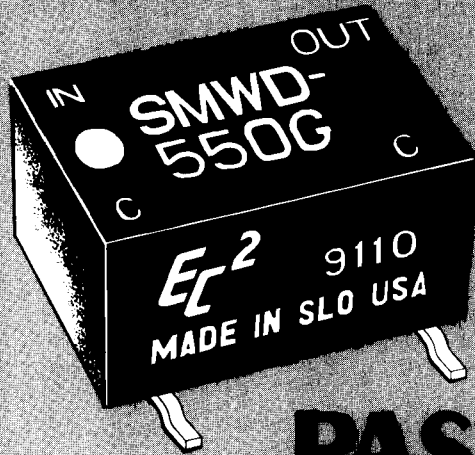


EC²



PASSIVE DELAY LINE

surface mount

Wee DIP

**LUMPED
CONSTANT**

DELAY LINE

- Analog input and output
- Delays stable and precise
- 14-pin Wee DIP package (.200 high)
- Available in delays from 1ns to 250ns
- Precise, fixed delay
- Available in impedances of 50, 100, 200, 350 and 500 ohms
- SOL-14 footprint

design notes

The "Surface Mount Wee DIP Series" Lumped Constant Passive Delay Lines developed by Engineered Components Company have been designed to provide precise delays for analog delay line applications. These delay lines provide excellent delay accuracy, low DCR, low attenuation and low distortion.

These delay lines are offered in 188 models with delays from 1 to 250ns. Delay time is measured at the 50% point on the leading edge. Accuracies are maintained as shown under "Operating Characteristics." Temperature coefficient of delay is less than 75 ppm/°C over the operating temperature range of -55 to +125°C.

The "Surface Mount Wee DIP Series" LC delay lines are intended for use in most analog applications; they are also compatible with the low signal levels of TTL and ECL. These

delay lines find extensive use in providing the required delay timing functions necessary in radar, computer, communication, testing and instrument applications.

Construction of the "SMWD Series" utilizes miniature inductors and monolithic ceramic capacitors to provide the utmost in miniaturization and reliability. The MTBF on these delay lines, when calculated per MIL-HDBK-217, for a 50°C ground fixed environment and with 5V DC applied, is in excess of 12 million hours.

The "SMWD Series" delay lines are packaged in a 14-pin DIP housing, molded of flame-proof Diallyl Phthalate per MIL-M-14, Type SDG-F. These delay lines are designed to meet the applicable portions of MIL-D-23859, and they are capable of meeting the environmental requirements of MIL-STD-202 for moisture resistance, vibration, temperature cycling, humidity and life. Leads meet the solderability requirements of MIL-STD-202, Method 208 and provide positive standoff from the printed circuit board to permit flush cleaning of solder-flux residues for improved reliability.

Marking consists of manufacturer's logo (EC²), federal supply code, part number, terminal identification and date code of manufacture. All marking is applied by silk screen process using white epoxy paint in accordance with MIL-STD-130, to meet the permanency of identification required by MIL-STD-202, Method 215.

