

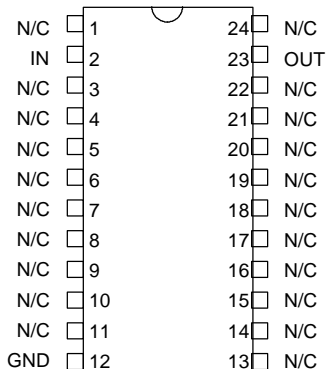
**FIXED DIP DELAY LINE**

$T_D/T_R = 10$   
(SERIES 2211)

**data  
delay  
devices, inc.** 

**FEATURES**

- High bandwidth ( $T_D/T_R = 10$ )
- Low profile
- Epoxy encapsulated
- Meets or exceeds MIL-D-23859C

**PACKAGES**

2211-xxz (DIP)  
2211-xxzC4 (Gull-Wing)  
xx = Delay ( $T_D$ )  
z = Impedance Code

**PIN DESCRIPTIONS**

IN Signal Input  
OUT Signal Output  
GND Ground

**FUNCTIONAL DESCRIPTION**

The 2211-series device is a fixed, single-input, single-output, passive delay line. The signal input (IN) is reproduced at the output (OUT) with a delay ( $T_D$ ) 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 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:  $-55^\circ\text{C}$  to  $+125^\circ\text{C}$
- Storage temperature:  $-55^\circ\text{C}$  to  $+125^\circ\text{C}$
- Temperature coefficient: 100 PPM/ $^\circ\text{C}$

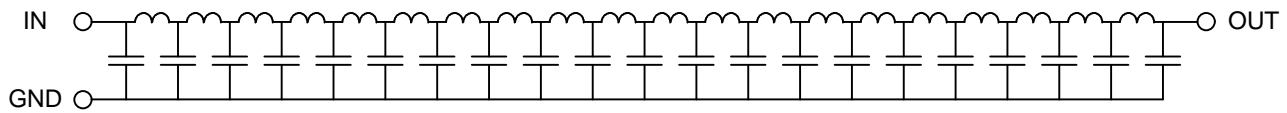
**DASH NUMBER SPECIFICATIONS**

Part Number	$T_D$ (ns)	$T_R$ (ns)	Imped. ( $\Omega$ )	$R_{DC}$ ( $\Omega$ )
2211-40C	$40.0 \pm 2.0$	4.0	200	7.0
2211-80C	$80.0 \pm 4.0$	8.0	200	8.0
2211-120C	$120 \pm 6.0$	12.0	200	10.0
2211-200C	$200 \pm 10.0$	20.0	200	13.0
2211-300C	$300 \pm 15.0$	30.0	200	12.0
2211-400C	$400 \pm 20.0$	40.0	200	15.0
2211-500C	$500 \pm 25.0$	50.0	200	17.0
2211-600C	$600 \pm 30.0$	60.0	200	23.0
2211-800C	$800 \pm 40.0$	80.0	200	38.0
2211-50D	$50.0 \pm 2.5$	5.0	250	7.0
2211-100D	$100 \pm 5.0$	10.0	250	10.0
2211-150D	$150 \pm 7.5$	15.0	250	12.0
2211-200D	$200 \pm 10.0$	20.0	250	22.0
2211-250D	$250 \pm 12.5$	25.0	250	21.0
2211-300D	$300 \pm 15.0$	30.0	250	23.0
2211-400D	$400 \pm 20.0$	40.0	250	26.0
2211-500D	$500 \pm 25.0$	50.0	250	30.0
2211-600D	$600 \pm 30.0$	60.0	250	37.0
2211-800D	$800 \pm 40.0$	80.0	250	41.0
2211-1000D	$1000 \pm 50.0$	100	250	47.0
2211-200G	$200 \pm 10.0$	20.0	500	20.0
2211-300G	$300 \pm 15.0$	30.0	500	37.0
2211-400G	$400 \pm 20.0$	40.0	500	40.0
2211-500G	$500 \pm 25.0$	50.0	500	45.0
2211-600G	$600 \pm 30.0$	60.0	500	52.0
2211-800G	$800 \pm 40.0$	80.0	500	80.0
2211-1000G	$1000 \pm 50.0$	100	500	100
2211-1200G	$1200 \pm 60.0$	120	500	110
2211-1500G	$1500 \pm 75.0$	150	500	130
2211-2000G	$2000 \pm 100$	200	500	156

