New Optical Networks

NEON Photonics Co., Ltd.

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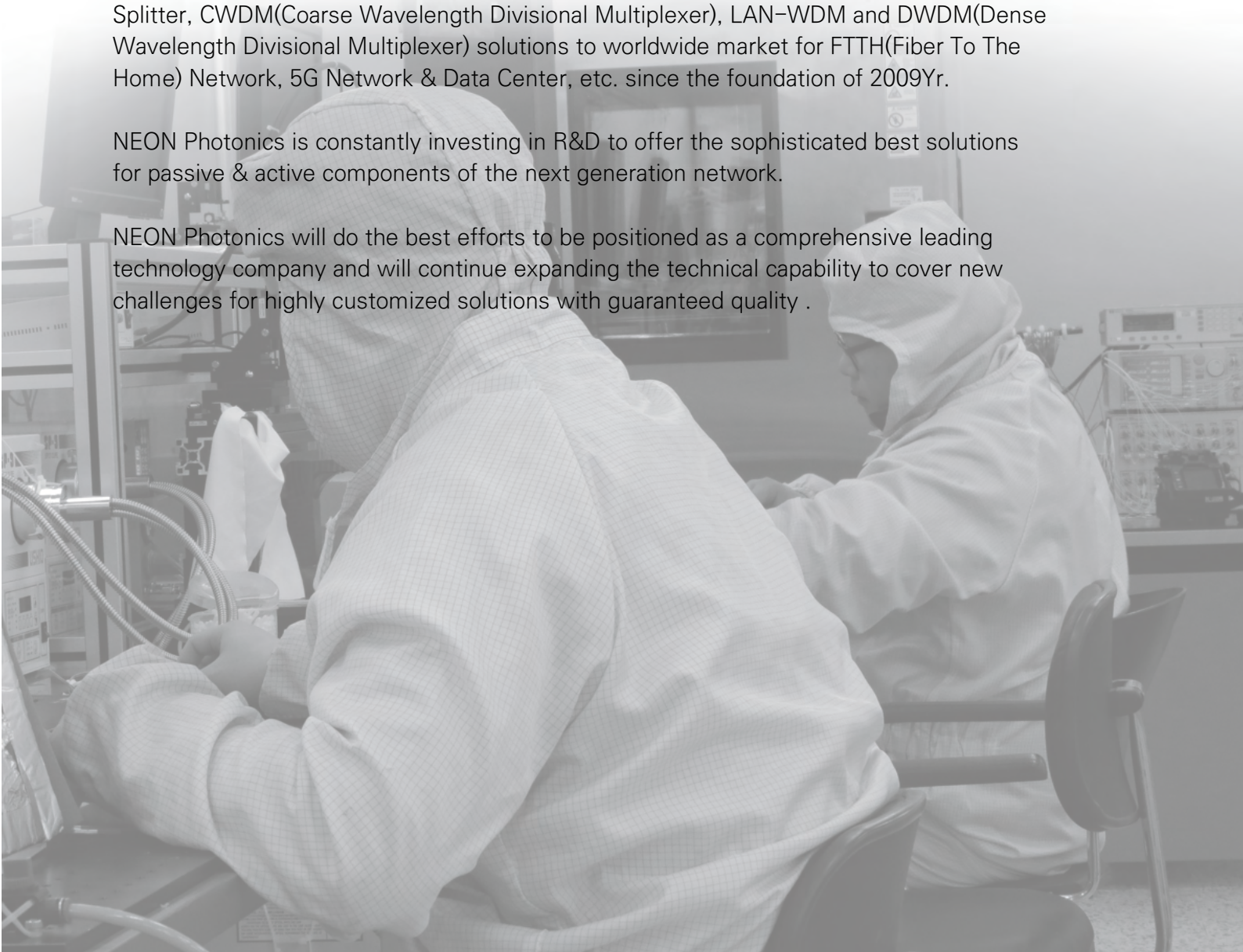
NEON Photonics Co., Ltd.