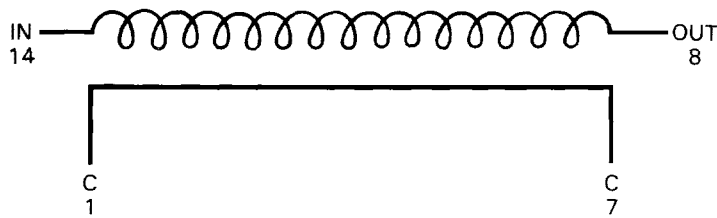
EC²

engineered components company

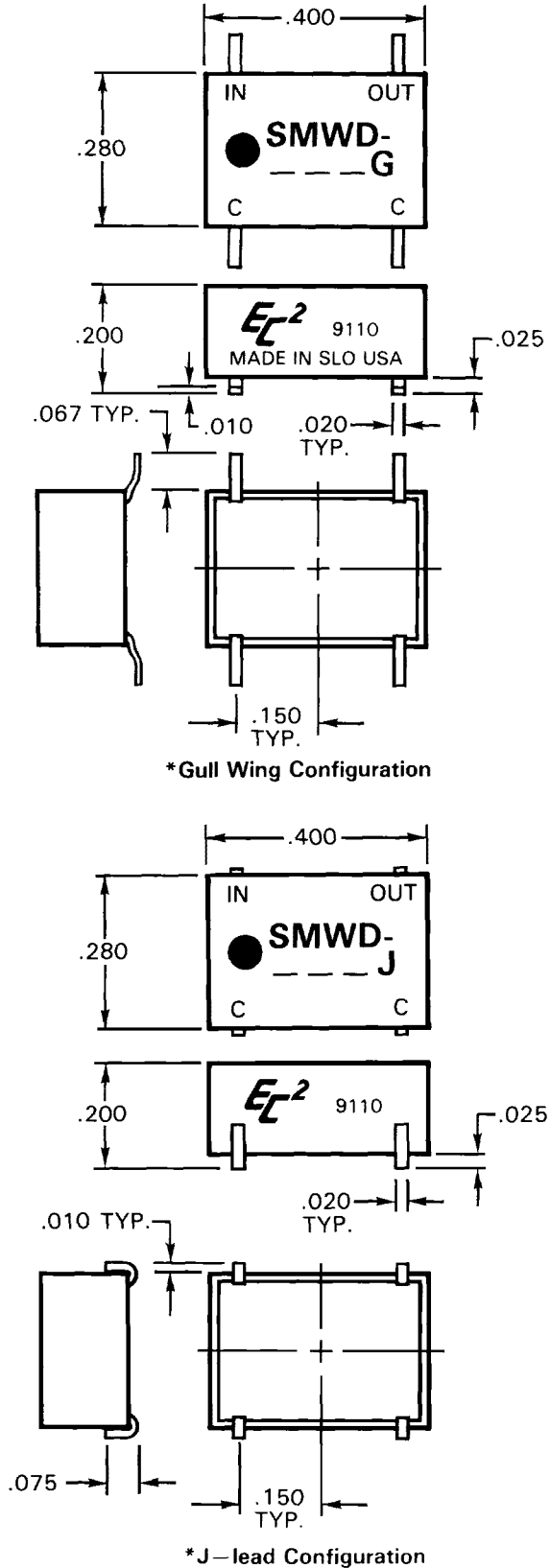
3580 Sacramento Drive, P. O. Box 8121, San Luis Obispo, CA 93403-8121

Phone: (805) 544-3800

BLOCK DIAGRAM IS SHOWN BELOW



MECHANICAL DETAILS ARE SHOWN BELOW



TEST CONDITIONS

1. All measurements are made at 25°C.
2. Test procedures in accordance with MIL-D-23859.

OPERATING CHARACTERISTICS

- Total delay tolerance: See tabulations
- Rise time, maximum: See tabulations
- Impedance: 50, 100, 200, 350, or 500 ohms
- Impedance tolerance: ± 10%
- DC resistance, maximum: See tabulations
- Attenuation, maximum:5 db
- Distortion, maximum: ± 5%
- Overshoot, maximum: 10%
- Working voltage, maximum: . . . 25V DC
- Dielectric strength: 100V DC @ 50ua
- Insulation resistance, minimum: 10,000 megohms@ 100V DC

PART NUMBER TABLE

*Suffix Part Number with G (for Gull Wing) or J (for J-lead)
 Examples: SMWD-501G (Gull Wing) or SMWD-5250J (J-lead)