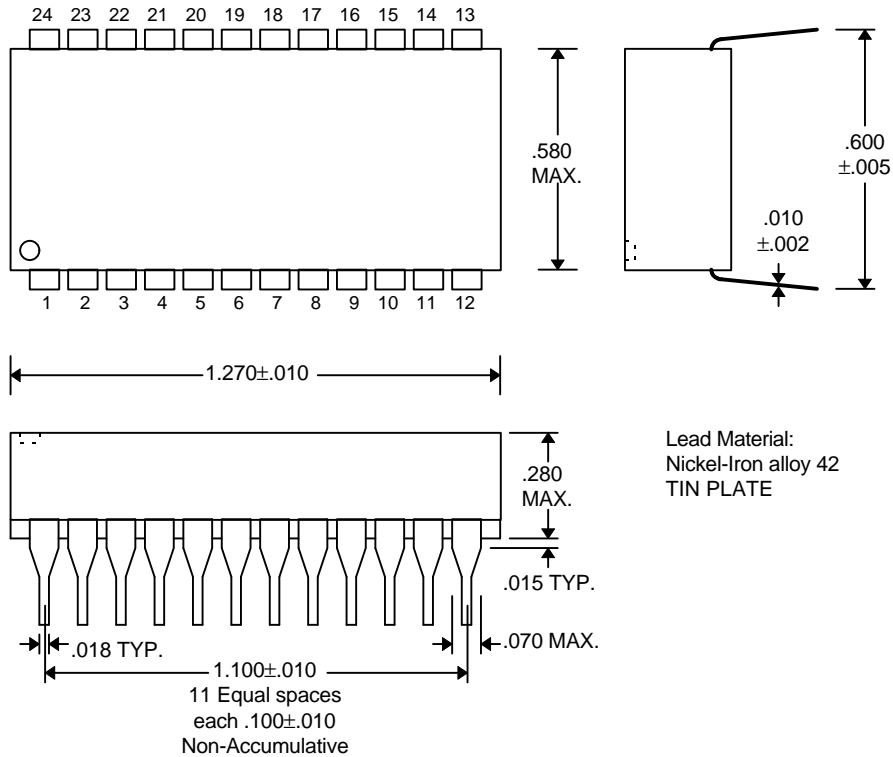
**DASH NUMBER SPECIFICATIONS**

Part Number	$T_D$ (ns)	$T_R$ (ns)	Imped. ( $\Omega$ )	$R_{DC}$ ( $\Omega$ )
2211-50A	$50.0 \pm 2.5$	5.0	50	3.2
2211-60A	$60.0 \pm 3.0$	6.0	50	3.6
2211-80A	$80.0 \pm 4.0$	8.0	50	5.0
2211-100A	$100 \pm 5.0$	10.0	50	6.0
2211-150A	$150 \pm 7.5$	15.0	50	6.0
2211-200A	$200 \pm 10.0$	20.0	50	7.0
2211-50B	$50.0 \pm 2.5$	5.0	100	6.0
2211-60B	$60.0 \pm 3.0$	6.0	100	6.0
2211-80B	$80.0 \pm 4.0$	8.0	100	6.5
2211-100B	$100 \pm 5.0$	10.0	100	7.0
2211-150B	$150 \pm 7.5$	15.0	100	8.0
2211-200B	$200 \pm 10.0$	20.0	100	8.5
2211-300B	$300 \pm 15.0$	30.0	100	11.0
2211-400B	$400 \pm 20.0$	40.0	100	12.0

