



ROC3 Platform

Fiber Optic Product Catalog

ROBOfiber, Inc.

Optical Protection
Optical Transmission
Optical Monitoring

About ROBOfiber:

ROBOfiber, Inc. was established in 2013, focusing on design, manufacturing and sales of high-end semiconductor lasers, photodiodes and other components, as well as associated optical active and passive devices. Our products serve customers in the data communications/telecommunications markets. Capabilities include optical product design and software simulation(quantum well, high bandwidth, high and low temperature performance) process design verification, epitaxial wafers, chip manufacturing process technology and control, device reliability testing, telecom applications and high speed data applications for short and long haul optical transmission, etc.

We offer a wide product portfolio, from components to finished passive and active equipment, such as high data rate passive optical devices and modules(FSI/circulators/optical switches/CWDM/DWDM/bypass modules), customized modules, transmission, monitoring and optical system protection equipment, and more.

ROC3 Optical Platform Product Catalogue

ROC3-CH04/8/16 Optical Transport Platform Main Chassis-----	04
ROC3-NMC Network Management Card-----	06
ROC3-100G-3R two channel 100G Transponder Card-----	07
ROC3-25G-3R four channel 25G Transponder Card-----	09
ROC3-10G-3R/ROC3-2.5G-3R four channel 10G/2.5G/1G Transponder Cards-----	11
ROC3-DWDM40 AAWG 40 channels DWDM mux/demux Cards-----	13
ROC3-CWDM81 and ROC3-DWDM81 eight channels mux/demux Cards-----	15
ROC3-OLP35 Optical 1:1 Protection duplex and simplex fiber Cards-----	17
ROC3-EDFA Optical EDFA Amplifier (Pre-Amp, In-Line, Booster) Cards-----	19
ROC3-DCM Dispersion Compensation Modules for EDFA systems-----	21
ROC3-VOA Variable Optical Attenuator for balanced DWDM gains-----	23
ROC3-OBYP Optical Bypass Protection System for duplex fiber circuits-----	25
ROC3-OSW 1xN Optical Switch Cards-----	27
Other ROC3 Accessories Cards (OTDR, FWDM, LSU, ODU)-----	29
Contact Us-----	30

ROC3 Managed Optical Communications Platform



ROC3 is an extremely versatile managed platform for optical transport. Platform provides a high density optical fiber solution that includes optical regeneration and transport, amplification, protection and multiplexing, as well as a wide variety of tools for monitoring and analyzing optical performance. The ROC3 features rich management features via web, SNMP, telnet, SSH, local console and local LCD panel.

The ROC3 is structured around 3 main chassis, all 19" mountable and covering 1RU, 2RU and 4RU of rack space. All chassis are driven by same management NMU unit and support redundant AC and DC powering and removable ventilation fan trays. Chassis capacity runs from 4 slots for 1RU to 16 slots for the 4RU, and available cards cover various multi speed transponders(1G to 100G), DWDM and CWDM mux/demuxes and OADM, EDFA and DCM modules, Optical protection and Optical switching, OPM and OLS units, Variable Optical Attenuators, TMUX cards, and more.

Main ROC3 Architecture Traits

- **Pluggable design:** all cards are hot swappable and hot pluggable (complete redundancy)
- **High integration:** high density solutions with up to 4 optical cards per 1RU of space
- **Flexible applications:** versatile platform allowing a myriad of card combinations for complex applications
- **Carrier-class network management:** powerful network management options for complete control

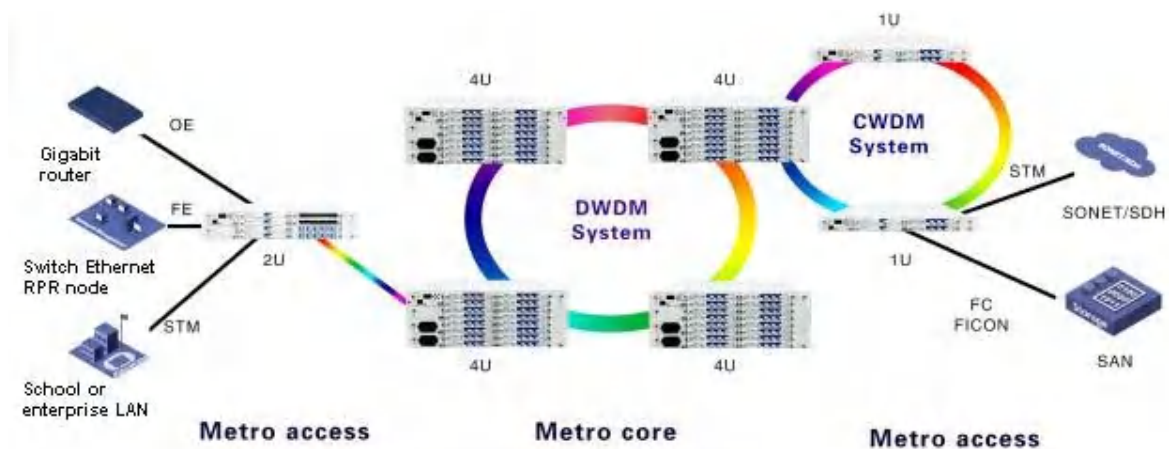
Features

- Modular design, flexible CWDM/DWDM options, protection and monitoring
- Strong configuration, performance, monitoring and management tools
- 4RU chassis allows 16 function cards for complex WDM/OADM/EDFA/OEO applications
- Web based GUI user interface management for easy installation/configuration process.
- Supports SNMP, web, telnet and SSH remote management.

