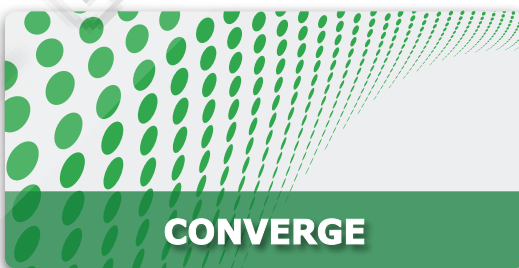




## Pluggable Transceivers

●●● **MRV EMPOWERS THE OPTICAL EDGE.** WE DELIVER PACKET AND OPTICAL SOLUTIONS ORCHESTRATED WITH INTELLIGENT SOFTWARE TO MAKE SERVICE PROVIDER NETWORKS SMARTER.



## MRV Pluggable Optics

Today's network engineer is faced with a unique set of challenges when designing an optical network. Legacy protocols must be supported on the same network as emerging optical standards, customers demand service upgrades that create ripple effects throughout the network, and optical technology is constantly moving towards faster speeds. Protecting today's investment against tomorrow's demands is increasingly difficult.

For optical network implementations, pluggable transceivers (SFP, SFP+, and XFP) provide a modular approach to future-safe network design. Pluggable technology replaces fixed ports or optics and increases the flexibility and longevity of network devices. Interchangeable transceivers allow a single device to operate with a wide selection of media, protocols and functions. The same host module may function as a simple optical device, a distance extension solution, a repeater or a WDM transponder. Upgrading a port takes only seconds - snap in a new pluggable option at both ends of the media and the upgrade is complete.

### Standards-based with vertical integration

MRV offers a full line of pluggable transceiver options fully integrated with our optical and packet networking solutions. The MRV pluggable transceivers operate in MRV devices or most other devices that comply with industry standards. MRV's pluggable transceiver line includes:

- SFP — offering a wide range of protocols and rates (Fast and Gigabit Ethernet, Fibre Channel, SONET/SDH and many more), for dual and bidirectional fiber as well as copper media support, Digital Video, and others
- SFP+ — supporting 8 and 10 Gbps Fibre Channel and a variety of 10Gbps Protocols (Ethernet, SONET/SDH, OTN, etc.)
- XFP — designed for 10 Gbps Ethernet and Fibre Channel, OC192/STM64, and Copper 10 Gbps services
- CFP — 100 Gbps interfaces supporting Ethernet and OTN standards over a variety of distances

Most of MRV's pluggable transceivers support Digital Diagnostics (SFF-8472) to monitor real-time statistics including input power, output power, temperature, and supply voltage.

### Future-proof and economical network design

MRV's line of pluggable transceivers gives you the option to implement today's technology while offering the ability to protect your investment for what lies ahead. Combined with flexible transponders supporting a wide variety of protocols and speeds in the same hardware, MRV's pluggable transceiver options provide unprecedented network flexibility. Implement Gigabit Ethernet to a customer today and upgrade to 10 Gigabit Ethernet tomorrow through a simple transceiver change-out. Provide Ethernet services initially and add SAN services later by adding a new transceiver. Unique pluggable transceivers allow off-the-shelf devices to operate like custom-built equipment at a fraction of the price. Pluggable transceiver technology is the answer to today's ever-changing network needs.

## Optical SFP Transceivers

### Transceiver Specifications

| Part Number                                                | Description                                                        | Wavelength (nm) | Tx Power (dBm) |     | Rx Power (dBm) |     | Dispersion Penalty (dB) | Dispersion Tolerance (ps/nm/km) | Span Distance (km) | Operating Temp. (°C) | Digital Diagnost. | Power (W) | Conn. Type | OSNR |
|------------------------------------------------------------|--------------------------------------------------------------------|-----------------|----------------|-----|----------------|-----|-------------------------|---------------------------------|--------------------|----------------------|-------------------|-----------|------------|------|
|                                                            |                                                                    |                 | Min            | Max | Min            | Max |                         |                                 |                    |                      |                   | Max       |            | Min  |
| Single Fiber Bidirectional, Fast Ethernet/OC-3 STM-1       |                                                                    |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |      |
| SFP-FD-BX35                                                | 100Base-BX and OC3, SM Single Fiber, 20 km                         | 1310 / 1550     | -14            | -8  | -28            | -8  | N/A                     | N/A                             | 0 - 28             | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-FD-BX53                                                | 100Base-BX and OC3, SM Single Fiber, 20 km                         | 1550 / 1310     | -14            | -8  | -28            | -8  | N/A                     | N/A                             | 0 - 28             | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-FD-BX35TH                                              | 100Base-BX and OC3, SM Single Fiber, 20 km, Industrial Temperature | 1310 / 1550     | -14            | -8  | -28            | -8  | N/A                     | N/A                             | 0 - 28             | -40 - 85             | Yes               | 1         | LC         | N/A  |
| SFP-FD-BX53TH                                              | 100Base-BX and OC3, SM Single Fiber, 20 km, Industrial Temperature | 1550 / 1310     | -14            | -8  | -28            | -8  | N/A                     | N/A                             | 0 - 28             | -40 - 85             | Yes               | 1         | LC         | N/A  |
| SFP-FD-BD35                                                | 100Base-BX and OC3, SM Single Fiber, 40 km                         | 1310 / 1550     | -5             | 0   | -28            | -8  | N/A                     | N/A                             | 16 - 46            | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-FD-BD53                                                | 100Base-BX and OC3, SM Single Fiber, 40 km                         | 1550 / 1310     | -5             | 0   | -28            | -8  | N/A                     | N/A                             | 16 - 46            | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-FD-BD35TH                                              | 100Base-BX and OC3, SM Single Fiber, 40 km, Industrial Temperature | 1310 / 1550     | -5             | 0   | -28            | -8  | N/A                     | N/A                             | 16 - 46            | -40 - 85             | Yes               | 1         | LC         | N/A  |
| SFP-FD-BD53TH                                              | 100Base-BX and OC3, SM Single Fiber, 40 km, Industrial Temperature | 1550 / 1310     | -5             | 0   | -28            | -8  | N/A                     | N/A                             | 16 - 46            | -40 - 85             | Yes               | 1         | LC         | N/A  |
| SFP-FD-BZ45                                                | 100Base-BX SM Single Fiber, 100 km                                 | 1490 / 1570     | 0              | 5   | -28            | -8  | N/A                     | N/A                             | 52 - 112           | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-FD-BZ54                                                | 100Base-BX SM Single Fiber, 100 km                                 | 1570 / 1490     | 0              | 5   | -28            | -8  | N/A                     | N/A                             | 52 - 112           | -5 - 70              | Yes               | 1         | LC         | N/A  |
| Single Fiber Bidirectional, Gigabit Ethernet/Fibre Channel |                                                                    |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |      |
| SFP-GD-BX34                                                | 1000Base-BX, SM Single Fiber, 20 km                                | 1310 / 1490     | -9             | -3  | -22            | -3  | N/A                     | N/A                             | 0 - 26             | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-GD-BX43                                                | 1000Base-BX, SM Single Fiber, 20 km                                | 1490 / 1310     | -9             | -3  | -22            | -3  | N/A                     | N/A                             | 0 - 26             | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-GD-BD35                                                | 1000Base-BX, SM Single Fiber, 40 km                                | 1310 / 1550     | -5             | 0   | -24            | -3  | N/A                     | N/A                             | 12 - 38            | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-GD-BD53                                                | 1000Base-BX, SM Single Fiber, 40 km                                | 1550 / 1310     | -5             | 0   | -24            | -3  | N/A                     | N/A                             | 12 - 38            | -5 - 70              | Yes               | 1         | LC         | N/A  |