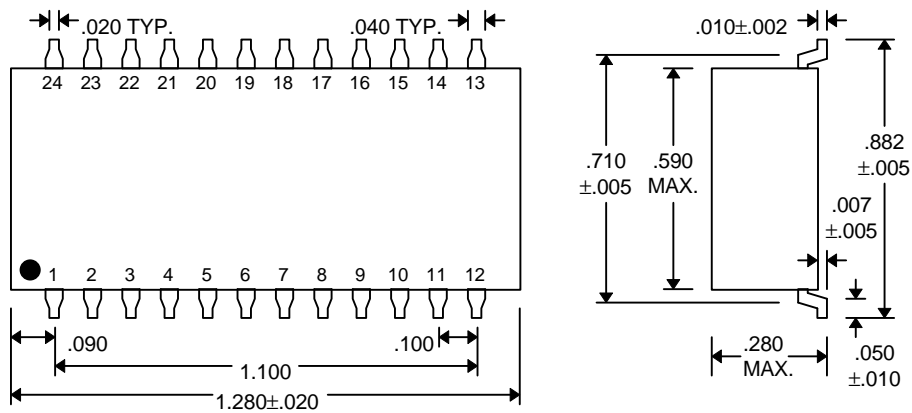
**FUNCTIONAL DIAGRAM**



**PACKAGE DIMENSIONS**



**DIP (2214-xxz)**



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

## PASSIVE DELAY LINE TEST SPECIFICATIONS

### TEST CONDITIONS

#### INPUT:

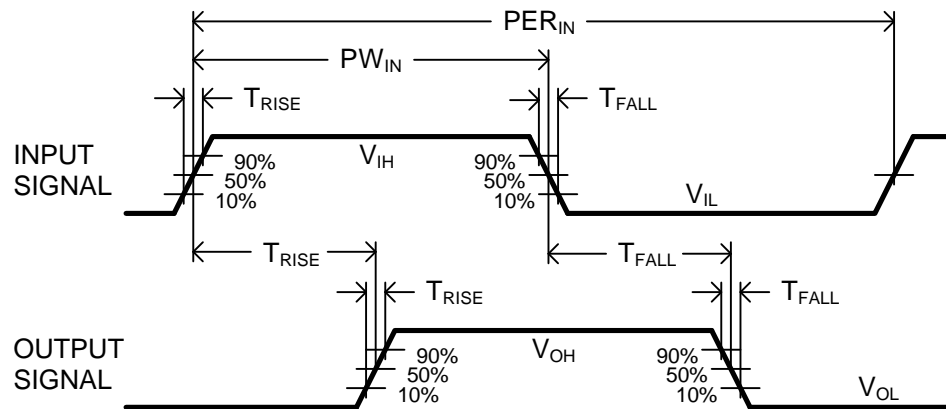
**Ambient Temperature:**  $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$   
**Input Pulse:** High = 3.0V typical  
 Low = 0.0V typical  
**Source Impedance:**  $50\Omega$  Max.  
**Rise/Fall Time:** 3.0 ns Max. (measured at 10% and 90% levels)

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

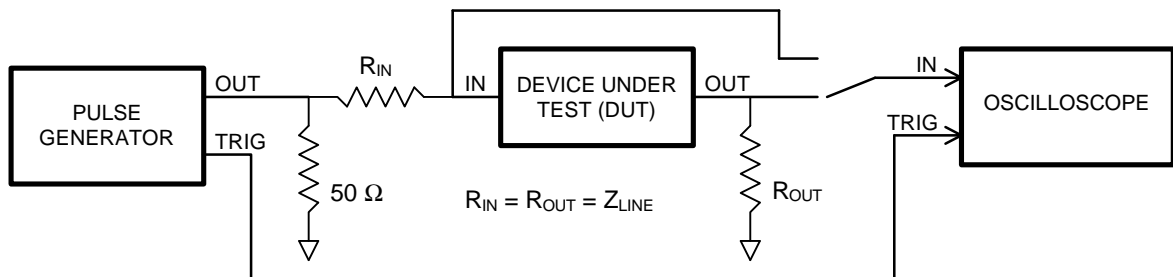
#### OUTPUT:

**$R_{load}$ :**  $10\text{M}\Omega$   
 **$C_{load}$ :** 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