

# MECHANICALLY VARIABLE DELAY LINE (SERIES 1509 & 1509J)

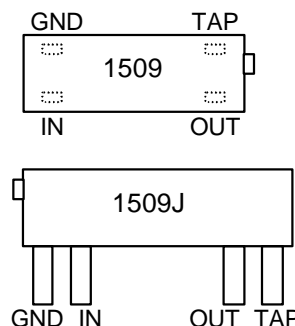
**data  
delay  
devices, inc.**



## FEATURES

- Ideal for "Set and Forget" applications
- Multi-turn adjustment screw  
(1509: 20 turns, 1509J: 60 turns)
- Stackable for PC board economy
- Fits standard 14-pin DIP socket (1509)
- 20mil x 10mil flat leads (1509)
- #20 gauge leads (1509J)
- **Resolution:** As low as 0.15ns
- **Dielectric breakdown:** 50 Vdc
- **Temperature coefficient:** 200 PPM/°C

## PACKAGES



1509-xxz  
1509J-xxz  
xx = Max Delay ( $T_D$ )  
z = Impedance Code

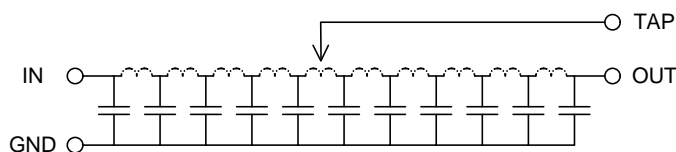
## FUNCTIONAL DESCRIPTION

The 1509- and 1509J-series devices are mechanically variable, passive delay lines. The signal input (IN) is reproduced at the tap output (TAP), shifted by an amount which can be adjusted between 0 and  $T_D$ , where  $T_D$  is the device dash number. The fixed output (OUT) reproduces the input, delayed by  $T_D$ , and must be terminated to match the characteristic impedance of the line, which is given by the letter code that follows the dash number (See Table). The tap output is unbuffered. The 3dB bandwidth of the line is given by  $3.5 / T_R$ , where  $T_R$  is the rise time of the line (See Table).

## PIN DESCRIPTIONS

IN Signal Input  
TAP Variable Output  
OUT Fixed Output  
GND Ground

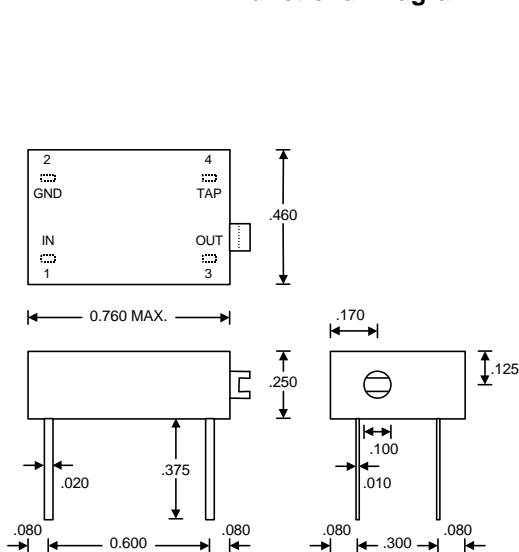
## SERIES SPECIFICATIONS



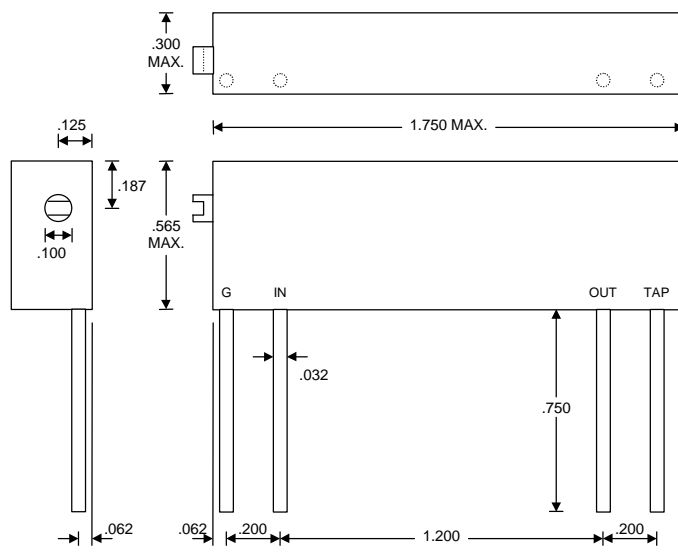
Functional Diagram

## DASH NUMBER SPECIFICATIONS

Part Number	Max Dly (ns)	TR (ns)	Imped ( $\Omega$ )	RDC ( $\Omega$ )
1509-05B	5	3	100	0.4
1509-20C	20	8	200	1.0
1509-20D	20	8	250	1.0
1509J-10B	10	4	100	0.8
1503J-40C	40	9	200	1.5