## Optical SFP Transceivers

### Transceiver Specifications

| Part Number                                                            | Description                                                                        | Wavelength (nm) | Tx Power (dBm) |     | Rx Power (dBm) |     | Dispersion Penalty (dB) | Dispersion Tolerance (ps/nm/km) | Span Distance (km) | Operating Temp. (°C) | Digital Diagnost. | Power (W) | Conn. Type | OSNR |
|------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------|----------------|-----|----------------|-----|-------------------------|---------------------------------|--------------------|----------------------|-------------------|-----------|------------|------|
|                                                                        |                                                                                    |                 | Min            | Max | Min            | Max |                         |                                 |                    |                      |                   | Max       |            | Min  |
| Single Fiber Bidirectional, Gigabit Ethernet/Fibre Channel (Continued) |                                                                                    |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |      |
| SFP-GD-BD34                                                            | 1000Base-BX, SM Single Fiber, 40 km                                                | 1310 / 1490     | -5             | 0   | -24            | -3  | N/A                     | N/A                             | 12 - 38            | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-GD-BD43                                                            | 1000Base-BX, SM Single Fiber, 40 km                                                | 1490 / 1310     | -5             | 0   | -24            | -3  | N/A                     | N/A                             | 12 - 38            | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-GD-BZ45                                                            | 1000Base-BX, SM Single Fiber, 80 km                                                | 1490 / 1570     | 0              | 5   | -24            | -3  | N/A                     | N/A                             | 32 - 96            | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-GD-BZ54                                                            | 1000Base-BX, SM Single Fiber, 80 km                                                | 1570 / 1490     | 0              | 5   | -24            | -3  | N/A                     | N/A                             | 32 - 96            | -5 - 70              | Yes               | 1         | LC         | N/A  |
| Single Fiber Bidirectional, Multirate 100-2700 Mbps                    |                                                                                    |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |      |
| SFP-MR-35IR1                                                           | Multirate, SM Single Fiber, 15 km                                                  | 1310 / 1550     | -5             | 0   | -18            | -8  | N/A                     | N/A                             | 0 - 24             | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-MR-53IR1                                                           | SFP, Multirate, SM Single Fiber, 15 km                                             | 1550 / 1310     | -5             | 0   | -18            | -8  | N/A                     | N/A                             | 0 - 24             | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-MR-45IR2                                                           | SFP, Multirate, SM Single Fiber, 40 km                                             | 1490 / 1570     | -2             | 3   | -18            | 0   | N/A                     | N/A                             | 12- 60             | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-MR-54IR2                                                           | SFP, Multirate, SM Single Fiber, 40 km                                             | 1570 / 1490     | -2             | 3   | -18            | 0   | N/A                     | N/A                             | 12- 60             | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-MR-45LR2                                                           | SFP, Multirate, SM Single Fiber, 80 km                                             | 1490 / 1570     | -2             | 3   | -28            | -10 | N/A                     | N/A                             | 52 - 100           | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-MR-54LR2                                                           | SFP, Multirate, SM Single Fiber, 80 km                                             | 1570 / 1490     | -2             | 3   | -28            | -10 | N/A                     | N/A                             | 52 - 100           | -5 - 70              | Yes               | 1         | LC         | N/A  |
| Dual Fiber, Fast Ethernet/OC-3 STM-1                                   |                                                                                    |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |      |
| SFP-O3D-M                                                              | Fast Ethernet and OC-3, MM, 2 km                                                   | 1310            | -20            | -14 | -30            | -10 | N/A                     | N/A                             | 0 - 2              | 0 - 70               | Yes               | 1         | LC         | N/A  |
| SFP-O3-M                                                               | Fast Ethernet and OC-3, MM, 2 km                                                   | 1310            | -20            | -14 | -30            | -8  | N/A                     | N/A                             | 0 - 2              | 0 - 70               | No                | 1         | LC         | N/A  |
| SFP-O3D-XLR-51                                                         | Fast Ethernet EZX or OC-3 LR2, SM, up to 155 Mbps, CWDM wavelength 1510 nm, 120 km | 1510            | 1              | 5   | -42            | -10 | 2                       | N/A                             | 60 - 120           | -5 - 70              | Yes               | 1         | LC         | N/A  |
| SFP-FDSGMII-M                                                          | Fast Ethernet SGMII, MM, 2 km                                                      | 1310            | -20            | -14 | -31            | -8  | N/A                     | N/A                             | 0 - 2              | -5 - 70              | No                | 1         | LC         | N/A  |
| SFP-FDSGMII-LR                                                         | Fast Ethernet SGMII, SM, 10 km                                                     | 1310            | -15            | -8  | -31            | -8  | N/A                     | N/A                             | 0 - 10             | -5 - 70              | No                | 1         | LC         | N/A  |
| SFP-O3D-IR1                                                            | Fast Ethernet or OC-3 IR1, SM, 15 km                                               | 1310            | -15            | -8  | -28            | -8  | 1                       | N/A                             | 0 - 24             | 0 - 70               | Yes               | 1         | LC         | N/A  |
| SFP-O3D-LR1                                                            | Fast Ethernet XD or OC-3 LR1, SM, 40 km                                            | 1310            | -3             | 2   | -34            | -8  | 1                       | N/A                             | 20 - 60            | 0 - 70               | Yes               | 1         | LC         | N/A  |
| SFP-O3D-LR2                                                            | Fast Ethernet EZX or OC-3 LR2, SM, 80 km                                           | 1550            | -5             | 0   | -34            | -10 | 1                       | N/A                             | 40 - 112           | 0 - 70               | Yes               | 1         | LC         | N/A  |

