

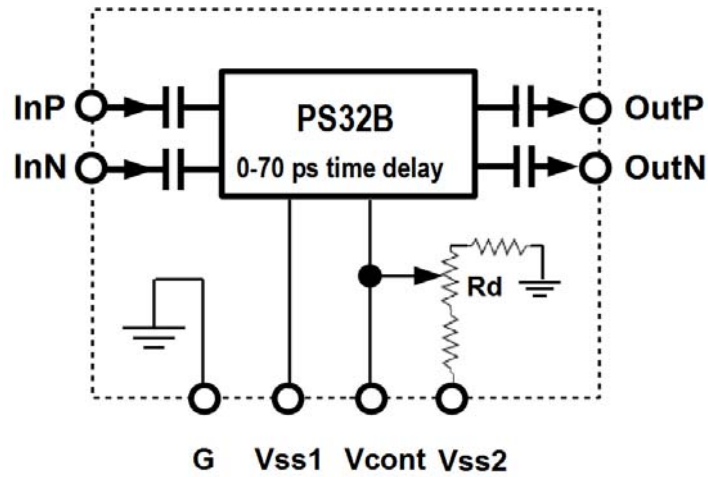
32 Gb/s Time Delay

PS32B

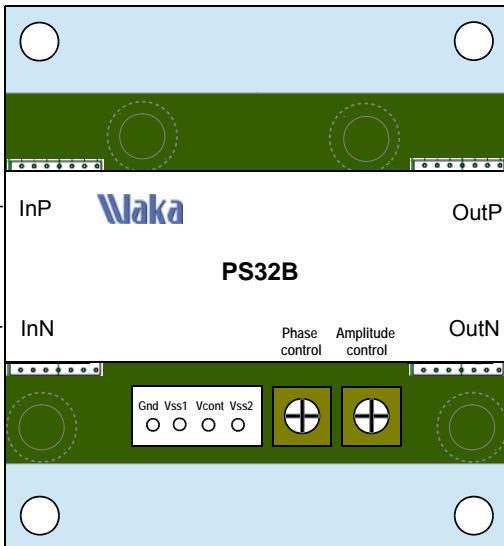
1. Application

Phase adjustment for 32 Gb/s data signals.

2. Block diagram



3. Top view and photograph



4. Terminal description

No	Name	Function	Note
1	InP	Signal Input Positive (Internal AC Coupled)	SMPM/P
2	InN	Signal Input Negative (Internal AC Coupled)	SMPM/P
2	OutP	Signal Output Positive (Internal AC Coupled)	SMPM/P
3	OutN	Signal Output Negative (Internal AC Coupled)	SMPM/P
4	G	Ground	Pin header
5	Vss1	Supply Voltage (3.3V)	Pin header
6	Vcont	Time delay control voltage using external voltage source (1.1 to 2.3V)	Pin header
7	Vss2	Supply Voltage for time delay control using built-in trimmer (3.3V)	Pin header
	Rd	Delay control	Trimmer

