ELECTRICAL MODEL REPORT

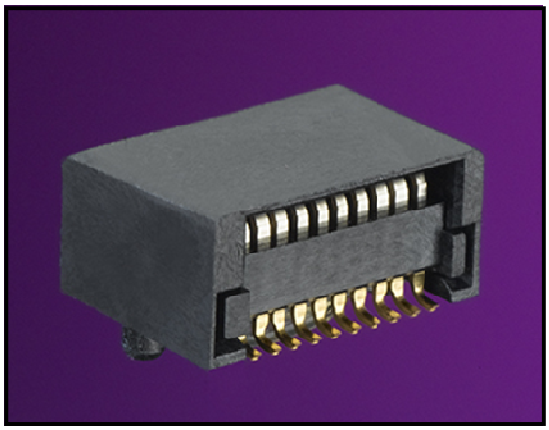
MODEL SUMMARY

This is an electrical model of the zSFP+ connector. This connector supports 10 Gbps Ethernet and 16 Gbps Fiber Channel applications with the ability to support 25/28 Gbps applications.

This model can be used as a standalone model for analysis of connector performance or with other models to complete a channel.

Further information regarding this connector product line and other related Molex zSFP+ products can be found at http://www.molex.com/ .

zSFP+ Connector



APPLICABLE PART NUMBER(S): 170382

MODEL TYPE: S-parameter	**MODEL FORMAT:** Touchstone (*.sNp)
MODEL FILENAME: SP-170382-0001_revC.s8p	**DATA FORMAT:** Real/Imaginary
MODEL BASIS: Analytical 3-D field solution	**MODEL SOURCE:** Ansoft HFSS version 14.0
BANDWIDTH: DC - 40.96 GHz	**RESOLUTION:** 10 MHz steps
REFERENCE: 50 ohms	**NUMBER OF POINTS:** 4097 (4096 + 1 DC)
NUMBER OF CHANNELS: 2 differential	**NUMBER OF PORTS:** 8 single-ended
CHANNEL TYPE: Coupled pairs + reference	**VALIDATION:** TS-170382-0001
MODEL APPLICATION: Fibre Channel, Ethernet	**DATA RATE:** 28 Gbps

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MODEL DESCRIPTION

This model contains 2 differential pairs (and their associated grounds) arranged in a G-S-S-G format circuit board interfaces, which results in an 8-port, single-ended S-parameter matrix. Two power pins are not part of the ports. The signal path represented by the model consists of a surface-mount host card, and an edge card connector inserted into one side of the connector.

The electrical model was simulated using Ansoft HFSS in the Frequency domain. The frequency range of this simulation is from 0 GHz to 40.96 GHz. With Ansoft HFSS the DC values of the S-parameters are extrapolated from the lowest solved frequency (10 MHz).

CONDUCTOR TO PORT MAPPING TABLE

SIGNAL PATHS

Terminals (Host Board)	Ports (Host Board)	Ports (Edge Card)
12	1	2
13	3	4
18	5	6
19	7	8

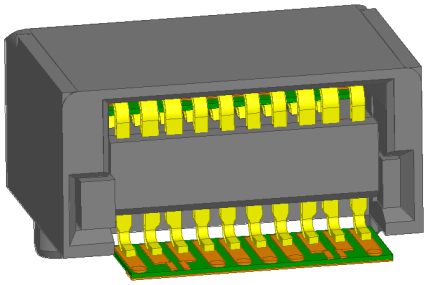
ELECTRICAL MODEL REPORT

PART ILLUSTRATIONS

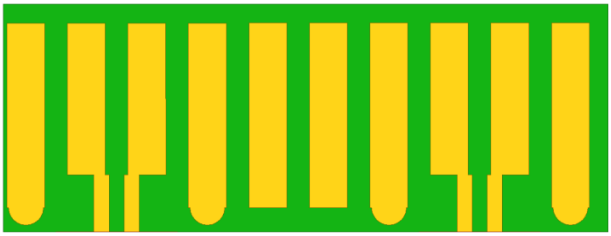
Connector

Side

Perspective



Host Card



Host Board Construction Details

Thickness:	0.148mm
Layers:	2 (Microstrip & Ground)
Board Material:	Dk=3.8, Df=0.015
Copper:	1.5 oz. (.05mm)