A World-Class Optical Component Company Based on Vertically Integrated Planar Lightwave Circuit(PLC) Technology

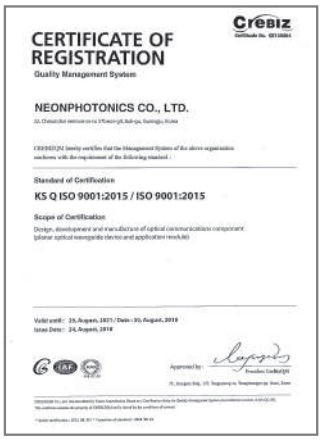
Based on long-term experienced semiconductor process technology and waveguide design & simulation technology, NEON Photonics has been developed and provided PLC Splitter, CWDM(Coarse Wavelength Divisional Multiplexer), LAN-WDM and DWDM(Dense Wavelength Divisional Multiplexer) solutions to worldwide market for FTTH(Fiber To The Home) Network, 5G Network & Data Center, etc. since the foundation of 2009Yr.

NEON Photonics is constantly investing in R&D to offer the sophisticated best solutions for passive & active components of the next generation network.

NEON Photonics will do the best efforts to be positioned as a comprehensive leading technology company and will continue expanding the technical capability to cover new challenges for highly customized solutions with guaranteed quality .



Certificate & Patent

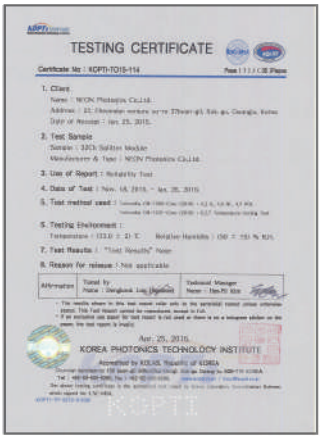


ISO 9001

ISO 14001

GR-1209 & GR-1221 Certification

for Athermal AWG Module
by KOLAS



GR-1209 & GR-1221 Certification

for Splitter Module
by KOLAS

Patent for Athermal AWG
Module Package

Patent for Optical Receiver
by AWG Chip

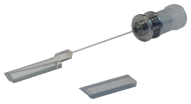
Patent for Optical
Transceiver Package

Product Line-up

- Athermal AWG Module

- PLC CWDM MUX & DEMUX AWG

- PLC LAN-WDM MUX & DEMUX AWG



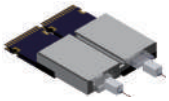
- Symmetrical PLC Splitter Module

- Asymmetrical PLC Splitter Module

- 400G PAM4 TOSA

- 400G PAM4 ROSA

- 400G PAM4 TROSA



- 400G PAM4 Optical Transceiver

- 400G PAM4 BERT

- Polarization Controller

- 16ch Optical Power Meter

Athermal AWG Module

Key Features

- Available in gaussian & flat-top types
- Available for 50GHz ~ 200GHz Channel Spacing
- O, C & L-band operating wavelength
  : Available for customized wavelength plan
- Mechanical temperature compensation
- Guaranteed reliability by KOLAS
- Patented by NEON's own tech. from -40~85 degree C

Specification

Parameters		Specification			Unit	Remark
		MIN	TYP	MAX		
Number of Channels		20, 32, 40, or 48			CH	20, 32, 40, 48ch or custom channel are all available
Channel Spacing		100			GHz	50GHz, 200GHz or custom spec are available
Center Wavelength		192.1		196.0	THz	Any ITU Channel or Custom wavelength plan are available.
Reference Passband		12.5		12.5	GHz	
Wavelength Accuracy		-80		+80	pm	Offset from defined λ: -40~85°C
Insertion Loss	Gaussian			3.5	dB	
	Flat-top			5.5	dB	
Insertion Loss Uniformity				1.0	dB	
PDL				0.7	dB	
1dB Bandwidth	Gaussian	0.24			nm	
	Flat-top	0.41			nm	
3dB Bandwidth	Gaussian	0.42			nm	
	Flat-top	0.61			nm	
Adjacent Channel Isolation	Gaussian	26			dB	
	Flat-top	25			dB	
Non-Adjacent Channel Isolation	Gaussian	30			dB	
	Flat-top	28			dB	
Return Loss				-40	dB	Over All Channels and PDL