## Optical SFP Transceivers

### Transceiver Specifications

| Part Number                                                  | Description                                                   | Wavelength (nm) | Tx Power (dBm) |     | Rx Power (dBm) |     | Dispersion Penalty (dB) | Dispersion Tolerance (ps/nm/km) | Span Distance (km) | Operating Temp. (°C) | Digital Diagnost. | Power (W) | Conn. Type | OSNR              |
|--------------------------------------------------------------|---------------------------------------------------------------|-----------------|----------------|-----|----------------|-----|-------------------------|---------------------------------|--------------------|----------------------|-------------------|-----------|------------|-------------------|
|                                                              |                                                               |                 | Min            | Max | Min            | Max |                         |                                 |                    |                      |                   | Max       |            | Min               |
| Dual Fiber, Gigabit Ethernet/Fibre Channel                   |                                                               |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                   |
| SFP-GD-MX                                                    | 1000Base-SX, Extended MM, 2 km                                | 1310            | -9             | -3  | -17            | -3  | N/A                     | N/A                             | 0 - 2              | -5 - 70              | Yes               | 1         | LC         | N/A               |
| SFP-GD-MMX                                                   | 1000Base-SX, Extended MM, 2 km                                | 1310            | -9             | -3  | -20            | -3  | N/A                     | N/A                             | 0 - 2              | 0 - 70               | Yes               | 1         | LC         | N/A               |
| SFP-GD-LX                                                    | 1000Base-LX, SM, 10 km                                        | 1310            | -10            | -3  | -20            | -3  | N/A                     | N/A                             | 0 - 20             | 0 - 70               | Yes               | 1         | LC         | N/A               |
| SFP-GD-ELX                                                   | 1000Base-ELX, SM, 20 km                                       | 1310            | -7             | 0   | -24            | -3  | 2                       | N/A                             | 6 - 30             | 0 - 70               | Yes               | 1         | LC         | N/A               |
| SFP-GD-XD                                                    | 1000Base-XD, SM, 50 km                                        | 1550            | -5             | 0   | -24            | -3  | 2                       | N/A                             | 12 - 70            | 0 - 70               | Yes               | 1         | LC         | N/A               |
| SFP-GD-ZX                                                    | 1000Base-ZX, SM, 80 km                                        | 1550            | 0              | 5   | -24            | -3  | 2                       | N/A                             | 35 - 88            | 0 - 70               | Yes               | 1         | LC         | N/A               |
| SFP-GD-EZX                                                   | 1000Base-EZX, SM, 120 km                                      | 1550            | 0              | 5   | -32            | -6  | 2                       | N/A                             | 44 - 120           | 0 - 70               | Yes               | 1         | LC         | N/A               |
| Dual Fiber, CWDM Gigabit Ethernet/Fibre Channel              |                                                               |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                   |
| SFP-GDCWXD-XX                                                | 1000Base-XD, SM CWDM, 50 km                                   | 1310 / 1610     | -5             | 0   | -24            | -3  | 1                       | N/A                             | 10 - 70            | 0 - 70               | Yes               | 1         | LC         | N/A               |
| SFP-GDCWZX-XX                                                | 1000Base-ZX, SM CWDM, 80 km                                   | 1310 / 1610     | 0              | 5   | -24            | -3  | 1                       | N/A                             | 30 - 90            | 0 - 70               | Yes               | 1         | LC         | N/A               |
| SFP-GDCWEZX-XX                                               | 1000Base-ZX, SM CWDM, 120 km                                  | 1310 / 1610     | 0              | 5   | -32            | -6  | 2                       | N/A                             | 40- 120            | 0 - 70               | Yes               | 1         | LC         | N/A               |
| Dual Fiber, Fibre Channel Dual Rate (1 and 2 Gbps)           |                                                               |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                   |
| SFP-DGD-SX                                                   | Dual Rate 1/2.1 Gbps SX or 1000Base-SX GigE, MM, 550 m        | 850             | -10            | -2  | -18            | 0   | N/A                     | N/A                             | 0 - 0.55           | -20 - 85             | Yes               | 1         | LC         | N/A               |
| SFP-DGD-LX                                                   | Dual Rate 1/2.1 Gbps SX or 1000Base-LX GigE, SM, 10 km        | 1310            | -10            | -3  | -21            | 0   | N/A                     | N/A                             | 0 - 10             | -40 - 85             | Yes               | 1         | LC         | N/A               |
| Dual Fiber, Fibre Channel Triple Rate (1, 2 and 4 Gbps)      |                                                               |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                   |
| SFP-TGD-SX                                                   | Triple Rate 1/2.1/4.2 Gbps SX or 1000Base-SX GigE, MM, 550 km | 850             | -10            | -2  | -15            | 0   | N/A                     | N/A                             | 0 - 0.55           | -20 - 85             | Yes               | 1         | LC         | N/A               |
| SFP-TGD-SR4                                                  | 1/2/4-GFC, SM, 4 km @ 4 GFC and 10 km @ 2GFC                  | 1310            | -10            | -3  | -18            | 0   | N/A                     | N/A                             | 0 - 4              | -20 - 85             | Yes               | 1         | LC         | N/A               |
| SFPFC408                                                     | 1/2/4 GFC, SM, 80 km                                          | 1550            | 0              | 4   | -24            | -6  | 3                       | N/A                             | 40 - 84            | -5 - 70              | Yes               | 1         | LC         | N/A               |
| Dual Fiber, Fibre Channel Triple Rate (1, 2 and 4 Gbps) CWDM |                                                               |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                   |
| SFPFC4CW08-XX                                                | 1/2/4 GFC CWDM, SM, 80 km                                     | 1270 / 1610     | 0              | 5   | -24            | -6  | 3                       | N/A                             | 30 - 84            | -5 - 70              | Yes               | 1         | LC         | N/A               |
| Dual Fiber, Fibre Channel Triple Rate (1, 2 and 4 Gbps) DWDM |                                                               |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                   |
| SFPFC4DW08-XX                                                | 1/2/4 GFC DWDM (XX=ITU C-Band Ch. 17-60 for 100 GHz), 80 km   | 1528 / 1565     | 0              | 4   | -24            | -6  | 3                       | 1600                            | 40 - 80            | -5 - 70              | Yes               | 1         | LC         | 30 dB @ BER=1e-12 |

