

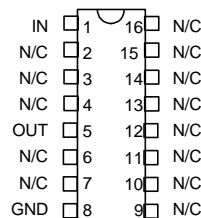
FIXED DIP DELAY LINE

$T_D/T_R = 5$
(SERIES 1504)

**data
delay
devices, inc.** 

FEATURES

- Fast rise time for high frequency applications
- Delays as large as 1000ns available
- Low DC resistance
- Standard 16-pin DIP package
- Epoxy encapsulated
- Meets or exceeds MIL-D-23859C

PACKAGE

1504-xxz

xx = Delay (T_D)

z = Impedance Code

FUNCTIONAL DESCRIPTION

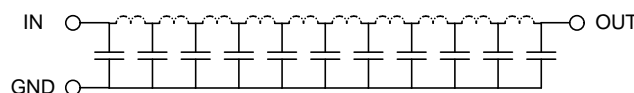
The 1504-series device is a fixed, single-input, single-output, passive delay line. The signal input (IN) is reproduced at the output (OUT), shifted by a time (T_D) given by the device dash number. The characteristic impedance of the line is given by the letter code that follows the dash number (See 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

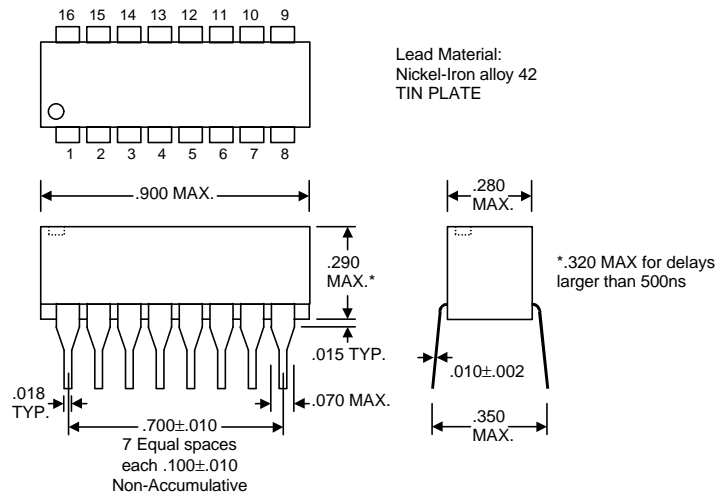
- Dielectric breakdown: 50 Vdc
- Distortion @ output: 10% max.
- Operating temperature: -55°C to +125°C
- Storage temperature: -55°C to +125°C
- Temperature coefficient: 100 PPM/°C