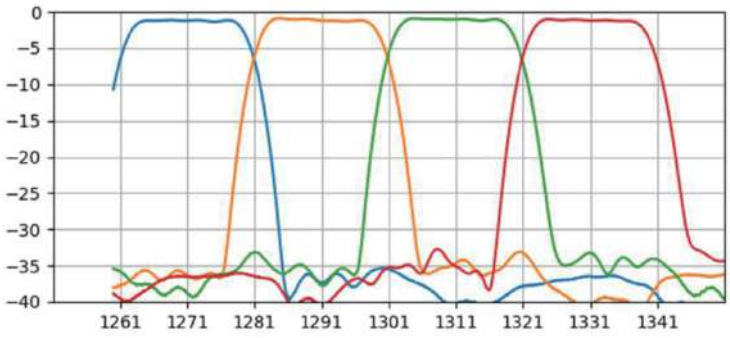
*Available for customized specification

PLC CWDM MUX/DeMUX AWG

Key Features

- Optimized for 100G, 200G, 400G & beyond
- Flexible for customized design
- Easy assembly and cost competitiveness
- Flat-top spectral response
- Low loss, low crosstalk & low PDL, but, low cost
- Excellent channel uniformity and reliability
- Complied to IEEE & MSA standard

Spectral Response (DeMUX)



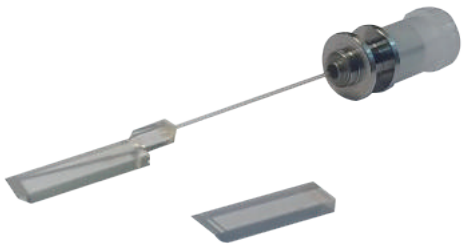
Specification & Spectral Response (DeMUX)

Parameter	Symbol	Description	Value	Unit
Lane 1 center wavelength	λ1		1271.0	nm
Lane 2 center wavelength	λ2		1291.0	nm
Lane 3 center wavelength	λ3		1311.0	nm
Lane 4 center wavelength	λ4		1331.0	nm
Center wavlength accuracy	Δλ		±1.0	nm
Insertion Loss	IL	Passband ±6.5nm worst IL	≤ 2.5	dB
1dB Bandwidth	BW1	Relative to nominal central wavelength, full width	≥ 13	nm
3dB Bandwidth	BW3	Relative to nominal central wavelength, full width	≥ 15	nm
Adjacent crosstalk	Ax	Pass Band ±6.5nm	≥ 20	dB
Non-adjacent crosstalk	NAx	Pass Band ±6.5nm	≥ 30	dB
Polarization dependent loss	PDL		≤ 0.5	dB

*Available for customized specification

PLC LAN-WDM MUX/DeMUX AWG

Key Features



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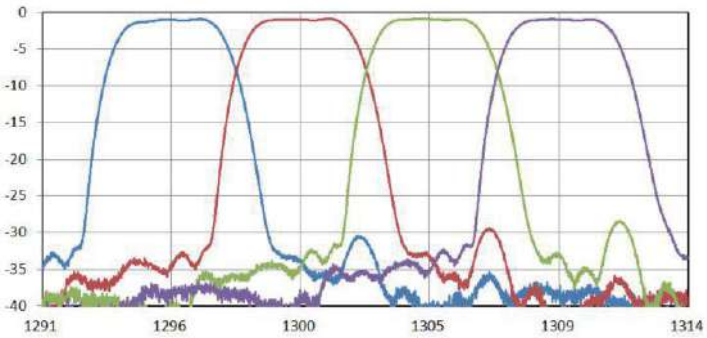
Spectral Response (DeMUX)



Specification & Spectral Response (DeMUX)

Parameter	Symbol	Description	Value	Unit
Lane 1 PASSBAND	λ1		1294.53~1296.59	nm
Lane 2 PASSBAND	λ2		1299.02~1301.09	nm
Lane 3 PASSBAND	λ3		1303.54~1305.63	nm
Lane 4 PASSBAND	λ4		1308.09~1310.19	nm
Center wavlength accuracy	Δλ		±0.3	nm
Insertion Loss	IL	Worst IL @ PASSBAND	≤ 2.8	dB
1dB Bandwidth	BW1	1dB from min. insertion loss, full width	≥ 2.8	nm
Adjacent crosstalk	Ax	Adjacent Channels overall PASSBAND	≥ 26	dB
Non-adjacent crosstalk	NAx	Non-adjacent Channels overall PASSBAND	≥ 30	dB
Polarization dependent loss	PDL		≤ 0.5	dB

