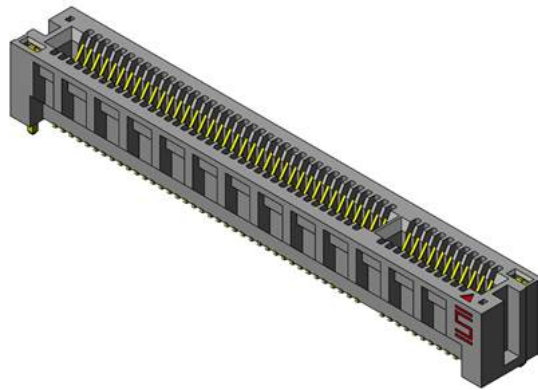




High Speed Characterization Report

PCIE-LP-08-01-F-DV-A-WT



Description:
PCI Express® Low Profile Edge Card Connector,
1.0mm (.0394") Pitch, Accepts 1.60mm (.062") thick cards

Series: PCIE-LP**Description:** 1.00 mm PCI Express® Low Profile Edge Card Connector

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Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

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Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Connector Overview

The PCIE-LP series is a double row, edge-card connector on a 1.0mm (.0394") pitch and accepts .062" (1.60 mm) thick cards. It is low profile provides space saving and supports one, four, eight and sixteen PCI Express® links. The data in this report is applicable to PCIE-LP connector mated to 1.6mm thick card.

Connector System Bandwidth

PCIE-LP Series, 1.0mm (.0394") Pitch Interface, Edge Card Connector

<u>Signaling</u>	<u>-3dB Insertion Loss Bandwidth</u>
Differential (85 Ohm):	15.0 GHz
Differential (100 Ohm):	14.5 GHz

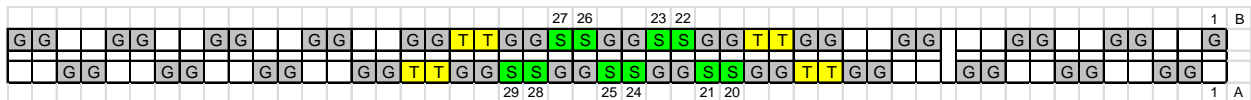
The Connector System Bandwidth is based on the -3 dB insertion loss point of the connector system. The -3 dB point can be used to estimate usable system bandwidth in a typical, two-level signaling environment.

Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Frequency Domain Data Summary

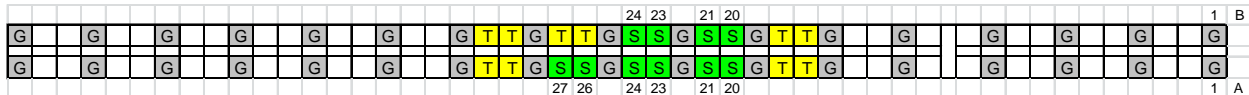
Table 1 - Differential Connector System Performance (85 Ohm)			
Test Parameter	Driver	Receiver	
Insertion Loss	Edge-Card_A24,A25	PCIE-LP_A24,A25	3dB@ 14.8 GHz
Return Loss	Edge-Card_A24,A25	Edge-Card_A24,A25	>10dB to 11.6 GHz
Near-End Crosstalk	Edge-Card_ A24,A25	Edge-Card_A20,A21	<-20dB to 20 GHz
	Edge-Card_ A24,A25	Edge-Card_A28,A29	<-20dB to 20 GHz
	Edge-Card_ A24,A25	Edge-Card_B22,B23	<-20dB to 20 GHz
	Edge-Card_ A24,A25	Edge-Card_B26,B27	<-20dB to 20 GHz
Far-End Crosstalk	Edge-Card_ A24,A25	PCIE-LP_A20,A21	<-20dB to 20 GHz
	Edge-Card_ A24,A25	PCIE-LP_A28,A29	<-20dB to 20 GHz
	Edge-Card_ A24,A25	PCIE-LP_B22,B23	<-20dB to 20 GHz
	Edge-Card_ A24,A25	PCIE-LP_B26,B27	<-20dB to 20 GHz



Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Table 2 - Differential Connector System Performance (100 Ohm)			
Test Parameter	Driver	Receiver	
Insertion Loss	Edge-Card_A23,A24	PCIE-LP_A23,A24	3dB@ 14.4 GHz
Return Loss	Edge-Card_A23,A24	Edge-Card_A23,A24	>10dB to 11.1 GHz
Near-End Crosstalk	Edge-Card_A23,A24	Edge-Card_A20,A21	<-20dB to 20 GHz
	Edge-Card_A23,A24	Edge-Card_A26,A27	<-20dB to 20 GHz
	Edge-Card_A23,A24	Edge-Card_B20,B21	<-20dB to 20 GHz
	Edge-Card_A23,A24	Edge-Card_B23,B24	<-20dB to 20 GHz
Far-End Crosstalk	Edge-Card_A23,A24	PCIE-LP_A20,A21	<-20dB to 20 GHz
	Edge-Card_A23,A24	PCIE-LP_A26,A27	<-20dB to 20 GHz
	Edge-Card_A23,A24	PCIE-LP_B20,B21	<-20dB to 20 GHz
	Edge-Card_A23,A24	PCIE-LP_B23,B24	<-20dB to 20 GHz



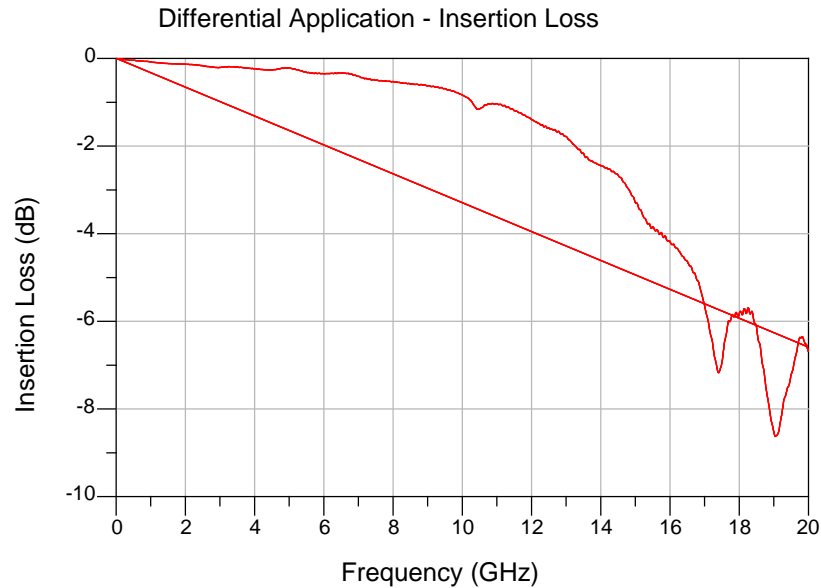
Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

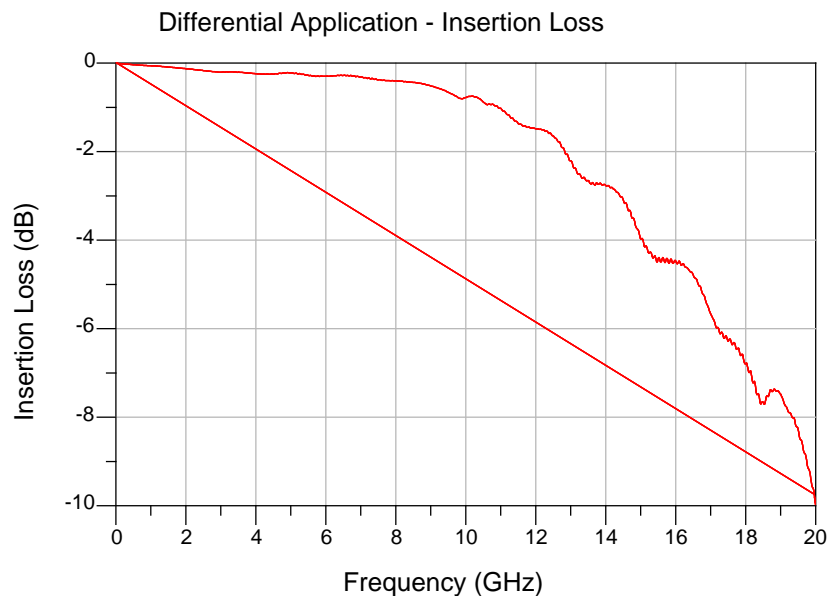
Bandwidth Chart – Differential Insertion Loss

PCIE-LP Connector Series

85Ohm



100Ohm



Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Time Domain Data Summary

Table 3 - Differential Impedance (Ω)-85 Ohm					
Signal Rise-time	30ps	50ps	100ps	250ps	500ps
Maximum Impedance	90.9	88.3	85.2	82.0	80.5
Minimum Impedance	77.9	77.9	78.0	78.3	79.9

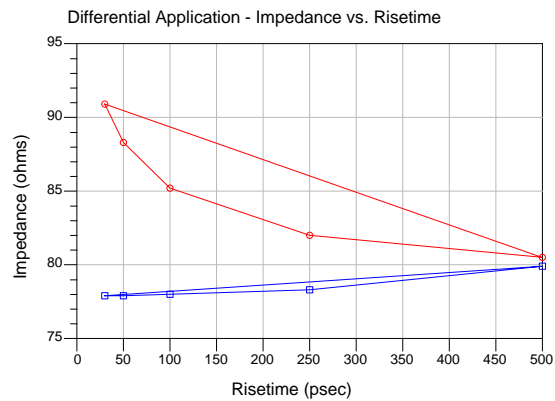
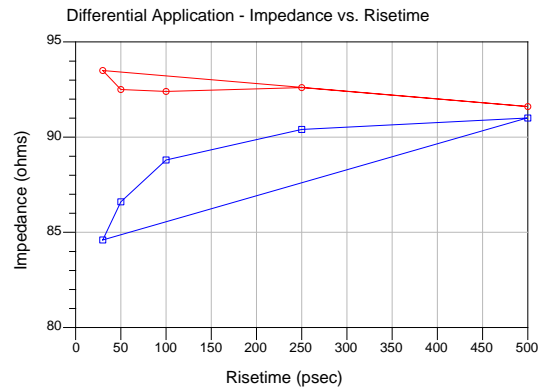


Table 4 - Differential Impedance (Ω)-100 Ohm					
Signal Rise-time	30ps	50ps	100ps	250ps	500ps
Maximum Impedance	93.5	92.5	92.4	92.6	91.6
Minimum Impedance	84.6	86.6	88.8	90.4	91.0



Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Table 5 - Differential Crosstalk (%) -85 Ohm						
Input(tr)	Driver	Receiver	30ps	50ps	100ps	250ps
NEXT	Edge-Card_A24,A25	Edge-Card_A20,A21	0.16	<0.1	<0.1	<0.1
	Edge-Card_A24,A25	Edge-Card_A28,A29	0.18	0.10	<0.1	<0.1
	Edge-Card_A24,A25	Edge-Card_B22,B23	0.58	0.43	0.25	0.10
	Edge-Card_A24,A25	Edge-Card_B26,B27	<0.1	<0.1	<0.1	<0.1
FEXT	Edge-Card_A24,A25	PCIE-LP_A20,A21	0.33	0.25	0.12	<0.1
	Edge-Card_A24,A25	PCIE-LP_A28,A29	0.33	0.24	0.12	<0.1
	Edge-Card_A24,A25	PCIE-LP_B22,B23	0.20	0.13	<0.1	<0.1
	Edge-Card_A24,A25	PCIE-LP_B26,B27	<0.1	<0.1	<0.1	<0.1

Table 6 - Differential Crosstalk (%) -100 Ohm						
Input(tr)	Driver	Receiver	30ps	50ps	100ps	250ps
NEXT	Edge-Card_A23,A24	Edge-Card_A20,A21	0.49	0.39	0.29	0.15
	Edge-Card_A23,A24	Edge-Card_A26,A27	0.50	0.39	0.29	0.15
	Edge-Card_A23,A24	Edge-Card_B20,B21	0.17	0.15	<0.1	<0.1
	Edge-Card_A23,A24	Edge-Card_B23,B24	1.54	1.26	0.76	0.33
FEXT	Edge-Card_A23,A24	PCIE-LP_A20,A21	0.61	0.43	0.19	<0.1
	Edge-Card_A23,A24	PCIE-LP_A26,A27	0.64	0.45	0.22	<0.1
	Edge-Card_A23,A24	PCIE-LP_B20,B21	<0.1	<0.1	<0.1	<0.1
	Edge-Card_A23,A24	PCIE-LP_B23,B24	<0.1	<0.1	<0.1	<0.1

Table 7 - Propagation Delay (Mated Connector)	
Differential (85 Ohm)	53 ps
Differential (100 Ohm)	47 ps

Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Characterization Details

This report presents data that characterizes the signal integrity response of a connector pair in a controlled printed circuit board (PCB) environment. All efforts are made to reveal typical best-case responses inherent to the system under test (SUT).

In this report, the SUT includes the connector pair and footprint effects on a typical multi-layer PCB. PCB effects (trace loss) are de-embedded from test data. Board related effects, such as pad-to-ground capacitance, are included in the data presented in this report.

Additionally, intermediate test signal connections can mask the connector's true performance. Such connection effects are minimized by using high performance test cables and adapters. Where appropriate, calibration and de-embedding routines are also used to reduce residual effects.

Differential and Single-Ended Data

Most Samtec connectors can be used successfully in both differential and single-ended applications. However, electrical performance will differ depending on the signal drive type. In this report, data is presented for differentially driven scenarios.

Connector Signal to Ground Ratio

Samtec connectors are most often designed for generic applications and can be implemented using various signal and ground pin assignments. In high speed systems, provisions must be made in the interconnect for signal return currents. Such paths are often referred to as "ground". In some connectors, a ground plane or blade, or an outer shield, is used as the signal return, while in others, connector pins are used as signal returns. Various combinations of signal pins, ground blades, and shields can also be utilized. Electrical performance can vary significantly depending upon the number and location of ground pins.

In general, the more pins dedicated to ground, the better electrical performance will be. But dedicating pins to ground reduces signal density of a connector. Therefore, care must be taken when choosing signal/ground ratios in cost or density-sensitive applications.

Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

For this connector, the following array configurations were evaluated:

85 Ohm use “GGSSGGSSGG” PCIe pin configuration

G	G		G	G		G	G		G	G		G	G		G	G	27	26	G	23	22	G		G	G		G	G		G	G		G	B
	G	G		G	G		G	G		G	G		G	G	29	28	G	25	24	G	21	20	G		G	G		G	G		G	A		

100 Ohm use “GSSGSSG” pin configuration

G		G		G		G		G		G		G		G		G	24	23	G	21	20	G		G		G		G		G		G	B
G		G		G		G		G		G		G		G	27	26	G	24	23	G	21	20	G		G		G		G		G	A	

Differential Impedance (denoted by green circles):

- 85 Ohm use “GGSSGGSSGG” PCIe pin configuration
- 100 Ohm use “GSSGSSG” pin configuration

Differential Crosstalk (denoted by red circles):

- 85 Ohm use “GGSSGGSSGG” PCIe pin configuration
- 100 Ohm use “GSSGSSG” pin configuration

Only one differential pair was driven for crosstalk measurements.

Other configurations can be evaluated upon request. Please contact sig@samtec.com for more information.

In a real system environment, active signals might be located at the outer edges of the signal contacts of concern, as opposed to the ground signals utilized in laboratory testing. For example, in a single-ended system, a pin-out of “SSSS”, or four adjacent single ended signals might be encountered as opposed to the “GSG” and “GSSG” configurations tested in the laboratory. Electrical characteristics in such applications could vary slightly from laboratory results. But in most applications, performance can safely be considered equivalent.

Signal Edge Speed (Rise Time):

In pulse signaling applications, the perceived performance of the interconnect can vary significantly depending on the edge rate or rise time of the exciting signal. For this report, the fastest rise time used was 30 ps. Generally, this should demonstrate worst-case performance.

In many systems, the signal edge rate will be significantly slower at the connector than at the driver launch point. To estimate interconnect performance at other edge rates, data is provided for several rise times between 30ps and 500ps.

For this report, measured rise times were at 10%-90% signal levels.

Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Frequency Domain Data

Frequency Domain parameters are helpful in evaluating the connector system's signal loss and crosstalk characteristics across a range of sinusoidal frequencies. In this report, parameters presented in the Frequency Domain are Insertion Loss, Return Loss, and Near-End and Far-End Crosstalk. Other parameters or formats, such as VSWR or S-Parameters, may be available upon request. Please contact our Signal Integrity Group at sig@samtec.com for more information. Frequency performance characteristics for the SUT are generated directly from network analyzer measurements.

Time Domain Data

Time Domain parameters indicate Impedance mismatch versus length, signal propagation time, and crosstalk in a pulsed signal environment. The measured S-Parameters from the network analyzer are post-processed using Agilent Advanced Design System to obtain the time domain response. Time Domain procedure is provided in [Appendix E](#) of this report. Parameters or formats not included in this report may be available upon request. Please contact our Signal Integrity Group at sig@samtec.com for more information.

In this report, propagation delay is defined as the signal propagation time through the connector and connector footprint. It includes 10 mils of PCB trace on the PCIE-LP connector and Edge Card side each. Delay is measured at 100 picoseconds signal rise time. Delay is calculated as the difference in time measured between the 50% amplitude levels of the input and output pulses.

Crosstalk or coupled noise data is provided for various signal configurations. All measurements are single disturber. Crosstalk is calculated as a ratio of the input line voltage to the coupled line voltage. The input line is sometimes described as the active or drive line. The coupled line is sometimes described as the quiet or victim line. Crosstalk ratio is tabulated in this report as a percentage. Measurements are made at both the near-end and far-end of the SUT. Data for other configurations may be available. Please contact our Signal Integrity Group at sig@samtec.com for further information.

As a rule of thumb, 10% crosstalk levels are often used as a general first pass limit for determining acceptable interconnect performance. But modern system crosstalk tolerance can vary greatly. For advice on connector suitability for specific applications, please contact our Signal Integrity Group at sig@samtec.com.

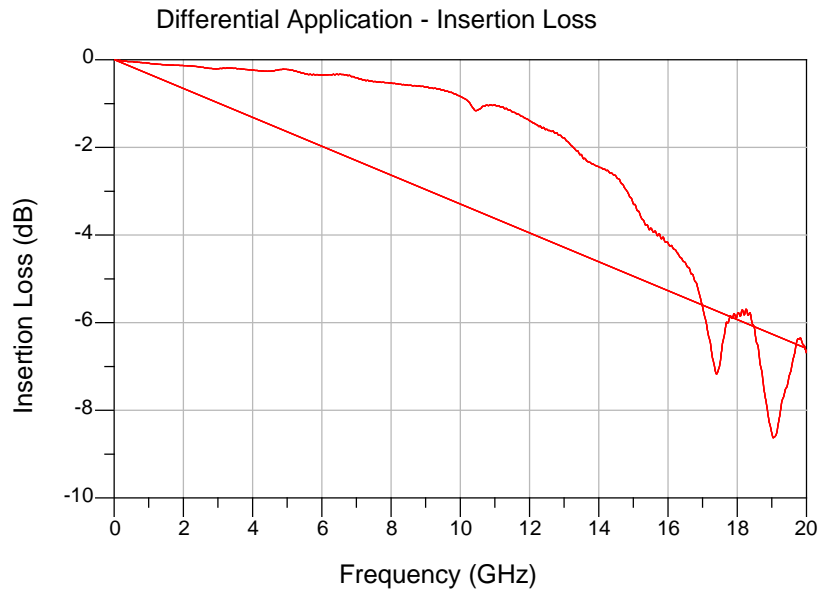
Additional information concerning test conditions and procedures is in the appendices of this report. Further information may be obtained by contacting our Signal Integrity Group at sig@samtec.com.

