

**20-TAP DIP DELAY LINE**

$T_D/T_R = 10$   
(SERIES 2214)

**data  
delay  
devices, inc.** 

**FEATURES**

- 20 taps of equal delay increment
- High bandwidth ( $T_D/T_R = 10$ )
- Low profile
- Epoxy encapsulated
- Meets or exceeds MIL-D-23859C

**PACKAGES**

N/C	□ 1	24	□ N/C	2214-xxz (DIP)
IN	□ 2	23	□ T20	2214-xxzC4 (Gull-Wing)
T1	□ 3	22	□ T19	xx = Delay ( $T_D$ )
T2	□ 4	21	□ T18	z = Impedance Code
T3	□ 5	20	□ T17	
T4	□ 6	19	□ T16	
T5	□ 7	18	□ T15	
T6	□ 8	17	□ T14	
T7	□ 9	16	□ T13	
T8	□ 10	15	□ T12	
T9	□ 11	14	□ T11	
GND	□ 12	13	□ T10	

**PIN DESCRIPTIONS**

IN Signal Input  
T1-T20 Tap Outputs  
GND Ground

**FUNCTIONAL DESCRIPTION**

The 2214-series device is a fixed, single-input, twenty-output, passive delay line. The signal input (IN) is reproduced at the outputs (T1-T20) in equal increments. The delay from IN to T20 ( $T_D$ ) is 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 10% of  $T_D$ , and the 3dB bandwidth is given by  $3.5 / T_D$ .

**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

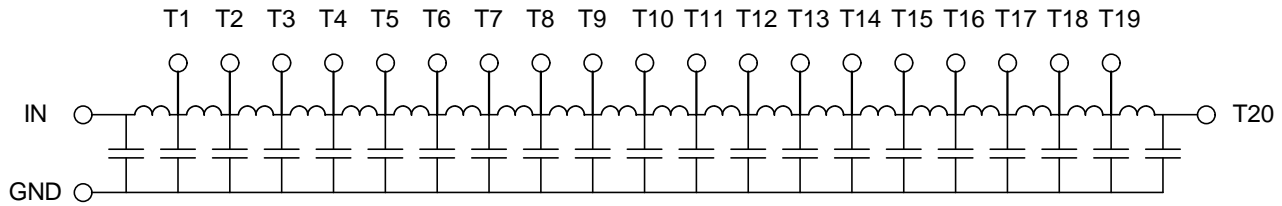
**DASH NUMBER SPECIFICATIONS****DASH NUMBER SPECIFICATIONS**

Part Number	$T_D$ (ns)	Delay per Tap (ns)	$T_R$ (ns)	Imped. ( $\Omega$ )	$R_{DC}$ ( $\Omega$ )
2214-50A	50.0 ± 2.5	2.5 ± 1.0	5.0	50	3.2
2214-60A	60.0 ± 3.0	3.0 ± 1.0	6.0	50	3.6
2214-80A	80.0 ± 4.0	4.0 ± 1.0	8.0	50	5.0
2214-100A	100 ± 5.0	5.0 ± 1.0	10.0	50	6.0
2214-150A	150 ± 7.5	7.5 ± 1.0	15.0	50	6.0
2214-200A	200 ± 10.0	10.0 ± 1.0	20.0	50	7.0
2214-50B	50.0 ± 2.5	2.5 ± 1.0	5.0	100	6.0
2214-60B	60.0 ± 3.0	3.0 ± 1.0	6.0	100	6.0
2214-80B	80.0 ± 4.0	4.0 ± 1.0	8.0	100	6.5
2214-100B	100 ± 5.0	5.0 ± 1.0	10.0	100	7.0
2214-150B	150 ± 7.5	7.5 ± 1.0	15.0	100	8.0
2214-200B	200 ± 10.0	10.0 ± 1.0	20.0	100	8.5
2214-300B	300 ± 15.0	15.0 ± 1.0	30.0	100	11.0
2214-400B	400 ± 20.0	20.0 ± 1.0	40.0	100	12.0

