

# 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+/SFP28

(optical; longwave, shortwave, DWDM and tunable)

**DATACOM** applications using 10G and 25G Ethernet and 2x/4x/8x/10x/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



## CFP/CFP2/CFP4/CFP8

(optical; longwave and shortwave)

**DATACOM** applications using 100G and 400G Ethernet

**TELECOM** applications using OTU4

### Features

- Hot-pluggable, MSA-compliant CFP, CFP2, CFP4 and CFP8 form factors
- Supports 103.1 Gb/s to 425 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



## QSFP+/QSFP28 (optical; longwave and shortwave)

**DATACOM** applications using 40G and 100G Ethernet 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
- Digital diagnostics
- Wireless CPRI compliant (LW and SW)



## 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



## Active Optical Cables

**SFPwire**

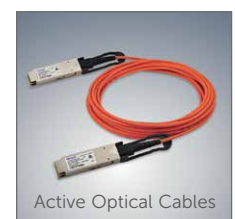
SFP+ Active Optical Cable for 10G and 25G Ethernet. Also available with Connectivity Diagnostics.®

**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.



## Optical Engines (optical; shortwave)

**DATACOM** applications for inter-chassis connections

### Features

- Twelve-channel full-duplex transceiver modules
- Maximum link length  
100m at 10 Gb/s on OM3 MMF  
70m at 25 Gb/s on OM4 MMF
- Multirate capability: supports 1 Gb/s up to 28.1 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** 100 Gb/s and 200 Gb/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 > 200 Gb/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 the modules at both ends of a link when either module experiences a fault. 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.



**FINISAR**<sup>®</sup>

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Optical Engines



Coherent



XFP



X2



Endurance



SFF

**FINISAR**

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**CFP/CFP2/CFP4**

FTLC1141SDNL (CFP4)		Duplex SMF	1310nm Band	4x LWDM DFB Laser	PIN	112 Gb/s	10 km
FTLC8221RFNM (CFP2)	✓	Parallel MMF	850nm Band	10x VCSEL	PIN	103 Gb/s	300 m <sup>(2)</sup>
FTLC8221SCNM (CFP2)		Parallel MMF	850nm Band	10x VCSEL	PIN	112 Gb/s	100 m <sup>(2)</sup>
FTLC1122RDNL (CFP2)		Duplex SMF	1310nm Band	4x LWDM DFB Laser	PIN	103.1 Gb/s	10 km
FTLC1122SDNL (CFP2)		Duplex SMF	1310nm Band	4x LWDM DFB Laser	PIN	112 Gb/s	10 km
FTLC8281RCNM (CFP)		Parallel MMF	850nm Band	VCSEL	PIN	103.1 Gb/s	100 m <sup>(1)</sup>
FTLC8281SCNM (CFP)		Parallel MMF	850nm Band	10x VCSEL	PIN	112 Gb/s	100 m <sup>(1)</sup>
FTLC1183RDNx (CFP)	✓	Duplex SMF	1310nm Band	4x LWDM DFB Laser	PIN	103.1 Gb/s	10 km
FTLC1183SDNx (CFP)	✓	Duplex SMF	1310nm Band	4x LWDM DFB Laser	PIN	112 Gb/s	10 km