Edge Card

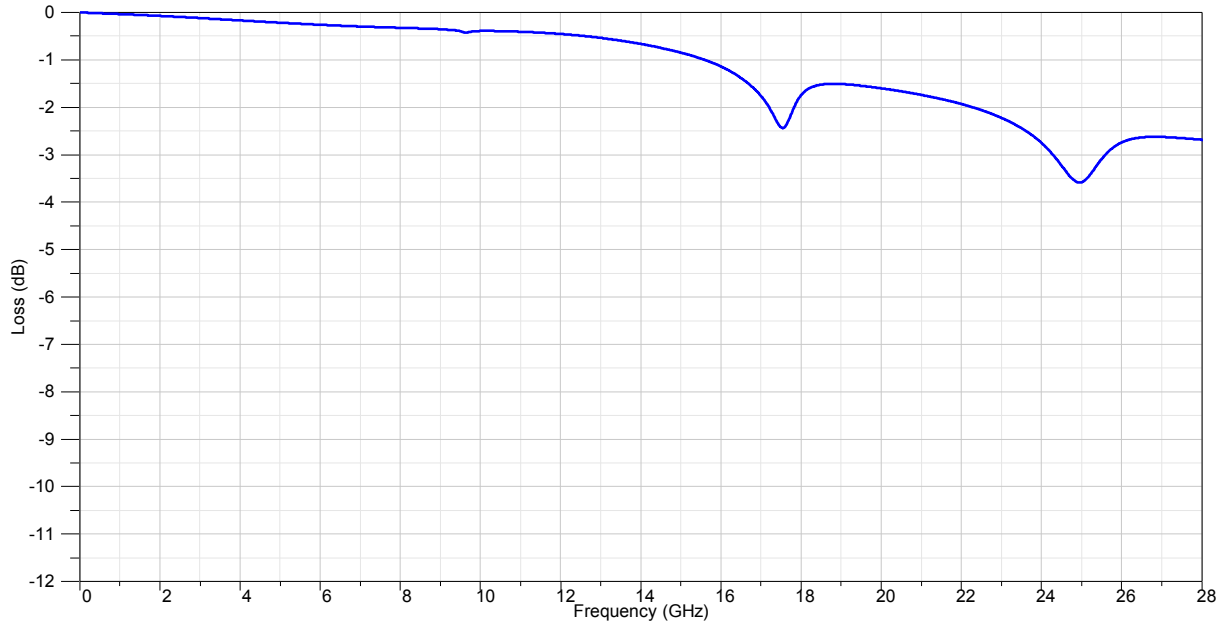
Edge Card Pads

Pitch:	0.8 mm
Ground:	3.0 x 0.6 mm
Signal:	2.2 x 0.6 mm

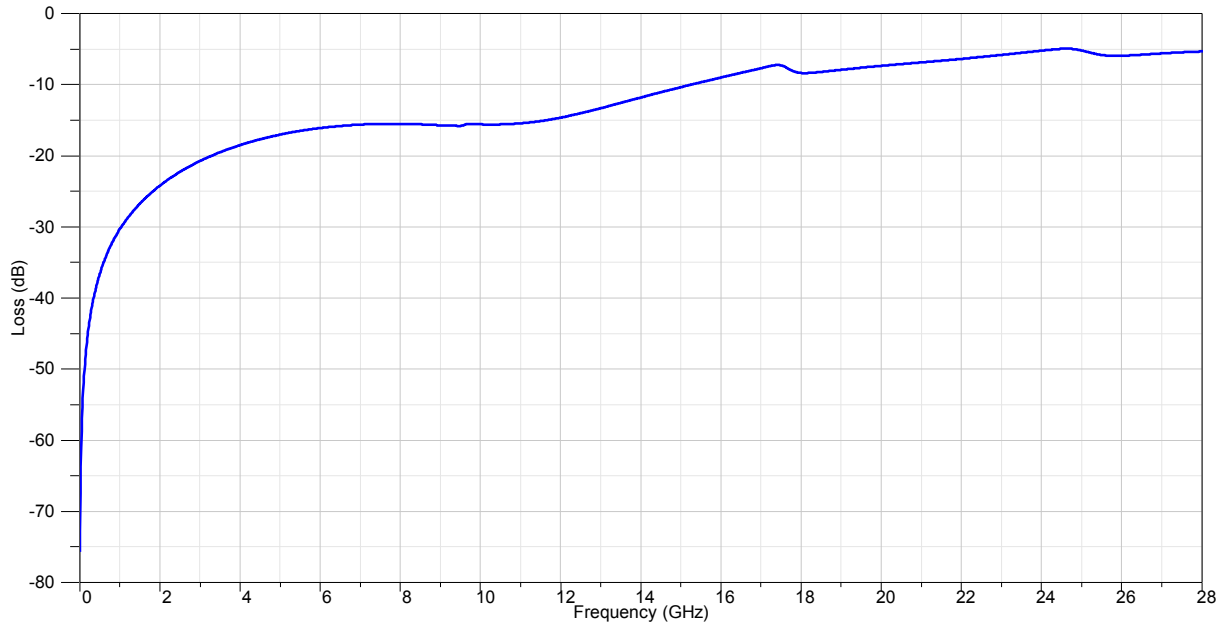
ELECTRICAL MODEL REPORT