## Optical SFP Transceivers

### Transceiver Specifications

| Part Number                                      | Description                                                                                        | Wavelength (nm) | Tx Power (dBm) |     | Rx Power (dBm) |     | Dispersion Penalty (dB) | Dispersion Tolerance (ps/nm/km) | Span Distance (km) | Operating Temp. (°C) | Digital Diagnost. | Power (W) | Conn. Type | OSNR             |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------|----------------|-----|----------------|-----|-------------------------|---------------------------------|--------------------|----------------------|-------------------|-----------|------------|------------------|
|                                                  |                                                                                                    |                 | Min            | Max | Min            | Max |                         |                                 |                    |                      |                   | Max       |            | Min              |
| Dual Fiber, Multi-rate 100-2700 Mbps             |                                                                                                    |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                  |
| SFP-MR27D-MMX                                    | Multi-rate Ext. MM, 1 km                                                                           | 1310            | -10            | -3  | -20            | -3  | N/A                     | N/A                             | 0 - 1              | 0 - 70               | Yes               | 1         | LC         | N/A              |
| SFP-MR27D-SR1                                    | Multi-rate SR1, SM, 2 km                                                                           | 1310            | -10            | -3  | -20            | -3  | N/A                     | N/A                             | 0 - 20             | 0 - 70               | Yes               | 1         | LC         | N/A              |
| SFP-MR27D-IR1                                    | Multi-rate IR1, SM, 20 km                                                                          | 1310            | -5             | 0   | -20            | 0   | 1                       | N/A                             | 0 - 28             | 0 - 70               | Yes               | 1         | LC         | N/A              |
| SFP-MR27D-IR2                                    | Multi-rate IR2, SM, 40 km                                                                          | 1550            | -5             | 0   | -20            | 0   | 1                       | N/A                             | 0 - 56             | 0 - 70               | Yes               | 1         | LC         | N/A              |
| SFP-MR27D-LR1                                    | Multi-rate LR1, SM, 40 km                                                                          | 1310            | -2             | 3   | -27            | -9  | N/A                     | N/A                             | 20 - 48            | 0 - 70               | Yes               | 1         | LC         | N/A              |
| SFP-MR27D-LR1                                    | Multi-rate LR2, SM, 80 km                                                                          | 1550            | -2             | 3   | -28            | -9  | 2                       | N/A                             | 40 - 96            | 0 - 70               | Yes               | 1         | LC         | N/A              |
| Dual Fiber, Multi-rate 100-2700 Mbps CWDM        |                                                                                                    |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                  |
| SFP27DCWEIR-XX                                   | Multi-rate EIR CWDM, SM, 60 km                                                                     | 1310 / 1610     | 0              | 5   | -20            | 0   | 1                       | N/A                             | 20 - 70            | 0 - 70               | Yes               | 1         | LC         | N/A              |
| SFP-27DCWLR-XX                                   | Multi-rate LR CWDM, SM, 80 km                                                                      | 1310 / 1610     | -2             | 3   | -28            | -6  | 2                       | N/A                             | 40 - 96            | 0 - 70               | Yes               | 1         | LC         | N/A              |
| Dual Fiber, Multi-rate 100-2700 Mbps 100GHz DWDM |                                                                                                    |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                  |
| SFP27DWLR08-XX                                   | Multi-rate LR, SM DWDM (XX=ITU C-Band Ch. 17-60 for 100 GHz), 80 km                                | 1529 / 1563     | 0              | 4   | 28             | -6  | 2                       | 1450                            | 40 - 80            | -5 - 70              | Yes               | 1.3       | LC         | 28dB @ BER=1e-12 |
| SFP27DWLR12-XX                                   | Multi-rate LR, SM DWDM (XX=ITU C-Band Ch. 17-60 for 100 GHz), Dispersion spec'd for 120 km, 80 km. | 1529 / 1563     | 0              | 4   | 28             | -6  | 2                       | 2200                            | 40 - 120           | -5 - 70              | Yes               | 1.3       | LC         | 28dB @ BER=1e-12 |

