

Product Guide

Transceivers, Transponders,
and Active Optical Cables

FINISAR®



Transceivers, Transponders, and Active Optical Cables

SFP (copper and optical; longwave, shortwave and WDM)

DATACOM applications using Fast Ethernet, Gigabit Ethernet, 1x/2x/4x Fibre Channel

TELECOM applications using OC-3/STM-1, OC-12/STM-4, OC-48/STM-16, EPON/GPON and Wireless/CPRI across all reaches

Features

- 3.3 V operating voltage
- Distances from very short links up to 100+ km
- Wide operating temperature range
- Metal enclosure for lower EMI
- Digital diagnostics
- Wireless CPRI compliant



SFP

SFP+/SFP28

(optical; longwave, shortwave, DWDM and tunable)

DATACOM applications using 10G and 25G Ethernet and 2x/4x/8x/16x/32x Fibre Channel (LW and SW)

TELECOM applications using either OC-192/STM-64, 10G Ethernet, or Wireless/CPRI

Features

- 3.3 V operating voltage
- Supports bit rates up to 28.05 Gb/s (LW, SW, and DWDM) and 11.3 Gb/s (Tunable)
- Distances from short links up to 80 km metro (LW, SW, and DWDM) and 80km (Tunable)
- Wide operating temperature range
- Digital diagnostics
- Wireless CPRI compliant (LW and SW)
- Bi-directional SFP+ transceiver available



SFP+/SFP28

CFP/CFP2/CFP4 (optical; longwave and shortwave)

DATACOM applications using 40G and 100G Ethernet

TELECOM applications using OTU3 and OTU4

Features

- Hot-pluggable, MSA-compliant CFP, CFP2 and CFP4 form factors
- Supports 39.8 Gb/s to 112 Gb/s aggregate bit rates
- Maximum link length of 100m on OM3 MMF, 150m on OM4 MMF, 10km on SMF
- 3.3 V operating voltage



CFP/CFP2/CFP4

QSFP+/QSFP28 (optical; longwave and shortwave)

DATACOM applications using 40G and 100G Ethernet, 128G Fibre Channel and high-density 10G and 25G Ethernet

TELECOM applications using OTU3 and OTU4

Features

- Four-channel full-duplex transceiver module
- Hot-pluggable, MSA-compliant QSFP+ and QSFP28 form factors
- Maximum link length of 300m on OM3 MMF, 400m on OM4 MMF, and 40 km on SMF
- 3.3 V operating voltage



QSFP+/QSFP28

CXP (optical; shortwave)

DATACOM applications using 100G Ethernet and chassis interconnections

Features

- Twelve-channel full-duplex transceiver module
- Hot Pluggable CXP form factor
- Maximum link length of 300m on OM3 MMF and 400m on OM4 MMF
- Multirate capability: supports 1.06 Gb/s to 12.5 Gb/s per channel



CXP

Active Optical Cables

SFPwire

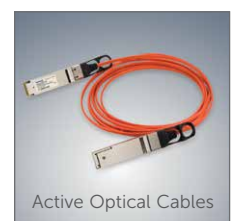
SFP+ Active Optical Cable for 10G and 25G Ethernet. Also available with Connectivity Diagnostics®

quadwire

40 Gb/s to 100 Gb/s Parallel Active Optical Cable for 40GbE and 100GbE, InfiniBand 4xQDR, InfiniBand 4xFDR, InfiniBand 4xEDR and Intel® Omni-Path Architecture. Also available with Connectivity Diagnostics®

C.wire

150 Gb/s Parallel Active Optical Cable for 100GbE and InfiniBand 12xQDR.



Active Optical Cables

Optical Engines (optical; shortwave)

DATACOM applications for inter-chassis connections

Features

- Twelve-channel full-duplex transceiver modules
- Maximum link length of 100m at 10 Gb/s on OM3 MMF or 70m at 25 Gb/s on OM4 MMF
- Multirate capability: supports 1 Gb/s up to 28.05 Gb/s per channel



X2 (optical; longwave and shortwave)

DATACOM applications using 10G Ethernet

Features

- Supports bit rates up to 10.5 Gb/s
- Distances up to 10 km
- Digital diagnostics



Coherent (optical; longwave)

TELECOM 100Gb/s and 200Gb/s applications

Features

- Pluggable CFP2-ACO analog coherent optics module
 - Highest density coherent interface
 - Enables “pay-as-you-grow” deployment of coherent optics
 - Analog interface is compatible with any external DSP
 - Modulation format independent, supports data rates > 200Gb/s



Endurance Compact Transceivers (optical; longwave and shortwave)

