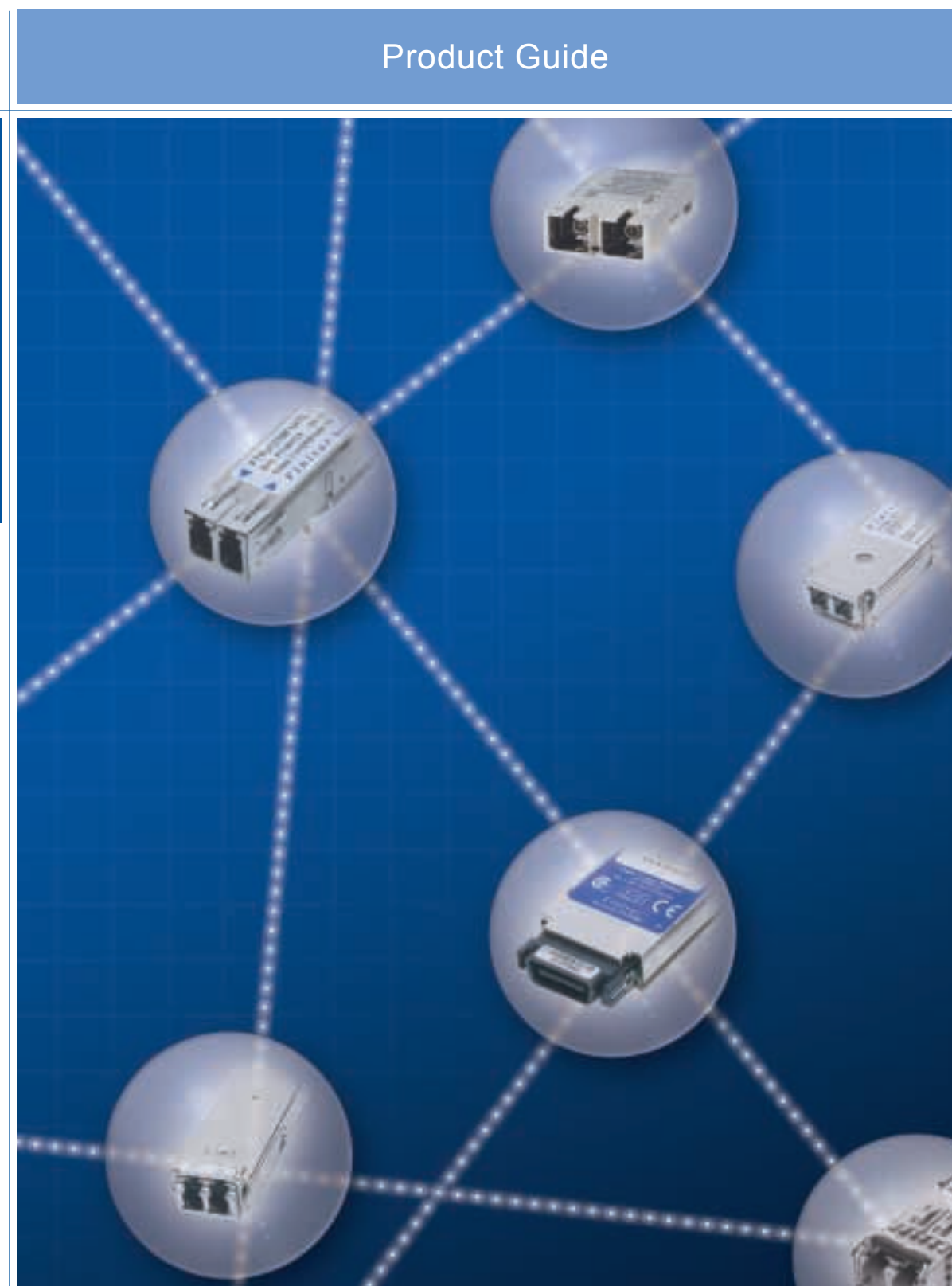


Transceivers and Transponders for Datacom and Telecom Applications



Product Guide

Transceivers and
Transponders for
Datacom and Telecom
Applications

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Rev E

Finisar's broad product selection and innovative technology have made us the optical module manufacturer of choice for all major networking equipment vendors worldwide. We have taken a lead role in transforming the telecommunications equipment market from utilizing discrete optical components to leveraging the design and pay-as-you-grow flexibility offered by pluggable modules. Our products are fully compliant with Gigabit Ethernet, Fibre Channel, and SONET/SDH standards and operate at data rates up to 40 Gb/s and for distances greater than 160 km. They feature outstanding performance over extended voltage and temperature ranges, while minimizing jitter, electromagnetic interference (EMI) and power dissipation.

FINISAR MODULES ARE AVAILABLE IN A WIDE VARIETY OF FORM FACTORS:

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

- DATACOM applications using Fast Ethernet, Gigabit Ethernet, 1x2x/4x Fibre Channel