Specifications

Parameters	Unit			
Chassis Type		ROC3-CH04	ROC3-CH08	ROC3-CH16
Chassis Slots		2 power card slot; 1 NMU card slot; 1 fan card slot; 4 function card slot;	2 power card slot; 1 NMU card slot; 1 fan card slot; 8 function card slot;	2 power card slot; 1 NMU card slot; 1 fan card slot; 16 function card slot;
Chassis Size (WxDxH)	mm	482.6×300×44	482.6×300×89	482.6×300×178
Maximal Device Power	W	100	200	300
Device Weight	Kgs	6	8	12
Power Supply		Redundant power: DC 36V~72V or AC 100V~240V		
Fan Type		Plug-in module		
Operating Temperature	°C	-5 ~ +55		
Storage Temperature	°C	- 20~ +70		
Relative Humidity		5% ~ 95% (non-condensing)		

Application



Ordering Information: ROC3-CHXX-YY

XX	YY	
Chassis Type	Power Supply Mode	Obs.
04: 482.6×300×44 mm (4 slots) 08: 482.6×300×89 mm (8 slots) 16: 482.6×300×178 mm (16 slots)	(fan tray included in all chassis versions) DC: DC power AC: AC power AA: Dual AC power DD: Dual DC power AD: AC and DC power	NMC management card is included with any of the 3 types of ROC3 chassis

ROC3-NMC

Network Management Card



The ROC3-NMC management card is a powerful addition to the platform. Based on an ARM9 CPU, it has 4 data ports (2x SFP slots and 2x RJ45 10/100Base-Tx) for management network connectivity. Card offers also a local LCD screen and keypad for OOB setup. The NMC supports SNMP v1/v2/v3, Telnet, SSH v1/v2, Web GUI, TACACS authentication and provides a rapid function card configuration and intelligent management.

Features

- GUI management and local keypad console, supports hot-swap functions by storing all line card settings on the NMC card internal memory
- Offers configuration, performance monitoring and alarm and diagnostic functions
- Local LCD and keypad panel offer an option for installation without PC assistance
- High connectivity with 2x 100Base-X SFP slots and 2x 10/100Base-Tx RJ45 ports
- Remote management available via SNMP, Web, Telnet, SSH

Ordering Information: ROC3-NMC

ROC3-NMC	2x 100Base-X SFP slots and 2x 10/100Base-TX RJ45 ports, LCD graphic panel with 6 keys keypad for local management
----------	--

ROC3-100G-3R

2x 100G Channel Transponder Card



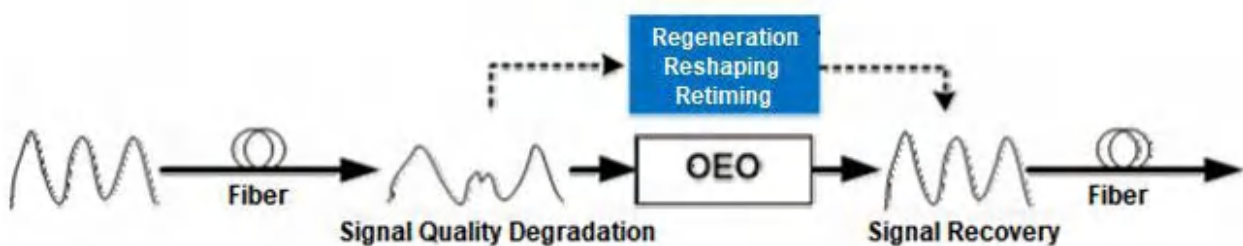
The ROC3-100G-3R is a double density OEO transponder card for the ROC3 platform. Card offers 3R functions (Re-Amplify, Re-Shape and Re-Timing), acting as a high capacity transponder for fiber media conversion (MM to SM, CWDM or DWDM), amplifying signal and offering complete OEO regeneration. It offers double density of 2 separate 100G channels per card, reaching a density of 8 channels per 1RU when loaded into any ROC3-CH chassis. ROC3-100G-3R complements other WDM, OADM, DCM and EDFA cards for a complete high density optical transport solution.

Features

- Compact, high-density design, hot-pluggable and hot-swappable card
- 3R Transponder, multi-rate support 100GE
- 4x QSFP+/QSFP28 transceiver slots

Applications

- SM and MM conversion, xWDM Wavelength Conversion(CWDM/DWDM)
- Optical Signal Regeneration and Amplification
- Optical Signal Reshaping



Specifications

Parameter	Unit	ROC3-100G-3R
Dimension	mm	160×200×21 (WxDxH)
Maximal Power	W	5(without QSFP modules)
Rate	Gb/s	Supports 100Gb Ethernet w/ or w/o RS-FEC
Maximal Slot Qty		4
Heat Dissipation		Yes
Coding Scheme		NRZ
3R Function		Support 3R (Re-Amplify, Re-Shape, Re-Time)
Alarm Management		Provide optical receiving power alarm, optical transmission alarm, temperature alarm etc.
Working Mode		Loopback mode / Forward mode
Crossing Function		Single board support the crossing function of group optical channel service
WDM Type		CWDM / DWDM
Applications		Wavelength conversion, SM and MM conversion, Optical signal regeneration and amplification
Operating Temperature	°C	-5 ~ +55
Storage Temperature	°C	-20 ~ +70
Relative Humidity		5% ~ 95% (non-condensing)

Ordering Information: ROC3-100G-3R

Example:

ROC3-100G-3R: 2ch. 40G/100G rated QSFP+/QSFP28 transponder card, managed

ROC3-25G-3R

4x 25G Channel Transponder Card



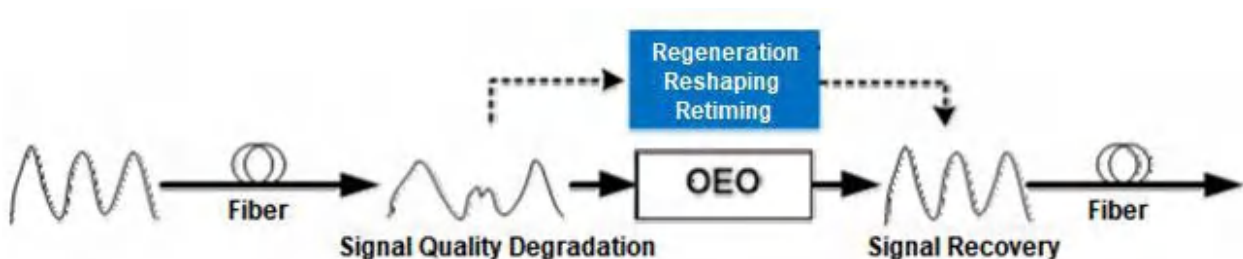
The ROC3-25G-3R is a high density OEO transponder card for the ROC3 platform. Card offers 3R functions (Re-Amplify, Re-Shape and Re-Timing), acting as a high capacity transponder for fiber media conversion (MM to SM, CWDM or DWDM), amplifying signal and offering complete OEO regeneration. It offers a high density of 4 separate 25G channels per card, reaching a density of 16 channels per 1RU when loaded into any ROC3-CH chassis. ROC3-25G-3R complements other WDM, OADM, DCM and EDFA cards for a complete high density optical transport solution.