Part Number	Delay Time (ns)	Rise Time (ns)	Impedance (ohms)	DCR (ohms)
SMWD-501	1 ± 0.2	1.4	50	0.2
SMWD-502	2 ± 0.2	1.4		0.3
SMWD-503	3 ± 0.3	1.7		0.4
SMWD-504	4 ± 0.4	2.6		0.4
SMWD-505	5 ± 0.5	2.6		0.4
SMWD-506	6 ± 0.5	2.6		0.4
SMWD-507	7 ± 0.5	3.0		0.4
SMWD-508	8 ± 0.6	3.2		0.5
SMWD-509	9 ± 0.6	3.6		0.5
SMWD-510	10 ± 0.7	4.4		0.6
SMWD-512	12 ± 0.7	4.4		0.6
SMWD-514	14 ± 0.8	5.2		0.6
SMWD-516	16 ± 0.8	5.8		0.6
SMWD-518	18 ± 1.0	6.5		0.6
SMWD-520	20 ± 1.0	8.5		0.8
SMWD-522	22 ± 1.0	8.5		0.8
SMWD-524	24 ± 1.0	8.5		0.8
SMWD-526	26 ± 1.2	9.2		0.8
SMWD-528	28 ± 1.2	9.5		0.8
SMWD-530	30 ± 1.5	12.0		1.1
SMWD-535	35 ± 1.5	14.5		1.1
SMWD-540	40 ± 2.0	16.0		1.2
SMWD-545	45 ± 2.0	18.0		1.2
SMWD-550	50 ± 2.5	19.0		1.2
SMWD-560	60 ± 2.5	20.0		1.2
SMWD-570	70 ± 3.0	23.0	1.2	
SMWD-580	80 ± 3.0	26.0	1.2	
SMWD-590	90 ± 4.0	32.0	1.2	
SMWD-5100	100 ± 4.0	35.0	1.3	
SMWD-5110	110 ± 4.5	38.0	1.3	
SMWD-5120	120 ± 4.5	42.0	2.3	
SMWD-5130	130 ± 5.0	46.0	2.3	
SMWD-5140	140 ± 5.0	48.0	2.3	
SMWD-5150	150 ± 5.5	50.0	2.5	
SMWD-5160	160 ± 5.5	53.0	2.5	
SMWD-5170	170 ± 6.0	56.0	2.7	
SMWD-5180	180 ± 6.0	58.0	2.7	
SMWD-5190	190 ± 7.0	62.0	2.8	
SMWD-5200	200 ± 8.0	68.0	2.8	
SMWD-5210	210 ± 8.5	68.0	3.0	
SMWD-5220	220 ± 9.0	74.0	3.0	
SMWD-5230	230 ± 9.5	74.0	3.0	
SMWD-5240	240 ± 10.0	80.0	3.0	
SMWD-5250	250 ± 10.0	80.0	3.0	