- TELECOM applications using OC-3/STM-1, OC-12/STM-4 and OC-48/STM-16 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

• **SFF** (optical 2x5, 2x6, 2x7 and 2x10; longwave and shortwave)

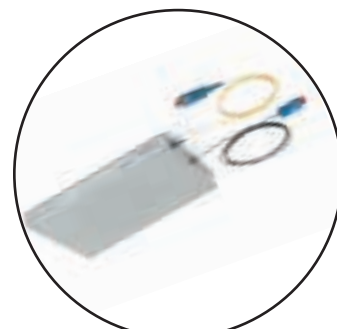
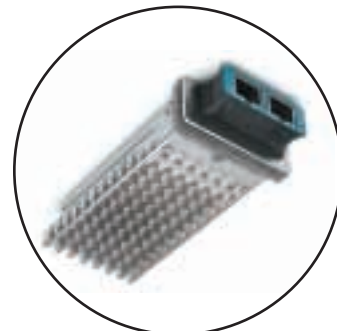
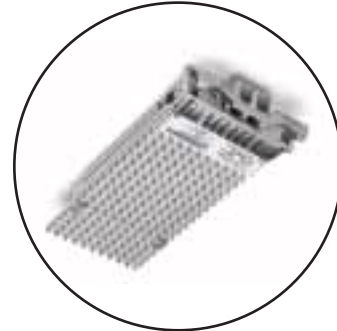
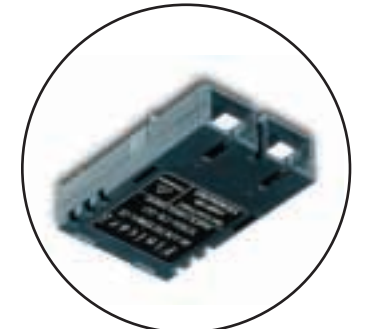
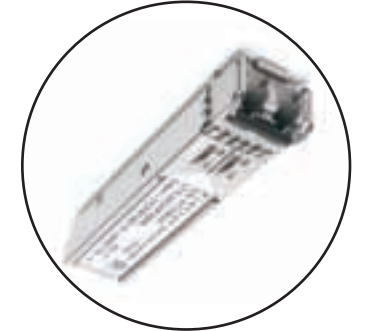
- DATACOM applications using Gigabit Ethernet, 1x2x/4x Fibre Channel
- TELECOM applications using OC-3/STM-1, OC-12/STM-4 and OC-48/STM-16 across all reaches
- FEATURES
 - 3.3 V and 5 V operating voltage
 - Distances from very short links up to 80 km
 - Wide operating temperature range
 - Metal enclosure for lower EMI
 - 2x6, 2x7 and 2x10 incorporate digital diagnostics

• **GBIC** (copper and optical; longwave, shortwave and WDM)

- DATACOM applications using Gigabit Ethernet and 1x2x Fibre Channel
- TELECOM applications using OC-3/STM-1, OC-12/STM-4 and OC-48/STM-16 across all reaches
- FEATURES
 - 3.3 V and 5 V operating voltage
 - Distances from very short links up to 160 km
 - Digital diagnostics functions available