## Electrical SFP Transceivers

### Transceiver Specifications

| Part Number                                           | Description                               | Rate (Mbps) | Autonegotiation | Span Distance (m) | Operating Temp. (°C) | Max Power (W) | Connector Type |
|-------------------------------------------------------|-------------------------------------------|-------------|-----------------|-------------------|----------------------|---------------|----------------|
| <b>Copper (RJ45), Ethernet for Layer 0/1 Products</b> |                                           |             |                 |                   |                      |               |                |
| <b>SFP-GA-R</b>                                       | 1000Base-T for Layer 2 and higher devices | 10/100/1000 | Yes             | 0 - 100           | 0 - 70               | 1.5           | RJ-45          |
| <b>SFP-GC-R</b>                                       | 1000Base-T for Layer 1 devices            | 1000        | N/A             | 0 - 100           | 0 - 70               | 1.5           | RJ-45          |
| <b>SFP-SW10/100-R</b>                                 | 10/100Base-TX                             | 10/100      | Yes             | 0 - 100           | 0 - 70               | 1.5           | RJ-45          |

### Transceiver Specifications

| Part Number                  | Description                                                                                                                                 | Rate (Mbps)                       | Supported Frame and Refresh Rates                                                                                                                                                                                | Span Distance (m)                  | Operating Temp. (°C) | Max Power (W) | Connector Type |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------|---------------|----------------|
| <b>Copper, Digital Video</b> |                                                                                                                                             |                                   |                                                                                                                                                                                                                  |                                    |                      |               |                |
| <b>SFP3MRHDSDI-RX</b>        | Unidirectional Digital Video, Dual Speed SDI (270 Mbps) / HD-SDI (1.485 Gbps) / 1.001 Gbps) NTSC RX Only<br>Processes pathological patterns | 270 Mbps<br>1.485 Gbps/1.001 Gbps | 720 x 486i<br>720 x 576i<br>1280 x 720p (60hz)<br>1920 x 1035i (60hz)<br>1920 x 1080sF (24hz)<br>1920 x 1080p (24hz)<br>1920 x 1080i (60hz)<br>1920 x 1080p (30hz)                                               | 300 @ 270 Mbps<br>140 @ 1.485 Gbps | -5 - 70              | 1             | BNC            |
| <b>SFP3MRHDSDI-TX</b>        | Unidirectional Digital Video, Dual Speed SDI (270 Mbps) / HD-SDI (1.485 Gbps) / 1.001 Gbps) NTSC TX Only<br>Processes pathological patterns | 270 Mbps<br>1.485 Gbps/1.001 Gbps | 720 x 486i<br>720 x 576i<br>1280 x 720p (60hz)<br>1920 x 1035i (60hz)<br>1920 x 1080sF (24hz)<br>1920 x 1080p (24hz)<br>1920 x 1080i (60hz)<br>1920 x 1080p (30hz)                                               | 300 @ 270 Mbps<br>140 @ 1.485 Gbps | -5 - 70              | 1             | BNC            |
| <b>SFP5MRHDSDI-RX</b>        | Unidirectional Digital Video, Dual Speed SDI (270 Mbps) / HD-SDI(1.485 Gbps) PAL/SECAM RX Only<br>Processes pathological patterns           | 270 Mbps<br>1.485 Gbps            | 720 x 486i<br>720 x 576i<br>1280 x 720p (60hz)<br>1920 x 1035i (60hz)<br>1920 x 1080sF (24hz)<br>1920 x 1080p (24hz)<br>1920 x 1080i (50hz)<br>1920 x 1080p (25hz)<br>1920 x 1080i (60hz)<br>1920 x 1080p (30hz) | 300 @ 270 Mbps<br>140 @ 1.485 Gbps | -5 - 70              | 1             | BNC            |
| <b>SFP5MRHDSDI-TX</b>        | Unidirectional Digital Video, Dual Speed SDI (270 Mbps) / HD-SDI(1.485 Gbps) PAL/SECAM TX Only<br>Processes pathological patterns           | 270 Mbps<br>1.485 Gbps            | 720 x 486i<br>720 x 576i<br>1280 x 720p (60hz)<br>1920 x 1035i (60hz)<br>1920 x 1080sF (24hz)<br>1920 x 1080p (24hz)<br>1920 x 1080i (50hz)<br>1920 x 1080p (25hz)<br>1920 x 1080i (60hz)<br>1920 x 1080p (30hz) | 300 @ 270 Mbps<br>140 @ 1.485 Gbps | -5 - 70              | 1             | BNC            |