Features

- Compact, high-density design, hot-pluggable and hot-swappable card
- 3R Transponder, multi-rate support GE 1.25Gb/s, 10GE 10.3Gb/s, 25GE 11.1Gb/s
- Multi-rate STM support: STM-16 2.488Gb/s, STM-64 9.95Gb/s, etc.
- 8x SFP/SFP+/SFP28 transceiver slots

Applications

- SM and MM conversion, xWDM Wavelength Conversion(CWDM/DWDM)
- Optical Signal Regeneration and Amplification
- Optical Signal Reshaping



Specifications

Parameter	Unit	ROC3-25G-3R
Dimension	mm	160×200×21 (WxDxH)
Maximal Power	W	3.5(without SFP module)
Rate	Gb/s	Support Ethernet 1.25 Gb/s, 10.3Gb/s, 11.1Gb/s with FEC. Support STM-16 2.488Gb/s, STM-64 9.95Gb/s. Support other 8.5Gb/s,10.5Gb/s,11.3Gb/s, 25.5Gb/s rates
Maximal Slot Qty		8
Heat Dissipation		Yes
Coding Scheme		NRZ
3R Function		Support 3R (Re-Amplify, Re-Shape, Re-Time)
Alarm Management		Provide optical receiving power alarm, optical transmission alarm, temperature alarm etc.
Working Mode		Loopback mode / Forward mode
Crossing Function		Single board support the crossing function of group optical channel service
WDM Type		CWDM / DWDM
Applications		Wavelength conversion, SM and MM conversion, Optical signal regeneration and amplification
Operating Temperature	℃	-5 ~ +55
Storage Temperature	℃	-20 ~ +70
Relative Humidity		5% ~ 95% (non-condensing)

Ordering Information: ROC3-xxG-3R

XX
Rate
25: 1G/2.5G/10G/25G rated SFP28/SFP+/SFP transceivers

Example:

ROC3-25G-3R: 4ch. 1G/2.5G/10G/25G rated SFP28 transponder card

ROC3-10G-3R

4x 10G Channel Transponder Card



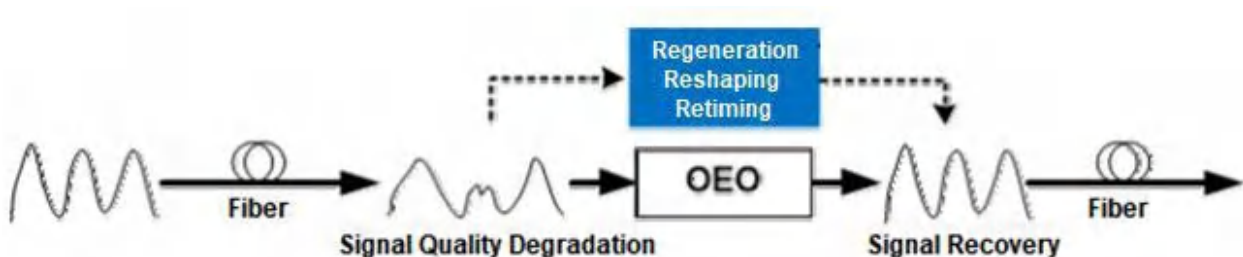
The ROC3-10G-3R is one of the most popular OEO transponder cards of the ROC3 platform. Card offers 3R functions (Re-Amplify, Re-Shape and Re-Timing), acting as a high capacity transponder for fiber media conversion (MM to SM, CWDM or DWDM), amplifying signal and offering complete OEO regeneration. It offers a high density of 4 separate 10G channels per card, reaching a density of 16 channels per 1RU when loaded into any ROC3-CH chassis. ROC3-10G-3R complements other WDM, OADM, DCM and EDFA cards for a complete high density optical transport solution.

Features

- Compact, high-density design, hot-pluggable and hot-swappable card
- 3R Transponder, multi-rate support GE 1.25Gb/s, 10GE 10.3Gb/s, 10GE 11.1Gb/s w/FEC
- Multi-rate STM support: STM-16 2.488Gb/s, STM-64 9.95Gb/s, etc.
- 8 SFP or SFP+ transceiver slots

Applications

- SM and MM conversion, xWDM Wavelength Conversion(CWDM/DWDM)
- Optical Signal Regeneration and Amplification
- Optical Signal Reshaping.



Specifications

Parameter	Unit	ROC3-10G-3R
Dimension	mm	160×200×21 (WxDxH)
Maximal Power	W	3.5(without SFP module)
Rate	Gb/s	Support Ethernet 1.25 Gb/s, 10.3Gb/s, 11.1Gb/s with FEC. Support STM-16 2.488Gb/s, STM-64 9.95Gb/s. Support others at 8.5Gb/s,10.5Gb/s,11.3Gb/s,11.7Gb/s rate.
Maximal Slot Quantity		8
Heat Dissipation		Yes
Coding Scheme		NRZ
3R Function		Support 3R (Re-Amplify, Re-Shape, Re-Time)
Alarm Management		Provide optical receiving power alarm, optical transmission alarm, temperature alarm etc.
Working Mode		Loopback mode / Forward mode
Crossing Function		Single board support the crossing function of group optical channel service
WDM Type		CWDM / DWDM
Applications		Wavelength conversion, SM and MM conversion, Optical signal regeneration and amplification
Operating Temperature	℃	-5 ~ +55
Storage Temperature	℃	-20 ~ +70
Relative Humidity		5% ~ 95% (non-condensing)

Ordering Information: ROC3-xxG-3R

XX
Rate
10: 1G/2.5G/10G rated SFP+ 2.5: 1G/2.5G rated SFP 01: 1.25G rated SFP

Example:

ROC3-10G-3R: 1G/2.5G/10G rated SFP+ transponder card

ROC3-2.5G-3R: 1G/2.5G rated SFP transponder card

ROC3-01G-3R: 1.25G rated SFP transponder card

ROC3-DWDM40S-M/D

AAWG DWDM 40channels simplex mux or demux card



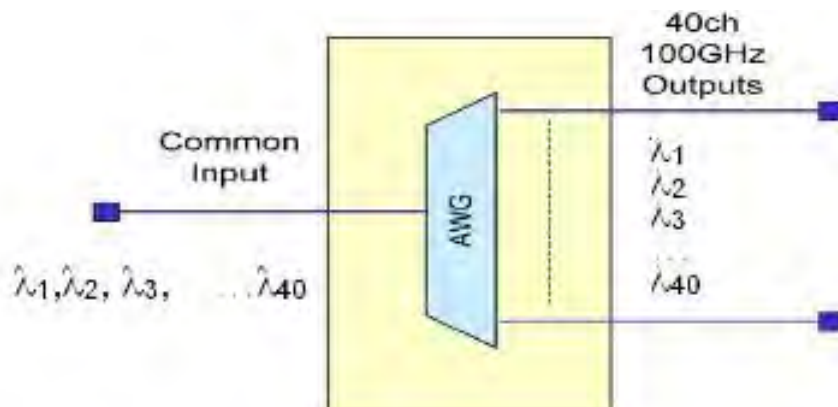
The ROC3-DWDM40S is an Athermal Array Waveguide Grating (AAWG) DWDM mux or demux. The AAWG technology allows a high number of DWDM channels (usually 40) to be implemented at a very low Insertion loss compared with traditional WDM muxes. DWDM technology provides a very high density of simultaneous optical channels over same fiber, dramatically increasing the capacity of the fiber. With its low cost, low power consumption and compact size features, AAWG is an ideal optical transmission solution.

Features

- Compact size, Hot Pluggable
- Very low insertion loss, Low PDL, High Channel Isolation
- High stability, high reliability

Applications

- WDM Systems/ Optical Transport
- MAN (Metropolitan Area Network)



Specifications

Parameters	Unit	ROC3-DWDM40S-M/D
Dimension	mm	160×200×43 (WxDxH)
Maximal Power	W	9
Wavelength Range	nm	1529.55 ~ 1560.60
Channel Spacing	Ghz	100
Channel Passband	nm	±0.1
Passband Flatness	dB	≤ 0.5
Channel	λ	40
Insertion Loss	dB	≤ 6.5
Center Wavelength Accuracy	nm	≤ 0.05
Isolation	dB	Adjacent channel isolation ≥25 ; Non-adjacent channel isolation ≥30;
Crosstalk	dB	≥21
Return Loss	dB	SM ≥ 40
PDL	dB	≤ 0.5
Polarization Mode Dispersion	ps	≤ 0.5
Optical Power	mw	≤ 500
Operating Temperature	°C	-5 ~ +55
Storage Temperature	°C	-20 ~ +70
Relative Humidity		5% ~ 95% (non-condensing)

Ordering Information: ROC3-DWDM40S-X

SKU	Description
ROC3-DWDM40S-M ROC3-DWDM40S-D	DWDM multiplexer, 40 ch ITU 100GHz grid, Ch21~60, single strand, LC/UPC connectors DWDM de-multiplexer, 40 ch ITU 100GHz grid, Ch21~60, single strand, LC/UPC connectors ROC3 series compatible

ROC3-CWDM81D and ROC3-DWDM81D

CWDM & DWDM 8 channels duplex mux/demux cards



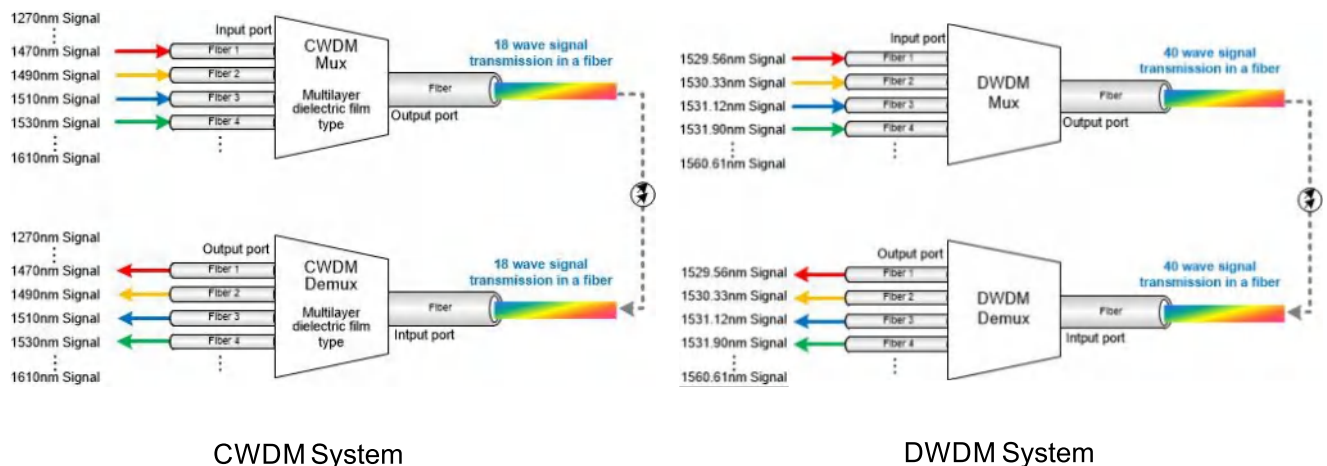
ROC3-CWDM81D and ROC3-DWDM81D are classic duplex mux/demuxes for CWDM or DWDM technology. Each card only occupies a single slot in any ROC3 chassis and supports a duplex path. Cards come with LC/UPC connectors and also include a wide 1310nm pass through port. The 8 channels cards offer a middle way in designing CWDM or DWDM networks. Custom versions can include any CWDM or DWDM channel upon request, but generally they are in consecutive blocks of 8 channels in either the CWDM or the DWDM ITU 100GHz grid spectrum.