• **1x9** (optical; longwave and shortwave)

- DATACOM applications using Gigabit Ethernet and 1x Fibre Channel
- TELECOM applications using OC-3/STM-1 and OC-12/STM-4 across all reaches
- FEATURES
 - 3.3 V and 5 V operating voltage
 - Distances from short links up to 40 km
 - Wide operating temperature range
 - AC and DC coupling available



• **XFP** (optical; longwave and DWDM)

- DATACOM applications using 10 Gigabit Ethernet and 10x Fibre Channel
- TELECOM applications using OC-192/STM-64
- FEATURES
 - Supports bit rates up to 11.1 Gb/s
 - Distances up to 80 km
 - Metal enclosure for improved EMI and ESD
 - Digital diagnostics

• **XPAK** (optical; longwave and shortwave)

- DATACOM applications using 10 Gigabit Ethernet and 10x Fibre Channel
- FEATURES
 - 1.2 V, 3.3 V and 5 V operating voltage
 - Supports bit rates up to 10.5 Gb/s
 - Distances from short links up to 10 km
 - Digital diagnostics

• **X2** (optical; longwave and shortwave)

- DATACOM applications using 10 Gigabit Ethernet and 10x Fibre Channel
- FEATURES
 - 1.2 V, 3.3 V and 5 V operating voltage
 - Supports bit rates up to 10.5 Gb/s
 - Distances up to 10 km
 - Digital diagnostics

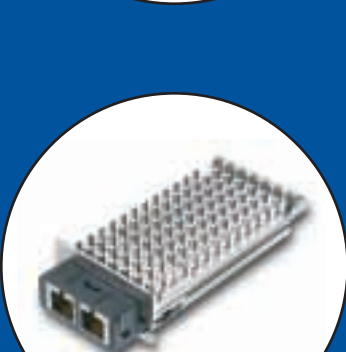
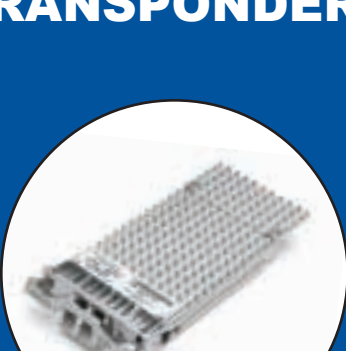
• **300-PIN** (optical; longwave)

- TELECOM applications using OC-768/STM-256
- FEATURES
 - Supports bit rates up to 40 Gb/s
 - Distances up to 2 km
 - Operating case temperature range: 0°C to 70°C
 - Full monitor and control functions via I²C
 - Compliant to industry standards (ITU-T, SFI-5, 300-pin MSA)

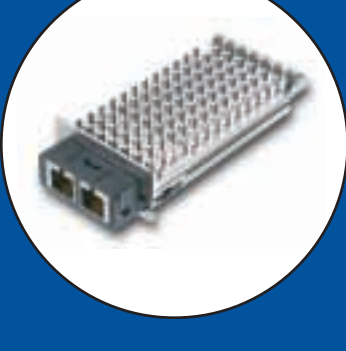
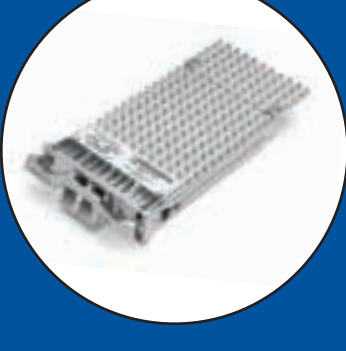
FINISAR'S PATENTED DIGITAL DIAGNOSTICS

Finisar's XFP, XPAK, X2, SFP, 2x6, 2x7 and 2x10 SFF and selected GBIC transceivers feature a microprocessor and diagnostics interface that provides 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 digital diagnostic functions provide network managers with a highly accurate, cost-effective tool for implementing reliable performance monitoring.