5. Absolute maximum ratings

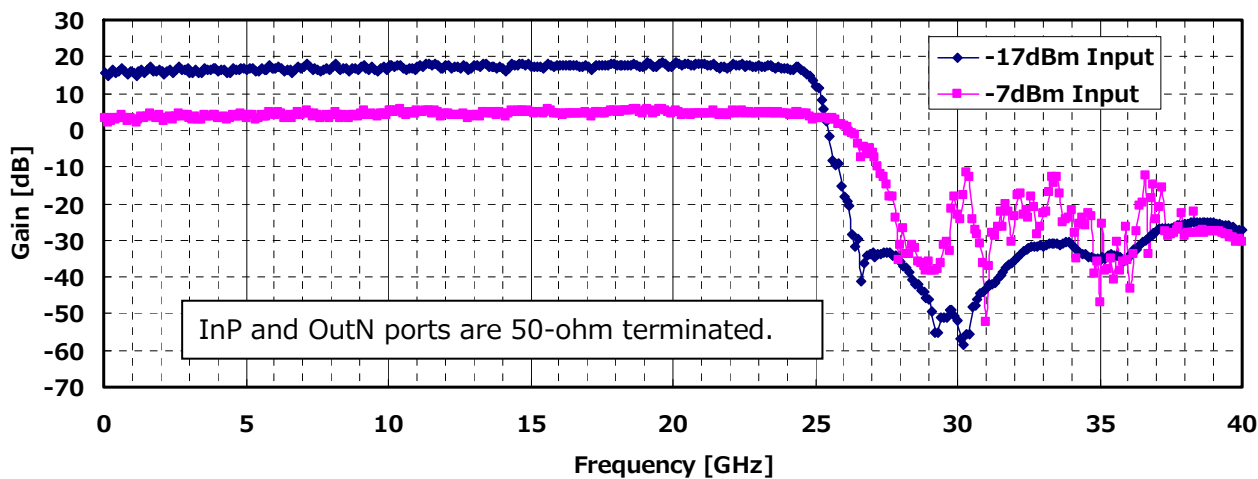
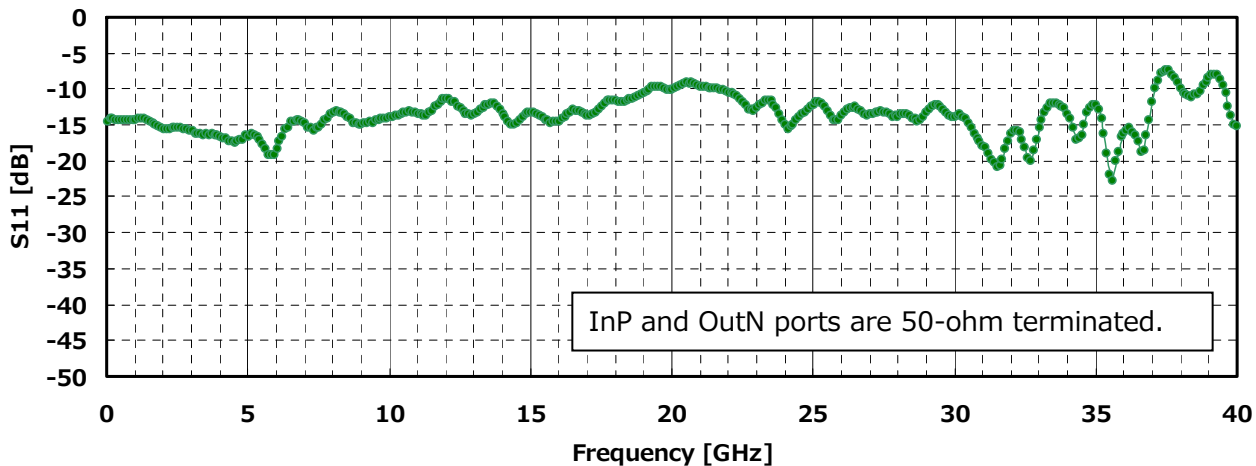
Related terminal	Parameter	Symbol	Unit	Min	Max
Vss1, Vss2	Applied voltage of Vss1, Vss2		V		3.6
In	Apply voltage of In	Pin	dBm		+4 (1Vpp)
	ESD tolerance (HBM)	Vesd	V	-TBD	+TBD
	Storage temperature	Tst	°C	-40	80