Features

- Compact form-factor for high-density solutions
- Data rate flexibility including 1G and 10G Ethernet, Fast Ethernet, and 1x/2x/4x/8x/16x Fibre Channel
- Board-mounted for an edge optical interface or internal mounting
- Designed for rugged applications



XFP (optical; longwave, shortwave, DWDM, and tunable)

DATACOM applications using 10G Ethernet and 10x Fibre Channel

TELECOM applications using OC-192/STM-64

Features

- Supports bit rates up to 11.3 Gb/s
- Distances up to 200 km (LW, SW, and DWDM) and 80 km (Tunable)
- Digital diagnostics
- Wide operating temperature range versions available



SFF (optical; longwave and shortwave)

DATACOM applications using Gigabit Ethernet, 1x/2x/4x Fibre Channel

TELECOM applications using OC-3/STM-1, OC-12/STM-4 and OC-48/STM-16 across all reaches

Features

- Distances from very short links up to 80 km
- Wide operating temperature range
- Available in 2x5, 2x7 or 2x10. 2x7 and 2x10 incorporate digital diagnostics



Finisar’s Digital Diagnostics

Finisar’s transceivers feature a microprocessor and diagnostics interface that provide performance information on the data link. Users can remotely monitor—in real-time—received optical power, transmitted optical power, laser bias current, transceiver input voltage and transceiver temperature of any transceiver in the network. These patented digital diagnostic functions provide network managers with a highly accurate, cost-effective tool for implementing reliable performance monitoring.

Finisar’s Connectivity Diagnostics

Several of Finisar’s products feature the Connectivity Diagnostics® suite of tools, which helps data center technicians quickly and intuitively find specific modules in a sea of sockets using a visual indicator. LynkFind™ allows an operator to light up the pull-tab of the module at the far-end of a link by pressing the pull-tab of the near-end module. LynkGuardian™ lights up a module experiencing a fault and sends alarms and warnings. LynkCommander™ allows a network operations center to light up a module for easy identification on the data center floor. Together, these patented tools bring the intelligence normally available through data center monitoring software to a simple and intuitive visual indicator. The benefits to the data center operator enable faster installation and maintenance, easier troubleshooting, and simplified operations.

Technology Innovator.
Broad Product Portfolio.
Trusted Partner.

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Optical Engines



Coherent



XFP



X2



Endurance



SFF

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FTLC1183RDNx (CFP)	✓	Duplex SMF	1310nm Band	4x DFB Laser	PIN	103.1 Gb/s	10 km
FTLC1183SDNx (CFP)	✓	Duplex SMF	1310nm Band	4x DFB Laser	PIN	112 Gb/s	10 km