TRANSCEIVERS



TRANSPONDERS



Finisar

Part Number	RoHS (lead free)	Rate Select	Media Type	Operating Wavelength (nm)	Transmitter	Receiver	Data Rate (maximum)	Voltage Supply (V)	Transmission Standard Supported										Case Temperature Range (°C)	Connector	Module Type	Diagnostic Monitoring Inheritance	Reach				
									Optical					Copper													
									Optical Fast Ethernet	Optical Gigabit Ethernet	1x Fibre Channel	2x Fibre Channel	4x Fibre Channel	SONET OC-3	SONET OC-12	SONET OC-48	SONET OC-192	10x Fibre Channel	10 Gigabit Ethernet	100GBASE-T	100GBASE-CX						
FCMJ-8520/21-3 FCLF-8520/21-3	✓		Copper	NA	NA	NA	1.25 Gb/s	3.3															0 to 85	RJ-45	Pluggable	Digital	100 m
FTLF8519P2xCL	✓		Multimode	850	Oxide VCSEL	PIN	2.125 Gb/s	3.3		●	●	●											0 to 75	LC	2x5	NA	550 m
FTLF8519P2xNL	✓		Multimode	850	Oxide VCSEL	PIN	2.125 Gb/s	3.3		●	●	●											-20 to 85	LC	2x5	NA	550 m
FTLF8519P2xTL	✓		Multimode	850	Oxide VCSEL	PIN	2.125 Gb/s	3.3		●	●	●											-40 to 85	LC	2x7	Digital	550 m
FTLF8524P2xNL	✓		Multimode	850	Oxide VCSEL	PIN	4.25 Gb/s	3.3		■	●	●	●										-20 to 85	LC	2x7	Digital	550 m
FTLF8524P2xNV	✓	✓	Multimode	850	Oxide VCSEL	PIN	4.25 Gb/s	3.3		■	●	●	●										-20 to 85	LC	2x7	Digital	550 m
FTLF1217P2xTL	✓		Multimode	1310	LED	PIN	200 Mb/s	3.3		●													-40 to 85	LC	Pluggable	Digital	2 km
FTLF8517P2xTL	✓		Multimode	1310	LED	PIN	200 Mb/s	3.3		●													-40 to 85	LC	Pluggable	Digital	2 km
FTLF1318P2xCL	✓		Single Mode	1310	Fabry-Perot Laser	PIN	1.25 Gb/s	3.3		●	●												0 to 70	LC	Pluggable	NA	10 km
FTLF1318P2xTL	✓		Single Mode	1310	Fabry-Perot Laser	PIN	1.25 Gb/s	3.3		●	●												-40 to 85	LC	Pluggable	Digital	10 km
FTRJ1319P1xTL FTLF1319P1xTL	✓		Single Mode	1310	Fabry-Perot Laser	PIN	2.125 Gb/s	3.3		●	●	●											-40 to 85	LC	Pluggable	Digital	10 km
FTRJ1419P1xCL FTLF1419P1xCL	✓		Single Mode	1310	DFB Laser	PIN	2.125 Gb/s	3.3		●	●	●											-10 to 70	LC	Pluggable	Digital	55 km
FTRJ1519P1xCL FTLF1519P1xCL	✓		Single Mode	1550	DFB Laser	PIN	2.125 Gb/s	3.3		●	●	●											-10 to 70	LC	Pluggable	Digital	90 km
FTRJ1519P1xNL FTLF1519P1xNL	✓		Single Mode	1550	DFB Laser	PIN	2.125 Gb/s	3.3		●	●	●											-5 to 85	LC	Pluggable	Digital	90 km
FTRJ1619P1xNL FTLF1619P1xNL	✓		Single Mode	1550	DFB Laser	APD	2.125 Gb/s	3.3		●	●	●											-10 to 70	LC	Pluggable	Digital	115 km