Features

- Modular design, compact size, hot-pluggable cards
- Low insertion loss, low PDL, high channel isolation
- High stability and high reliability

Applications

- WDM Systems
- MAN (Metropolitan Area Networks)



Specifications

Parameters	Unit	ROC3-CWDM81D			ROC3-DWDM81D			
Dimension	mm	160×200×21 (WxDxH)						
Max Power Consumption	W	0.5						
Wavelength Range	nm	1260 ~ 1620			1500 ~ 1620			
Channel Spacing	Ghz				100	200		
Passband Width	nm	±7.5			±0.11	±0.25		
Passband Flatness	dB	≤ 0.5						
Channel	λ	4	8	16	4	8	16	
Insertion Loss	dB	≤ 1.5	≤ 2.7	≤ 5.0	≤ 2.0	≤ 3.0	≤ 5.0	
Isolation	dB	Adjacent channel isolation ≥30 Non-adjacent channel isolation≥45						
Return Loss	dB	SM ≥ 45						
Directivity	dB	SM ≥ 50						
PDL	dB	≤ 0.1		≤ 0.15		≤ 0.20		
Polarization Mode Disp.	ps	≤ 0.1				≤ 0.15		
Optical Power	mw	≤ 500						
Operating Temperature	℃	-5 ~ +55						
Storage Temperature	℃	-20 ~ +70						
Relative Humidity		5% ~ 95% (non-condensing)						

Ordering Information: ROC3-XWDM81D-YY

X	YY
Technology Type	Starting Channel
C: CWDM D: DWDM	For CWDM, middle two digits of the first wavelength used (for example, 27 means 1271nm, or 47 means 1471nm, etc.) For DWDM technology equals the ITU 100GHz grid channel (for example, 20 means 1561.42nm, 21 means 1560.61nm, etc.) each card has 8 duplex consecutive channels

ROC3-OLP35 and ROC3-OLP35S

Optical 1:1 protection cards for duplex and simplex fiber circuits



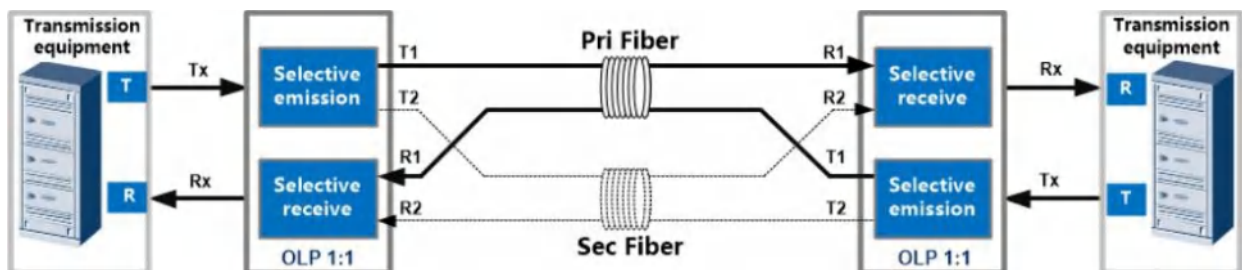
ROC3-OLP35 and ROC3-OLP35S are perfect complements for the ROC3 optical transport platform. Cards provide optical protection for either duplex (OLP35) or simplex (OLP35S) fiber circuits, independent to any protocol or telecom transmissions and strictly based on the physical link of the optical fiber. The ROC3 OLP cards provide very fast fault protection and employ 1:1 optical protection for minimum insertion loss, covering any wavelengths 1260nm to 1620nm. The OLP cards also have their own internal laser source used for probing the fiber path and automatically restoring primary optical fiber circuit when deemed operational.

Features

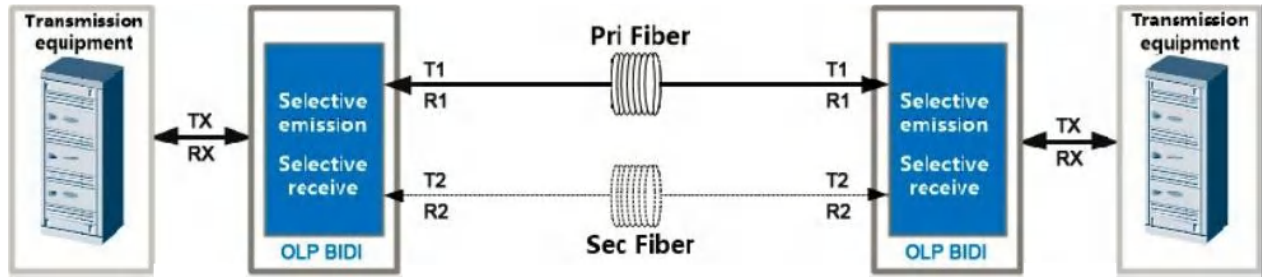
- Modular design, compact size, hot-pluggable and hot-swappable
- Wide wavelength coverage 1260~1620nm, very low IL, low crosstalk and fast switching speed
- Protocol transparent, high stability and reliability, automatic and manual protection modes, GUI configurable
- 1:1 protection for lowest possible insertion loss, available for duplex and simplex circuits

Applications

- Optical Line Transmission Protection
- Network Route Protection



Drawing of a duplex ROC3-OLP35 1:1 optical protection application



Drawing of a simplex BiDi ROC3-OLP35S 1:1 optical protection application

Specifications

Parameters	Unit	ROC3-OLP35	ROC3-OLP35S
Dimension	mm	160×200×21 (WxDxH)	
Maximal Power Consumption	W	1	
Wavelength Range	nm	1260 ~ 1650	
Test Wavelength	nm	1310 / 1550	
Protecting Ways		1:1	1:1
Insertion Loss	dB	TX<1.5 RX<1.5	Tx ≤ 1.5 Rx ≤ 1.5
Switching Time	ms	≤25	≤35
Crosstalk	dB	SM ≥ 50	SM ≥ 55
Return Loss	dB	SM ≥ 45	
PDL	dB	≤ 0.20	
WDL	dB	≤ 0.30	
Power Monitoring Range	dBm	-40 to 23	
Operating Temperature	℃	-5 ~ +55	
Storage Temperature	℃	-20 ~ +70	
Relative Humidity		5% ~ 95% (non-condensing)	