REFERENCE RESULTS

Differential Insertion Loss



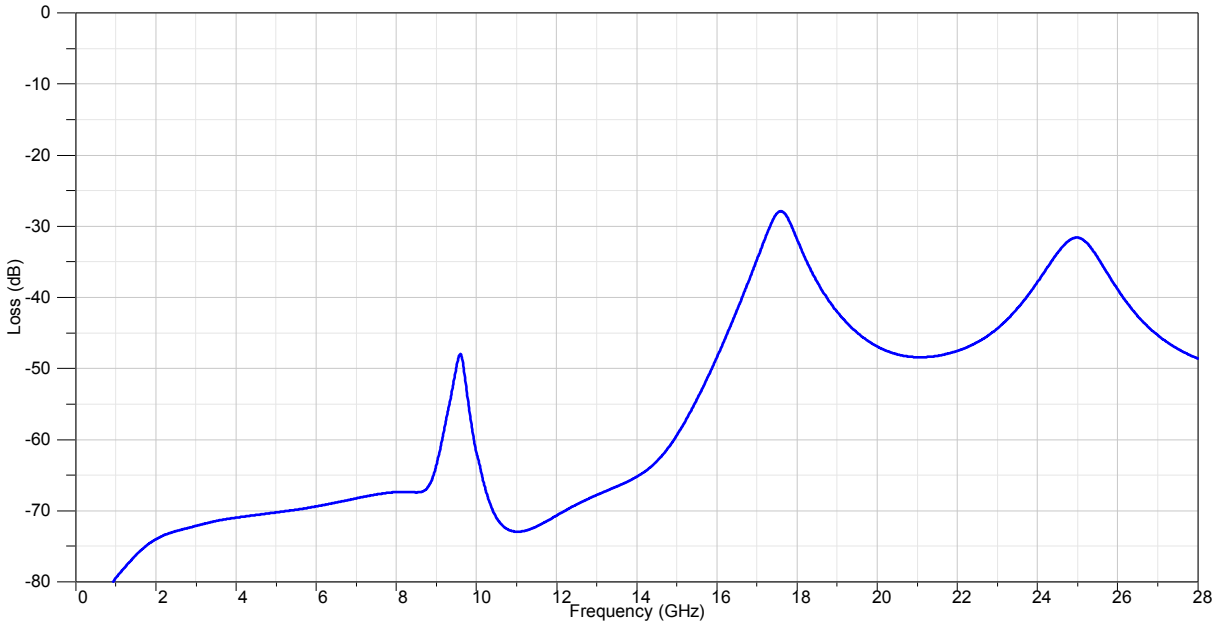
Differential Return Loss



ELECTRICAL MODEL REPORT

REFERENCE RESULTS