FTLF1324P2xTL	✓		Single Mode	1310	Fabry-Perot Laser	PIN	4.25 Gb/s	3.3		■	●	●	●										-40 to 85	LC	Pluggable	Digital	4 km
FTLF1324P2xTV	✓	✓	Single Mode	1310	Fabry-Perot Laser	PIN	4.25 Gb/s	3.3		■	●	●	●										-40 to 85	LC	Pluggable	Digital	4 km
FTLF1424P2xCR	✓		Single Mode	1310	DFB Laser	PIN	4.25 Gb/s	3.3		■	●	●	●										-10 to 70	LC	Pluggable	Digital	10 km
FTLF1424P2xCD	✓	✓	Single Mode	1310	DFB Laser	PIN	4.25 Gb/s	3.3		■	●	●	●										-10 to 70	LC	Pluggable	Digital	10 km
FTLF1424P2xTR	✓		Single Mode	1310	DFB Laser	PIN	4.25 Gb/s	3.3		■	●	●	●										-40 to 85	LC	Pluggable	Digital	10 km
FTLF1424P2xTD	✓	✓	Single Mode	1310	DFB Laser	PIN	4.25 Gb/s	3.3		■	●	●	●										-40 to 85	LC	Pluggable	Digital	10 km
FTLF1424P2xCL	✓		Single Mode	1310	DFB Laser	PIN	4.25 Gb/s	3.3		■	●	●	●										-10 to 70	LC	Pluggable	Digital	30 km
FTLF1424P2xCV	✓	✓	Single Mode	1310	DFB Laser	PIN	4.25 Gb/s	3.3		■	●	●	●										-10 to 70	LC	Pluggable	Digital	30 km
FTRJ1323P1xTR FTLF1323P1xTR	✓		Single Mode	1310	Fabry-Perot Laser	PIN	155 Mb/s	3.3		■				●									-40 to 85	LC	Pluggable	Digital	15 km
FTRJ1323P1xTL FTLF1323P1xTL	✓		Single Mode	1310	Fabry-Perot Laser	PIN	155 Mb/s	3.3		■				●									-40 to 85	LC	Pluggable	Digital	40 km
FTRJ1523P1xTL FTLF1523P1xTL	✓		Single Mode	1550	DFB Laser	PIN	155 Mb/s	3.3		■				●									-40 to 85	LC	Pluggable	Digital	80 km
FTRJ1322P1xTR FTLF1322P1xTR	✓		Single Mode	1310	Fabry-Perot Laser	PIN	622 Mb/s	3.3						●	●								-40 to 85	LC	Pluggable	Digital	15 km
FTRJ1422P1xTL FTLF1422P1xTL	✓		Single Mode	1310	DFB Laser	PIN	622 Mb/s	3.3						●									-40 to 85	LC	Pluggable	Digital	40 km
FTRJ1522P1xTL FTLF1522P1xTL	✓		Single Mode	1550	DFB Laser	PIN	622 Mb/s	3.3						●									-40 to 85	LC	Pluggable	Digital	80 km
FTRJ1321P1xTL FTLF1321P1xTL	✓		Single Mode	1310	Fabry-Perot Laser	PIN	2.67 Gb/s	3.3		●	●	●		■	■	●							-40 to 85	LC	Pluggable	Digital	2 km
FTRJ1421P1xCL FTLF1421P1xCL	✓		Single Mode	1310	DFB Laser	PIN	2.67 Gb/s	3.3		●	●	●		■	■	●							-10 to 70	LC	Pluggable	Digital	15 km
FTRJ1421P1xNL	✓		Single Mode	1310	DFB Laser	PIN	2.67 Gb/s	3.3		●	●	●		■	■	●							-5 to 85	LC	Pluggable	Digital	15 km
FTLF1421P1xTL	✓		Single Mode	1310	DFB Laser	PIN	2.67 Gb/s	3.3		●	●	●		■	■	●							-40 to 85	LC	Pluggable	Digital	15 km
FTRJ1521P1xCL FTLF1521P1xCL	✓		Single Mode	1550	DFB Laser	PIN	2.67 Gb/s	3.3		●	●	●		■	■	●							0 to 70	LC	Pluggable	Digital	15 km