6. Characteristics (Ta=25 [°C])

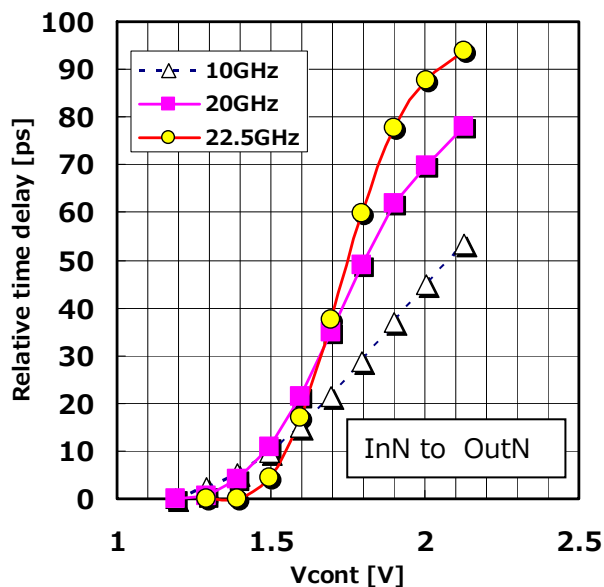
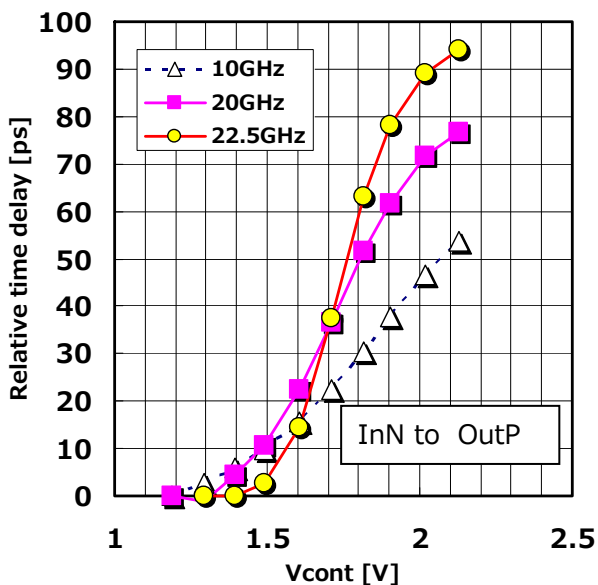
Related terminal	Parameter	Symbol	Unit	Specification		
				Min	Typ	Max
	Operating maximum bit-rate	Bmax	Gb/s		32	
	Operating maximum frequency	fmax	GHz		24	
In, OutP/OutN	Maximum time delay variation at 20 GHz		ps		70	
In	Minimum input voltage (Single ended, the other input terminal 50ohm terminated)	Vinmin	mVpp		50	
	Maximum input voltage (Single ended, the other input terminal 50ohm terminated)	Vinmax	Vpp		0.9	
OutP/OutN	Output voltage	Vout	Vpp		0.2 to 0.8	
	Rise/Fall times	Tr/Tf	ps		14	
	Additive jitter	Tj	ps		0.8 rms	
Vcont	Time delay control input voltage	Vcont	V		1.1 to 2.3	

Vss1, Vss2	Supply voltage	Vss1, Vss2	V	3.1	3.3	3.5
	Supply current of Vss1	Iss1	mA		< 500	
	Supply current of Vss2	Iss2	mA		< 4	
Pdiss	Power dissipation	Pdis	W			2.2

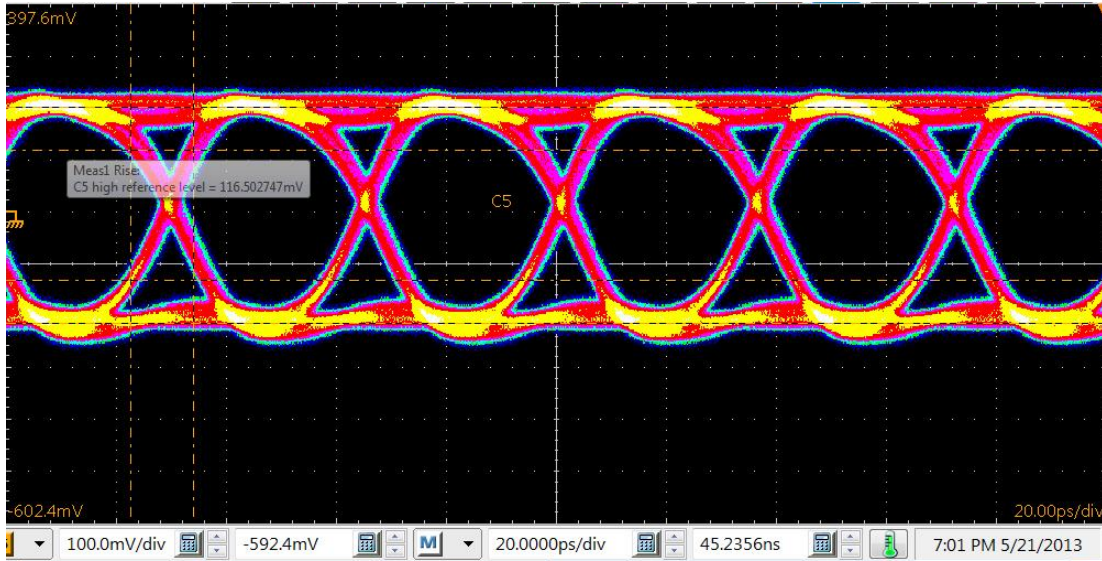
7. Typical frequency responses between InN and OutP ports



