

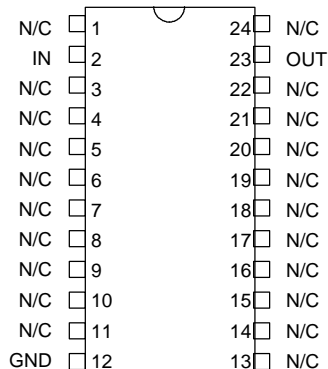
**FIXED DIP DELAY LINE**

$T_D/T_R = 10$   
(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°C to +125°C
- Storage temperature: -55°C to +125°C
- Temperature coefficient: 100 PPM/°C

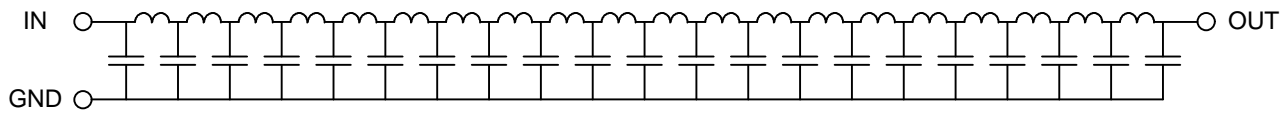
**DASH NUMBER SPECIFICATIONS**

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

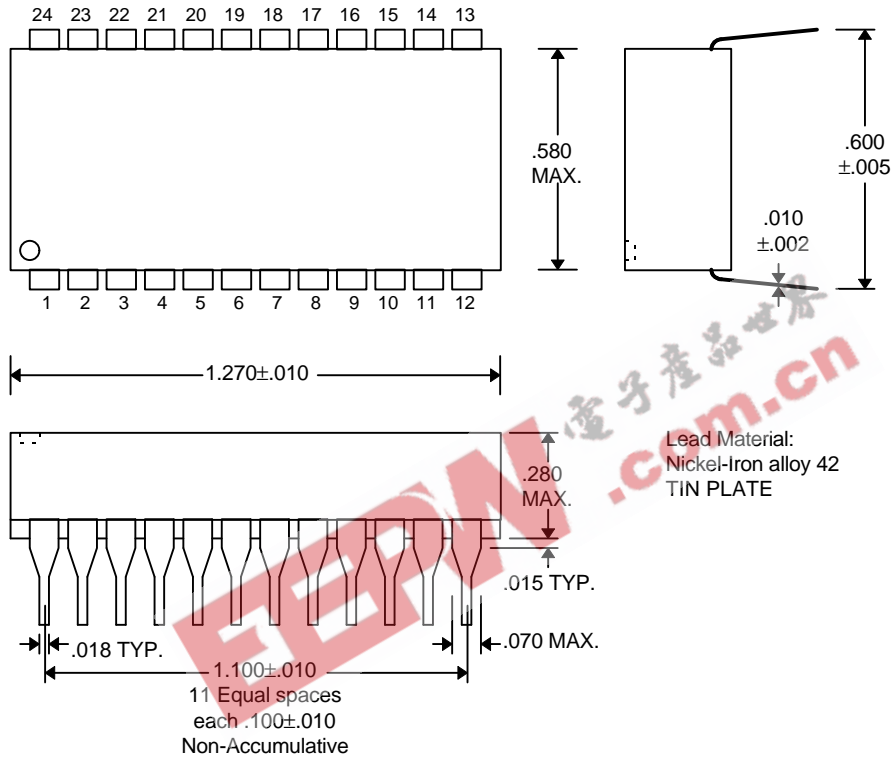
**DASH NUMBER SPECIFICATIONS**

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

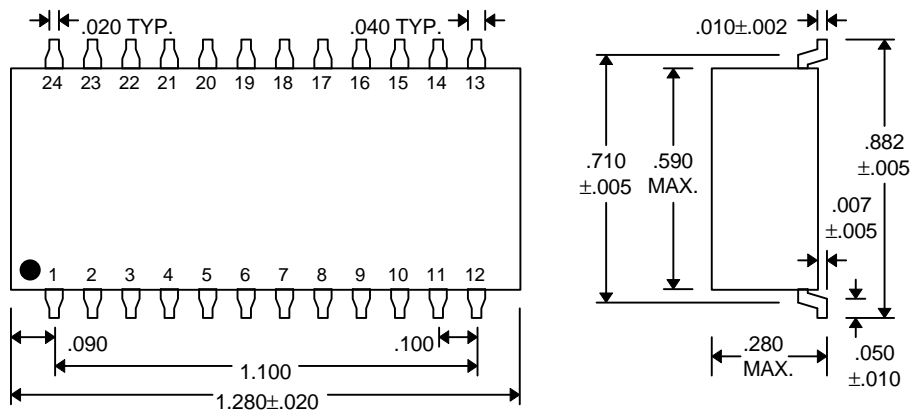
**FUNCTIONAL DIAGRAM**



**PACKAGE DIMENSIONS**



**DIP (2214-xxz)**



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

