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Solid State Variable Fiber Optical Time Delay

(patent pending)

Product Description

The SSTD Series Photonic Time Delay provides a variable time delay over a long range up to the millisecond. This is accomplished by selectively routing optical signals through N fiber segments whose lengths increase successively by a power of 2. Since each switching element allows the signal to either connect or bypass a fiber segment, a delay T may be inserted, which can take any value (in increments of ΔT) up to the maximum value T . This is achieved using a patent-pending non-mechanical configuration and activated via an electrical control signal. Latching operation preserves the selected optical path after the drive signal has been removed. The solid-state configuration eliminates the need for mechanical movement and organic materials.

The device is designed to meet the most demanding switching requirements of ultra-high reliability and fast response time.



Features

- 4-Bit Resolution or more
- High Speed
- Non-Mechanical
- High Reliability
- Fail-Safe Latching
- Low Insertion Loss
- Low Power Consumption

Performance Specification

SSTD Series Photonic Delay Line	Min	Typical	Max	Unit
Wavelength band	1520	1550	1580	nm
	1280	1310	1340	nm
Insertion Loss ¹	2.5	2.8	3.5	dB
Cross Talk	22	28	35	dB
Durability	10 ¹⁴			cycles
Switching Time(fall, rise)	50		200	μs
Repetition Rate	1			KHz
Delay Time Range	n	m		s
Polarization Dependent Loss	0.15	0.25	0.45	dB
Fiber Segment Number	4		5	loop
Polarization Mode Dispersion ²	0.1		0.2	ps
Polarization Extinction Ratio ³	18	22	30	ps
Return Loss	50	55	60	dB
Operating Temperature	-5		70	°C
Optical Power Handling	400			mW
Storage Temperature	-40		85	°C
Fiber Length	1			m

1. Insertion Loss Max value is 4.2 for 5 bits.

2. For None-PM Version

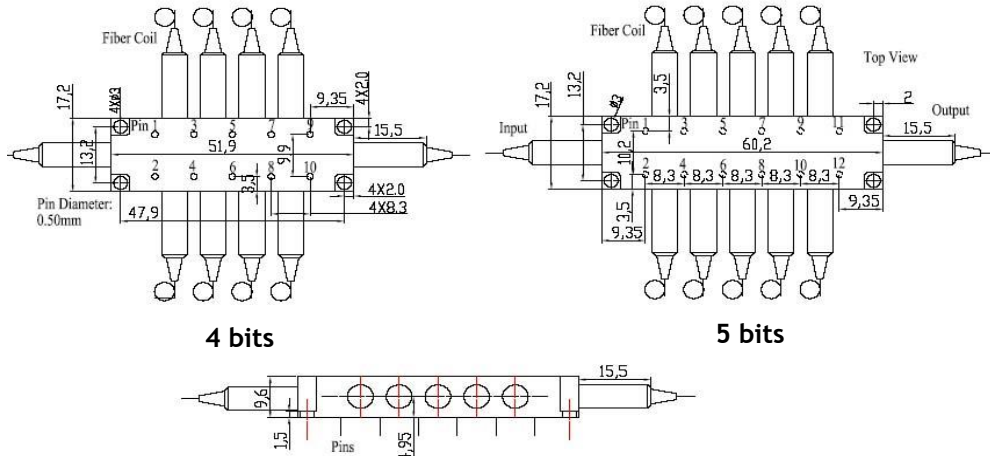
3. For PM Version

Applications

- Phase-Array Antennas
- Instrumentation

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Mechanical Dimensions (mm)



*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Electrical Driving Requirements

Parameter	Minimum	Typical	Maximum	Unit
Switch Voltage	2.3	2.5	2.8	V
Switch Current	140	120	160	mA
Pulse Duration	0.2	0.3	0.5	ms

Evaluation kit with TTL and RS232 interfaces and Windows™ GUI also available.