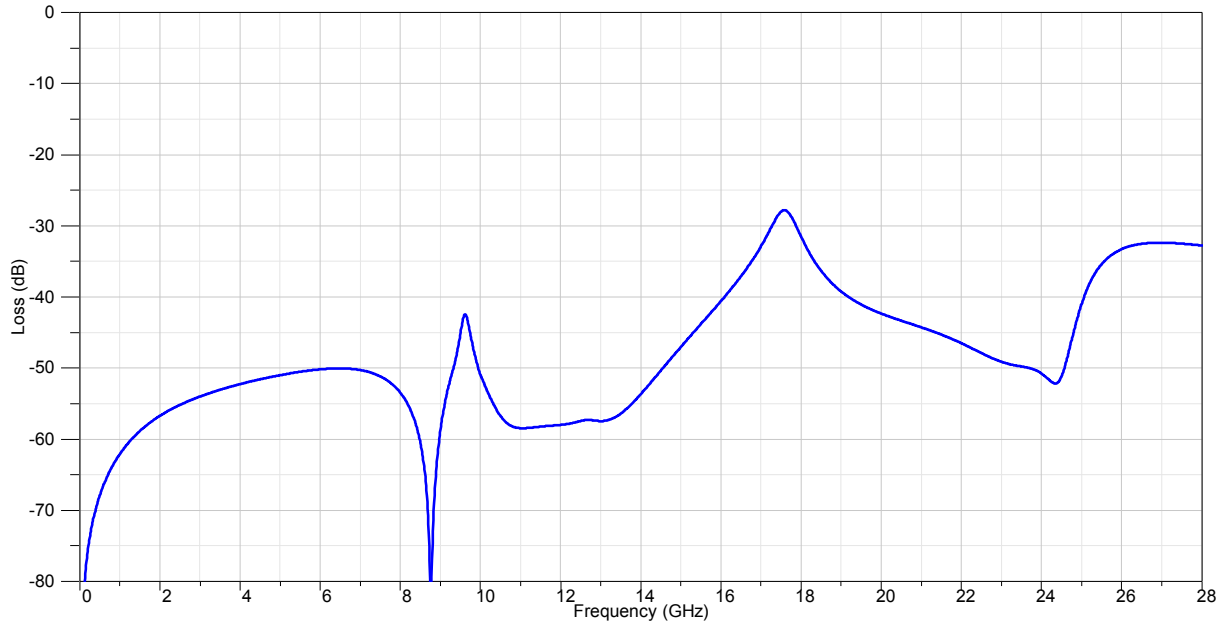
Near-end Differential Crosstalk



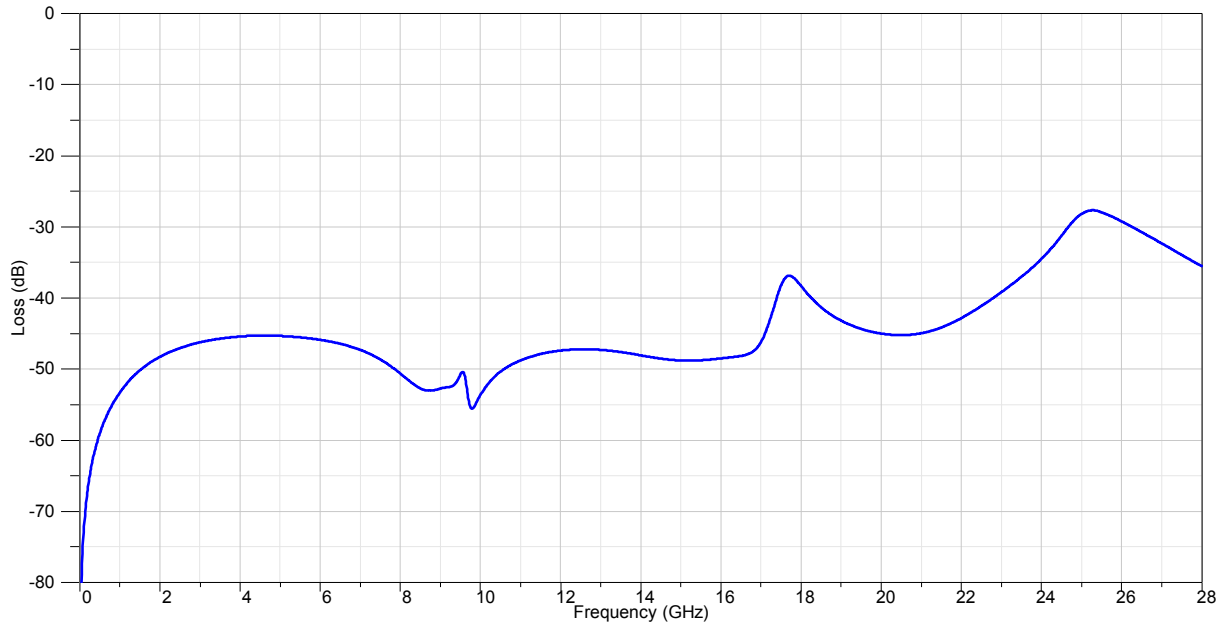
ELECTRICAL MODEL REPORT

REFERENCE RESULTS

Mode Conversion - Thru