Series: PCIE-LP

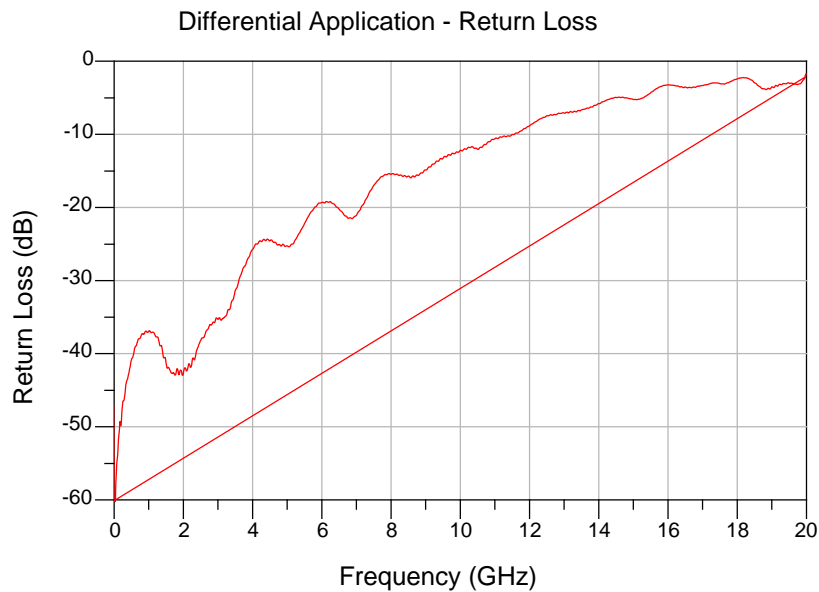
Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Appendix A – Frequency Domain Response Graphs

Differential Application (85 Ohm) – Insertion Loss



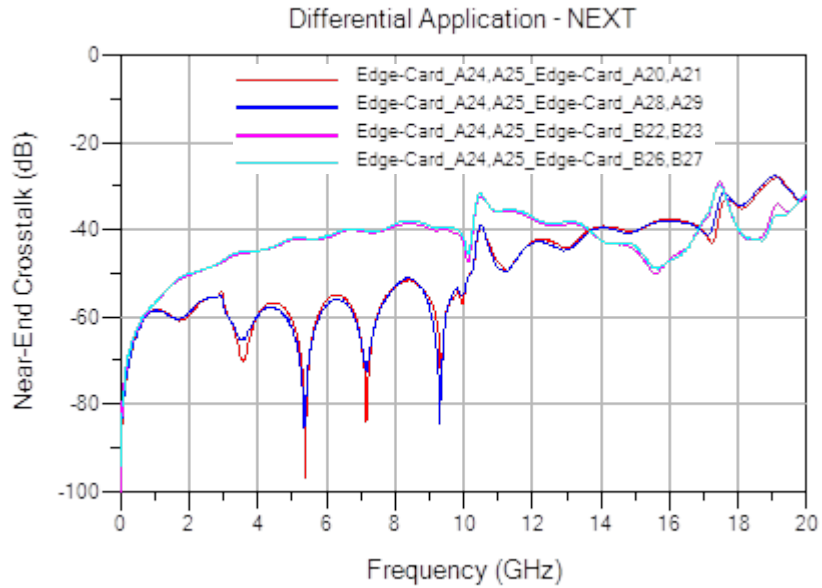
Differential Application (85 Ohm) – Return Loss



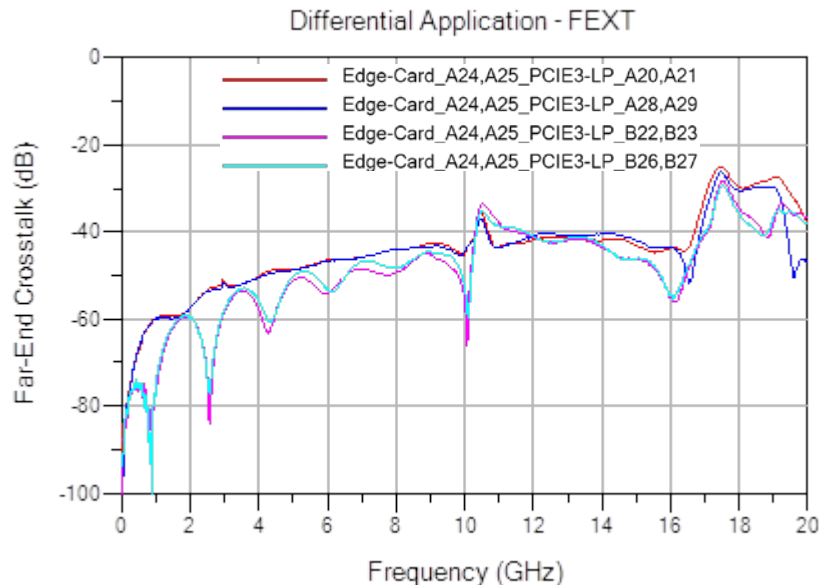
Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Differential Application (85 Ohm) – NEXT Configurations



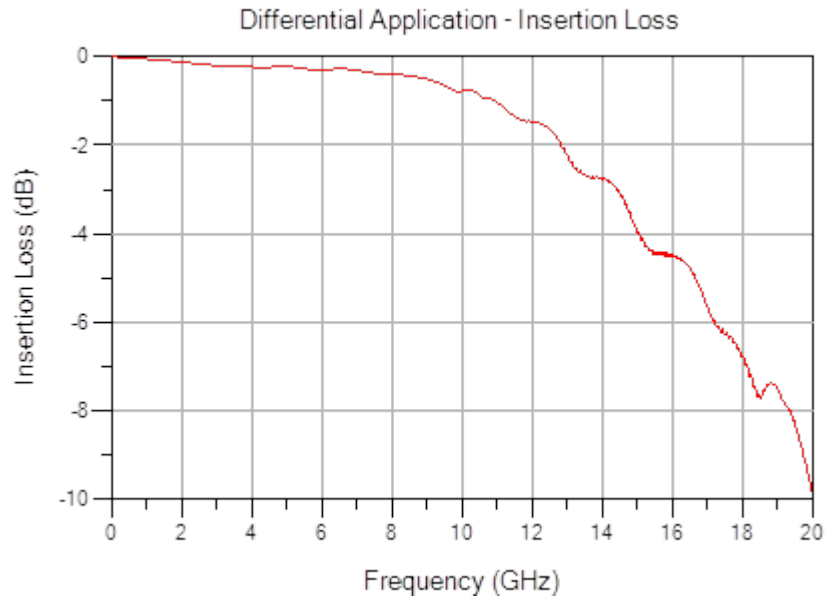
Differential Application (85 Ohm) – FEXT Configurations



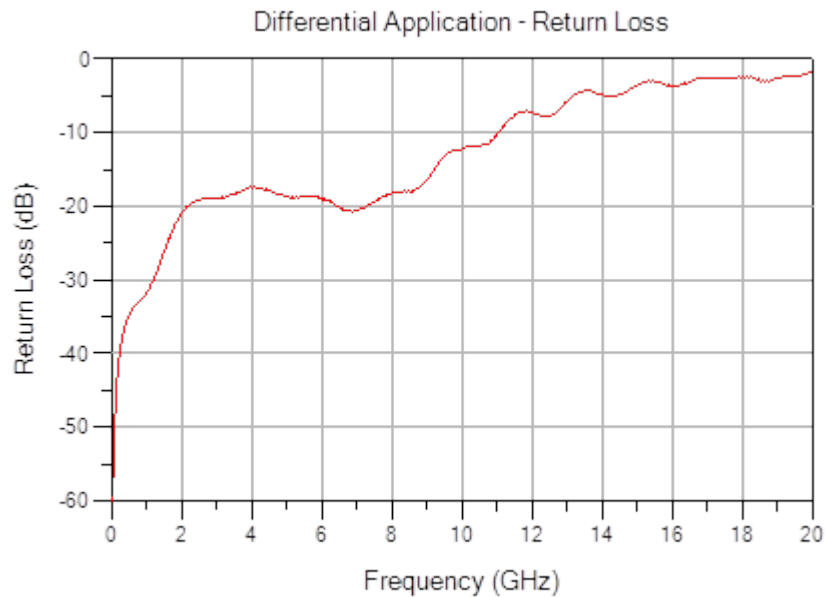
Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Differential Application (100 Ohm) – Insertion Loss



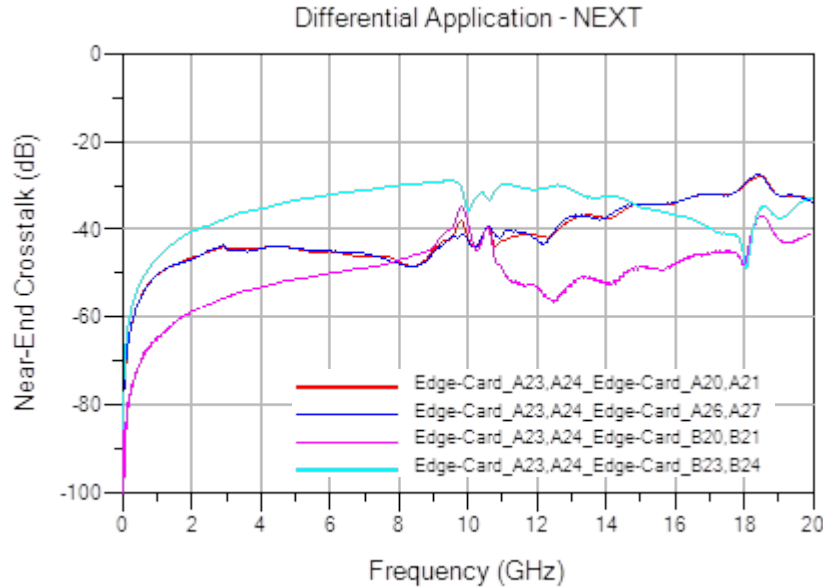
Differential Application (100 Ohm) – Return Loss



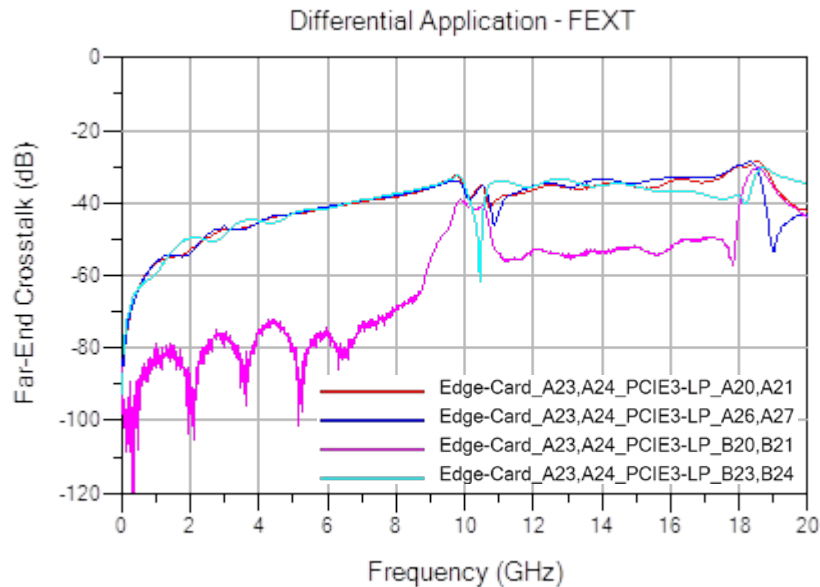
Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Differential Application (100 Ohm) – NEXT Configurations