Part Number	Rate Select	Media Type	Wavelength (nm)	Transmitter	Receiver	Data Rate (Gb/s)	Reach
QSFP+/QSFP28							
FTL410QExC (QSFP+)		Parallel MMF	850nm Band	4x VCSEL	PIN	41.2 Gb/s	100 m
FTL410QDxC (QSFP+)		Parallel MMF	850nm Band	4x VCSEL	PIN	41.2 Gb/s	300 m
FTL410QE2N (QSFP+)		Parallel MMF	850nm Band	4x VCSEL	PIN	41.2 Gb/s	100 m
FTL414QB2C (QSFP+)		Parallel MMF	850nm Band	4x VCSEL	PIN	56 Gb/s	60 m
FTL4C2QE1C (QSFP+)		Duplex SMF	1310nm Band	4x DFB Laser	PIN	41.2 Gb/s	160 m
FTL4C3QE1C (QSFP+)		Duplex SMF/MMF	1310nm Band	4x DFB Laser	PIN	41.2 Gb/s	1 km
FTL4S1QE1C (QSFP+)		Duplex MMF	850nm Band	4x VCSEL	PIN	41.2 Gb/s	300 m
FTL4C1QL2C (QSFP+) ⁽⁵⁾		Duplex SMF	1310nm Band	4x DFB Laser	PIN	41.2 Gb/s	2 km
FTL4C1QE1C (QSFP+) ⁽⁵⁾		Duplex SMF	1310nm Band	4x DFB Laser	PIN	41.2 Gb/s	10 km
FTL4C1QM1C (QSFP+)		Duplex SMF	1310nm Band	4x DFB Laser	PIN	44.6 Gb/s	10 km
FTL4E1QE1C (QSFP+)		Duplex SMF	1310nm Band	4x DFB Laser	APD	41.2 Gb/s	40 km
FTL4E1QM1C (QSFP+)		Duplex SMF	1310nm Band	4x DFB Laser	APD	44.6 Gb/s	40 km
FTLC9551REPM (QSFP28)		Parallel MMF	850nm Band	4x VCSEL	PIN	103.1 Gb/s	100 m ⁽³⁾
FTLC9551SEPM (QSFP28)		Parallel MMF	850nm Band	4x VCSEL	PIN	112.2 Gb/s	100 m ⁽³⁾
FTLC9552FEPM (QSFP28)		Parallel MMF	850nm Band	4x VCSEL	PIN	103.1 Gb/s	100 m ⁽³⁾
FTLC9554REPM (QSFP28)		Parallel MMF	850nm Band	4x VCSEL	PIN	103.1 Gb/s	30/50/70 m ⁽⁴⁾
FTLC1152RGPL (QSFP28)		Duplex SMF	1310nm Band	4x DFB Laser	PIN	103.1 Gb/s	2 km
FTLC1152SGPL (QSFP28)		Duplex SMF	1310nm Band	4x DFB Laser	PIN	112.2 Gb/s	2 km
FTLC1151RDPL (QSFP28)		Duplex SMF	1310nm Band	4x DFB Laser	PIN	103.1 Gb/s	10 km
FTLC1151SDPL (QSFP28)		Duplex SMF	1310nm Band	4x DFB Laser	PIN	112.2 Gb/s	10 km
CXP							
FTLD10CE1C		Parallel MMF	850nm Band	12x VCSEL	PIN	126 Gb/s	100 m ⁽⁴⁾
FTLD10CE3C		Parallel MMF	850nm Band	12x VCSEL	PIN	135.6 Gb/s	100 m ⁽⁴⁾
FTLD10CD3C		Parallel MMF	850nm Band	12x VCSEL	PIN	135.6 Gb/s	300 m ⁽⁴⁾
FTLD12CL3C		Parallel MMF	850nm Band	12x VCSEL	PIN	150 Gb/s	100 m ⁽⁴⁾
Active Optical Cables							
SFPwire (10G SFP+ based AOC)		Duplex MMF	850nm Band	VCSEL	PIN	10.3 Gb/s	30 m
SFPwire (25G SFP+ based AOC)		Duplex MMF	850nm Band	VCSEL	PIN	25.78 Gb/s	30 m
Quadwire (40G QSFP-based AOC)		Parallel MMF	850nm Band	4x VCSEL	PIN	42 Gb/s	300 m
Quadwire Fanout (40G QSFP to 4xSFP+ AOC)		Duplex/Parallel MMF	850nm Band	4x VCSEL	PIN	42 Gb/s	30 m
Quadwire (56G QSFP-based AOC)		Parallel MMF	850nm Band	4x VCSEL	PIN	56 Gb/s	100 m
Quadwire (100G QSFP28-based AOC)		Parallel MMF	850nm Band	4x VCSEL	PIN	112 Gb/s	100 m
C.wire (CXP-based AOC)		Parallel MMF	850nm Band	12x VCSEL	PIN	150 Gb/s	100 m
Optical Engines							
FBOTD10SL1C00 (10G BOA)		Parallel MMF	850nm Band	12x VCSEL	PIN	12 x 10.5 Gb/s	100 m
FBOTD10FL1C00 (10G BOA)		Parallel MMF	850nm Band	12x VCSEL	PIN	12 x 10.5 Gb/s	100 m
FBOTD25ML3C00		Parallel MMF	850nm Band	12x VCSEL	PIN	12x 25 Gb/s	70 m
FBOTD25MT3C00		Parallel MMF	850nm Band	12x VCSEL	PIN	12x 25 Gb/s	70 m
Coherent							
FTLC3321x3NL (CFP2-ACO)		Duplex SMF	C-Band DWDM Tunable	Tunable DP-QPSK/16QAM	Coherent	256 Gb/s	2,000 km