FTRJ1721P1xCL(**)	✓		Single Mode	1310	DFB Laser	APD	2.67 Gb/s	3.3		●	●	●		■	■	●							-10 to 70	LC	Pluggable	Digital	40 km
FTLF1721P2xCL(**)	✓		Single Mode	1310	DFB Laser	APD	2.67 Gb/s	3.3		●	●	●		■	■	●							-10 to 70	LC	Pluggable	Digital	40 km
FTLF1721P2xTL	✓		Single Mode	1310	DFB Laser	APD	2.67 Gb/s	3.3		●	●	●		■	■	●							-40 to 85	LC	Pluggable	Digital	40 km
FTRJ1621P1xCL(**)	✓		Single Mode	1550	DFB Laser	APD	2.67 Gb/s	3.3		●	●	●		■	■	●							-10 to 70	LC	Pluggable	Digital	80 km
FTLF1621P2xCL(**)	✓		Single Mode	1550	DFB Laser	APD	2.67 Gb/s	3.3		●	●	●		■	■	●							-10 to 70	LC	Pluggable	Digital	80 km
FTLF1621P2xTL	✓		Single Mode	1550	DFB Laser	APD	2.67 Gb/s	3.3		●	●	●		■	■	●							-40 to 85	LC	Pluggable	Digital	80 km
FWDM-1519-7D-xx(**) FWLF1519P2xx(**)	✓		Single Mode	1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610	CWDM DFB Laser	PIN	1.25 Gb/s	3.3		■	●	●		■	■	●							0 to 70	LC	Pluggable	Digital	80 km
FWDM-1619-7D-xx(**) FWLF1619P2xx(**)	✓		Single Mode	1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610	CWDM DFB Laser	APD	1.25 Gb/s	3.3		■	●	●		■	■	●							0 to 70	LC	Pluggable	Digital	100 km
FWDM-1521-7D-xx(**) FWLF1521P2xx(**)	✓		Single Mode	1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610	CWDM DFB Laser	PIN	2.67 Gb/s	3.3		■	●	●		■	■	●							0 to 70	LC	Pluggable	Digital	50 km
FWDM-1621-7D-xx(**) FWLF1621P2xx(**)	✓		Single Mode	1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610	CWDM DFB Laser	APD	2.67 Gb/s	3.3		■	●	●		■	■	●							0 to 70	LC	Pluggable	Digital	80 km
FWLF1524P2Vxx	✓	✓	Single Mode	1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610	CWDM DFB Laser	PIN	4.25 Gb/s	3.3		●	●	●	●	■	■	●							-5 to 75	LC	Pluggable	Digital	40km
FWLF1631xx(**)	✓		Single Mode	DWDM C-Band	DWDM DFB Laser	APD	2.67 Gb/s	3.3		■	●	●	●	■	■	●							0 to 70	LC	Pluggable	Digital	120 km
FTLF8519F2xCL	✓		Multimode	850	Oxide VCSEL	PIN	2.125 Gb/s	3.3		●	●	●											0 to 70	LC	2x5	NA	550 m
FTLF8519F2xNL	✓		Multimode	850	Oxide VCSEL	PIN	2.125 Gb/s	3.3		●	●	●											-10 to 85	LC	2x5	NA	550 m
FTLF8519F2xTL	✓		Multimode	850	Oxide VCSEL	PIN	2.125 Gb/s	3.3		●	●	●											-40 to 85	LC	2x5	NA	550 m
FTRJ8519U1xNL	✓		Multimode	850	Oxide VCSEL	PIN	2.125 Gb/s	3.3		●	●	●											-10 to 85	LC	2x6	Digital	550 m
FTLF8524E2xNL	✓		Multimode	850	Oxide VCSEL	PIN	4.25 Gb/s	3.3		●	●	●											-10 to 85	LC	2x7	Digital	550 m</