

# 5-TAP DIP/SMD DELAY LINE

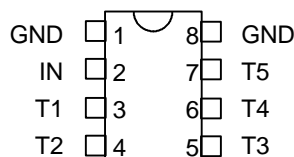
$$T_D/T_R = 3$$

(SERIES 1516)



## FEATURES

- 5 taps of equal delay increment
- Delays to 200ns
- Low profile
- Epoxy encapsulated
- Meets or exceeds MIL-D-23859C



## PACKAGES

IN Signal Input  
T1-T5 Tap Outputs  
GND Ground

**Note:** Standard pinout shown  
Other pinouts available

## FUNCTIONAL DESCRIPTION

The 1516-series device is a fixed, single-input, five-output, passive delay line. The signal input (IN) is reproduced at the outputs (T1-T5) in equal increments. The delay from IN to T5 ( $T_D$ ) and the characteristic impedance of the line ( $Z$ ) are determined by the dash number. The rise time ( $T_R$ ) of the line is 30% of  $T_D$ , and the 3dB bandwidth is given by  $1.05 / T_D$ . The device is available in a 8-pin DIP (1516) or a 8-pin SMD (1516S), and a wide range of pinouts may be specified.

Part numbers are constructed according to the scheme shown at right. For example, 1516C-101-500B is a 290 mil DIP, 100ns, 50 $\Omega$  delay line with pinout code B. Similarly, 1516SB-151-501 is a 240 mil SMD, 150ns, 500 $\Omega$  delay line with standard pinout.

## PART NUMBER CONSTRUCTION

1516(S)m - xxx - zzz p

**MOUNTING HEIGHT CODE**  
See Table

**DELAY TIME**  
Expressed in nanoseconds (ns)  
First two digits are significant figures  
Last digit specifies # of zeros to follow

**IMPEDANCE**  
Expressed in nanoseconds (ns)  
First two digits are significant figures  
Last digit specifies # of zeros to follow

**PINOUT CODE**  
See Table  
Omit for STD pinout

## SERIES SPECIFICATIONS

- **Dielectric breakdown:** 50 Vdc
- **Distortion @ output:** 10% max.
- **Operating temperature:** -55°C to +125°C
- **Storage temperature:** -55°C to +125°C
- **Temperature coefficient:** 100 PPM/°C

## PINOUT CODES

CODE	IN	T1	T2	T3	T4	T5	GND
STD	2	3	4	5	6	7	1,8
A	1	2	3	4	6	7	5,8
B	1	7	3	6	4	5	8
C	7	2	6	3	5	4	1,8
D	1	2	7	3	6	4	5,8

## MOUNTING HEIGHT CODES

CODE	HEIGHT (MAX)	DIP	SMD
A	0.187	Yes	No
B	0.240	Yes	Yes
C	0.290	Yes	Yes

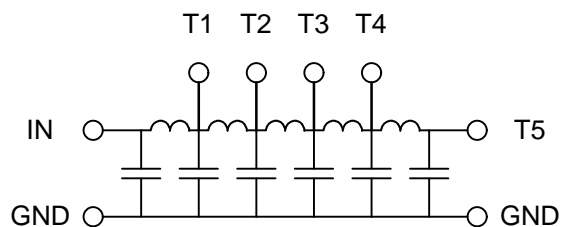
**Note:** Codes A and B are not available  
for all values of  $T_D$   
Contact technical staff for details

## DELAY SPECIFICATIONS

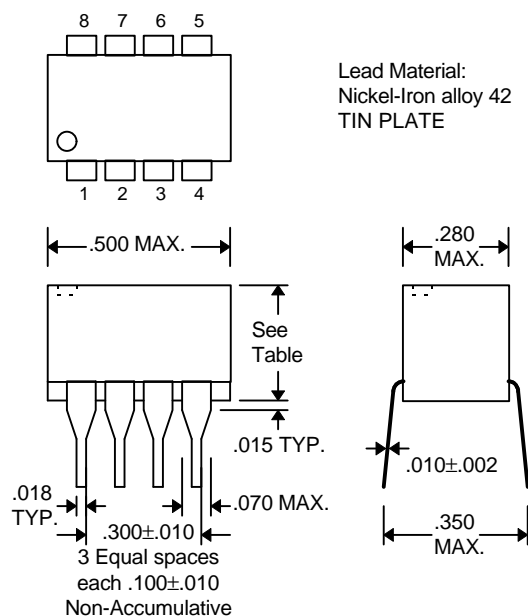
$T_D$ (ns)	$T_1$ (ns)	$T_R$ (ns)	ATTENUATION (%) TYPICAL				
			Z=50 $\Omega$	Z=100 $\Omega$	Z=200 $\Omega$	Z=300 $\Omega$	Z=500 $\Omega$
5	1.0	3.0	N/A	5	N/A	N/A	N/A
10	2.0	4.0	3	5	5	N/A	N/A
15	3.0	5.0	3	5	5	N/A	N/A
20	4.0	6.0	3	5	5	5	N/A
25	5.0	7.0	3	5	5	5	7
30	6.0	10.0	3	5	5	5	7
40	8.0	13.0	3	5	5	5	7
50	10.0	15.0	3	5	5	7	7
60	12.0	20.0	3	5	6	7	8
75	15.0	25.0	3	5	6	7	8
80	16.0	26.0	4	5	6	7	8
100	20.0	30.0	4	5	6	7	8
110	22.0	32.0	4	5	6	7	8
125	25.0	40.0	4	5	6	7	8
150	30.0	50.0	N/A	5	8	10	10
180	36.0	60.0	N/A	7	8	10	10
200	50.0	70.0	N/A	8	10	12	12