Ordering Information

Model	Description
ROC3-OLP35	optical card 1:1 protection for duplex optical fiber SM circuits, 1310/1550nm, LC/UPC connectors
ROC3-OLP35S	optical card 1:1 protection for simplex optical fiber SM circuits(BiDi), 1310/1550nm, LC/UPC connectors

ROC3-EDFA

C-band EDFA booster, in-line and pre-amplifier cards for ROC3 platform



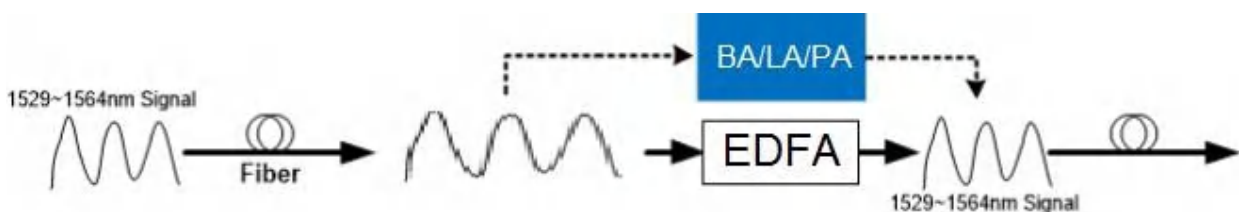
The EDFA series of cards are a perfect complement for applications requiring light amplification. ROC3-EDFA cards are able to process signals in the C-band, covering most DWDM applications. An EDFA card is only processing Layer 1 network transmission signals, being independent of speed or protocols of the communication network. Using a laser pump with AGC and APC controls, it directly amplifies multi-wavelength optical signals, thus extending the transmission distance beyond the ability of the regular optical transceivers. EDFA is usually applied in conjunction with DWDM mux/demuxes, DCM, OLP or VOA cards from same ROC3 optical transport platform.

Features

- Modular design, compact size, hot pluggable cards
- High gain, low noise, low gain flatness amplifying
- Automatic Adjustable Gain and Power (APC, AGC).
- 3 different types of EDFA available: booster, in-line and pre-amplifiers

Applications

- Long distance fiber backbone network transmissions
- Optical signal power amplification before optical signal split
- DWDM long range and high density MAN/WAN infrastructure



DWDM wavelength division system amplifying application

Specifications

Parameters	Unit	ROC3-EDFA1	ROC3-EDFA2	ROC3-EDFA3
Dimension	mm	160×200×21 (WxDxH)		
Maximal Power Consumption	W	15		
Input Power	dBm	-15 ~ 8	-30 ~ -5	-30 ~ -5
Gain	dB	15	24	18
Saturated Output Power	dBm	16	13	13
Wavelength Range	nm	1529 ~ 1564		
Flatness	dB	≤ 1.5		
Noise Figure	dB	≤ 5.0		
Input/ Output Pump Leakage	dBm	≤ -40		
Return Loss	dB	≤ -45		
Input/Output Isolation	dB	≥ 30		
Polarization Dependent Gain	dB	≤ 0.3		
Polarization Mode Dispersion	ps	≤ 0.5		
Working Mode		AGC or APC		
Connector Type		LC/UPC		
Operating Temperature	°C	-5 ~ +55		
Storage Temperature	°C	-20 ~ +70		
Relative Humidity		5% ~ 95% (non-condensing)		

Ordering Information: ROC3-EDFAXYYZZ

X	YY	ZZ	LOW
Amplifier Type	Saturated Output Power	Max Gain	Input Power Range
1: Booster 2: In-line amplifier 3: Pre-amplifier	13: Max +13dBm 15: Max +15dBm 17: Max +17dBm 20: Max +20dBm	15: Max 15dB 18: Max 18dB 20: Max 20dB 25: Max 25dB	n/a: -15 dBm ~ +8 dBm LOW: -30 dBm ~ -5 dBm

Examples

ROC3-EDFA21725: EDFA inline amplifier, max +17dBm power, 25dB gain, LC/UPC connectors

ROC3-EDFA31518-LOW: EDFA pre-amplifier, max +15dBm power, 18dB gain, LC/UPC connectors, low power input range

ROC3-DCM

Dispersion Compensation Modules



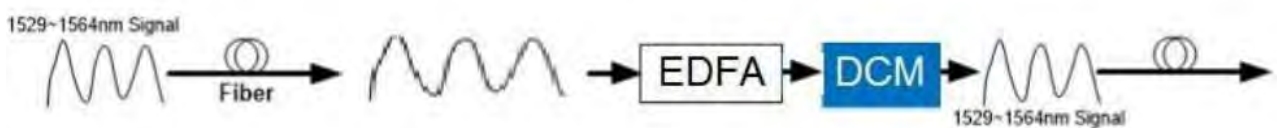
The ROC3-DCM are perfect complements for EDFA systems. When signal is traveling over long segments of physical fiber, especially when amplification systems are used, signal quality is affected by dispersion. To compensate the G652 long haul dispersion effects occurring in DWDM communication systems, Dispersion Compensation Modules (DCM) must be used. ROC3-DCM cards occupy 2 slots in the ROC3 platform chassis and have various compensation values depending on the amount of dispersion requiring compensation.