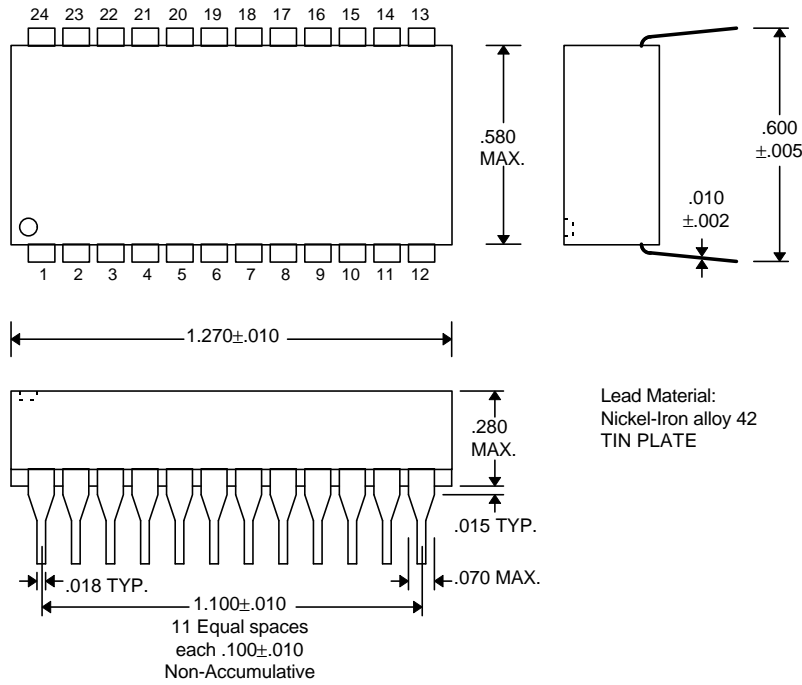
Part Number	$T_D$ (ns)	Delay per Tap (ns)	$T_R$ (ns)	Imped. ( $\Omega$ )	$R_{DC}$ ( $\Omega$ )
2214-40C	40.0 ± 2.0	2.0 ± 1.0	4.0	200	7.0
2214-80C	80.0 ± 4.0	4.0 ± 1.0	8.0	200	8.0
2214-120C	120 ± 6.0	6.0 ± 1.0	12.0	200	10.0
2214-200C	200 ± 10.0	10.0 ± 1.0	20.0	200	13.0
2214-300C	300 ± 15.0	15.0 ± 1.0	30.0	200	12.0
2214-400C	400 ± 20.0	20.0 ± 1.0	40.0	200	15.0
2214-500C	500 ± 25.0	25.0 ± 1.3	50.0	200	17.0
2214-600C	600 ± 30.0	30.0 ± 1.5	60.0	200	23.0
2214-800C	800 ± 40.0	40.0 ± 2.0	80.0	200	38.0
2214-50D	50.0 ± 2.5	2.5 ± 1.0	5.0	250	7.0
2214-100D	100 ± 5.0	5.0 ± 1.0	10.0	250	10.0
2214-150D	150 ± 7.5	7.5 ± 1.0	15.0	250	12.0
2214-200D	200 ± 10.0	10.0 ± 1.0	20.0	250	22.0
2214-250D	250 ± 12.5	12.5 ± 1.0	25.0	250	21.0
2214-300D	300 ± 15.0	15.0 ± 1.0	30.0	250	23.0
2214-400D	400 ± 20.0	20.0 ± 1.0	40.0	250	26.0
2214-500D	500 ± 25.0	25.0 ± 1.3	50.0	250	30.0
2214-600D	600 ± 30.0	30.0 ± 1.5	60.0	250	37.0
2214-800D	800 ± 40.0	40.0 ± 2.0	80.0	250	41.0
2214-1000D	1000 ± 50.0	50.0 ± 2.5	100	250	47.0
2214-200G	200 ± 10.0	10.0 ± 1.0	20.0	500	20.0
2214-300G	300 ± 15.0	15.0 ± 1.0	30.0	500	37.0
2214-400G	400 ± 20.0	20.0 ± 1.0	40.0	500	40.0
2214-500G	500 ± 25.0	25.0 ± 1.3	50.0	500	45.0
2214-600G	600 ± 30.0	30.0 ± 1.5	60.0	500	52.0
2214-800G	800 ± 40.0	40.0 ± 2.0	80.0	500	80.0
2214-1000G	1000 ± 50.0	50.0 ± 2.5	100	500	100
2214-1200G	1200 ± 60.0	60.0 ± 3.0	120	500	110
2214-1500G	1500 ± 75.0	75.0 ± 3.8	150	500	130
2214-2000G	2000 ± 100	100 ± 5.0	200	500	156

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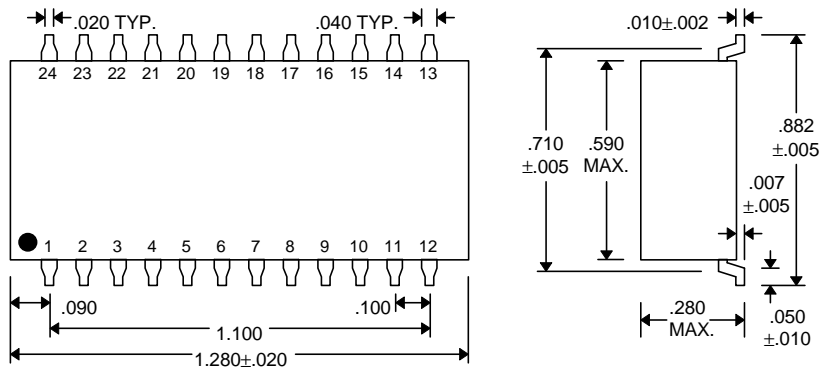
**FUNCTIONAL DIAGRAM**