*Available for customized specification

Symmetrical PLC Splitter Module

Key Features

- Available for 1x2 ... 1x128, 2x2 ... 2x64
- Optimized for E-PON, G-PON, XG-PON, GE-PON & 10G-PON
- Excellent optical performance & reliability, but, low price
- Guaranteed reliability by KOLAS

Specification (1xN, with connector)

ITEM	Unit	Specification					
		1x2	1x4	1x8	1x16	1x32	1x64
Insertion Loss	dB	4.0	7.3	10.5	13.8	17.0	20.4
Uniformity	dB	0.6	0.7	0.8	1.0	1.2	2.0
PDL	dB	0.2	0.2	0.2	0.2	0.3	0.3
Return Loss	dB	UPC Connector: >50dB / APC Connector: >55dB					

*Available for customized specification

Asymmetrical PLC Splitter Module

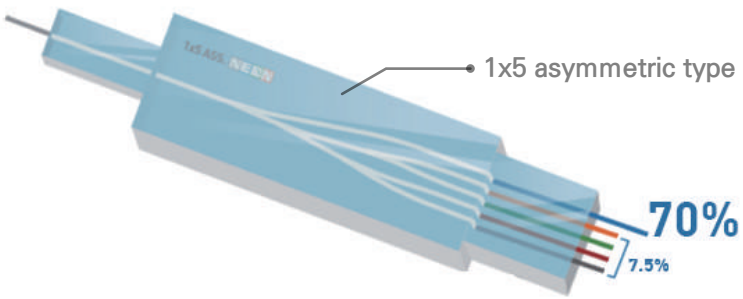
Key Features

- Available for
  - Asymmetric types (1x3, 1x5, 1x6, 1x7, 1x12, 1x24, etc.)
  - Customized special types (8x4x4, 4x1x2, 4x1x8, NxM, etc.)
- Optimized for E-PON, G-PON, XG-PON, GE-PON & 10G-PON
- Excellent optical performance & reliability, but, low price
- Reliability guaranteed by KOLAS

Specification (1x5, with connector)

	Unit	Unit	Specification
Operating Wavelength			1260 ~ 1650
Insertion Loss (Port 0)	Max	dB	2.7
Insertion Loss (Port 1 ~ 4)	Max	dB	12.7
Uniformity (Port 1 ~ 4)	Max	dB	0.7
Polarization Depending Loss	Max	dB	0.3
Return Loss			
Directivity	Min	dB	55
Stability in Hot Environment	(dB/℃)		≤0.003
Power	mW		≤300
Operating Temperature	℃		-40℃ to +85℃
Storage Temperature	℃		-40℃ to +85℃

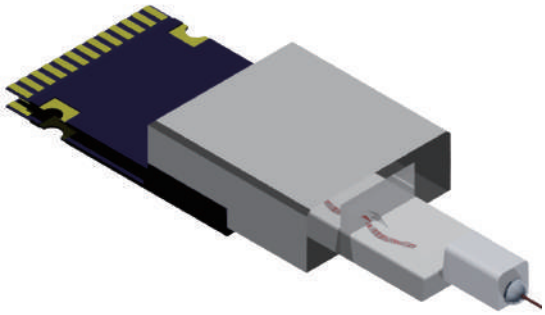
*Available for customized specification



Highly Compact

400G PAM4 TOSA

Summary



NEON Photonics' 400G PAM4 TOSA is designed for 400 Gigabit Ethernet interface, QSFP-DD MSA over single mode fiber 2km. The specifications are compliant with the 400G-FR4 TechnicalSpecification of 100G Lambda MSA. Its key differentiator is a highly compact optical and electrical design technology.

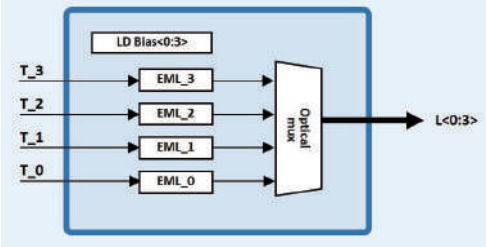
Key Features

- 100G x 4ch PAM4 optical I/F
- 100G x 4ch PAM4 electrical single ended I/F
- Lens-less optical coupling technology
- Compact package technology
- QSFP-DD compatible
- Cost competitiveness
- Capacity(multi-channel) scalability
- Availability to user defined design
- W x L x H = 7.1 x 7.8 x 3 mm^3

