

FIXED SIP DELAY LINE

$$T_D/T_R = 5$$

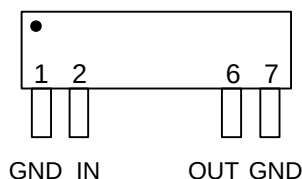
(SERIES 1513)



FEATURES

- Fast rise time for high frequency applications
- Very narrow device (SIP package)
- Stackable for PC board economy
- Low profile
- Epoxy encapsulated
- Meets or exceeds MIL-D-23859C

PACKAGES



1513-xxz

xx = Delay (T_D)

z = Impedance Code

FUNCTIONAL DESCRIPTION

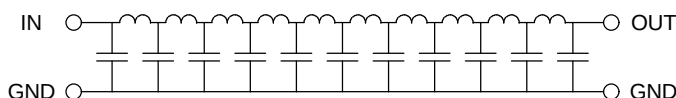
The 1513-series device is a fixed, single-input, single-output, passive delay line. The signal input (IN) is reproduced at the output (OUT), shifted by a time (T_D) given by the device dash number. The characteristic impedance of the line is given by the letter code that follows the dash number (See Table). The rise time (T_R) of the line is 20% of T_D , and the 3dB bandwidth is given by $1.75 / T_D$.

PIN DESCRIPTIONS

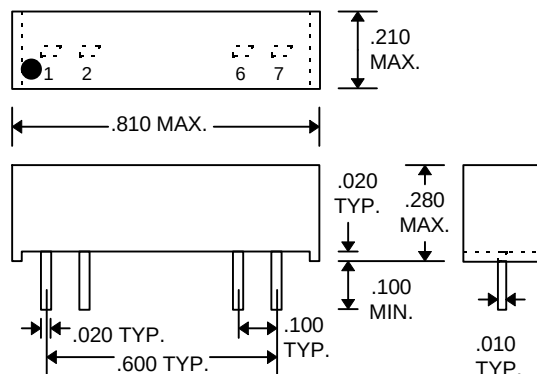
IN Signal Input
OUT Signal Output
GND Ground

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



Functional Diagram



Package Dimensions

DASH NUMBER SPECIFICATIONS

Part Number	Delay (ns)	Rise Time (ns)	Impedance (Ω)
1513-2.5A	2.5 $\pm$ 1.0	1.0	50
1513-5A	5.0 $\pm$ 1.0	1.0	50
1513-10A	10.0 $\pm$ 1.0	2.0	50
1513-15A	15.0 $\pm$ 1.0	3.0	50
1513-20A	20.0 $\pm$ 1.0	4.0	50
1513-25A	25.0 $\pm$ 1.3	5.0	50
1513-30A	30.0 $\pm$ 1.5	6.0	50
1513-40A	40.0 $\pm$ 2.0	8.0	50
1513-50A	50.0 $\pm$ 2.5	10.0	50
1513-60A	60.0 $\pm$ 3.0	12.0	50
1513-80A	80.0 $\pm$ 4.0	16.0	50
1513-100A	100 $\pm$ 5.0	20.0	50
1513-3.5Y	3.5 $\pm$ 1.0	1.0	75
1513-7.5Y	7.5 $\pm$ 1.0	1.5	75
1513-15Y	15.0 $\pm$ 1.0	3.0	75
1513-22.5Y	22.5 $\pm$ 1.2	4.5	75
1513-30Y	30.0 $\pm$ 1.5	6.0	75
1513-37.5Y	37.5 $\pm$ 1.9	7.5	75
1513-45Y	45.0 $\pm$ 2.3	9.0	75
1513-60Y	60.0 $\pm$ 3.0	12.0	75
1513-75Y	75.0 $\pm$ 3.8	15.0	75
1513-90Y	90.0 $\pm$ 4.5	18.0	75
1513-105Y	105 $\pm$ 5.3	21.0	75
1513-120Y	120 $\pm$ 6.0	24.0	75
1513-135Y	135 $\pm$ 6.8	27.0	75
1513-150Y	150 $\pm$ 7.5	30.0	75
1513-5B	5.0 $\pm$ 1.0	1.0	100
1513-10B	10.0 $\pm$ 1.0	2.0	100
1513-20B	20.0 $\pm$ 1.0	4.0	100
1513-30B	30.0 $\pm$ 1.5	6.0	100
1513-40B	40.0 $\pm$ 2.0	8.0	100
1513-50B	50.0 $\pm$ 2.5	10.0	100
1513-60B	60.0 $\pm$ 3.0	12.0	100
1513-80B	80.0 $\pm$ 4.0	16.0	100
1513-100B	100 $\pm$ 5.0	20.0	100
1513-120B	120 $\pm$ 6.0	24.0	100
1513-140B	140 $\pm$ 7.0	28.0	100
1513-150B	150 $\pm$ 7.5	30.0	100