Features

- Modular design, Compact size, Hot Pluggable cards
- Wide wavelength range dispersion compensation, efficient compensation for DWDM systems
- Low insertion loss, low polarization mode dispersion
- All parameters are compliant with Telcordia GR-2854-CORE certifications
- Telcordia GR-1221-CORE reliability certifications

Applications

- Suitable for G.652 optical fiber long-haul communication systems
- DWDM transmission systems, SDH transport systems
- Dispersion adjustment



DCM application in DWDM transport system

Specifications

Parameters	Unit	Values			
Dimension	mm	160×200×43 WxDxH			
Wavelength Range	nm	1525~1565			
Optical Power	dBm	≤ 23			
Brillouin Dispersion Domain Value	dBm	≥ 6			
Nonlinear Coefficient	W-1	≤ 1.4*10 ⁹			
Effective Area	um ²	≥ 20			
Distance Up TO	km	≤ 80			
Dispersion Compensation Value	km	20	40	60	80
	Ps/nm	-340±20	-680±20	-1000±30	-1340±40
Relative Dispersion Slope	nm-1	0.0036±20%			
Insertion Loss	dB	≤ 3.2	≤ 4.5	≤ 6.0	≤ 7.7
Polarization Mode Dispersion	ps	≤ 0.3	≤ 0.4	≤ 0.5	≤ 0.6
Connector Type		LC/PC			
Operating Temperature	°C	-5 ~ +55			
Storage Temperature	°C	-20 ~ +70			
Relative Humidity		5% ~ 95% (non-condensing)			

Ordering Information: ROC3-DCMXX

Part Number (XX)	Description
ROC3-DCM20 ROC3-DCM40 ROC3-DCM60 ROC3-DCM80	20Km dispersion compensation module 40Km dispersion compensation module 60Km dispersion compensation module 80Km dispersion compensation module (all modules have LC/UPC connectors)

ROC3-VOA

Variable Optical Attenuator for balanced DWDM gains



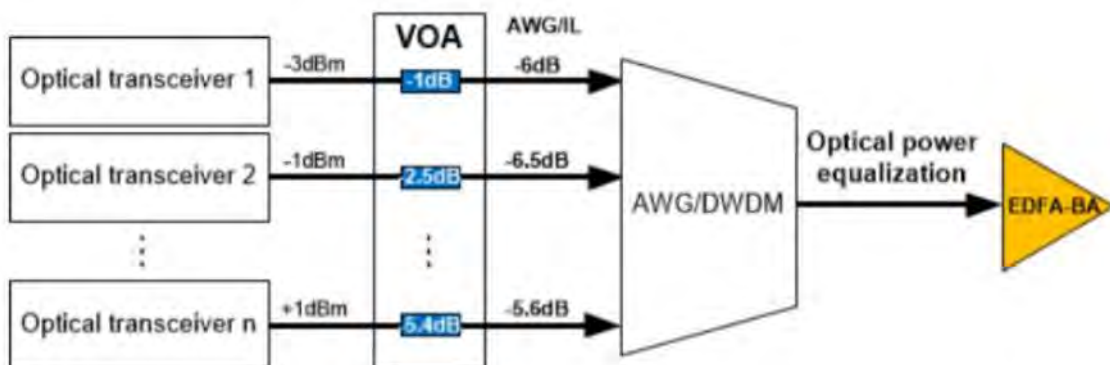
The ROC3-VOA is a perfect tool for DWDM applications in which various signals requiring amplification get into the EDFA amplifier at different power levels. The Variable Optical Attenuator will find the common denominator for these signals and bring each of them to the same input level for the EDFA, thus guaranteeing a proper amplifications across all DWDM channels. ROC3-VOA has two attenuators available on one card, independently manageable. Attenuators can be set in Auto or Manual operating modes. ROC3 is a managed Optical Transport platform including transponders, DWDM, EDFA, DCM, OADM, OLP and many other optical function cards under same chassis.

Features

- Modular design, Compact size, Hot pluggable
- High accuracy and stability, variable attenuation, multiple channel support
- Operating modes: Automatic, Manual

Applications

- Automatic Adjustment of the Optical Signal Output



Specifications

Parameters	Unit	ROC3-VOA	
Dimension	mm	160×200×21 WxDxH	
Maximal Power Consumption	W	1	
Maximal Attenuation Value	dB	≤ 20	
Attenuation Accuracy	dB	0.5(≥ 10)	0.1(≤ 10)
Operating Wavelength	nm	1260 ~ 1650	
Bandwidth	nm	±20	
Isolation	dB	≥30	
Insertion Loss	dB	≤ 1.2	
PDL	dB	≤ 0.1	
Working Mode		Automatic mode / Manual mode	
Connector Type		LC/PC	
Operating Temperature	℃	-5 ~ +55	
Storage Temperature	℃	-20 ~ +70	
Relative Humidity		5% ~ 95% (non-condensing)	

Ordering Information: ROC3-VOA-XX

XX: Max. Attenuation Value of the VOA card

Examples:

ROC3-VOA-15: Variable Optical Attenuator managed card for ROC3, 2 independent attenuators, 15dB max. attenuation, Auto and Manual modes, LC/UPC optical connectors

ROC3-VOA-20: Variable Optical Attenuator managed card for ROC3, 2 independent attenuators, 20dB max. attenuation, Auto and Manual modes, LC/UPC optical connectors

ROC3-OBYP

Optical Bypass Protection System for Duplex Fiber Circuits



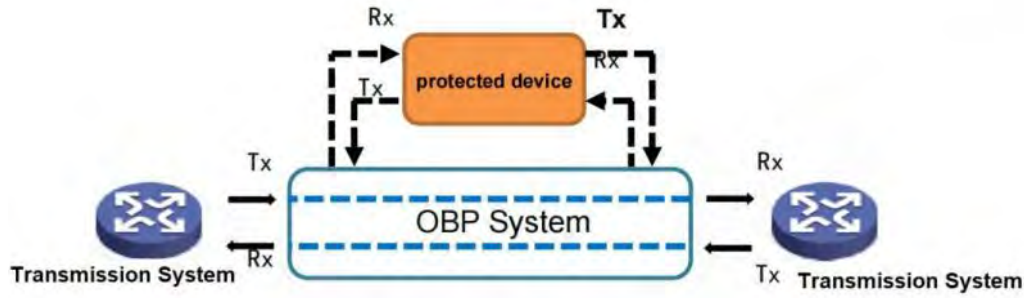
The ROC3-OBYP cards offer an independent physical fiber node protection. When deployed in an optical duplex fiber circuit, the Bypass card would detect if the optical node has failed (power loss, optical power failure, RX signal failure) and simply patch through the duplex fiber strands, bypassing the non operational node of the network and preserving functionality for other network nodes. Optical Bypass Systems are completely independent of network Layer 2+ functions, acting strictly at the physical layer.