Application

- Datacenter (400G FR-4)
- Optical connectivity

Block Diagram



Specification

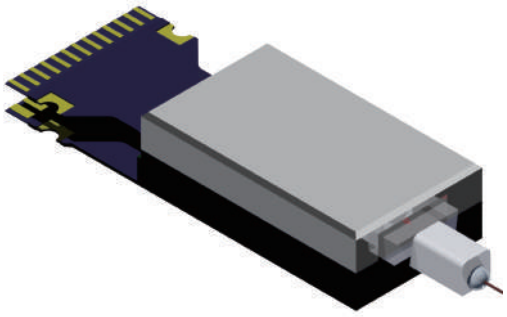
TX Parameter	Unit	Specification
PAM4 Signaling rate, each lane (range)	GBd	53.125 ± 100 ppm
Lane wavelengths (range)	nm	1284.5 to 1297.5
		1304.5 to 1317.5
		1324.5 to 1337.5
Average launch power, each lane (min)	dBm	-3.3
Transmitter and dispersion penalty eye closure for PAM4 (TDECQ), each lane (max)	dB	3.4
Extinction ratio (min)	dB	3.5
$RIN_{17.1}$ OMA (max)	dB/Hz	-136
Optical return loss tolerance (max)	dB	17.1

*Available for customized specification

Highly Compact

400G PAM4 ROSA

Summary



NEON Photonics' 400G PAM4 ROSA is designed for 400 Gigabit Ethernet interface, QSFP-DD MSA over single mode fiber 2km. The specifications are compliant with the 400G-FR4 Technical Specification of 100G Lambda MSA. Its key differentiator is a highly compact optical andelectrical design technology.

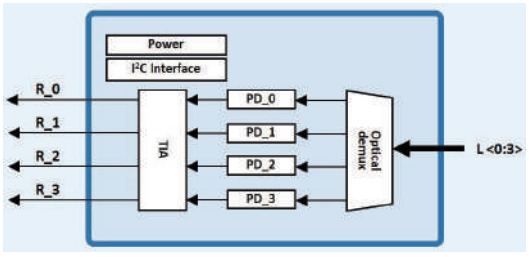
Key Features

- 100G x 4ch PAM4 optical I/F
- 100G x 4ch PAM4 electrical I/F
- Lens-less optical coupling technology
- Compact package technology
- QSFP-DD compatible
- Cost competitiveness
- Capacity(multi-channel) scalability
- Availability to user defined design
- W x L x H = 7.1 x 11 x 3 mm^3
- Datacenter (400G FR-4)
- Optical connectivity

Application

- Datacenter (400G FR-4)
- Optical connectivity

Block Diagram



Specification

RX Parameter	Unit	Specification
PAM4 Signaling rate, each lane (range)	GBd	53.125 ± 100 ppm
Lane wavelengths (range)	nm	1264.5 to 1277.5
		1284.5 to 1297.5
		1304.5 to 1317.5
		1324.5 to 1337.5
Damage threshold, each lane (min)	dBm	4.5
Average receive power, each lane (max)	dBm	3.5
Average receive power, each lane (min)	dBm	-7.5

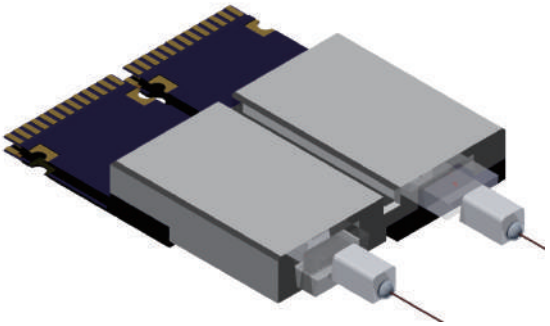
*Available for customized specification

Highly Compact

400G PAM4 TROSA

Summary

NEON Photonics' 400G PAM4 TROSA is designed for 400 Gigabit Ethernet interface, QSFP-DD MSA over single mode fiber 2km. The specifications are compliant with the 400G-FR4 Technical Specification of 100G Lamb Its key differentiator is a highly compact optical and electrical design technology.



