- Low profile
- Auto-insertable
- Input & outputs fully CMOS interfaced & buffered
- 10 T^2L fan-out capability

PACKAGES





MDU3C-xx	DIP	Military SMD
MDU3C-xxA2	Gull-Wing	MDU3C-xxMC2
MDU3C-xxB2	J-Lead	
MDU3C-xxM	Military DIP	

FUNCTIONAL DESCRIPTION

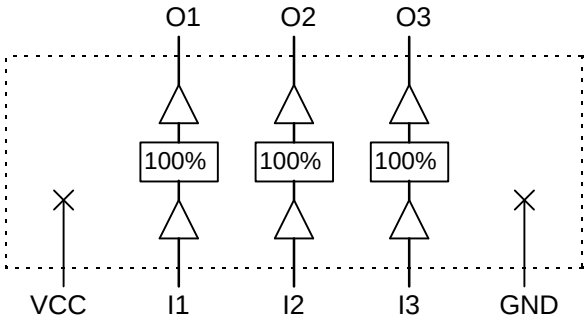
The MDU3C-series device is a 3-in-1 digitally buffered delay line. The signal inputs (I1-I3) are reproduced at the outputs (O1-O3), shifted in time by an amount determined by the device dash number (See Table). The delay lines function completely independently of each other.

PIN DESCRIPTIONS

I1-I3	Signal Inputs
O1-O3	Signal Outputs
VDD	+5 Volts
GND	Ground

SERIES SPECIFICATIONS

- **Minimum input pulse width:** 100% of total delay
- **Output rise time:** 8ns typical
- **Supply voltage:** 5VDC ± 5%
- **Supply current:** I_{CCL} = 40µa typical
  I_{CCH} = 60ma typical
- **Operating temperature:** 0° to 70° C
- **Temp. coefficient of total delay:** 300 PPM/°C



Functional block diagram

DASH NUMBER SPECIFICATIONS

Part Number	Delay Per Line (ns)
MDU3C-10	10 ± 2.0
MDU3C-15	15 ± 2.0
MDU3C-20	20 ± 2.0
MDU3C-25	25 ± 2.0
MDU3C-30	30 ± 2.0
MDU3C-40	40 ± 2.0
MDU3C-50	50 ± 2.5
MDU3C-60	60 ± 3.0
MDU3C-75	75 ± 3.7
MDU3C-100	100 ± 5.0

NOTE: Any dash number between 10 and 100 not shown is also available.

©1997 Data Delay Devices

APPLICATION NOTES

HIGH FREQUENCY RESPONSE

The MDU3C tolerances are guaranteed for input pulse widths and periods greater than those specified in the test conditions. Although the device will function properly for pulse widths as small as 100% of the total delay and periods as small as 200% of the total delay (for a symmetric input), the delays may deviate from their values at low frequency. However, for a given input condition, the deviation will be repeatable from pulse to pulse. Contact technical support at Data Delay Devices if your application requires device testing at a specific input condition.

POWER SUPPLY BYPASSING

The MDU3C relies on a stable power supply to produce repeatable delays within the stated tolerances. A 0.1uf capacitor from VDD to GND, located as close as possible to the VDD pin, is recommended. A wide VDD trace and a clean ground plane should be used.

DEVICE SPECIFICATIONS

TABLE 1: ABSOLUTE MAXIMUM RATINGS

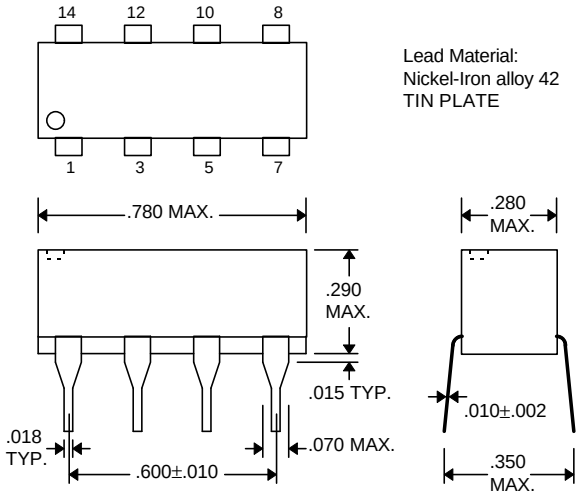
PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTES
DC Supply Voltage	V_{DD}	-0.3	7.0	V	
Input Pin Voltage	V_{IN}	-0.3	V_{DD}+0.3	V	
Storage Temperature	T_{STRG}	-55	150	C	
Lead Temperature	T_{LEAD}		300	C	10 sec