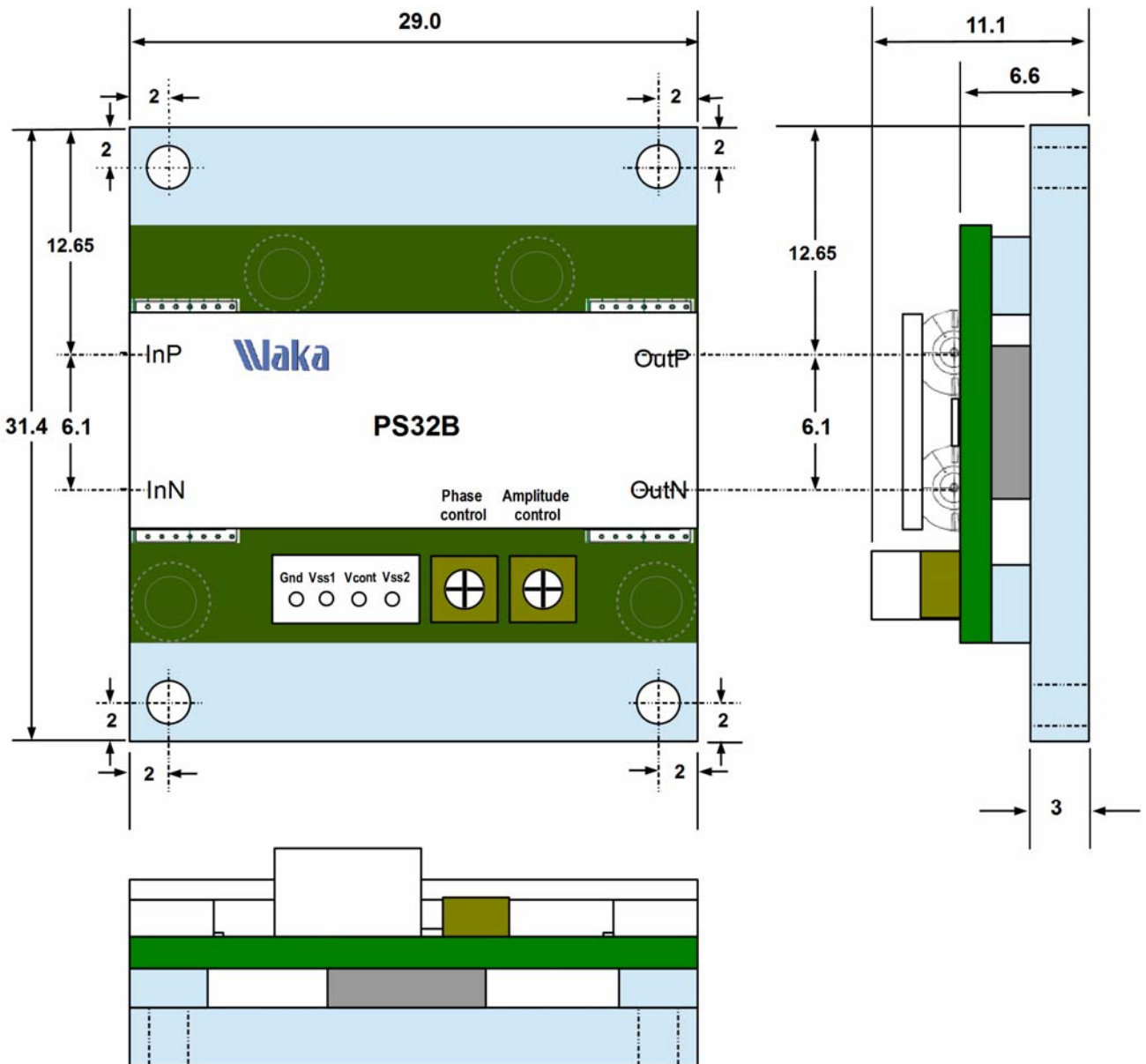
8. Typical time delay characteristics



9. 28Gb/s eye pattern (Vss1,2: 3.3 V, input voltage: 0.35 Vpp, output voltage: 0.53 Vpp)