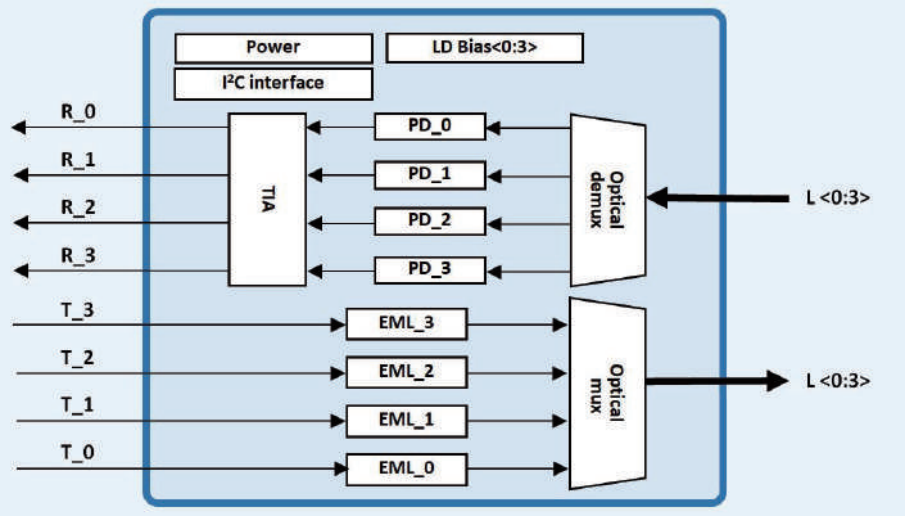
Key Features

- 100G x 4ch PAM4 optical I/F
- 100G x 4ch PAM4 electrical I/F
- Lens-less optical coupling technology
- Compact package technology
- QSFP-DD compatible
- Cost competitiveness
- Capacity(multi-channel) scalability
- Availability to user defined design
- W x L x H = 14.9 x 11 x 3 mm^3

Application

- Datacenter (400G FR-4)
- Optical connectivity

Block Diagram



Specification

TX Parameter	Unit	Specification
PAM4 Signaling rate, each lane (range)	GBd	53.125 ± 100 ppm
Lane wavelengths (range)	nm	1264.5 to 1277.5
		1284.5 to 1297.5
		1304.5 to 1317.5
		1324.5 to 1337.5
Average launch power, each lane (min)	dBm	-3.3
Transmitter and dispersion penalty eye closure for PAM4 (TDECQ), each lane (max)	dB	3.4
Extinction ratio (min)	dB	3.5
$RIN_{17.1}$ OMA (max)	dB/Hz	-136
Optical return loss tolerance (max)	dB	17.1

*Available for customized specification

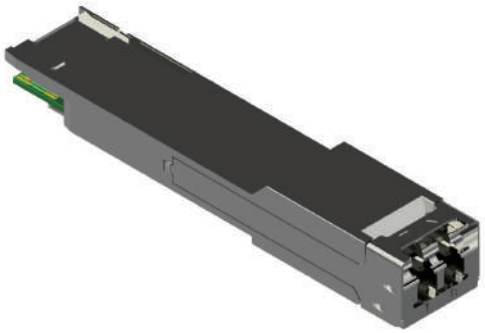
RX Parameter	Unit	Specification
PAM4 Signaling rate, each lane (range)	GBd	53.125 ± 100 ppm
Lane wavelengths (range)	nm	1264.5 to 1277.5
		1284.5 to 1297.5
		1304.5 to 1317.5
		1324.5 to 1337.5
Damage threshold, each lane (min)	dBm	4.5
Average receive power, each lane (max)	dBm	3.5
Average receive power, each lane (min)	dBm	-7.5
Receiver sensitivity (OMA outer), each lane (max)		
Stressed receiver sensitivity (OMA outer), each lane (max)	dBm	-2.6

*Available for customized specification

Low cost

400G PAM4 Optical Transceiver

Summary



NEON Photonics' 400G PAM4 optical transceiver is designed for 400 Gigabit Ethernet interface, QSFP-DD MSA over single mode fiber 2km. The specifications are compliant with the 400G FR4 Technical Specification of 100G Lambda MSA. Its key differentiator is a highly compact optical and electrical design technology.