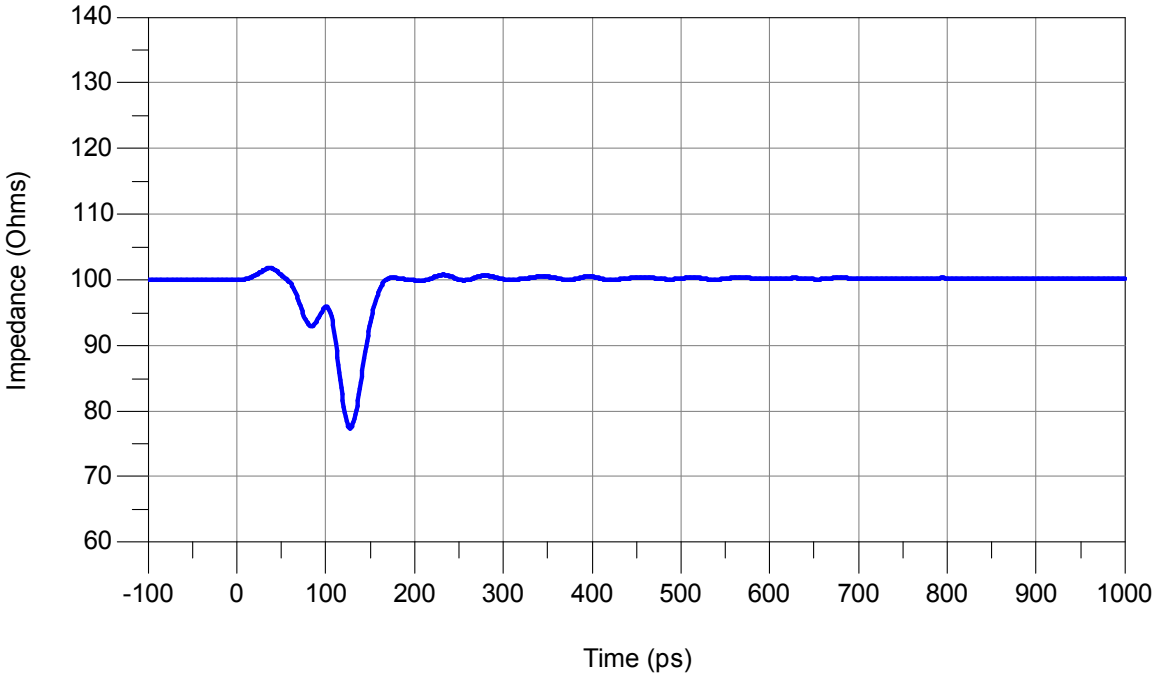
Mode Conversion – Reflected



REFERENCE RESULTS

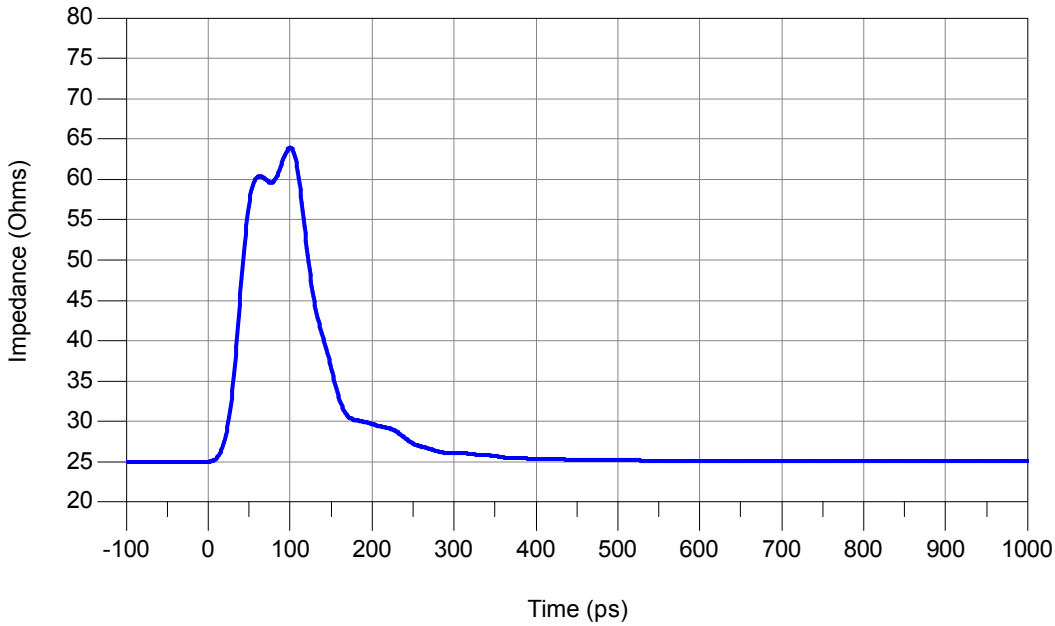
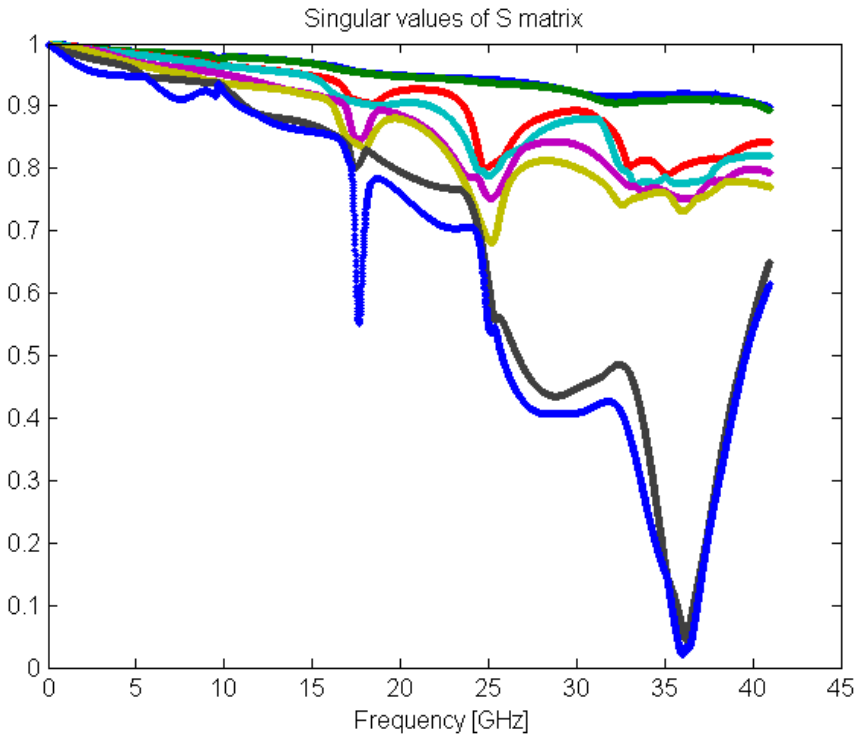
Differential TDR Response

- Rise-time of 18ps (20-80%), representative of 14.025Gbps applications



Common Mode TDR Response

- Rise-time of 18ps (20-80%), representative of 14.025Gbps applications



Model Passivity