

FIXED DIP DELAY LINE

$T_D/T_R = 10$
(SERIES 2211)

**FEATURES**

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

PACKAGES

N/C	1	24	N/C	2211-xxz	(DIP)
IN	2	23	OUT	2211-xxzC4	(Gull-Wing)
N/C	3	22	N/C	xx = Delay (T_D)	
N/C	4	21	N/C	z = Impedance Code	
N/C	5	20	N/C		
N/C	6	19	N/C		
N/C	7	18	N/C		
N/C	8	17	N/C		
N/C	9	16	N/C		
N/C	10	15	N/C		
N/C	11	14	N/C		
GND	12	13	N/C		

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

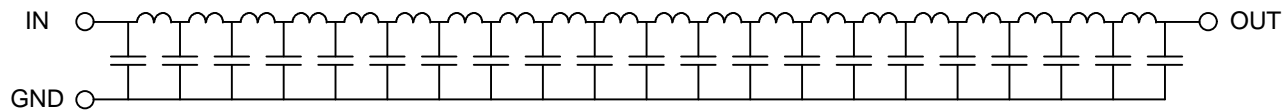
- Dielectric breakdown: 50 Vdc
- Distortion @ output: 10% max.
- Operating temperature: -55°C to +125°C
- Storage temperature: -55°C to +125°C
- Temperature coefficient: 100 PPM/°C

DASH NUMBER SPECIFICATIONS**DASH NUMBER SPECIFICATIONS**

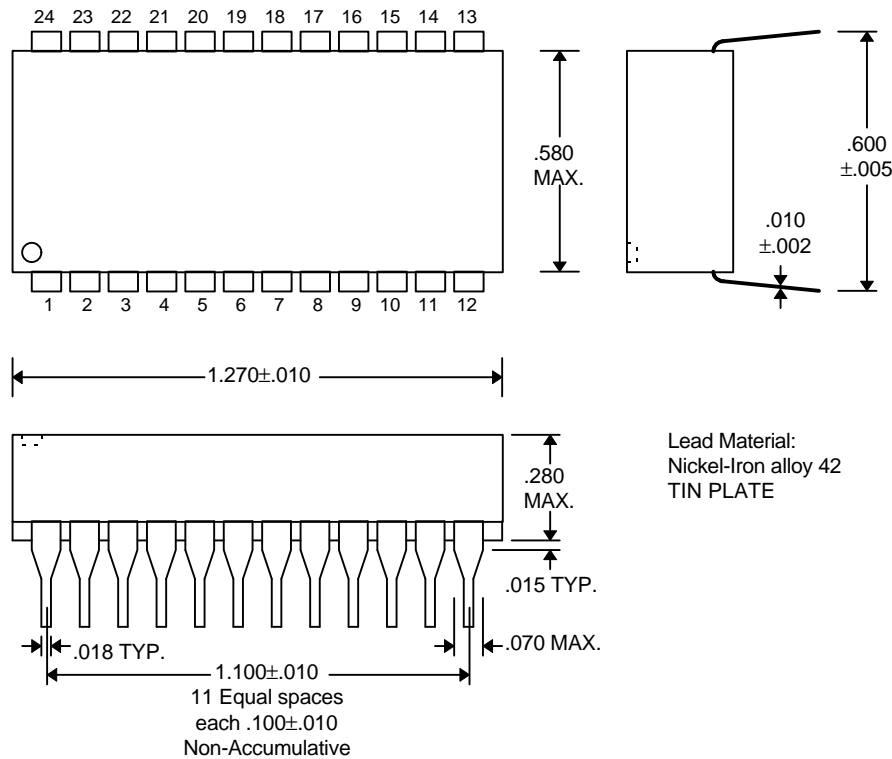
Part Number	T_D (ns)	T_R (ns)	Imped. (Ω)	R_{DC} (Ω)
2211-50A	50.0 \pm 2.5	5.0	50	3.2
2211-60A	60.0 \pm 3.0	6.0	50	3.6
2211-80A	80.0 \pm 4.0	8.0	50	5.0
2211-100A	100 \pm 5.0	10.0	50	6.0
2211-150A	150 \pm 7.5	15.0	50	6.0
2211-200A	200 \pm 10.0	20.0	50	7.0
2211-50B	50.0 \pm 2.5	5.0	100	6.0
2211-60B	60.0 \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

Part Number	T_D (ns)	T_R (ns)	Imped. (Ω)	R_{DC} (Ω)
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