**PACKAGE DIMENSIONS**



**DIP (2214-xxz)**



**Gull-Wing (2214-xxzC4)**

## PASSIVE DELAY LINE TEST SPECIFICATIONS

### TEST CONDITIONS

#### INPUT:

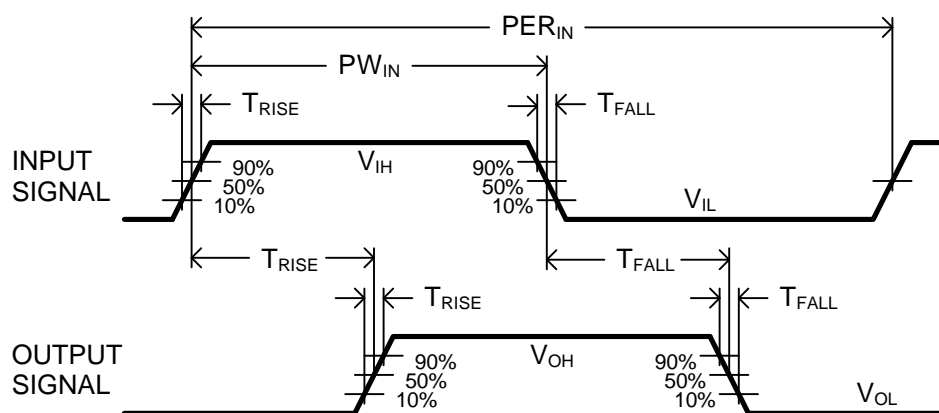
**Ambient Temperature:**  $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$   
**Input Pulse:** High = 3.0V typical  
 Low = 0.0V typical  
**Source Impedance:** 50Ω Max.  
**Rise/Fall Time:** 3.0 ns Max. (measured at 10% and 90% levels)

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

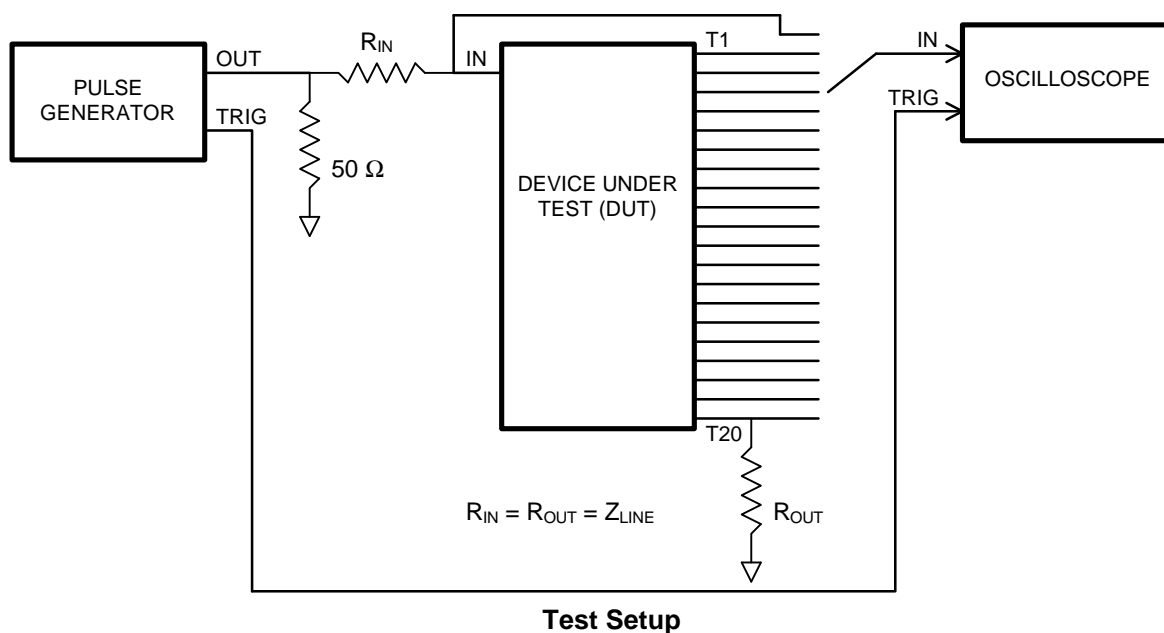
#### OUTPUT:

**$R_{load}$ :** 10MΩ  
 **$C_{load}$ :** 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