## PASSIVE DELAY LINE TEST SPECIFICATIONS

### TEST CONDITIONS

#### INPUT:

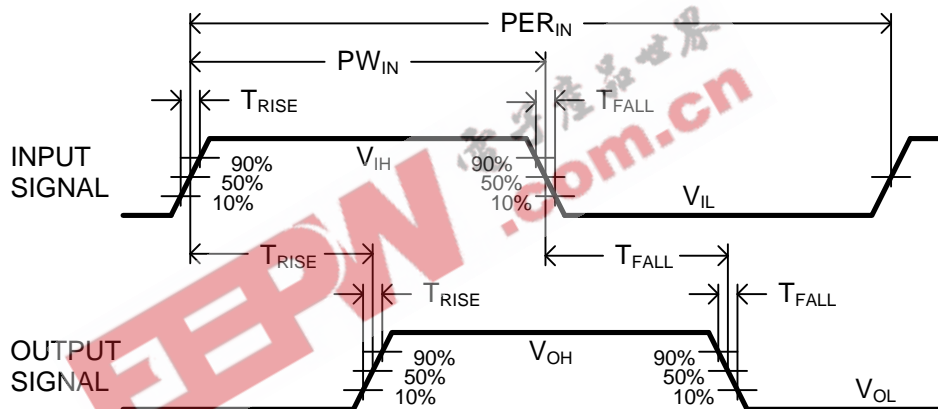
**Ambient Temperature:**  $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$   
**Input Pulse:** High = 3.0V typical  
 Low = 0.0V typical  
**Source Impedance:**  $50\Omega$  Max.  
**Rise/Fall Time:** 3.0 ns Max. (measured at 10% and 90% levels)

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

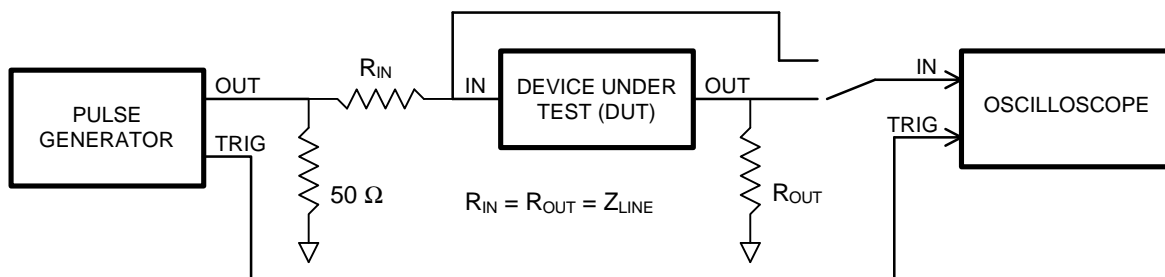
#### OUTPUT:

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