XFP							
FTLX8512D3BCL		Duplex MMF	850nm Band	VCSEL	PIN	10.5 Gb/s	300 m ⁽⁴⁾
FTLX8512D3BTL		Duplex MMF	850nm Band	VCSEL	PIN	10.5 Gb/s	300 m ⁽⁴⁾
FTLX1413D3BCL		Duplex SMF	1310nm Band	DFB Laser	PIN	10.5 Gb/s	10 km
FTLX1413D3BTL		Duplex SMF	1310nm Band	DFB Laser	PIN	11.3 Gb/s	10 km
FTLX1413M3BCL		Duplex SMF	1310nm Band	DFB Laser	PIN	11.3 Gb/s	10 km
FTLX1413M3BTL		Duplex SMF	1310nm Band	DFB Laser	PIN	11.3 Gb/s	10 km
FTLX1612M3BCL		Duplex SMF	1550nm	EML	PIN	11.3 Gb/s	40 km
FTLX1612M3BTL		Duplex SMF	1550nm	EML	PIN	11.3 Gb/s	40 km
FTLX1812M3BCL		Duplex SMF	1550nm	EML	APD	11.3 Gb/s	80 km
FTLX1812M3BTL		Duplex SMF	1550nm	EML	APD	11.3 Gb/s	80 km
FTLX3613M3xxx		Duplex SMF	C-Band DWDM Fixed	DWDM EML	PIN	11.3 Gb/s	40 km
FTLX3912M3xxx		Duplex SMF	C-Band DWDM Fixed	DWDM EML	APD	11.3 Gb/s	40 km
FTLX3813F3xxx		Duplex SMF	C-Band DWDM Fixed	DWDM EML	APD	8.8 Gb/s	80 km
FTLX3813M3xxx		Duplex SMF	C-Band DWDM Fixed	DWDM EML	APD	11.3 Gb/s	80 km
FTLX3815M3xxx		Duplex SMF	C-Band DWDM Fixed	Tunable + InP MZM	APD	11.3 Gb/s	80 km
FTLX4213M3BCL		Duplex SMF	1550nm	CML™	APD	10.5 Gb/s	120 km
FTLX4213xxxxxxx		Duplex SMF	C/L-Band DWDM Fixed	CML™	APD	11.3 Gb/s	200 km
FTLX5813P3Cxxx		Duplex SMF	C-Band DWDM Tunable	Narrow Tunable	APD	11.3 Gb/s	80 km
FTLX6624MCC		Duplex SMF	C-Band DWDM Tunable	Tunable + InP MZM	PIN	11.3 Gb/s	40 km
FTLX6824MCC		Duplex SMF	C-Band DWDM Tunable	Tunable + InP MZM	APD	11.3 Gb/s	80 km
FTLX6824MNC		Duplex SMF	C-Band DWDM Tunable	Tunable + InP MZM	APD	11.3 Gb/s	80 km
FTLX6825MCC		Duplex SMF	C-Band DWDM Tunable	Tunable + InP MZM	APD	11.3 Gb/s	80 km
X2							
FTLX8541E2		Duplex MMF	850nm Band	VCSEL	PIN	10.3 Gb/s	300 m ⁽⁴⁾
FTLX1442E2		Duplex SMF	1310nm Band	DFB Laser	PIN	10.3 Gb/s	10 km
Endurance							
FTE85xxxx	✓	Duplex MMF	850nm Band	VCSEL	PIN	14.025 Gb/s	550 m
FTE14xxxx	✓	Duplex SMF	1310nm Band	DFB Laser	PIN	10 Gb/s	10 km
SFF							
FTLF8519F2xCL		Duplex MMF	850nm Band	VCSEL	PIN	2.125 Gb/s	550 m
FTLF8519F2xNL		Duplex MMF	850nm Band	VCSEL	PIN	2.125 Gb/s	550 m
FTLF8519F2xTL		Duplex MMF	850nm Band	VCSEL	PIN	2.125 Gb/s	550 m
FTLF8524E2xNV	✓	Duplex MMF	850nm Band	VCSEL	PIN	4.25 Gb/s	550 m
FTLF1319F1xTL		Duplex SMF	1310nm Band	Fabry-Perot Laser	PIN	2.125 Gb/s	10 km
FTLF132151xTL		Duplex SMF	1310nm Band	Fabry-Perot Laser	PIN	2.67 Gb/s	2 km
FTLF142151xCL		Duplex SMF	1310nm Band	DFB Laser	PIN	2.67 Gb/s	15 km
FTLF172151xCL		Duplex SMF	1310nm Band	DFB Laser	APD	2.67 Gb/s	40 km
FTLF162151xCL		Duplex SMF	1550nm	DFB Laser	APD	2.67 Gb/s	80 km
FTLF1323F2xTR		Duplex SMF	1310nm Band	Fabry-Perot Laser	PIN	155 Mb/s	15 km
FTLF1322F2xTR		Duplex SMF	1310nm Band	Fabry-Perot Laser	PIN	622 Mb/s	15 km

⁽¹⁾ Using OM3 multimode fiber. ⁽²⁾ Extended case temperature ranges and reaches are available upon request. ⁽³⁾ 100m using OM4 multimode fiber and FEC. ⁽⁴⁾ 30m/50m
^{*} Wireless CPRI include the following data rates (Gb/s): 1.23, 3.07, 4.92, 6.14, 9.83 02/17

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