TABLE 2: DC ELECTRICAL CHARACTERISTICS

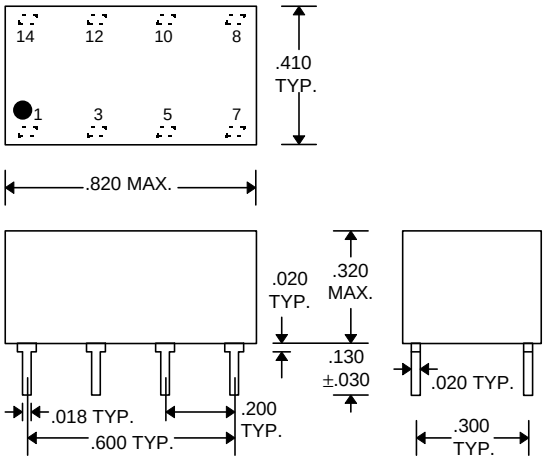
(0C to 70C, 4.75V to 5.25V)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
High Level Output Voltage	V_{OH}	3.98	4.4		V	V_{DD} = 5.0, I_{OH} = MAX V_{IH} = MIN, V_{IL} = MAX
Low Level Output Voltage	V_{OL}		0.15	0.26	V	V_{DD} = 5.0, I_{OL} = MAX V_{IH} = MIN, V_{IL} = MAX
High Level Output Current	I_{OH}			-4.0	mA	
Low Level Output Current	I_{OL}			4.0	mA	
High Level Input Voltage	V_{IH}	3.15			V	
Low Level Input Voltage	V_{IL}			1.35	V	
Input Current	I_{IH}			0.10	µA	V_{DD} = 5.0

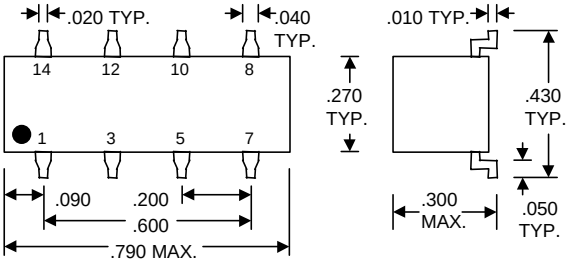
PACKAGE DIMENSIONS



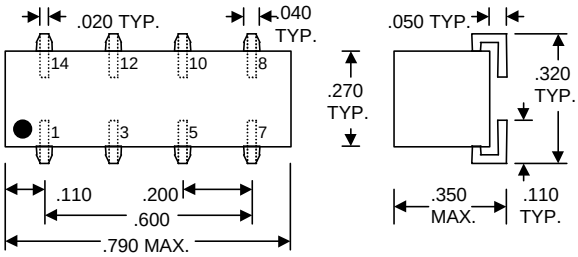
MDU3C-xx (Commercial DIP)



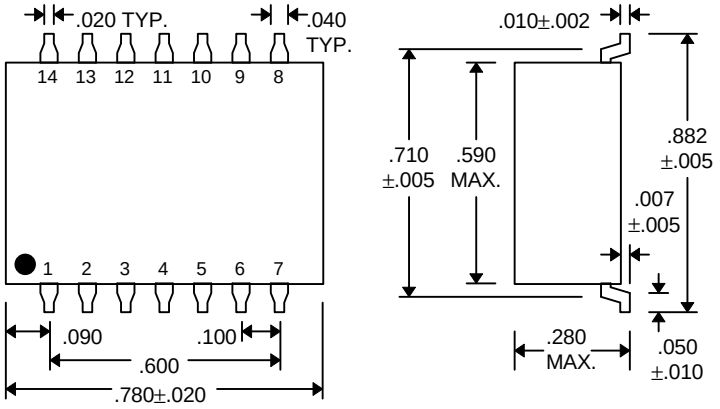
MDU3C-xxM (Military DIP)