## Electrical SFP Transceivers



### Transceiver Specifications

| Part Number                  | Description                                                         | Rate (Mbps)                                           | Supported Frame and Refresh Rates                                                                                                                                                                                | Span Distance (m)                                     | Operating Temp. (°C) | Max Power (W) | Connector Type |
|------------------------------|---------------------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------------|---------------|----------------|
| <b>Copper, Digital Video</b> |                                                                     |                                                       |                                                                                                                                                                                                                  |                                                       |                      |               |                |
| <b>SFP-TMDV3G-TX</b>         | Unidirectional Transparent Digital Video SDI/HD-SDI/3G-SDI, TX Only | 270 Mbps (SDI and DVB-ASI)<br>1.485 Gbps<br>2.97 Gbps | 720 x 486i<br>720 x 576i<br>1280 x 720p (60hz)<br>1920 x 1035i (60hz)<br>1920 x 1080sF (24hz)<br>1920 x 1080p (24hz)<br>1920 x 1080i (50hz)<br>1920 x 1080p (25hz)<br>1920 x 1080i (60hz)<br>1920 x 1080p (30hz) | 350 @ 270 Mbps<br>140 @ 1.485 Gbps<br>100 @ 2.97 Gbps | -5 - 50              | 1.3           | BNC            |
| <b>SFP-TMDV3G-RX</b>         | Unidirectional Transparent Digital Video SDI/HD-SDI/3G-SDI, RX Only | N/A                                                   | 720 x 486i<br>720 x 576i<br>1280 x 720p (60hz)<br>1920 x 1035i (60hz)<br>1920 x 1080sF (24hz)<br>1920 x 1080p (24hz)<br>1920 x 1080i (50hz)<br>1920 x 1080p (25hz)<br>1920 x 1080i (60hz)<br>1920 x 1080p (30hz) | 350 @ 270 Mbps<br>140 @ 1.485 Gbps<br>100 @ 2.97 Gbps | -5 - 50              | 1.3           | BNC            |