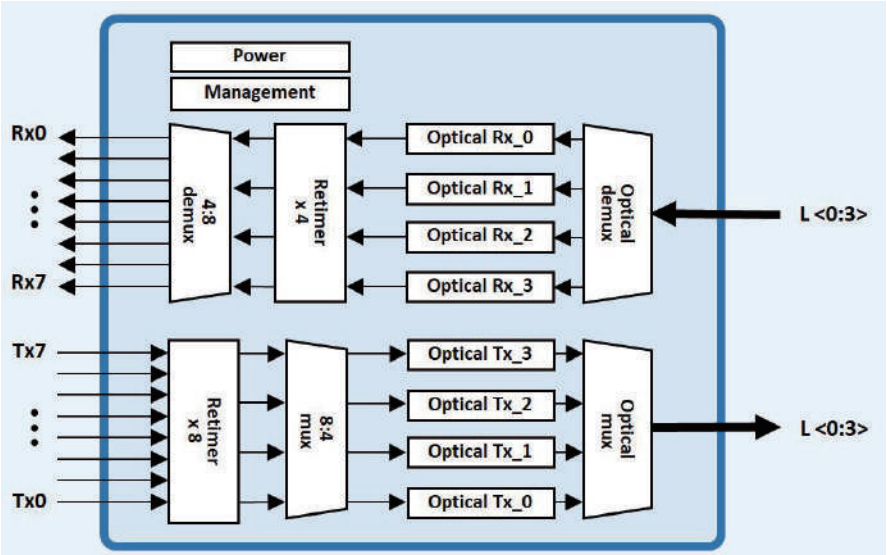
Key Features

- 100G x 4ch PAM4 optical I/F
- 50G x 8ch PAM4 Electrical I/F
- Lens-less optical coupling technology
- Compact package technology
- QSFP-DD compatible
- Cost competitiveness
- Capacity(multi-channel) scalability
- Availability to user defined design

Application

- Datacenter (400G FR-4)
- Optical connectivity

Block Diagram



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Extinction ratio (min)	dB	3.5
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Optical return loss tolerance (max)	dB	17.1

*Available for customized specification.

RX Parameter	Unit	Specification
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Average receive power, each lane (min)	dBm	-7.5
Receiver sensitivity (OMA outer), each lane (max)		
Stressed receiver sensitivity (OMA outer), each lane (max)	dBm	-2.6

*Available for customized specification.

Cost Competitive

400G PAM4 BERT

Summary

NEON Photonics' 400G PAB BERT is very compact and shows high performance. NEON BERT supports 4x100G-PAM4 and 8x50G PAM4 for 400Gb/s optical interconnection of Data-center. The BERT can also provide 8x25G NRZ and 4x50G for 200Gb/s applications. The application areas are 5G, 5G+, Data-center and access network.

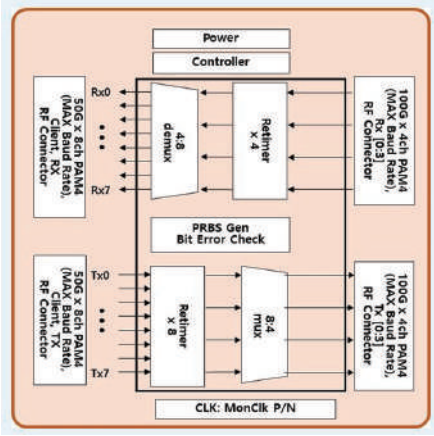
Key Features

- Mobile network (5G, 5G+ & beyond)
- Datacenter (100G, 200G, 400G)
- Access networks (25G, 50G, 100G)
- Performance test of optical transceiver & OSA (25G, 50G, 100G, 200G, 400G)

Specification

Parameter	Specification	Unit
Bit Rates per channel	PAM-4: 50 and 100 / NRZ: 25 and 50	GBaud / Gb/s
TX differential amplitude output	Typ. 800	mVpp
PRBS patterns	7/9/11/13/15/16/23/31	-
TX differential amplitude output adjustment	80 ~ 120	%
Error detector input range	100 ~ 1000 (TBD)	mV diff.
Reference clock output	Rate div 8/16/32/165	-

*Available for customized specification.



Cost Competitive

Polarization Controller

Summary

NEON Photonics' high-speed polarization controller(NPC) provides the 6 polarization states with a fast switching speed of < 250 μs for the state of polarization(SOP) and shows an robust repeatability of < 0.1 degrees. The NPC provides display and local control of the 6 polarization states using LCD display and 6 buttons on front panel, respectively. The compact NPC with communication interface(Ethernet,USB,RS232C) is optimized for shipment & warehousing inspection utilizing automatic measuring system which consist of tunable laser, optical switch, optical power meter, etc.