PART NUMBER TABLE

Part Number	Delay Time (ns)	Rise Time (ns)	Impedance (ohms)	DCR (ohms)	Part Number	Delay Time (ns)	Rise Time (ns)	Impedance (ohms)	DCR (ohms)
SMWD-1001	1 ± 0.2	1.4	↑ 100	0.2	SMWD-3502	2 ± 0.2	4.5	350	0.2
SMWD-1002	2 ± 0.2	1.8		0.3	SMWD-3503	3 ± 0.3	4.0		0.3
SMWD-1003	3 ± 0.3	1.8		0.4	SMWD-3504	4 ± 0.4	4.0		0.5
SMWD-1004	4 ± 0.4	2.0		0.5	SMWD-3505	5 ± 0.5	4.0		0.5
SMWD-1005	5 ± 0.5	2.8		0.6	SMWD-3506	6 ± 0.5	4.0		0.6
SMWD-1006	6 ± 0.5	2.8		0.6	SMWD-3507	7 ± 0.5	4.5		0.8
SMWD-1007	7 ± 0.5	3.2		0.6	SMWD-3508	8 ± 0.6	4.5		0.8
SMWD-1008	8 ± 0.6	3.2		0.6	SMWD-3509	9 ± 0.6	5.0		0.8
SMWD-1009	9 ± 0.6	3.6		0.7	SMWD-3510	10 ± 0.7	5.5		0.8
SMWD-1010	10 ± 0.7	4.6		0.8	SMWD-3512	12 ± 0.7	6.5		0.8
SMWD-1012	12 ± 0.7	4.8		0.8	SMWD-3514	14 ± 0.8	6.5		0.9
SMWD-1014	14 ± 0.8	5.0		0.9	SMWD-3516	16 ± 0.8	7.0		1.0
SMWD-1016	16 ± 0.8	5.6		0.9	SMWD-3518	18 ± 1.0	7.5		1.0
SMWD-1018	18 ± 1.0	6.5		1.0	SMWD-3520	20 ± 1.0	8.0		1.0
SMWD-1020	20 ± 1.0	8.5		1.2	SMWD-3522	22 ± 1.0	8.5		1.0
SMWD-1022	22 ± 1.0	8.5		1.0	SMWD-3524	24 ± 1.0	9.0		1.2
SMWD-1024	24 ± 1.0	8.5		1.0	SMWD-3526	26 ± 1.2	10.0		1.4
SMWD-1026	26 ± 1.2	9.0		1.0	SMWD-3528	28 ± 1.2	12.0		1.4
SMWD-1028	28 ± 1.2	9.5		1.2	SMWD-3530	30 ± 1.5	12.0		1.4
SMWD-1030	30 ± 1.5	12.0		1.0	SMWD-3535	35 ± 1.5	14.0		1.4
SMWD-1035	35 ± 1.5	14.5		1.0	SMWD-3540	40 ± 2.0	15.0		2.4
SMWD-1040	40 ± 2.0	14.5		1.2	SMWD-3545	45 ± 2.0	16.0		2.6
SMWD-1045	45 ± 2.0	17.0		1.4	SMWD-3550	50 ± 2.5	18.0		3.0
SMWD-1050	50 ± 2.5	19.0		1.2	SMWD-3560	60 ± 2.5	22.0		3.5
SMWD-1060	60 ± 2.5	22.0		1.4	SMWD-3570	70 ± 3.0	25.0		5.0
SMWD-1070	70 ± 3.0	24.0	2.3	SMWD-3580	80 ± 3.0	30.0	6.5		
SMWD-1080	80 ± 3.0	27.0	2.4	SMWD-3590	90 ± 4.0	35.0	7.0		
SMWD-1090	90 ± 4.0	32.0	2.6	SMWD-35100	100 ± 4.0	38.0	7.0		
SMWD-10100	100 ± 4.0	35.0	2.8						
SMWD-10110	110 ± 4.5	38.0	2.8						
SMWD-10120	120 ± 4.5	42.0	3.2						
SMWD-10130	130 ± 5.0	46.0	3.2						
SMWD-10140	140 ± 5.0	48.0	3.5						
SMWD-10150	150 ± 5.5	50.0	3.5						
SMWD-10160	160 ± 5.5	53.0	3.5						
SMWD-10170	170 ± 6.0	56.0	4.8						
SMWD-10180	180 ± 6.0	60.0	5.2						
SMWD-10190	190 ± 7.0	62.0	5.5						
SMWD-10200	200 ± 8.0	68.0	5.5						
SMWD-10210	210 ± 8.5	70.0	5.5						
SMWD-10220	220 ± 9.0	72.0	6.0						
SMWD-10230	230 ± 9.5	74.0	6.0						
SMWD-10240	240 ± 10.0	80.0	6.0						
SMWD-10250	250 ± 10.0	85.0	100						
SMWD-2001	1 ± 0.2	2.2	↑ 200	0.2	SMWD-5002	2 ± 0.2	4.8	500	0.2
SMWD-2002	2 ± 0.2	2.4		0.3	SMWD-5003	3 ± 0.3	6.5		0.3
SMWD-2003	3 ± 0.3	2.4		0.4	SMWD-5004	4 ± 0.4	6.5		0.3
SMWD-2004	4 ± 0.4	2.4		0.5	SMWD-5005	5 ± 0.5	6.5		0.3
SMWD-2005	5 ± 0.5	3.6		0.5	SMWD-5006	6 ± 0.5	6.5		0.6
SMWD-2006	6 ± 0.5	3.6		0.5	SMWD-5007	7 ± 0.5	6.5		0.8