Package Dimensions - 1509



Package Dimensions - 1509J

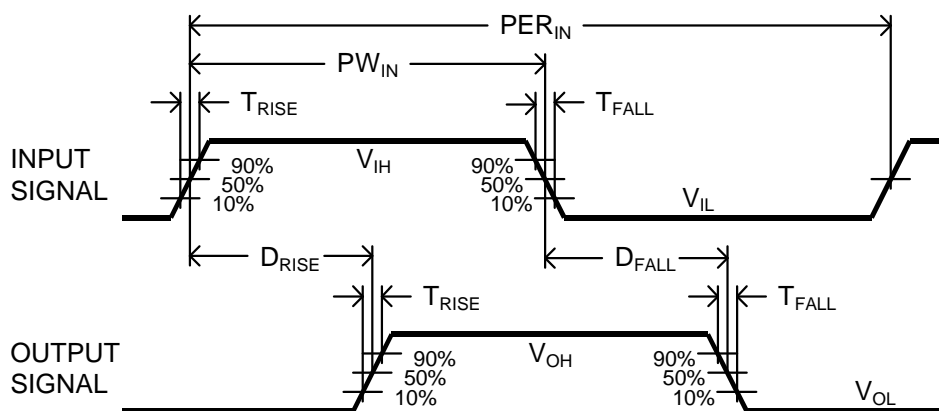
©2001 Data Delay Devices

## PASSIVE DELAY LINE TEST SPECIFICATIONS

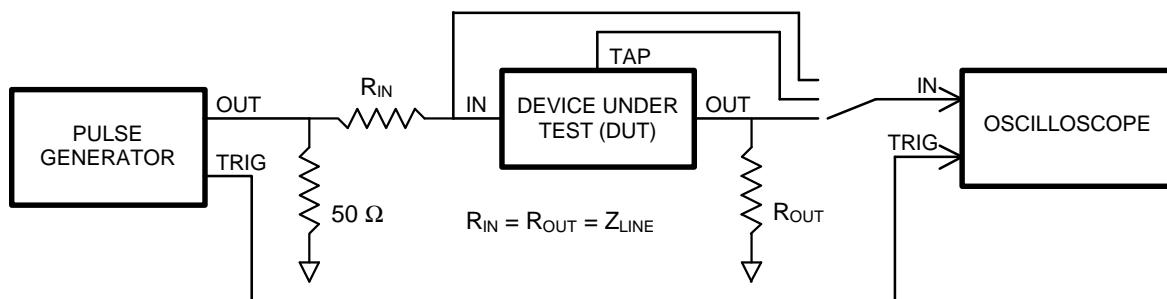
### TEST CONDITIONS

<b>INPUT:</b>		<b>OUTPUT:</b>	
<b>Ambient Temperature:</b>	25°C ± 3°C	<b>R<sub>load</sub>:</b>	10MΩ
<b>Input Pulse:</b>	High = 3.0V typical Low = 0.0V typical	<b>C<sub>load</sub>:</b>	10pf
<b>Source Impedance:</b>	50Ω Max.	<b>Threshold:</b>	50% (Rising & Falling)
<b>Rise/Fall Time:</b>	3.0 ns Max. (measured at 10% and 90% levels)		
<b>Pulse Width (T<sub>D</sub> ≤ 75ns):</b>	PW <sub>IN</sub> = 100ns		
<b>Period (T<sub>D</sub> ≤ 75ns):</b>	PER <sub>IN</sub> = 1000ns		
<b>Pulse Width (T<sub>D</sub> &gt; 75ns):</b>	PW <sub>IN</sub> = 2 x T <sub>D</sub>		
<b>Period (T<sub>D</sub> &gt; 75ns):</b>	PER <sub>IN</sub> = 10 x T <sub>D</sub>		

**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**