Functional Diagram

DASH NUMBER SPECIFICATIONS

| Part Number | Delay (ns) | Imped (Ω) | RDC (Ω) | Part Number | Delay (ns) | Imped (Ω) | RDC (Ω) | Part Number | Delay (ns) | Imped (Ω) | RDC (Ω) |
|-------------|----------------|--------------------|------------------|-------------|----------------|--------------------|------------------|-------------|----------------|--------------------|------------------|
| 1504-20A | 20 \pm 1.0 | 50 | 1.0 | 1504-160C | 160 \pm 8.0 | 200 | 7.0 | 1504-40F | 40 \pm 2.0 | 400 | 8.5 |
| 1504-25A | 25 \pm 1.3 | 50 | 1.0 | 1504-180C | 180 \pm 9.0 | 200 | 8.5 | 1504-80F | 80 \pm 4.0 | 400 | 9.0 |
| 1504-30A | 30 \pm 1.5 | 50 | 1.2 | 1504-240C | 240 \pm 12.0 | 200 | 9.5 | 1504-120F | 120 \pm 6.0 | 400 | 9.0 |
| 1504-40A | 40 \pm 2.0 | 50 | 1.5 | 1504-300C | 300 \pm 15.0 | 200 | 16.0 | 1504-160F | 160 \pm 8.0 | 400 | 16.0 |
| 1504-45A | 45 \pm 2.3 | 50 | 1.5 | 1504-400C | 400 \pm 20.0 | 200 | 18.0 | 1504-200F | 200 \pm 10.0 | 400 | 18.0 |
| 1504-60A | 60 \pm 3.0 | 50 | 1.5 | 1504-25D | 25 \pm 1.3 | 250 | 5.0 | 1504-240F | 240 \pm 12.0 | 400 | 20.0 |
| 1504-75A | 75 \pm 3.8 | 50 | 1.8 | 1504-50D | 50 \pm 2.5 | 250 | 5.5 | 1504-320F | 320 \pm 16.0 | 400 | 26.0 |
| 1504-100A | 100 \pm 5.0 | 50 | 2.0 | 1504-75D | 75 \pm 3.8 | 250 | 6.0 | 1504-360F | 360 \pm 18.0 | 400 | 28.0 |
| 1504-10B | 10 \pm 1.0 | 100 | 1.0 | 1504-100D | 100 \pm 5.0 | 250 | 7.0 | 1504-480F | 480 \pm 24.0 | 400 | 38.0 |
| 1504-20B | 20 \pm 1.0 | 100 | 1.5 | 1504-125D | 125 \pm 6.3 | 250 | 8.0 | 1504-600F | 600 \pm 30.0 | 400 | 45.0 |
| 1504-30B | 30 \pm 1.5 | 100 | 1.5 | 1504-150D | 150 \pm 7.5 | 250 | 8.5 | 1504-800F | 800 \pm 40.0 | 400 | 40.0 |
| 1504-40B | 40 \pm 2.0 | 100 | 1.8 | 1504-200D | 200 \pm 10.0 | 250 | 10.0 | 1504-50G | 50 \pm 2.5 | 500 | 6.0 |
| 1504-50B | 50 \pm 2.5 | 100 | 2.0 | 1504-225D | 225 \pm 12.0 | 250 | 11.0 | 1504-100G | 100 \pm 5.0 | 500 | 10.0 |
| 1504-60B | 60 \pm 3.0 | 100 | 3.0 | 1504-300D | 300 \pm 15.0 | 250 | 17.0 | 1504-150G | 150 \pm 7.5 | 500 | 16.0 |
| 1504-80B | 80 \pm 4.0 | 100 | 3.5 | 1504-375D | 375 \pm 18.8 | 250 | 20.0 | 1504-200G | 200 \pm 10.0 | 500 | 30.0 |
| 1504-100B | 100 \pm 5.0 | 100 | 4.0 | 1504-500D | 500 \pm 25.0 | 250 | 24.0 | 1504-220G | 220 \pm 11.0 | 500 | 31.0 |
| 1504-120B | 120 \pm 6.0 | 100 | 4.0 | 1504-30E | 30 \pm 1.5 | 300 | 5.0 | 1504-250G | 250 \pm 12.5 | 500 | 25.0 |
| 1504-150B | 150 \pm 7.5 | 100 | 5.0 | 1504-60E | 60 \pm 3.0 | 300 | 6.0 | 1504-300G | 300 \pm 15.0 | 500 | 26.0 |
| 1504-200B | 200 \pm 10.0 | 100 | 6.0 | 1504-90E | 90 \pm 4.5 | 300 | 7.0 | 1504-380G | 380 \pm 19.0 | 500 | 33.0 |
| 1504-250B | 250 \pm 12.5 | 100 | 7.0 | 1504-120E | 120 \pm 6.0 | 300 | 8.0 | 1504-400G | 400 \pm 20.0 | 500 | 42.0 |
| 1504-20C | 20 \pm 1.0 | 200 | 3.0 | 1504-150E | 150 \pm 7.5 | 300 | 9.0 | 1504-450G | 450 \pm 22.5 | 500 | 45.0 |
| 1504-40C | 40 \pm 2.0 | 200 | 4.0 | 1504-180E | 180 \pm 9.0 | 300 | 11.0 | 1504-500G | 500 \pm 25.0 | 500 | 55.0 |
| 1504-60C | 60 \pm 3.0 | 200 | 4.5 | 1504-240E | 240 \pm 12.0 | 300 | 16.0 | 1504-600G | 600 \pm 30.0 | 500 | 58.0 |
| 1504-80C | 80 \pm 4.0 | 200 | 5.5 | 1504-270E | 270 \pm 13.5 | 300 | 18.0 | 1504-750G | 750 \pm 37.5 | 500 | 50.0 |
| 1504-100C | 100 \pm 5.0 | 200 | 6.0 | 1504-360E | 360 \pm 18.0 | 300 | 21.0 | 1504-1000G | 1000 \pm 50 | 500 | 65.0 |
| 1504-120C | 120 \pm 6.0 | 200 | 6.5 | 1504-450E | 450 \pm 22.5 | 300 | 24.0 | | | | |
| 1504-140C | 140 \pm 7.0 | 200 | 7.0 | 1504-600E | 600 \pm 30.0 | 300 | 40.0 | | | | |



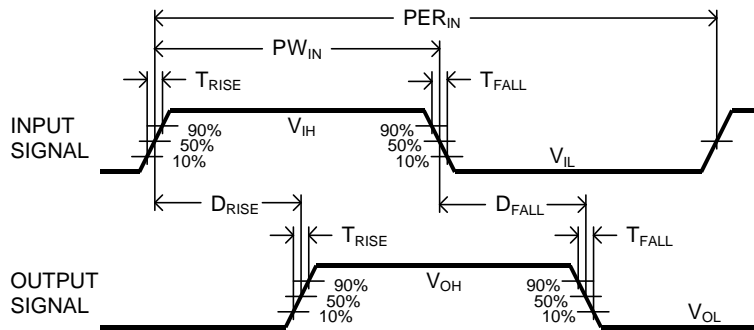
Package Dimensions

PASSIVE DELAY LINE TEST SPECIFICATIONS

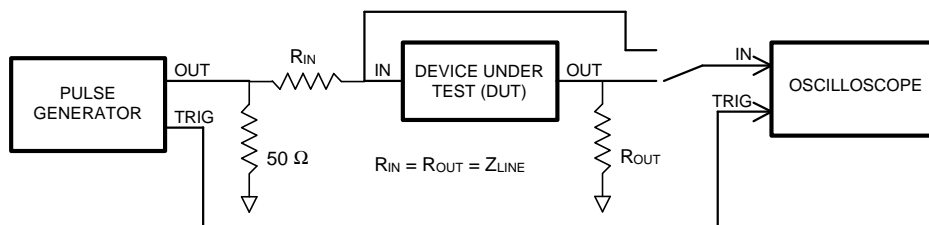
TEST CONDITIONS

| | | | |
|------------------------------------|--|--------------------------|------------------------|
| INPUT: | | OUTPUT: | |
| Ambient Temperature: | 25°C ± 3°C | R_{load}: | 10MΩ |
| Input Pulse: | High = 3.0V typical Low = 0.0V typical | C_{load}: | 10pf |
| Source Impedance: | 50Ω Max. | Threshold: | 50% (Rising & Falling) |
| Rise/Fall Time: | 3.0 ns Max. (measured at 10% and 90% levels) | | |
| Pulse Width (TD ≤ 75ns): | PW _{IN} = 100ns | | |
| Period (TD ≤ 75ns): | PER _{IN} = 1000ns | | |
| Pulse Width (TD > 75ns): | PW _{IN} = 2 x T _D | | |
| Period (TD > 75ns): | PER _{IN} = 10 x 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