Key Features

- States display & local SOP control (6-states)
- Switching speed of < 250 μs
- SOP repeatability of < 0.1 degree
- Communication interface (USB,RS232C)

Application

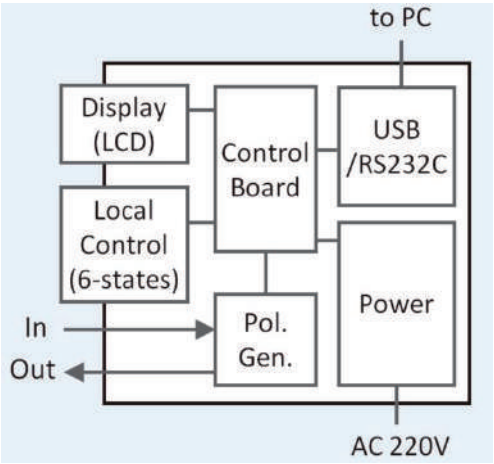
- Polarization analysis based on Mueller matrix
- Automatic measuring system
- Polarization OTDR
- Polarization Rotation

Specification

Parameter	Specification		Unit
Model	NPC-C100	NPC-O100	-
Wavelength Range	1480~1620	1260~1340	nm
Insertion Loss	1.0	1.2	dB
Wavelength Dependent Loss	0.3[1)]	< 0.3	dB
Maximum Optical Power(Min.)	300		mW
Insertion Loss Variation	±0.1[2)]		dB
Return Loss(Min.)	55		dB
SOP Repeatability	±0.1[3)]		degree
Rotation Angle Temperature Dependence	-0.068		deg./nm
Angle Between SOP States	90 ± 10[3)]		degree
SOP Switching Speed(Max.)	250		μs
Operating Temperature	0 to 50		℃
Storage Temperature	-40 to 80		℃
Power	AC 220V[4)], 50/60Hz		-
Communication Interface	USB,RS232C		-
Software	option		-
Dimension	220(W) x 250(L) x 60(H)		mm^3
Weight	1.5		Kg

*Available for customized specification.

Block Diagram



1) Typical across C band,

2) for all SOP states,

3) On Poincaré sphere, 4) option AC 110V

Cost Competitive

16ch Optical Power Meter

Summary

NEON Photonics' 16ch Optical Power Meter provide simultaneous 16ch optical power measurement and dramatic increasing of the production quantity using high speed trigger monitoring interface with fast measurement time. The optical power meter is optimized for multichannel measurement system and mass production line such as AWG, splitter and multichannel optical transceiver, etc.

Key Features

- Simultaneous measurement of 16 channels
- High speed triggering function
- Fast optical power measurement time
- Communication interface(USB,RS232C)
- Temperature monitoring

Application

- Multichannel measurement system
- Mass production line

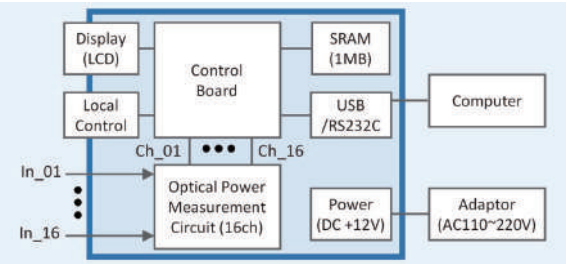
Specification

Parameter	Specification	Unit
Sensitivity	-55	dBm
Optical input power(MAX)	5	dBm
Operating wavelength	1260 ~ 1610	nm
Accuracy	0.01 ±	dB
Measuring time(16ch)	< 0.05	ms
Adjacent Cross-talk	50	dB
Optical interface	FC/APC, FC/PC	-
Operating temperature	10 ~ 35	℃
Storage temperature	-40 ~ 85	℃
Power[1)]	12	V
Communication Interface	USB,RS232C	-
Dimension	300(W) x 357(L) x 100(H)	mm^3
Weight	1.9	Kg

1) Adaptor included (AC110~220 to DC 12V)

*Available for customized specification.

Block Diagram



Cantact NEON Photonics

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New Optical Networks

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