Switch Position	Pin Group 1		Pin Group 2		Pin Group 3		Pin Group 4		Pin Group 5	
	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9	Pin 10
0 ΔT	+	-	-	+	-	+	-	+	+	-
1 ΔT	-	+	+	-	-	+	-	+	+	-
2 ΔT	+	-	+	-	+	-	-	+	+	-
3 ΔT	-	+	-	+	+	-	-	+	+	-
4 ΔT	+	-	-	+	+	-	+	-	+	-
5 ΔT	-	+	+	-	+	-	+	-	+	-
6 ΔT	+	-	+	-	-	+	+	-	+	-
7 ΔT	-	+	-	+	-	+	+	-	+	-
8 ΔT	+	-	-	+	-	+	+	-	-	+
9 ΔT	-	+	+	-	-	+	+	-	-	+
10 ΔT	+	-	+	-	+	-	+	-	-	+
11 ΔT	-	+	-	+	+	-	+	-	-	+
12 ΔT	+	-	-	+	+	-	-	+	-	+
13 ΔT	-	+	+	-	+	-	-	+	-	+
14 ΔT	+	-	+	-	-	+	-	+	-	+
15 ΔT	-	+	-	+	-	+	-	+	-	+

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Switch Position	Pin Group 1		Pin Group 2		Pin Group 3		Pin Group 4		Pin Group 5		Pin Group 6	
	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9	Pin 10	Pin 11	Pin 12
0 ΔT	+	-	-	+	-	+	-	+	-	+	+	-
1 ΔT	-	+	+	-	-	+	-	+	-	+	+	-
2 ΔT	+	-	+	-	+	-	-	+	-	+	+	-
3 ΔT	-	+	-	+	+	-	-	+	-	+	+	-
4 ΔT	+	-	-	+	+	-	+	-	-	+	+	-
5 ΔT	-	+	+	-	+	-	+	-	-	+	+	-
6 ΔT	+	-	+	-	-	+	+	-	-	+	+	-
7 ΔT	-	+	-	+	-	+	+	-	-	+	+	-
8 ΔT	+	-	-	+	-	+	+	-	+	-	+	-
9 ΔT	-	+	+	-	-	+	+	-	+	-	+	-
10 ΔT	+	-	+	-	+	-	+	-	+	-	+	-
11 ΔT	-	+	-	+	+	-	+	-	+	-	+	-
12 ΔT	+	-	-	+	+	-	-	+	+	-	+	-
13 ΔT	-	+	+	-	+	-	-	+	+	-	+	-
14 ΔT	+	-	+	-	-	+	-	+	+	-	+	-
15 ΔT	-	+	-	+	-	+	-	+	+	-	+	-
16 ΔT	+	-	-	+	-	+	-	+	+	-	-	+
17 ΔT	-	+	+	-	-	+	-	+	+	-	-	+
18 ΔT	+	-	+	-	+	-	-	+	+	-	-	+
19 ΔT	-	+	-	+	+	-	-	+	+	-	-	+
20 ΔT	+	-	-	+	+	-	+	-	+	-	-	+
21 ΔT	-	+	+	-	+	-	+	-	+	-	-	+
22 ΔT	+	-	+	-	-	+	+	-	+	-	-	+
23 ΔT	-	+	-	+	-	+	+	-	+	-	-	+
24 ΔT	+	-	-	+	-	+	+	-	-	+	-	+
25 ΔT	-	+	+	-	-	+	+	-	-	+	-	+
26 ΔT	+	-	+	-	+	-	+	-	-	+	-	+
27 ΔT	-	+	-	+	+	-	+	-	-	+	-	+
28 ΔT	+	-	-	+	+	-	-	+	-	+	-	+
29 ΔT	-	+	+	-	+	-	-	+	-	+	-	+
30 ΔT	+	-	+	-	-	+	-	+	-	+	-	+
31 ΔT	-	+	-	+	-	+	-	+	-	+	-	+

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Ordering Information

SSTD-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	1	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>
	Type	Wavelength	Configuration	Package	Fiber Type		Delay Range	Connector	
	4 Bits = 42 5 Bits = 52 Special=00	1550=5 1310=3 Special=0			SM28 = 1 PM1550=5 Special=0	Bare fiber=1 900um tube=3 Special=0	Custom	None=1 FC/PC=2 FC/APC=3 SC/PC=4 SC/APC=5 ST/PC=6 LC/PC=7 LC/APC=8 Special=0	