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: 50Ω Max.
Rise/Fall Time: 3.0 ns Max. (measured at 10% and 90% levels)

Pulse Width ($T_D \leq 75\text{ns}$): $PW_{IN} = 100\text{ns}$

Period ($T_D \leq 75\text{ns}$): $PER_{IN} = 1000\text{ns}$

Pulse Width ($T_D > 75\text{ns}$): $PW_{IN} = 2 \times T_D$

Period ($T_D > 75\text{ns}$): $PER_{IN} = 10 \times T_D$

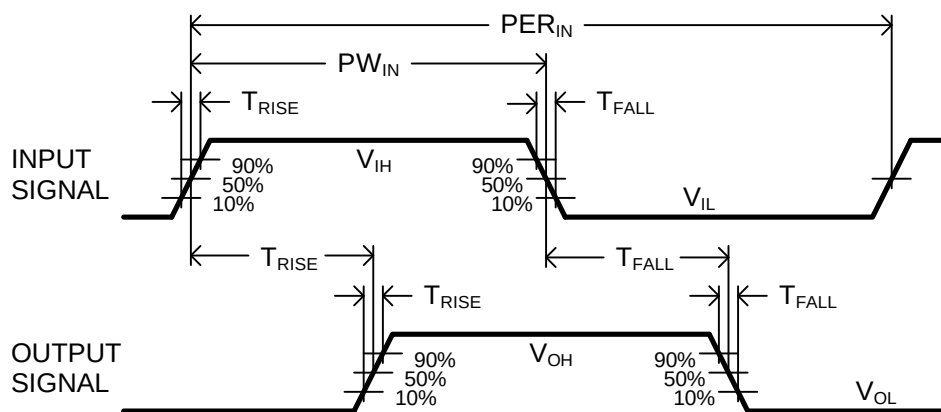
OUTPUT:

R_{load} : $10M\Omega$

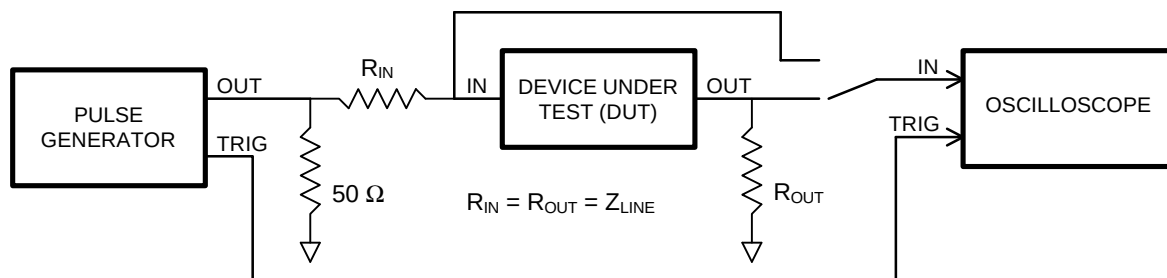
C_{load} : 10pf

Threshold: 50% (Rising & Falling)

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