Differential Application (100 Ohm) – FEXT Configurations

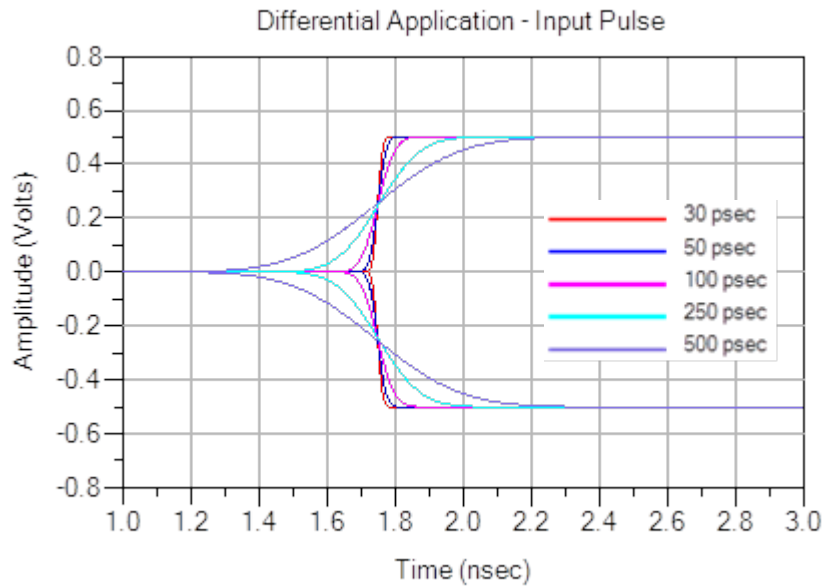


Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Appendix B – Time Domain Response Graphs

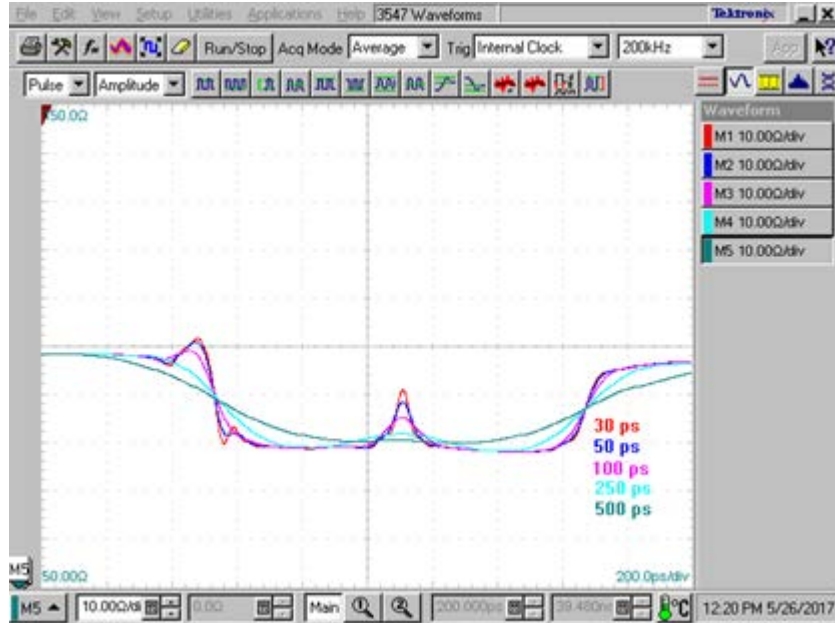
Differential Application (85 Ohm) – Input Pulse



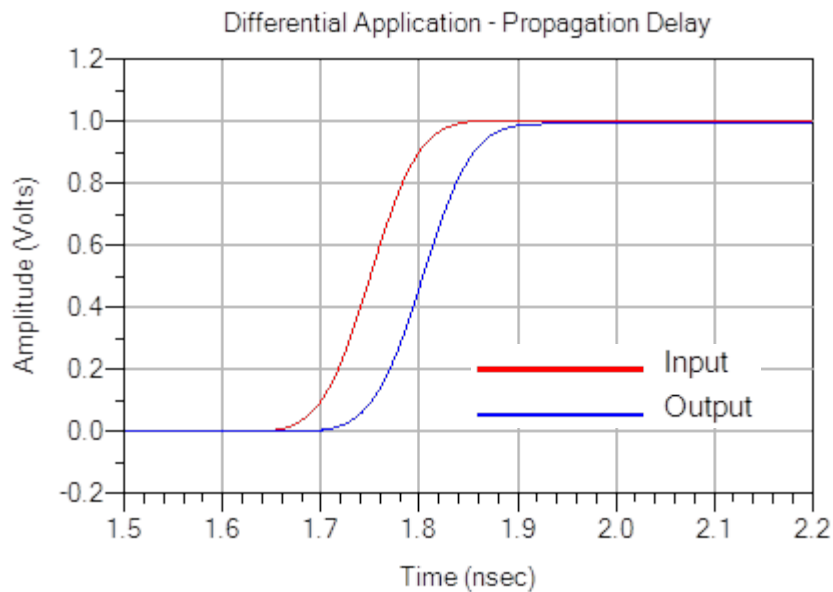
Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Differential Application (85 Ohm) – Impedance



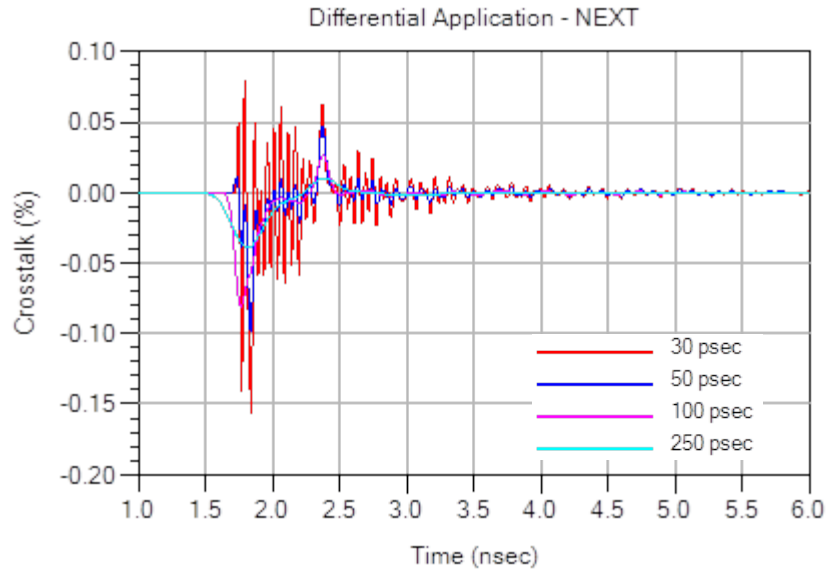
Differential Application (85 Ohm) – Propagation Delay



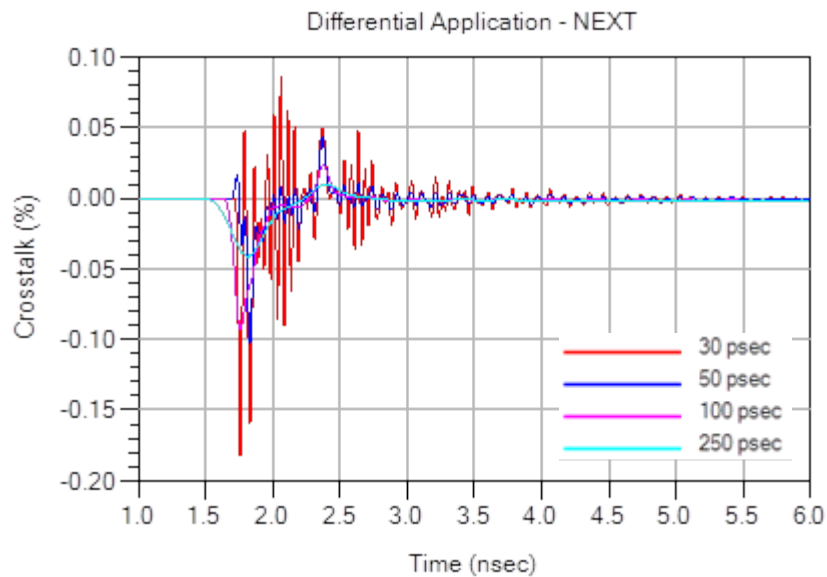
Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Differential Application (85 Ohm) – NEXT, Edge-Card_A24,A25_Edge-Card_A20,A21



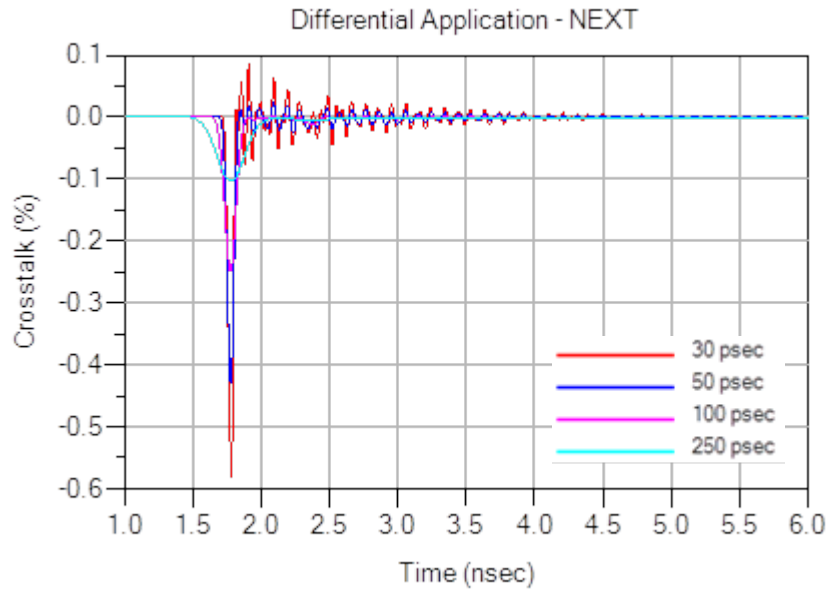
Differential Application (85 Ohm) – NEXT, Edge-Card_A24,A25_Edge-Card_A28,A29



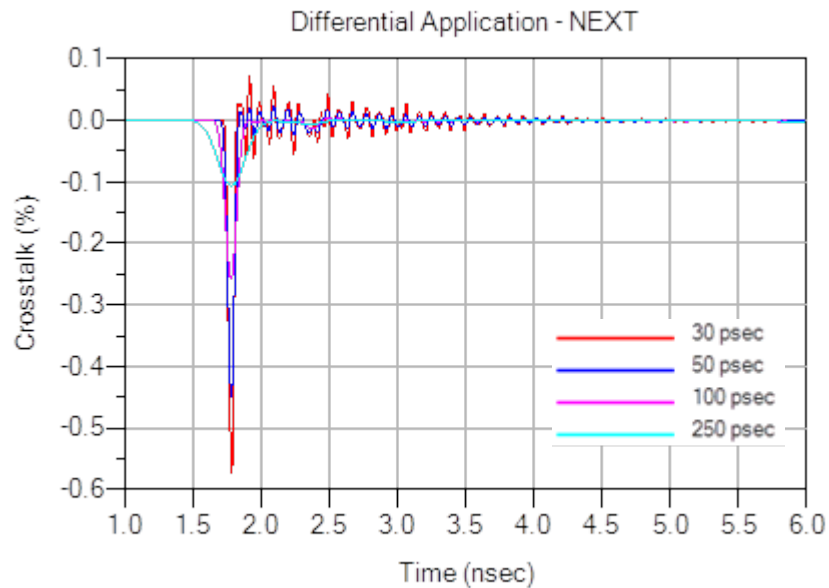
Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Differential Application (85 Ohm) – NEXT, Edge-Card_A24,A25_Edge-Card_B22,B23