MDU3C-xxA2 (Commercial Gull-Wing)



MDU3C-xxB2 (Commercial J-Lead)



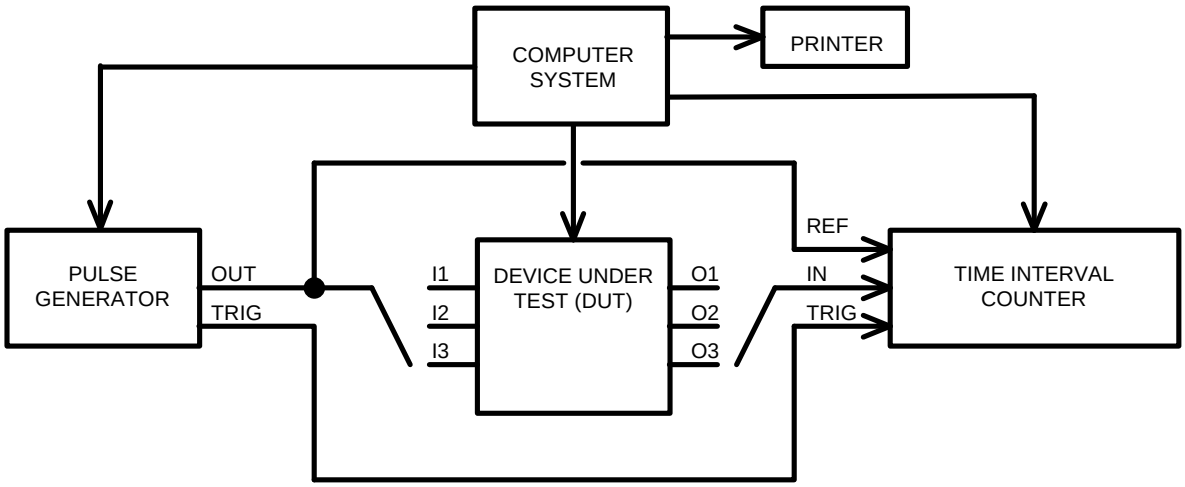
MDU3C-xxMC2 (Military SMD)

DELAY LINE AUTOMATED TESTING

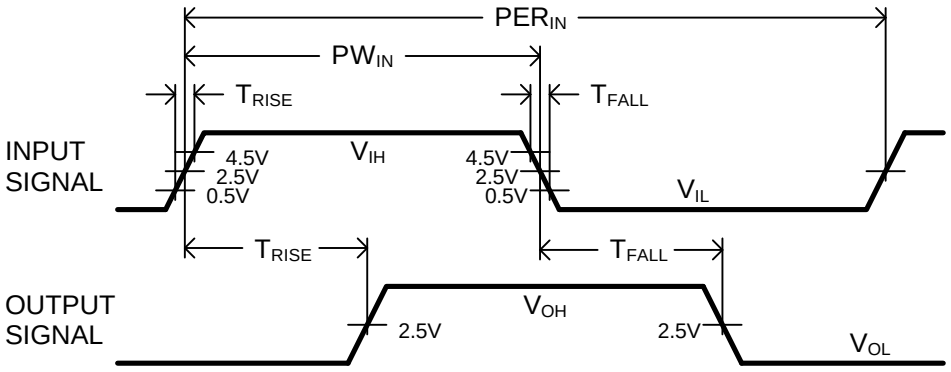
TEST CONDITIONS

INPUT:		**OUTPUT:**	
Ambient Temperature:	25°C ± 3°C	**Load:**	1 FAST-TTL Gate
Supply Voltage (VDD):	5.0V ± 0.1V	**C_{load}:**	5pf ± 10%
Input Pulse:	High = 5.0V ± 0.1V Low = 0.0V ± 0.1V	**Threshold:**	2.5V (Rising & Falling)
Source Impedance:	50Ω Max.		
Rise/Fall Time:	5.0 ns Max. (measured between 0.5V and 4.5V)		
Pulse Width:	PW_{IN} = 1.5 x Total Delay		
Period:	PER_{IN} = 10 x Total Delay		

NOTE: The above conditions are for test only and do not in any way restrict the operation of the device.



Test Setup



Timing Diagram For Testing