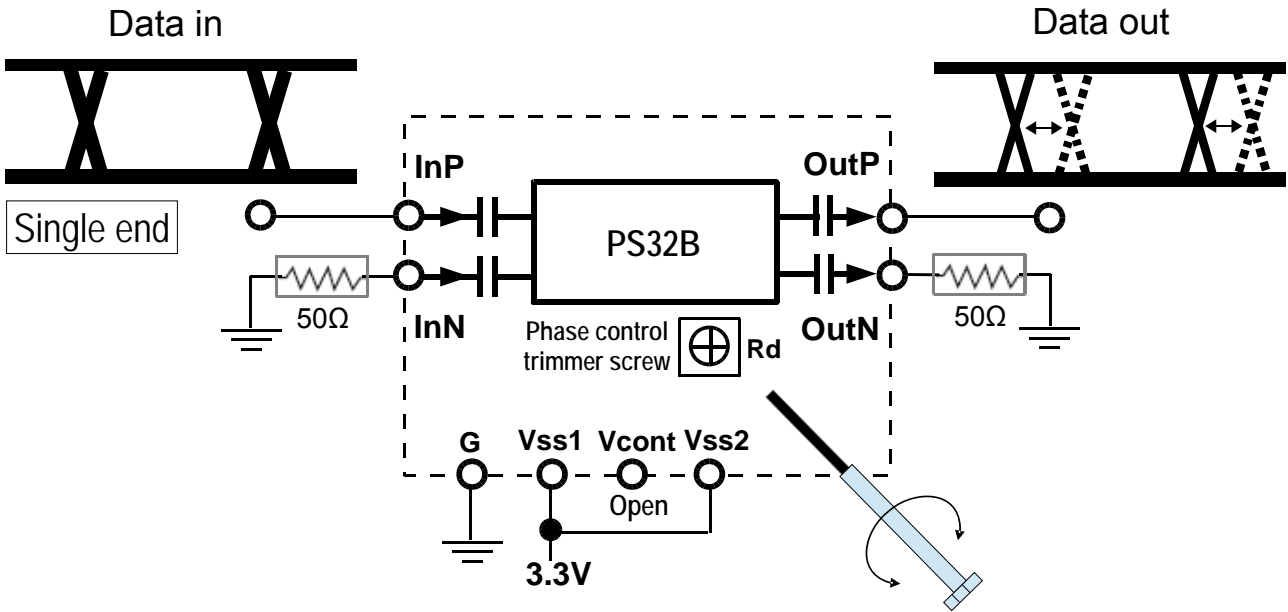


10. Structure (unit: mm, tolerance: ±0.1 mm)

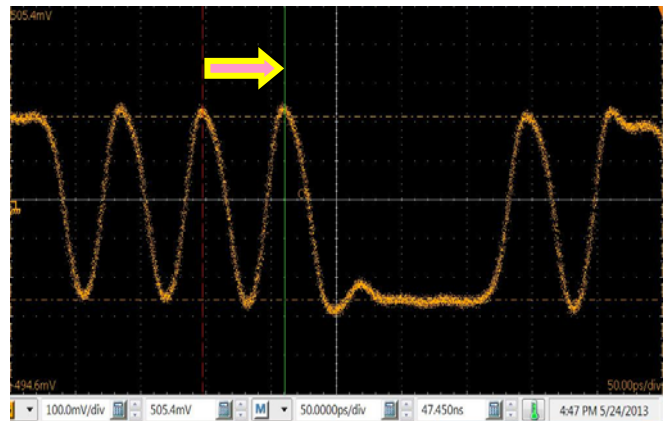
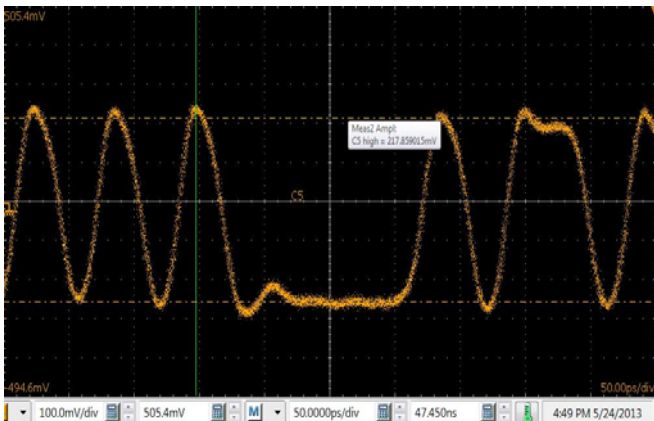
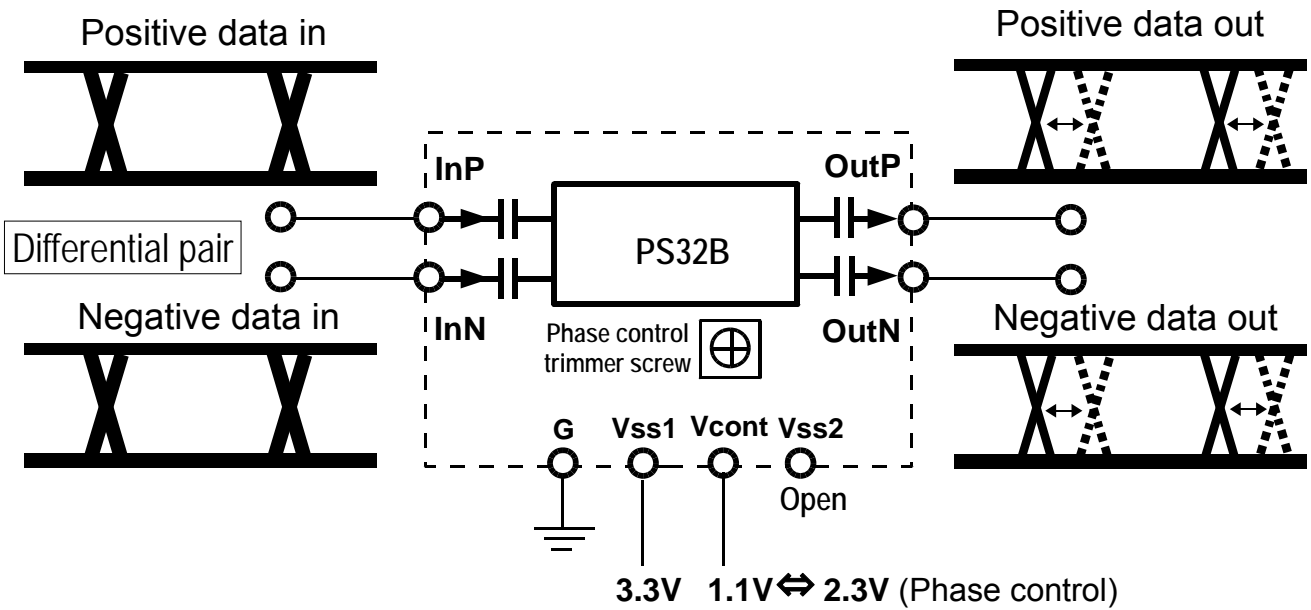


11. Implementation example

- a) Single end operation, time delay adjustment with built-in trimmer



- b) Differential operation, time delay adjustment with external voltage control



32-Gb/s pattern triggered waveforms when voltage of Vcont was set to 1.1 V (left) and 2.3 V (right). 62.5-ps time delay was obtained.

12. Precaution

This product uses ESD sensitive high-speed devices. We recommend that the product is handled with appropriate precaution described below.

- 1) Connect the ground (G) terminal of PS32B to the highest quality ground line in the room and connect this terminal to the ground terminal of test equipment as well.
- 2) Use ESD protection wrist strap which is connected PS32B ground.
- 3) Avoid abnormal mechanical shock.

13. Attachment

- 1) 30 cm Jumper cable with pin header socket: 1