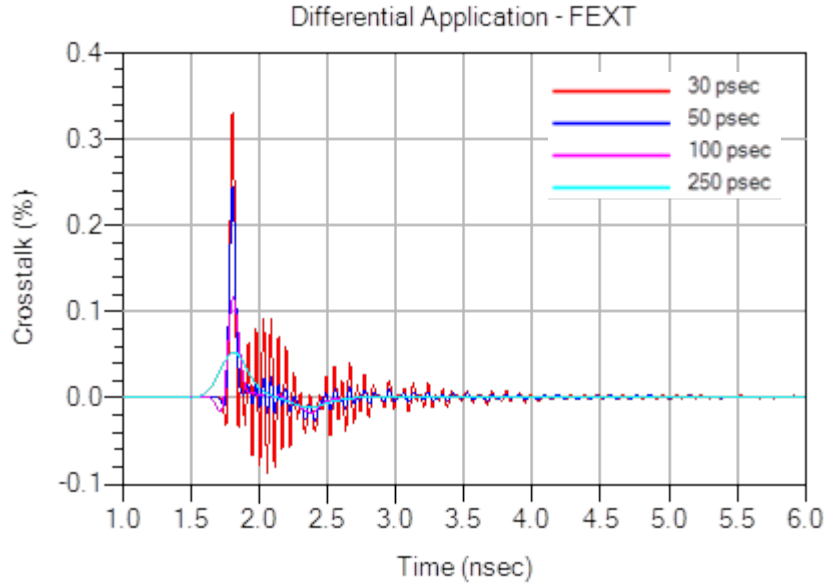
Differential Application (85 Ohm) – NEXT, Edge-Card_A24,A25_Edge-Card_B26,B27



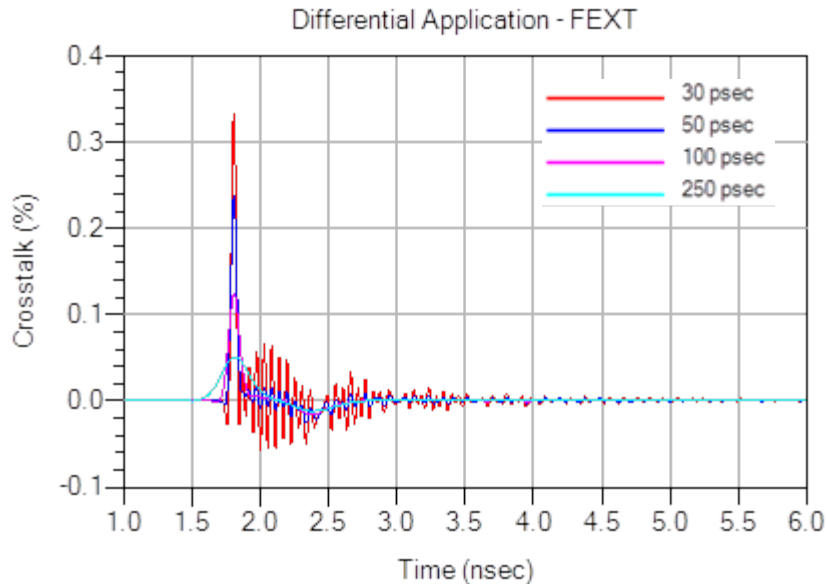
Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Differential Application (85 Ohm) – FEXT, Edge-Card_A24,A25_PCIE-LP_A20,A21



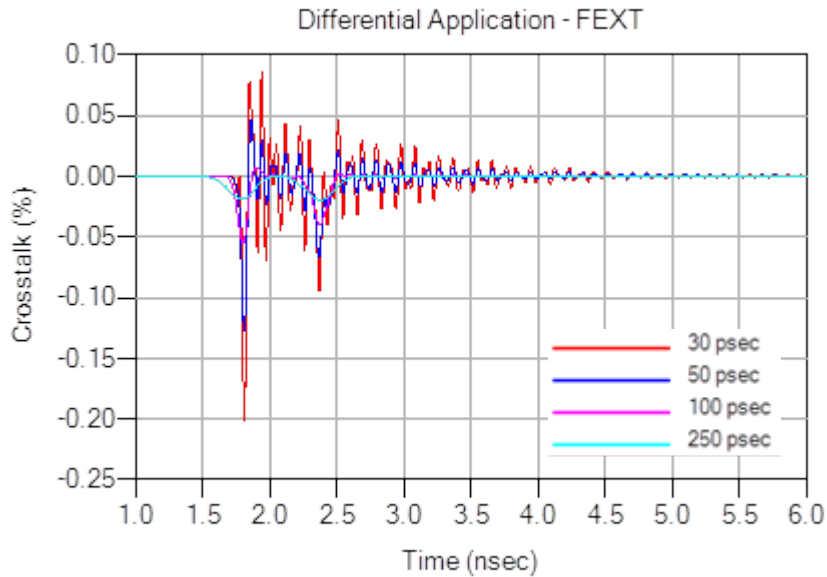
Differential Application (85 Ohm) – FEXT, Edge-Card_A24,A25_PCIE-LP_A28,A29



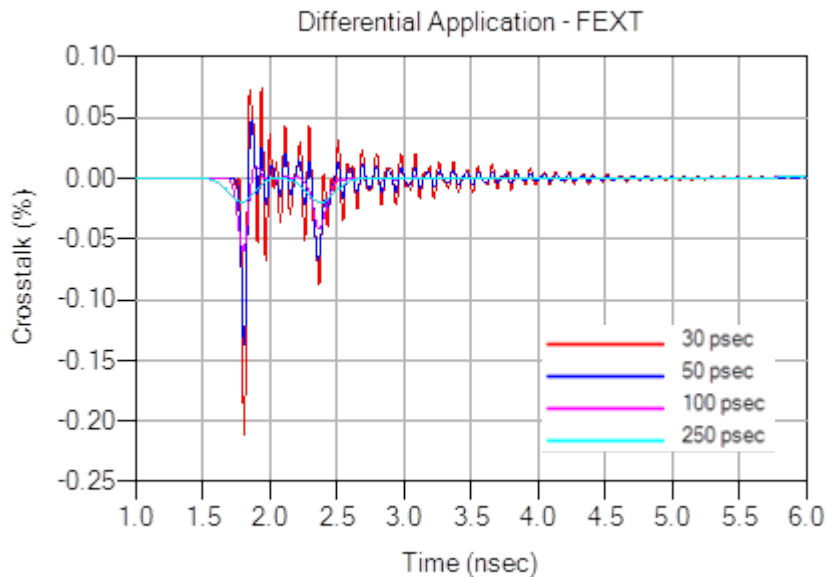
Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Differential Application (85 Ohm) – FEXT, Edge-Card_A24,A25_PCIE-LP_B22,B23



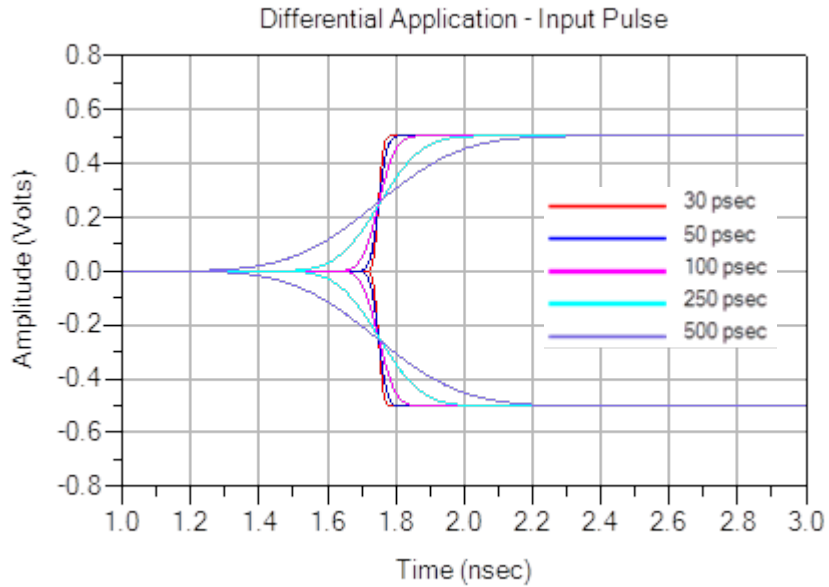
Differential Application (85 Ohm) – FEXT, Edge-Card_A24,A25_PCIE-LP_B26,B27



Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

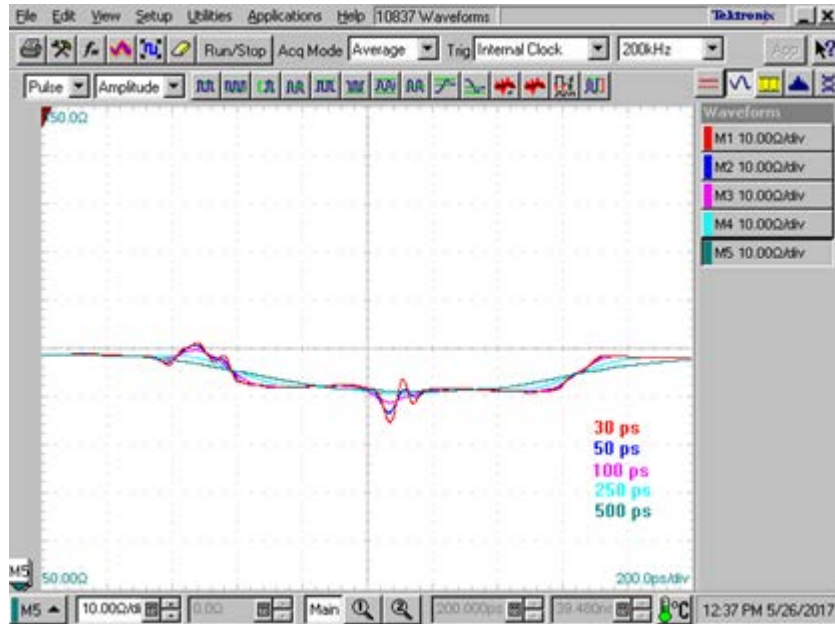
Differential Application (100 Ohm) – Input Pulse