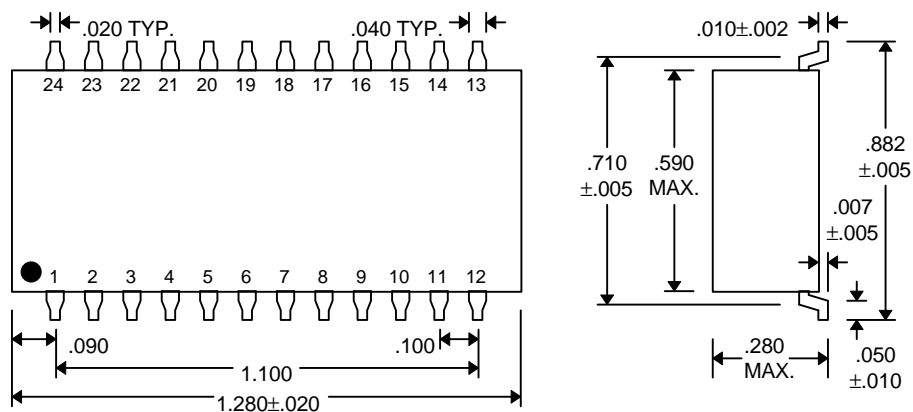
FUNCTIONAL DIAGRAM



PACKAGE DIMENSIONS



DIP (2214-xxz)



Gull-Wing (2214-xxzC4)

PASSIVE DELAY LINE TEST SPECIFICATIONS

TEST CONDITIONS

INPUT:

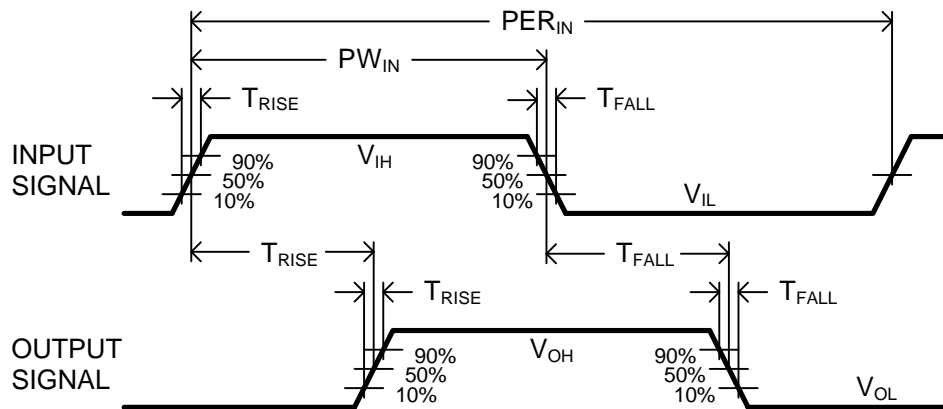
Ambient Temperature: $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$
Input Pulse: High = 3.0V typical
 Low = 0.0V typical
Source Impedance: 50Ω Max.
Rise/Fall Time: 3.0 ns Max. (measured at 10% and 90% levels)

OUTPUT:

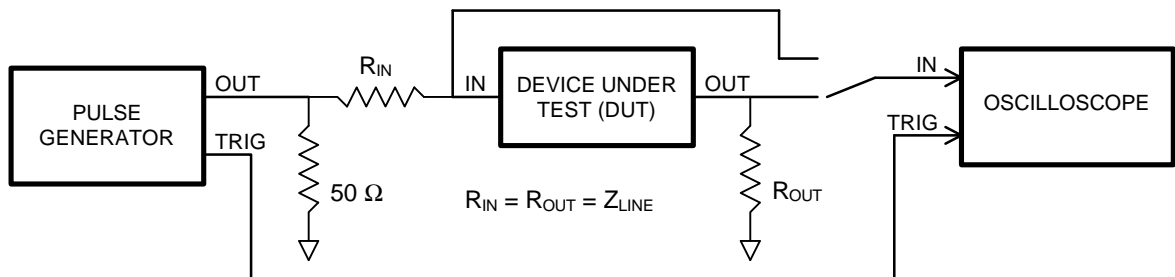
R_{load} : $10\text{M}\Omega$
 C_{load} : 10pf
Threshold: 50% (Rising & Falling)

Pulse Width ($T_D \leq 75\text{ns}$): $PW_{\text{IN}} = 100\text{ns}$
Period ($T_D \leq 75\text{ns}$): $PER_{\text{IN}} = 1000\text{ns}$
Pulse Width ($T_D > 75\text{ns}$): $PW_{\text{IN}} = 2 \times T_D$
Period ($T_D > 75\text{ns}$): $PER_{\text{IN}} = 10 \times T_D$

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