## Optical SFP+ Transceivers



### Transceiver Specifications

| Part Number                         | Description                                                                        | Wavelength (nm) | Tx Power (dBm) |      | Rx Power (dBm) |     | Dispersion Penalty (dB) | Dispersion Tolerance (ps/nm/km)          | Span Distance (km) | Operating Temp. (°C) | Digital Diagnost. | Power (W) | Conn. Type | OSNR                                  |
|-------------------------------------|------------------------------------------------------------------------------------|-----------------|----------------|------|----------------|-----|-------------------------|------------------------------------------|--------------------|----------------------|-------------------|-----------|------------|---------------------------------------|
|                                     |                                                                                    |                 | Min            | Max  | Min            | Max |                         |                                          |                    |                      |                   | Max       |            | Min                                   |
| Dual Fiber, 8 Gbps                  |                                                                                    |                 |                |      |                |     |                         |                                          |                    |                      |                   |           |            |                                       |
| SFP-8GD-SX                          | 2.125/4.25/8.5 Gbps, MM, 300 m rate select                                         | 850             | -9             | -2   | -11.2          | 0   | 4.2                     | N/A                                      | 0 - 0.3            | -5 - 70              | Yes               | 1         | LC         | N/A                                   |
| SFP-8GD-LR                          | 2.125/4.25/8.5 Gbps, SM, 10 km rate select                                         | 1310            | -8.4           | -0.5 | -13.8          | 0   | 3.2                     | N/A                                      | 0 - 10             | -5 - 85              | Yes               | 1         | LC         | N/A                                   |
| Dual Fiber, 10 Gbps                 |                                                                                    |                 |                |      |                |     |                         |                                          |                    |                      |                   |           |            |                                       |
| SFP-10GD-SX                         | 8 to 10.3 Gbps, MM, 300 m                                                          | 850             | -7             | -1   | -11            | 0.5 | 3.9                     | N/A                                      | 0 - 0.3            | 0 - 70               | Yes               | 1         | LC         | N/A                                   |
| SFP-10GD-LRM                        | 8 to 10.3 Gbps, MM, 220 m                                                          | 1310            | -5             | 2    | -6             | 2   | 5                       | N/A                                      | 0 - 0.22           | -5 - 70              | Yes               | 1         | LC         | N/A                                   |
| SFP-10GD-LR                         | 8 to 10.3 Gbps, SM, 10 km                                                          | 1310            | -5             | 0.5  | -14            | 0.5 | 3.2                     | N/A                                      | 0 - 11.6           | -5 - 70              | Yes               | 1         | LC         | N/A                                   |
| SFP-10GD-ER                         | 8 to 10.3 Gbps, SM, 40 km                                                          | 1550            | -4.7           | 4    | -15.8          | -1  | 3                       | 800                                      | 0 - 40             | 0 - 70               | Yes               | 1.5       | LC         | N/A                                   |
| SFP-10GD-ZR                         | 8 to 10.3 Gbps, SM, 80 km                                                          | 1550            | 0              | 5    | -23            | -8  | 3                       | 1600                                     | 40 - 80            | -5 - 70              | Yes               | 1.2       | LC         | N/A                                   |
| Single Fiber Bidirectional, 10 Gbps |                                                                                    |                 |                |      |                |     |                         |                                          |                    |                      |                   |           |            |                                       |
| SFP-10GD-BX32                       | 8 to 10.3 Gbps, SM Single Fiber, 10 km                                             | 1330 / 1270     | -8.2           | 0.5  | -14.4          | 0.5 | 3.2                     | N/A                                      | 0 - 10             | -5 - 70              | Yes               | 1         | LC         | N/A                                   |
| SFP-10GD-BX23                       | 8 to 10.3 Gbps, SM Single Fiber, 10 km                                             | 1270 / 1330     | -8.2           | 0.5  | -14.4          | 0.5 | 3.2                     | N/A                                      | 0 - 10             | -5 - 70              | Yes               | 1         | LC         | N/A                                   |
| Dual Fiber, 10 Gbps CWDM            |                                                                                    |                 |                |      |                |     |                         |                                          |                    |                      |                   |           |            |                                       |
| SFP-10GCWER-XX                      | 8 to 10.5 Gbps, OC192/STM-64, 10GE and 10GFC, SM CWDM (XX=Ch. 1470-1610 nm), 40 km | 1470 / 1610     | -1             | 3    | -14.1          | -1  | N/A                     | 800                                      | 10 - 40            | -5 - 70              | Yes               | 1.5       | LC         | N/A                                   |
| SFP-10GCWZR-XX                      | 8 to 10.5 Gbps, OC192/STM-64, 10GE and 10GFC, SM CWDM (XX=Ch. 1470-1610 nm), 70 km | 1470 / 1610     | 0              | 4    | -22            | -8  | N/A                     | 1470-1570 nm: 1600<br>1590-1610 nm: 1400 | 40 - 70            | -5 - 70              | Yes               | 2         | LC         | N/A                                   |
| Dual Fiber, 100 GHz and 50 GHz DWDM |                                                                                    |                 |                |      |                |     |                         |                                          |                    |                      |                   |           |            |                                       |
| SFP-10GDWER-XX                      | 8 to 11.3 Gbps, SM, XX=ITU Grid, DWDM C-Band 100 GHz, 40 km                        | 1528.77-1563.86 | -1             | 4    | -16            | -1  | 2                       | 800                                      | 0 - 40             | -5 - 70              | Yes               | 1         | LC         | 24 dB @ BER=1e-12<br>19 dB @ BER=1e-3 |
| SFP-10GDWER-YXX                     | 8 to 11.3 Gbps, SM, Y=C or H, XX=ITU Grid, DWDM C-Band, 50 GHz, 40 km              | 1528.38-1563.86 | -1             | 4    | -16            | -1  | 2                       | 800                                      | 0 - 40             | -5 - 70              | Yes               | 1         | LC         | 24 dB @ BER=1e-12<br>19 dB @ BER=1e-3 |
| SFP-10GDWZR-XX                      | 8 to 11.3 Gbps, SM, XX=ITU Grid, DWDM C-Band 100 GHz, 80 km                        | 1528.77-1563.86 | 0              | 4    | -23            | -8  | 3                       | 1600                                     | 40 - 80            | -5 - 70              | Yes               | 1.12      | LC         | 27dB @ BER=1e-12<br>19dB @ BER=1e-3   |

## Optical SFP+ Transceivers



### Transceiver Specifications

| Part Number                                     | Description                                                                                                                     | Wavelength (nm)    | Tx Power (dBm) |     | Rx Power (dBm) |     | Dispersion Penalty (dB) | Dispersion Tolerance (ps/nm/km) | Span Distance (km) | Operating Temp. (°C) | Digital Diagnost. | Power (W) | Conn. Type | OSNR                                    |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------|-----|----------------|-----|-------------------------|---------------------------------|--------------------|----------------------|-------------------|-----------|------------|-----------------------------------------|
|                                                 |                                                                                                                                 |                    | Min            | Max | Min            | Max |                         |                                 |                    |                      |                   | Max       |            | Min                                     |
| Dual Fiber, 100 GHz and 50 GHz DWDM (Continued) |                                                                                                                                 |                    |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                                         |
| SFP-10GDWZR-YXX                                 | 8 to 11.3 Gbps, SM, Y=C or H, XX=ITU Grid, DWDM C-Band 50 GHz, 80km                                                             | 1528.38-1563.86    | 0              | 4   | -23            | -8  | 3                       | 1600                            | 40 - 80            | -5 - 70              | Yes               | 1.12      | LC         | 27dB @ BER=1e-12<br>19dB @ BER=1e-3     |
| Dual Fiber, 10 Gbps Tunable DWDM                |                                                                                                                                 |                    |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                                         |
| SFP-10GDWZR-TC                                  | 8 to 11.3 Gbps SM, DWDM Tunable, C-Band, Ch. 11C - 61H, 80km                                                                    | 1528.38-1563.86    | -1             | 3   | -24            | -7  | 3                       | 1600                            | 40 - 80            | -5 - 70              | Yes               | 2         | LC         | 26 dB @ BER=1e-12<br>19.5 dB @ BER=1e-3 |
| Dual Fiber, 10Gbps Multirate Tunable SFP+ DWDM  |                                                                                                                                 |                    |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                                         |
| SFP-10GDWZR-TCME                                | 622Mbps to 11.3 Gb/s Multirate, Extended Temperature DWDM Tunable, C-Band, ITU Ch C13 - H60, 80km, SM, with Digital Diagnostics | 1529.16 to 1567.13 | -1             | 3   | -24            | -6  | 3                       | 1600                            | 40 - 80            | -5 - 85              | Yes               | 2         | LC         | 26 dB @ BER=1e-12<br>19.5 dB @ BER=1e-3 |