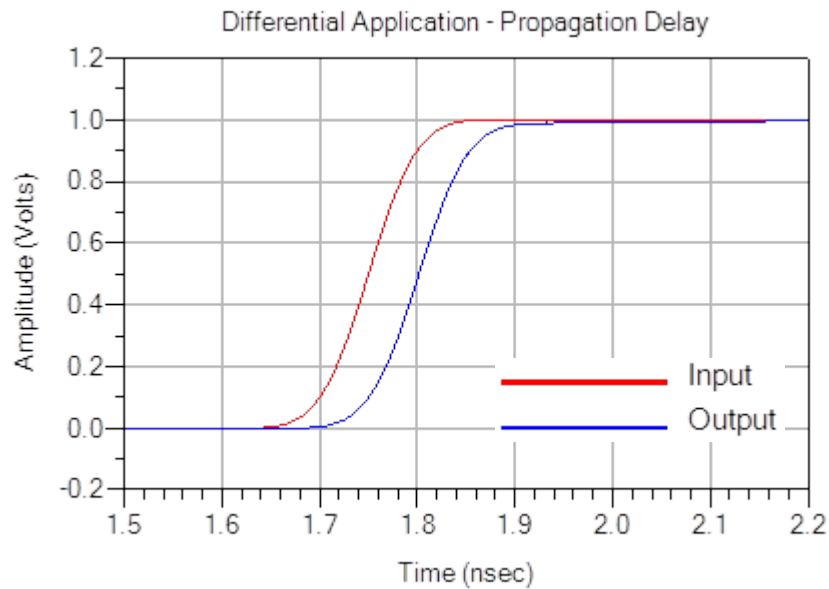
Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Differential Application (100 Ohm) – Impedance



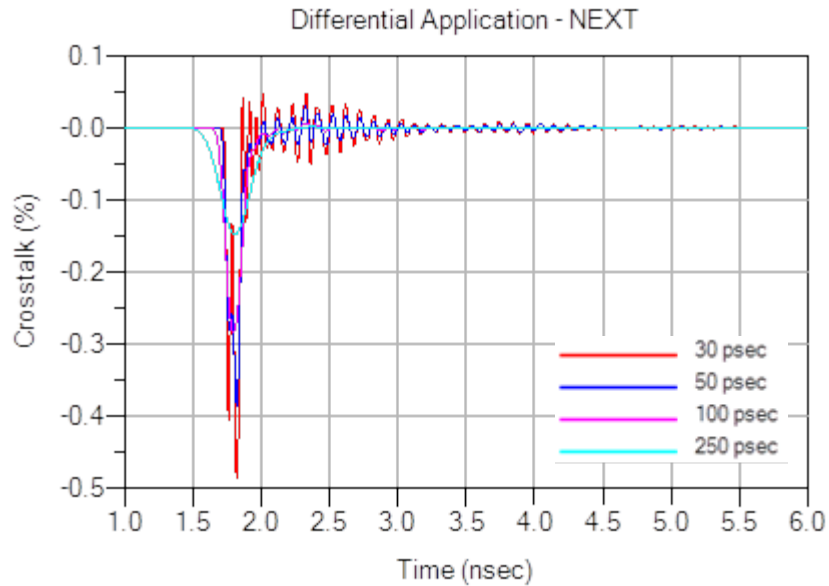
Differential Application (100 Ohm) – Propagation Delay



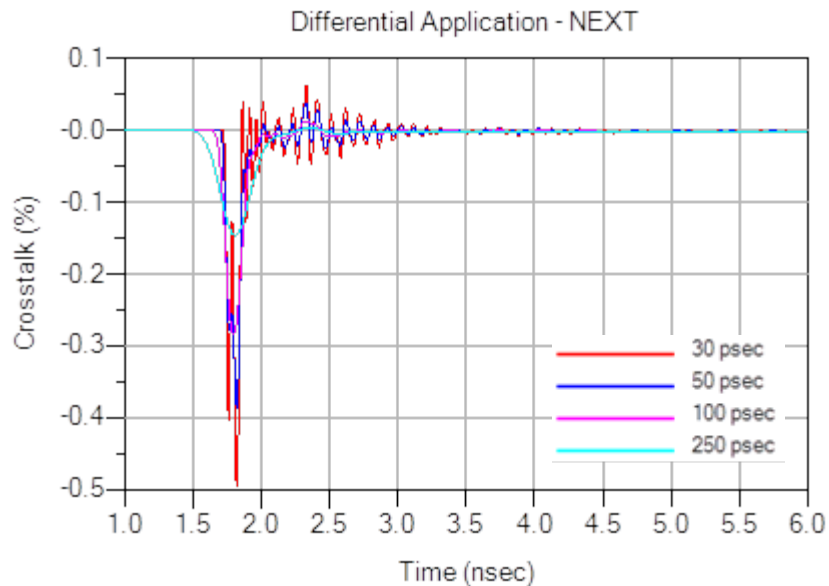
Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Differential Application (100 Ohm) – NEXT, Edge-Card_A23,A24_Edge-Card_A20,A21



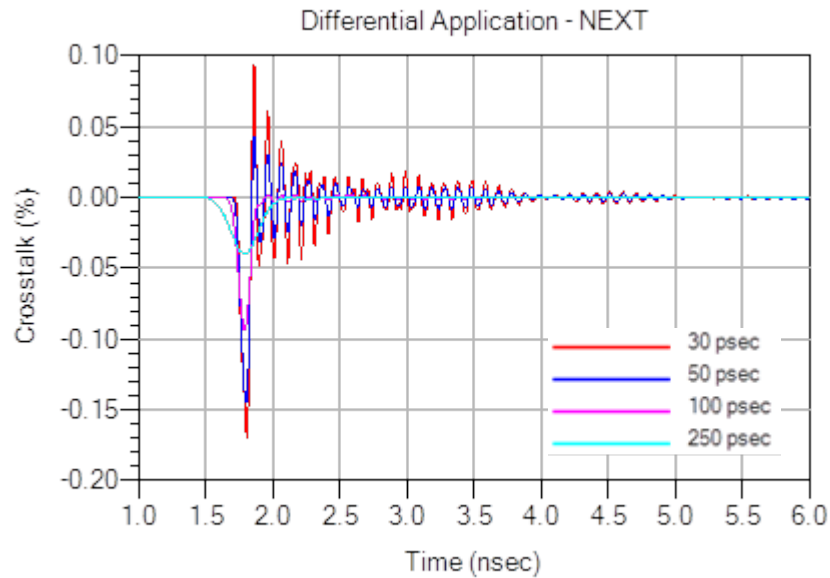
Differential Application (100 Ohm) – NEXT, Edge-Card_A23,A24_Edge-Card_A26,A27



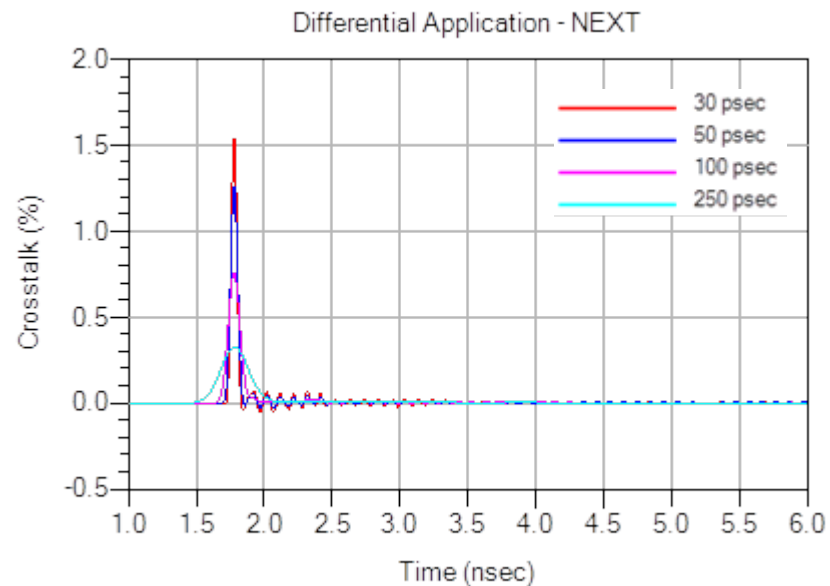
Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Differential Application (100 Ohm) – NEXT, Edge-Card_A23,A24_Edge-Card_B20,B21



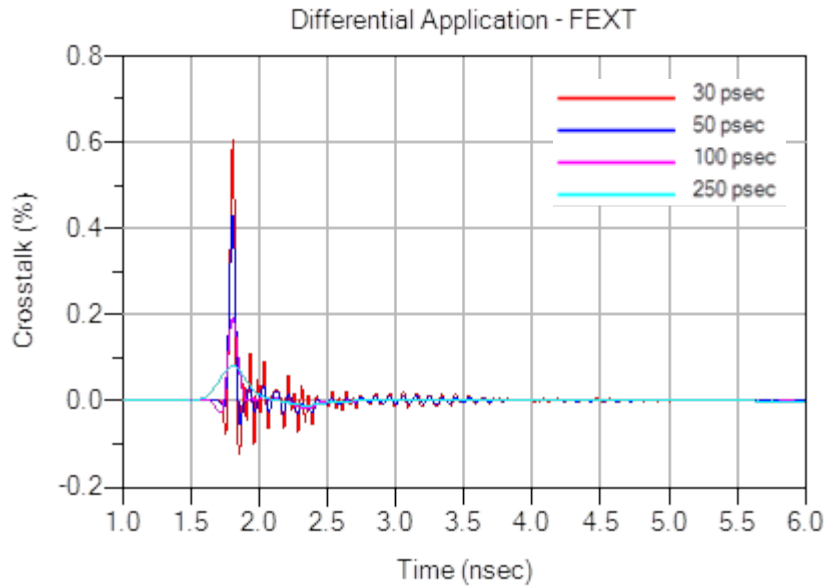
Differential Application (100 Ohm) – NEXT, Edge-Card_A23,A24_Edge-Card_B23,B24



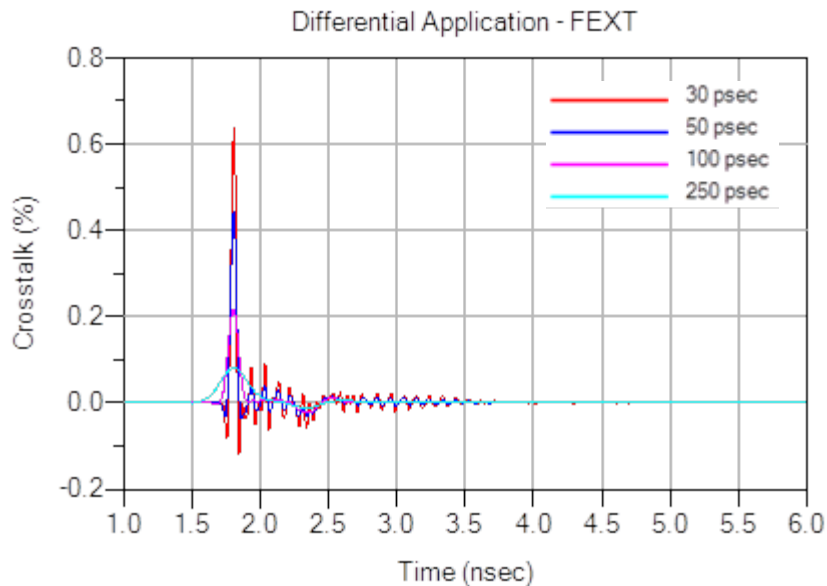
Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Differential Application (100 Ohm) – FEXT, Edge-Card_A23,A24_PCIE-LP_A20,A21