**QSFP+/QSFP28**

Part Number	Angle Select	Media Type	Wavelength (nm)	Transmitter	Receiver	Data Rate (Gb/s)	Reach
FTL4100E4C (QSFP+)		Parallel MMF	850nm Band	4x VCSEL	PIN	41.2 Gb/s	100 m
FTL4100D4C (QSFP+)		Parallel MMF	850nm Band	4x VCSEL	PIN	41.2 Gb/s	300 m
FTL4100E2N (QSFP+)		Parallel MMF	850nm Band	4x VCSEL	PIN	41.2 Gb/s	100 m
FTL4140B2C (QSFP+)		Parallel MMF	850nm Band	4x VCSEL	PIN	56 Gb/s	60 m
FTL4C2QE2C (QSFP+)		Duplex SMF	1310nm Band	4x CWDM DFB Laser	PIN	41.2 Gb/s	160 m
FTL4C3QE2C (QSFP+)		Duplex SMF/MMF	1310nm Band	4x CWDM DFB Laser	PIN	41.2 Gb/s	1 km
FTL4S1QE1C (QSFP+)		Duplex MMF	850nm Band	4x SWDM VCSEL	PIN	41.2 Gb/s	240 m <sup>(1)</sup>
FTL4C1QL2C (QSFP+) <sup>(5)</sup>		Duplex SMF	1310nm Band	4x CWDM DFB Laser	PIN	41.2 Gb/s	2 km
FTL4C1QE2C (QSFP+) <sup>(5)</sup>		Duplex SMF	1310nm Band	4x CWDM DFB Laser	PIN	41.2 Gb/s	10 km
FTL4C1QM2C (QSFP+)		Duplex SMF	1310nm Band	4x CWDM DFB Laser	PIN	44.6 Gb/s	10 km
FTL4E1QE1C (QSFP+)		Duplex SMF	1310nm Band	4x CWDM DFB Laser	APD	41.2 Gb/s	40 km
FTL4E1QM1C (QSFP+)		Duplex SMF	1310nm Band	4x CWDM DFB Laser	APD	44.6 Gb/s	40 km
FTLC9152RGL6 (QSFP28) <sup>(3)</sup>		Duplex MMF	850nm Band	4x SWDM VCSEL	PIN	103.1 Gb/s	100 m
FTLC9551REPM (QSFP28) <sup>(3)</sup>		Parallel MMF	850nm Band	4x VCSEL	PIN	103.1 Gb/s	100 m <sup>(3)</sup>
FTLC9551SEPM (QSFP28)		Parallel MMF	850nm Band	4x VCSEL	PIN	112.2 Gb/s	100 m <sup>(3)</sup>
FTLC9554REPM (QSFP28)		Parallel MMF	850nm Band	4x VCSEL	PIN	103.1 Gb/s	30/50/70 m <sup>(4)</sup>
FTLC1152RGL6 (QSFP28)		Duplex SMF	1310nm Band	4x CWDM DFB Laser	PIN	103.1 Gb/s	2 km
FTLC1152RGL6 (QSFP28)		Duplex SMF	1310nm Band	4x CWDM DFB Laser	PIN	103.1 Gb/s	500 m
FTLC1152WGL6 (QSFP28)		Duplex SMF	1310nm Band	4x CWDM DFB Laser	PIN	103.1 Gb/s	10 km
FTLC1152RGLA (QSFP28)		Duplex SMF	1310nm Band	4x CWDM DFB Laser	PIN	103.1 Gb/s	10 km
FTLC1151RDPL (QSFP28)		Duplex SMF	1310nm Band	4x LWDM DFB Laser	PIN	103.1 Gb/s	10 km
FTLC1151SDPL (QSFP28)		Duplex SMF	1310nm Band	4x LWDM DFB Laser	PIN	112.2 Gb/s	10 km

**CXP**

FTLD10CE1C		Parallel MMF	850nm Band	12x VCSEL	PIN	126 Gb/s	100 m <sup>(1)</sup>
FTLD10CE3C		Parallel MMF	850nm Band	12x VCSEL	PIN	135.6 Gb/s	100 m <sup>(1)</sup>
FTLD10CD3C		Parallel MMF	850nm Band	12x VCSEL	PIN	135.6 Gb/s	300 m <sup>(1)</sup>
FTLD12CL3C		Parallel MMF	850nm Band	12x VCSEL	PIN	150 Gb/s	100 m <sup>(1)</sup>

**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
Quadwire Fanout (100G QSFP28 to 4xSFP28 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 (with heatsink)		Parallel MMF	850nm Band	12x VCSEL	PIN	12 x 11.3 Gb/s	100 m
FBOTD10FL1C00 (flat-top)		Parallel MMF	850nm Band	12x VCSEL	PIN	12 x 11.3 Gb/s	100 m
FBOTD25FL3C00 (Finisar pinout)		Parallel MMF	850nm Band	12x VCSEL	PIN	12 x 25 Gb/s	70 m
FBOTD25MT3C00 (MBOM pinout)		Parallel MMF	850nm Band	12x VCSEL	PIN	12 x 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
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**XFP**

FTLX8512D3BCL		Duplex MMF	850nm Band	VCSEL	PIN	10.5 Gb/s	300 m <sup>(1)</sup>
FTLX8512D3BTL		Duplex MMF	850nm Band	VCSEL	PIN	10.5 Gb/s	300 m <sup>(1)</sup>
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
FTLX4213xxxxxx		Duplex SMF	C/L-Band DWDM Fixed	CML™	APD	11.3 Gb/s	200 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, High Pwr	APD	11.3 Gb/s	80 km

**Endurance X2**

FTLX8541E2		Duplex SMF	850nm Band	VCSEL	PIN	10.3 Gb/s	300 m <sup>(1)</sup>
FTLX1442E2		Duplex MMF	1310nm Band	DFB Laser	PIN	10.3 Gb/s	10 km
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
FTLF1321S1xTL		Duplex SMF	1310nm Band	Fabry-Perot Laser	PIN	2.67 Gb/s	2 km
FTLF1421S1xCL		Duplex SMF	1310nm Band	DFB Laser	PIN	2.67 Gb/s	15 km
FTLF1721S1xCL		Duplex SMF	1310nm Band	DFB Laser	APD	2.67 Gb/s	40 km
FTLF1621S1xCL		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

<sup>(1)</sup> Using OM3 multimode fiber. <sup>(2)</sup> Extended case temperature ranges and reaches are available upon request. <sup>(3)</sup> 100m using OM4 multimode fiber and FEC. <sup>(4)</sup> 30m/50m/70m OM3 MM

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