**Notes:**  $T_1$  represents nominal tap-to-tap delay increment  
Tolerance on  $T_D = \pm 5\%$  or  $\pm 2$ ns, whichever is greater  
Tolerance on  $T_1 = \pm 5\%$  or  $\pm 1$ ns, whichever is greater  
"N/A" indicates that delay is not available at this Z

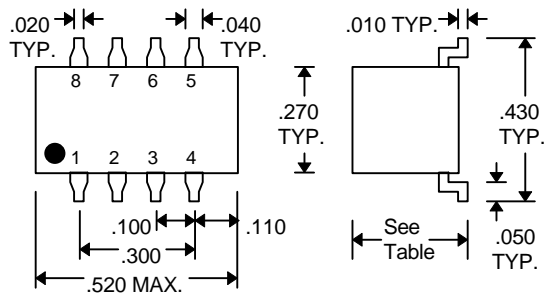
## FUNCTIONAL DIAGRAM



## PACKAGE DIMENSIONS



### 1516-xx (DIP)



### 1516S-xx (Gull-Wing)

## PASSIVE DELAY LINE TEST SPECIFICATIONS

### TEST CONDITIONS

#### INPUT:

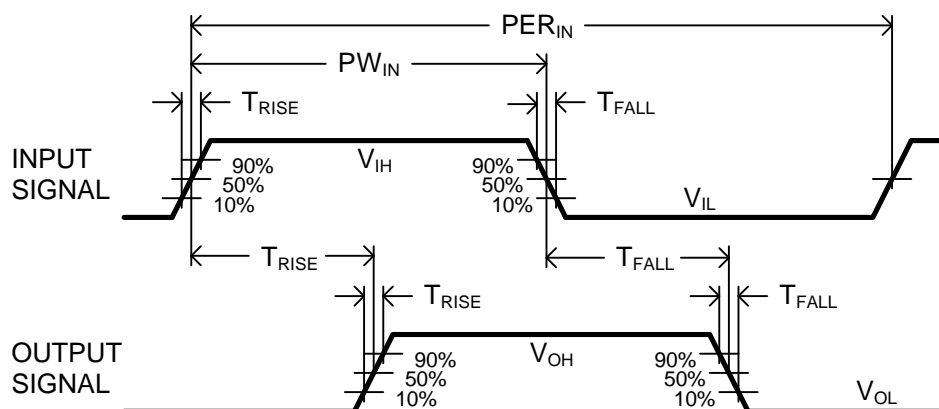
**Ambient Temperature:**  $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$   
**Input Pulse:** High = 3.0V typical  
 Low = 0.0V typical  
**Source Impedance:**  $50\Omega$  Max.  
**Rise/Fall Time:** 3.0 ns Max. (measured at 10% and 90% levels)

#### OUTPUT:

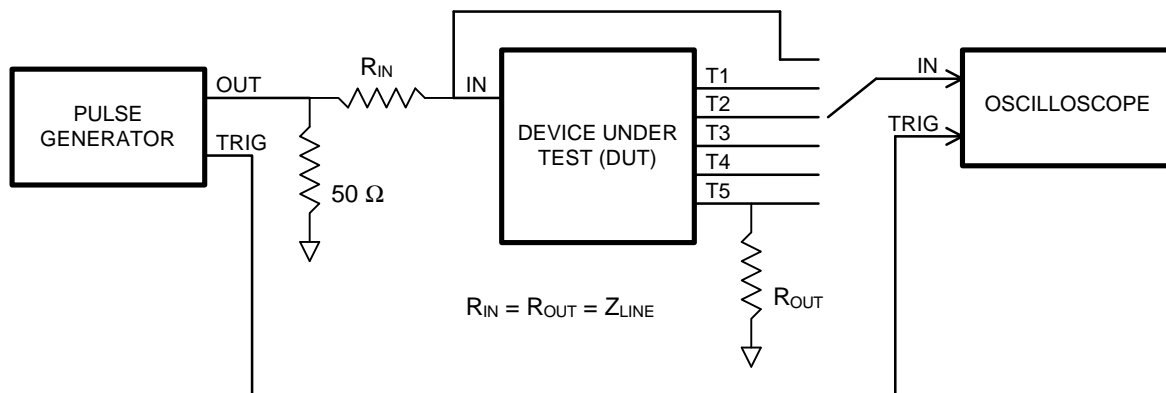
**$R_{\text{load}}$ :**  $10\text{M}\Omega$   
 **$C_{\text{load}}$ :** 10pf  
**Threshold:** 50% (Rising & Falling)

**Pulse Width ( $T_D \leq 75\text{ns}$ ):**  $PW_{\text{IN}} = 100\text{ns}$   
**Period ( $T_D \leq 75\text{ns}$ ):**  $PER_{\text{IN}} = 1000\text{ns}$   
**Pulse Width ( $T_D > 75\text{ns}$ ):**  $PW_{\text{IN}} = 2 \times T_D$   
**Period ( $T_D > 75\text{ns}$ ):**  $PER_{\text{IN}} = 10 \times T_D$

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



Timing Diagram For Testing



Test Setup