SMWD-2007	7 ± 0.5	3.6		0.5	SMWD-5008	8 ± 0.6	7.0		0.8
SMWD-2008	8 ± 0.6	3.8		0.5	SMWD-5009	9 ± 0.6	7.0		0.8
SMWD-2009	9 ± 0.6	4.0		0.6	SMWD-5010	10 ± 0.7	7.0		0.8
SMWD-2010	10 ± 0.7	5.5		0.8	SMWD-5012	12 ± 0.7	7.5		1.0
SMWD-2012	12 ± 0.7	5.5		0.8	SMWD-5014	14 ± 0.8	8.5		1.0
SMWD-2014	14 ± 0.8	5.5		0.8	SMWD-5016	16 ± 0.8	8.5		1.2
SMWD-2016	16 ± 0.8	5.5		0.8	SMWD-5018	18 ± 1.0	8.5		1.2
SMWD-2018	18 ± 1.0	6.5		1.0	SMWD-5020	20 ± 1.0	10.0		1.4
SMWD-2020	20 ± 1.0	7.5		1.1	SMWD-5022	22 ± 1.0	10.0		1.4
SMWD-2022	22 ± 1.0	7.5		1.1	SMWD-5024	24 ± 1.0	10.0		1.6
SMWD-2024	24 ± 1.0	8.0		1.1	SMWD-5026	26 ± 1.2	12.0		1.6
SMWD-2026	26 ± 1.2	8.5		1.2	SMWD-5028	28 ± 1.2	14.0		2.2
SMWD-2028	28 ± 1.2	9.0		1.2	SMWD-5030	30 ± 1.5	14.0		2.4
SMWD-2030	30 ± 1.5	12.0		1.4	SMWD-5035	35 ± 1.5	16.0		2.8
SMWD-2035	35 ± 1.5	13.0		1.6	SMWD-5040	40 ± 2.0	18.0		2.8
SMWD-2040	40 ± 2.0	16.0		2.6	SMWD-5045	45 ± 2.0	18.0		3.0
SMWD-2045	45 ± 2.0	18.0		2.6	SMWD-5050	50 ± 2.5	20.0		3.5
SMWD-2050	50 ± 2.5	18.0		2.8	SMWD-5060	60 ± 2.5	22.0		3.5
SMWD-2060	60 ± 2.5	22.0		3.0	SMWD-5070	70 ± 3.0	25.0		5.0
SMWD-2070	70 ± 3.0	24.0	3.2	SMWD-5080	80 ± 3.0	30.0	6.5		
SMWD-2080	80 ± 3.0	29.0	3.5	SMWD-5090	90 ± 4.0	35.0	7.0		
SMWD-2090	90 ± 4.0	32.0	5.2	SMWD-50100	100 ± 4.0	38.0	7.5		
SMWD-20100	100 ± 4.0	35.0	5.6						
SMWD-20110	110 ± 4.5	38.0	5.6						
SMWD-20120	120 ± 4.5	42.0	5.8						
SMWD-20130	130 ± 5.0	45.0	5.8						
SMWD-20140	140 ± 5.0	48.0	6.8						
SMWD-20150	150 ± 5.5	52.0	6.8						
SMWD-20160	160 ± 5.5	55.0	6.8						
SMWD-20170	170 ± 6.0	58.0	7.0						
SMWD-20180	180 ± 6.0	60.0	7.5						
SMWD-20190	190 ± 7.0	64.0	7.5						
SMWD-20200	200 ± 8.0	68.0	8.0						
SMWD-20210	210 ± 8.5	68.0	8.0						
SMWD-20220	220 ± 9.0	72.0	8.0						
SMWD-20230	230 ± 9.5	75.0	8.0						
SMWD-20240	240 ± 10.0	80.0	8.0						
SMWD-20250	250 ± 10.0	80.0	200						

Special delay lines can be readily manufactured with longer or specific delays, impedances, rise times and package configurations for specific applications.

The Leader in Passive Delay Line and Active Digital Module Technology

EC² manufactures products in T²L Schottky, T²L Low Power Schottky, Advanced CMOS, ECL 10,000 and ECL 100K Logic Families.

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- Noise Filter Modules
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- Memory Timing Modules and Four Phase Clock Modules
- Pixel Clock Generator Modules
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- Memory Backup Power Modules

All ***EC²*** products are *always* manufactured of the finest materials obtainable, 100% tested and

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