Features

- Modular design, compact size, hot pluggable cards
- Fast optical switching, low crosstalk and wide wavelength range Completely transparent to
- Layer 1 links, path latching when no signal
- Fully NMC remote manageable card
- Single or dual bypass link versions available with operating independently
- Supports 1:1 optical protection mode or 1+1 mode
- Supports mirroring monitoring

Applications

- Optical path integrity protection
- Optical signal security and monitoring
- Network node/server failure protection, auto/manual path latching



Specifications

Parameters		Unit	ROC3-OBYP	
Dimension		mm	160×200×21 (WxDxH)	
Maximal Power Consumption		W	1 W (single link), 2W (dual link)	
Protection Ways			SM 1:1	MM 1:1
Insertion Loss	R1 – T3	dB	≤ 1.5	≤ 1.5
	R2 – T4	dB	≤ 1.5	≤ 1.5
	R3 – T1	dB	≤ 1.5	≤ 1.5
	R4 – T2	dB	≤ 1.5	≤ 1.5
	R3 – T4	dB	≤ 1.5	≤ 1.5
	R4 – T3	dB	≤ 1.5	≤ 1.5
Return Loss		dB	≥ 45	≥ 30
Crosstalk		dB	≥ 55	≥ 35
PDL		dB	≤ 0.2	≤ 0.2
WDL		dB	≤ 0.3	≤ 0.3
Switching Time		ms	< 8	< 8
Operating Temperature		℃	-5 ~ +55	
Storage Temperature		℃	-20 ~ +70	
Relative Humidity			5% ~ 95% (non-condensing)	

Ordering Information: ROC3-OBYPX-YY-ZZ-W

X	YY	ZZ	W
Model	Protection Type	Fiber Type	Test Optical Source Wavelength
OBYP1: single link	NM: 1:1 protection mode, no monitoring M3: 1:1 protection mode with mirroring monitoring 30%	SM: SM fiber 9/125um M5: MM fiber 50/125um	1: 850nm 2: 1310nm
OBYP2: dual link	M5: 1:1 protection mode with mirroring monitoring 50%	M6: MM fiber 62.5/125um	3: 1550nm

Examples

ROC3-OBYP1-NM-SM-3: single link bypass card, 1:1 protection mode, no monitoring, SM fiber with 1550nm light source

ROC3-OBYP2-M3-M5-1: dual link bypass card, 1:1 protection mode, monitoring 30%, MM 50/125 fiber & 850nm LS

ROC3-OSW

1xN Optical Switch Cards for ROC3 platform



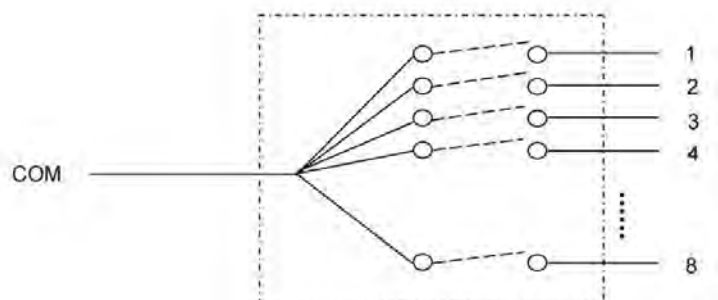
The ROC3-OSW card is a manageable 1xN single path Optical Switch card for the ROC3 platform. The Optical Switch can be managed from local console, front panel keys or the web GUI management interface. Settings include selecting operating mode: manual, auto-scan, detect, and applications include multi-fiber monitoring, optical protection, fiber testing and measurement.

Features

- Modular design, compact size, hot pluggable cards
- Management by panel keys, serial console or webGUI (via NMC card)
- Very fast switching times with low Insertion Loss
- High Stability and High Reliability components (10 million switch actions)

Applications

- FITL Automatic Measurement (last mile fiber)
- Optical Network Remote Monitoring
- Fiber Cable Monitoring and Maintenance Systems



Example of an ROC3-OSW1x8 card application
(only one output connects to COM line any given time)

Specifications

Parameters	Unit	ROC3-OSW-1xN	
Dimension	mm	160×200×21 (WxDxH)	
Maximal Power Consumption	W	2	
Wavelength Range	nm	850±40 / 1300±40	1260 ~ 1650
Test Wavelength	nm	850 / 1300	1310 / 1550
Insertion Loss	dB	1<N≤32	32<N≤64
		Typ:1.0 Max:1.2	Typ:1.2 Max:1.7
Return Loss	dB	MM≥30 SM≥45	
Crosstalk	dB	≥55	
PDL	dB	≤0.05	
WDL	dB	≤0.25	
Repeatability	dB	≤±0.05	
Durability	times	10 ⁷	
Optical Power	mW	≤500	
Switching Time	ms	≤10 (sequence switch time of adjacent channel)	
Operating Temperature	℃	-5 ~ + 55	
Storage Temperature	℃	-20 ~ + 70	
Relative Humidity		5% ~ 95% (non-condensing)	

Ordering Information: ROC3-OSW-1xN-YY-ZZZZ

N	YY	ZZZZ
Channel	Fiber Type	Operating Wavelength
1x16 : 16 Channels 1x32 : 32 Channels 1x72 : 72 Channels	SM : SM 9/125 M5 : MM 50/125 M6 : MM 62.5/125	0850 : 850nm 1310 : 1310nm 1550 : 1550nm 3155 :1310/1550nm

Example

ROC3-OSW-1x16-SM-1550: 1x16 Optical Switch card for SM fiber, 1550nm test wavelength

Other available cards for ROC3 platform (made-on-demand)



ROC3-OTDR

Optical Time Domain Reflectometer
(platform manageable)



ROC3-OD

Multi-fibre Optical Detection Card
(platform manageable)



ROC3-LS

Multi-fibre Optical Light Source Card
(platform manageable)



ROC3-FWDM

Multi-FWDM Optical Splitter Card
(platform manageable)



ROC3-OSW

Optical Switch Card 1xN(platform
manageable, $2 < N < 128$)

ROC3

Reliable Telecom Optical Transport Platform



ROBOfiber, Inc.

3000 Danville Blvd, Bldg. F
Alamo, CA 94507
USA
Tel: +1-888-27-FIBER (+1 888-273-4237)
Fax: +1-503-764-1462
Web: www.robofiber.com
E-mail: sales@robofiber.com