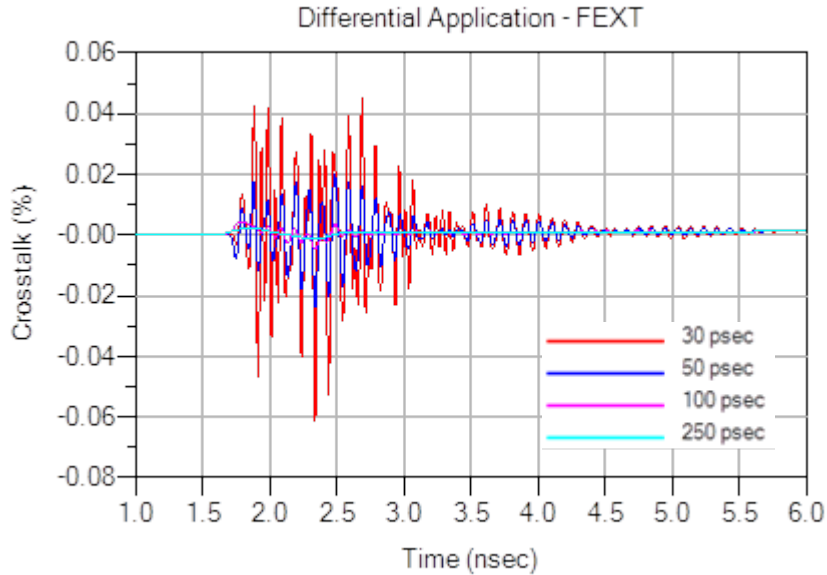
Differential Application (100 Ohm) – FEXT, Edge-Card_A23,A24_PCIE-LP_A26,A27



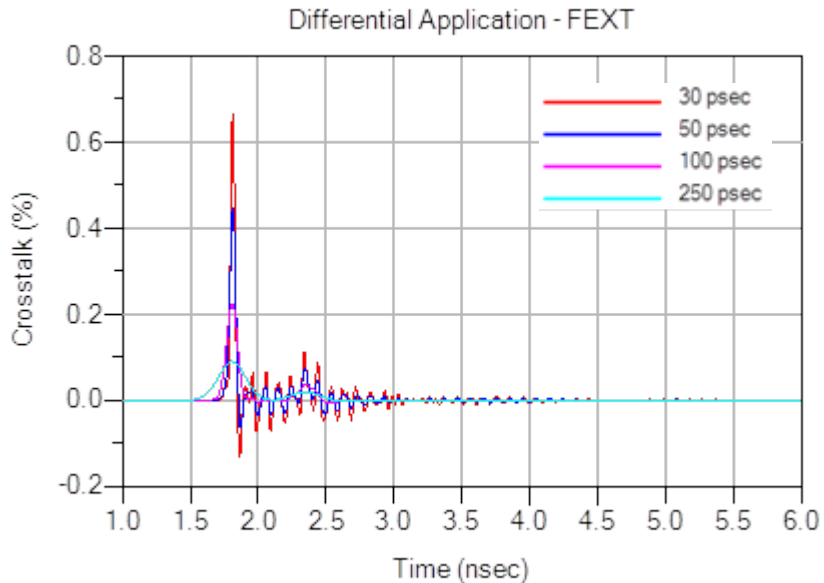
Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Differential Application (100 Ohm) – FEXT, Edge-Card_A23,A24_PCIE-LP_B20,B21



Differential Application (100 Ohm) – FEXT, Edge-Card_A23,A24_PCIE-LP_B23,B24



Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Appendix C – Product and Test System Descriptions

Product Description

Product test samples are vertical surface mount PCIE-LP Series connectors. The part number is PCIE-LP-08-01-F-DV-A-WT. The PCIE-LP Series connector are surface mount products. Each connector has two rows of contacts evenly spaced on a 1.0mm (.0394") pitch. The PCIE-LP Series connectors use an edge card contact system. A photo of the test articles mounted to SI test boards is shown below.

Test System Description

The test fixtures are composed of four-layer FR-4 material with 50Ω signal trace and pad configurations designed for the electrical characterization of Samtec high speed connector products. A PCB mount SMA connector is used to interface the VNA test cables to the test fixtures. Optimization of the SMA launch was performed using full wave simulation tools to minimize reflections. Four test fixtures are specific to the PCIE-LP series connector set and identified by part numbers PCB-107870-SIG-01-A and B, PCB-107870-SIG-02-A and B. Calibration standards specific to the PCIE-LP series are located on the same boards.

PCB-107870-SIG-XX Test Fixtures

Shown below is a photograph of the one of the three test board sets.

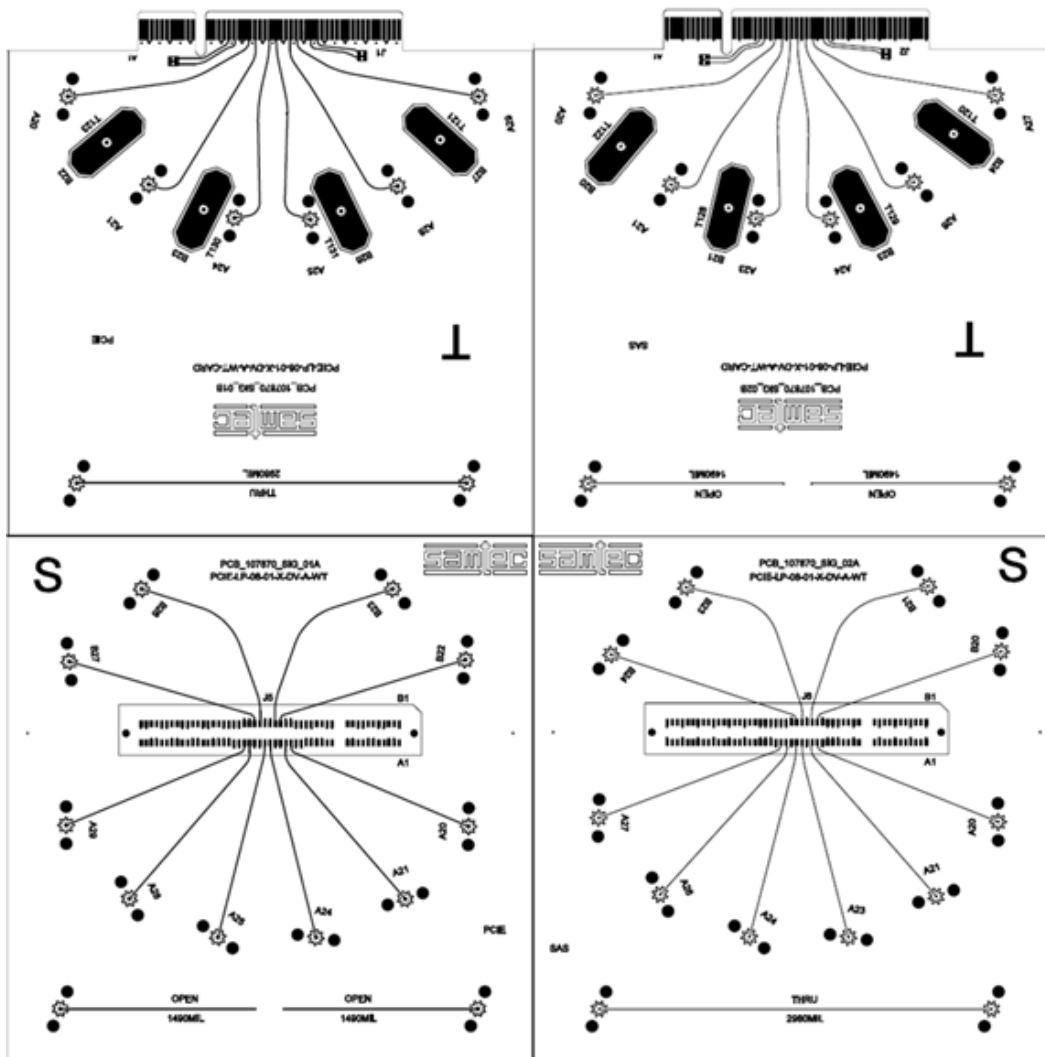


Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

PCB-107870-SIG-XX PCB Layout Panel

Artwork of the PCB design is shown below.



Series: PCIe-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

PCB Fixtures

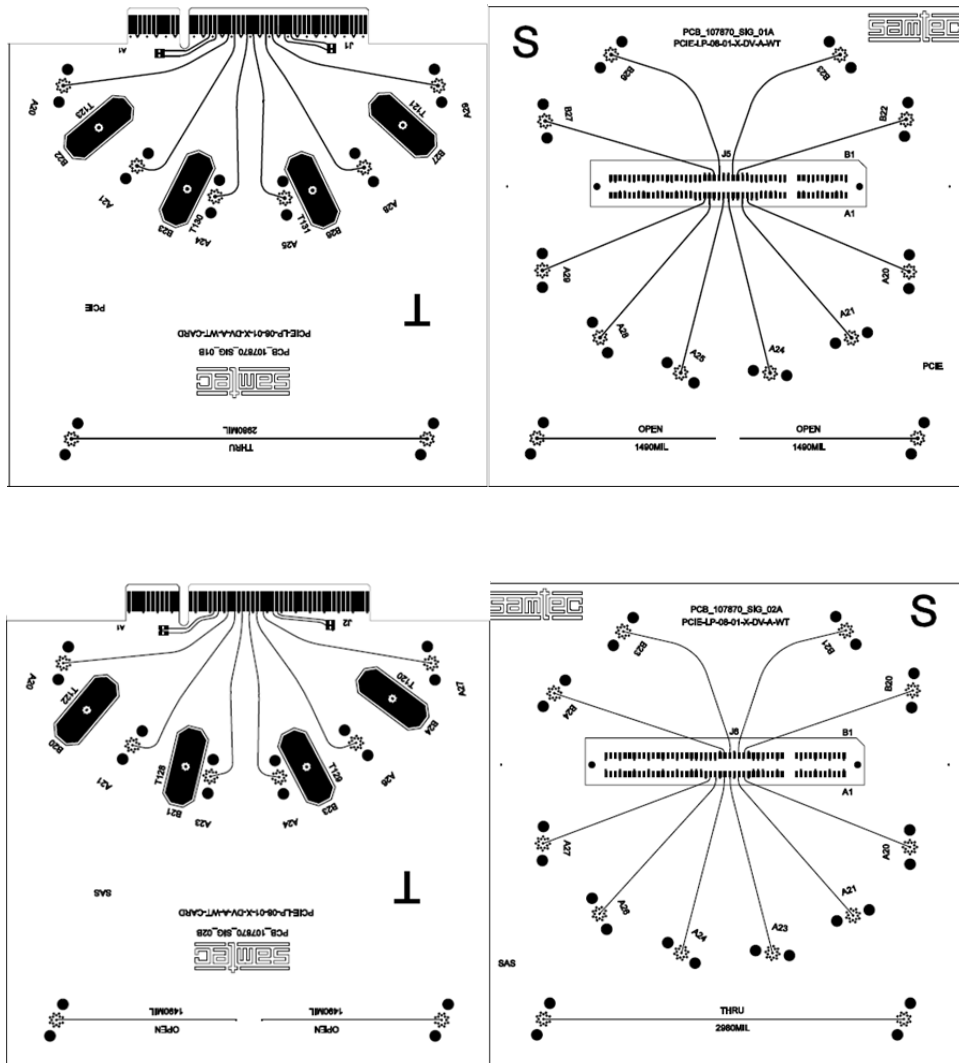
The test fixtures used are as follows:

PCB-107870-SIG-01-A – PCIe-LP Series Edge Card for 85 Ohm

PCB-107870-SIG-01-B – PCIe-LP Series Test Board for 85 Ohm

PCB-107870-SIG-02-A – PCIe-LP Series Edge Card for 100 Ohm

PCB-107870-SIG-02-B – PCIe-LP Series Test Board for 100 Ohm



Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

All traces on the test boards are length matched to 1.5" measured from the edge of the pad to the SMA. The AFR calibration effectively removes 1.49" of test board trace effects. This means that 10 mils of test board trace length effects are included in the both sides of test boards in the measurement.

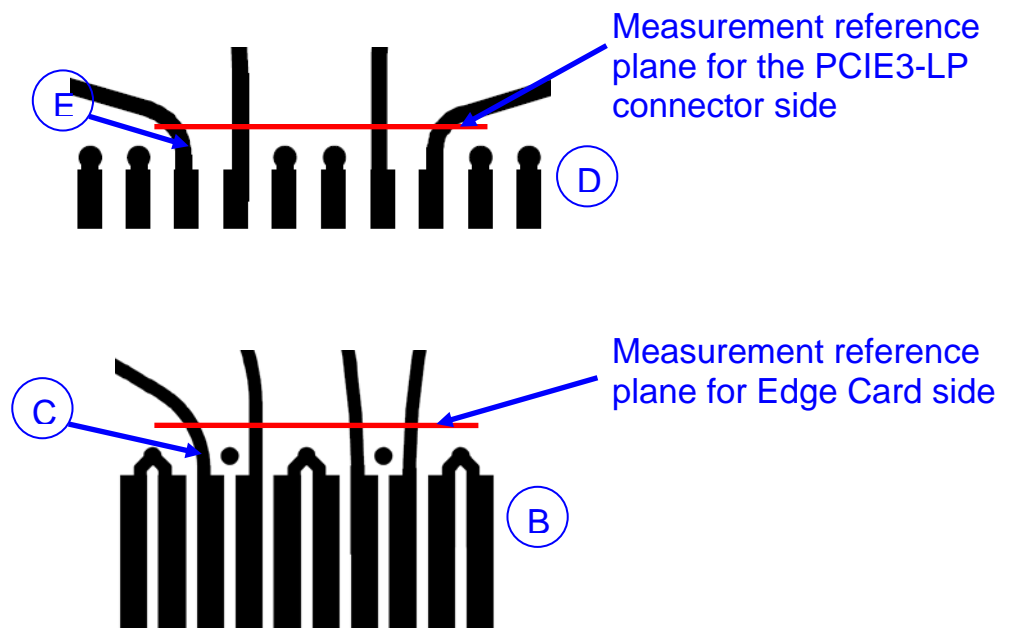
For 85 Ohm, The S-Parameter measurement includes:

- A- The PCIE-LP Series connector set
- B- Test board vias, pads (footprint effects) for the PCIE-LP connector side.
- C- 10 mils of 13.5 mil wide microstrip trace.
- D- Test board vias, pads (footprint effects) for the Edge Card side.
- E- 10 mils of 13.5 mil wide microstrip trace.

For 100 Ohm, The S-Parameter measurement includes:

- A- The PCIE-LP Series connector set
- B- Test board vias, pads (footprint effects) for the PCIE-LP connector side.
- C- 10 mils of 10 mil wide microstrip trace.
- D- Test board vias, pads (footprint effects) for the Edge Card side.
- E- 10 mils of 10 mil wide microstrip trace.

The figure below shows the location of the measurement reference plane.



Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Appendix D – Test and Measurement Setup

The test instrument is the Agilent N5230C PNA-L network analyzer. Frequency domain data and graphs are obtained directly from the instrument. Post-processed time domain data and graphs are generated using convolution algorithms within Agilent ADS. The network analyzer is configured as follows:

Start Frequency – 300 KHz

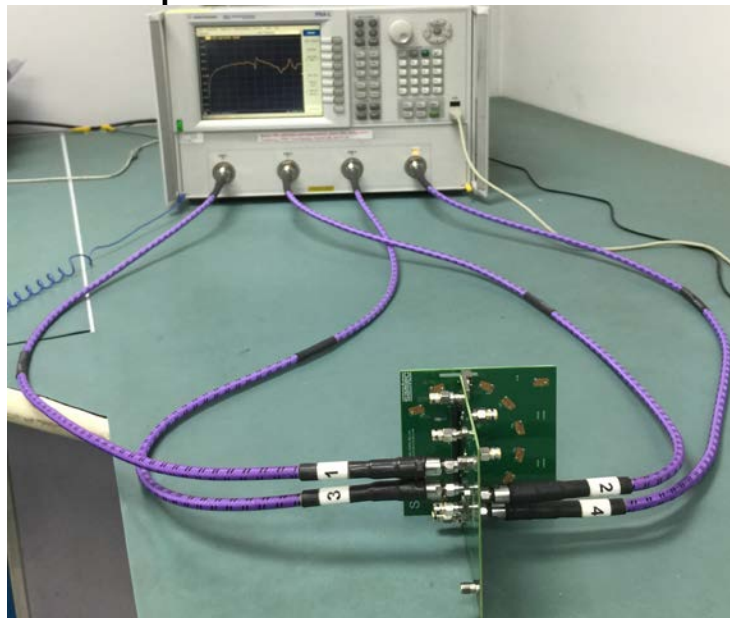
Stop Frequency – 20 GHz

Number of points -1601

IFBW – 1 KHz

With these settings, the measurement time is approximately 20 seconds.

N5230C Measurement Setup



Test Instruments

<u>QTY</u>	<u>Description</u>
1	Agilent N5230C PNA-L Network Analyzer (300 KHz to 20 GHz)
1	Agilent N4433A ecal module (300 KHz to 20 GHz)

Test Cables & Adapters

<u>QTY</u>	<u>Description</u>
4	Gore OWD01D02039-4 (DC-50 GHz)

Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Appendix E - Frequency and Time Domain Measurements

Frequency (S-Parameter) Domain Procedures

The quality of any data taken with a network analyzer is directly related to the quality of the calibration standards and the use of proper test procedures. For this reason, extreme care is taken in the design of the LRM calibration standards, the SI test boards, and the selection of the PCB vendor.

The measurement process begins with a measurement of the LRM calibration standards. A coaxial SOLT calibration is performed using an N4433A ecal module. This measurement is required to obtain precise values of the line standard offset delay and frequency bandwidths. Measurements of the reflect and 2x through line standard can be used to determine the maximum frequency for which the calibration standards are valid. For the PCIE-LP Series test boards, this is greater than 20 GHz.

From the LRM calibration standard measurements, a user defined calibration kit is developed and stored in the network analyzer. Calibration is then performed on all 4 ports following the calibration wizard within the Agilent N5230C. This calibration is saved and can be recalled at any time. Calibration takes roughly 30 minutes to perform.

Time Domain Procedures

Mathematically, Frequency Domain data can be transformed to obtain a Time Domain response. Perfect transformation requires Frequency Domain data from DC to infinity Hz. Fortunately, a very accurate Time Domain response can be obtained with bandwidth-limited data, such as measured with modern network analyzer.

The Time Domain responses were generated using Agilent ADS 2009 update 1. This tool has a transient convolution simulator, which can generate a Time Domain response directly from measured S-Parameters. An example of a similar methodology is provided in the Samtec Technical Note on domain transformation.

[http://www.samtec.com/Technical_Library/reference/articles/pdfs/tech-note_using-PLTS-for-time-domain-data_web.pdf](http://www.samtec.com/Technical_Library/reference/articles/pdfs/tech-note_using_PLTS-for-time-domain-data_web.pdf)

Impedance (TDR)

A step pulse is applied to the touchstone model of the connector and the reflected voltage is monitored. The reflected voltage is converted to a reflection coefficient and then transformed into an impedance profile. All ports of the Touchstone model are terminated in 50 ohms.

Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Propagation Delay (TDT)

The Propagation Delay is a measure of the Time Domain delay through the connector and footprint. A step pulse is applied to the touchstone model of the connector and the transmitted voltage is monitored. The same pulse is also applied to a reference channel with zero loss, and the Time Domain pulses are plotted on the same graph. The difference in time, measured at the 50% point of the step voltage is the propagation delay.

Near-End Crosstalk (TDT) & Far End Crosstalk (TDT)

A step pulse is applied to the touchstone model of the connector and the coupled voltage is monitored. The amplitude of the peak-coupled voltage is recorded and reported as a percentage of the input pulse.

Series: PCIE-LP

Description: 1.00 mm PCI Express® Low Profile Edge Card Connector

Appendix F – Glossary of Terms

ADS – Advanced Design Systems

BC – Best Case crosstalk configuration

DUT – Device under test, term used for TDA IConnect & Propagation Delay waveforms

FD – Frequency domain

FEXT – Far-End Crosstalk

GSG – Ground–Signal–Ground; geometric configuration

GSSG - Ground–Signal–Signal–Ground; geometric configuration

HDV – High Density Vertical

NEXT – Near-End Crosstalk

OV – Optimal Vertical

OH – Optimal Horizontal

PCB – Printed Circuit Board

PPO – Pin Population Option

SE – Single-Ended

SI – Signal Integrity

SUT – System Under Test

S – Static (independent of PCB ground)

SOLT – acronym used to define Short, Open, Load & Thru Calibration Standards

TD – Time Domain

TDA – Time Domain Analysis

TDR – Time Domain Reflectometry

TDT – Time Domain Transmission

WC – Worst Case crosstalk configuration

Z – Impedance (expressed in ohms)