## Optical XFP Transceivers

### Transceiver Specifications

| Part Number                                                         | Description                                                                              | Wavelength (nm) | Tx Power (dBm) |     | Rx Power (dBm) |     | Dispersion Penalty (dB) | Dispersion Tolerance (ps/nm/km) | Span Distance (km) | Operating Temp. (°C) | Digital Diagnost. | Power (W) | Conn. Type | OSNR                                  |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------|----------------|-----|----------------|-----|-------------------------|---------------------------------|--------------------|----------------------|-------------------|-----------|------------|---------------------------------------|
|                                                                     |                                                                                          |                 | Min            | Max | Min            | Max |                         |                                 |                    |                      |                   | Max       |            | Min                                   |
| Dual Fiber, 10 Gbps (no protocol-specific ref. clock required)      |                                                                                          |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                                       |
| XFP-10GD-SX                                                         | 10GbE, or 10GFC, MM, 300 m                                                               | 850             | -7             | -1  | -11            | -1  | N/A                     | N/A                             | 0 - 0.3            | -5 - 70              | Yes               | 2.5       | LC         | N/A                                   |
| XFP-10GD-MMX                                                        | 10 GbE, or 10 GFC, Extended MM, 500 m                                                    | 1310            | -6             | -1  | -13            | 0.5 | N/A                     | N/A                             | 0 - 0.5            | -5 - 70              | Yes               | 2.5       | SC         | N/A                                   |
| XFP-10GD-LR                                                         | OC192/STM-64, 10 GbE or 10 GFC, SM, 10 km                                                | 1310            | -8             | 0   | -14            | 0.5 | N/A                     | N/A                             | 0 - 14             | -5 - 70              | Yes               | 2.5       | LC         | N/A                                   |
| XFP-10GD-IR2                                                        | OC192/STM-64, 10 GbE or 10 GFC, SM, 40 km                                                | 1550            | -1             | 2   | -16            | -1  | 2                       | 800                             | 12 - 52            | -5 - 70              | Yes               | 2.5       | LC         | N/A                                   |
| XFP-10GD-LR2                                                        | OC192/STM-64, 10 GbE or 10 GFC, SM, 80 km                                                | 1550            | 0              | 4   | -24            | -7  | 3                       | 1600                            | 44 - 84            | -5 - 70              | Yes               | 2.5       | LC         | N/A                                   |
| Dual Fiber, 10 Gbps CWDM                                            |                                                                                          |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                                       |
| XFP-10GCWER-XX                                                      | 8 to 10.3 Gbps, MM, 300 m                                                                | 1470 - 1610     | -1             | 2   | -16            | -1  | 2                       | 800                             | 10 - 40            | -5 - 70              | Yes               | 3.5       | LC         | N/A                                   |
| XFP-10GCWZR-XX                                                      | 8 to 10.3 Gbps, MM, 220 m                                                                | 1470 - 1610     | 0              | 4   | -24            | -7  | 2                       | 1400                            | 40 - 70            | -5 - 70              | Yes               | 3.5       | LC         | N/A                                   |
| Dual Fiber, 10 Gbps DWDM (no protocol-specific ref. clock required) |                                                                                          |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                                       |
| XFP-DWLR08-XX                                                       | OC192/STM-64, 10 GbE or 10 GFC, SM DWDM (XX + ITU C-Band Ch. 17-61 for 100 GHz), 80 km   | 1529 / 1563     | -1             | 3   | -23            | -7  | 2.5                     | 1450                            | 40 - 80            | -5 - 70              | Yes               | 3.5       | LC         | 24dB @ BER=1e-12<br>16dB @ BER=1e-4   |
| Dual Fiber, 10 Gbps Tunable DWDM                                    |                                                                                          |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                                       |
| XFP-DWLR08TC                                                        | OC192/STM-64, 10GbE or 10 GFC, SM DWDM Tunable, C-Band, Ch. 11C - 61H, 80 km             | 1528.38-1568.77 | -1             | 3   | -24            | -7  | 2                       | 1600                            | 40 - 80            | -5 - 70              | Yes               | 3.5       | LC         | 27dB @ BER=1e-12<br>19.5dB @ BER=1e-4 |
| XFP-DWLR08TCMR                                                      | 8GFC, OC192/STM-64, 10GbE or 10GFC, SM DWDM 50 GHz Tunable, C-Band, Ch11C - Ch61H, 80 km | 1528.38-1568.77 | -1             | 3   | -23            | -6  | 3                       | 1600                            | 40 - 80            | -5 - 70              | Yes               | 3.5       | LC         | 24dB @ BER=1e-12<br>16dB @ BER=1e-4   |

## Optical XFP Transceivers

| Transceiver Specifications                                                         |                                                                                                                         |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |      |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-----------------|----------------|-----|----------------|-----|-------------------------|---------------------------------|--------------------|----------------------|-------------------|-----------|------------|------|
| Part Number                                                                        | Description                                                                                                             | Wavelength (nm) | Tx Power (dBm) |     | Rx Power (dBm) |     | Dispersion Penalty (dB) | Dispersion Tolerance (ps/nm/km) | Span Distance (km) | Operating Temp. (°C) | Digital Diagnost. | Power (W) | Conn. Type | OSNR |
|                                                                                    |                                                                                                                         |                 | Min            | Max | Min            | Max |                         |                                 |                    |                      |                   | Max       |            | Min  |
| Dual Fiber, Multi-rate 16 Gbps XFPs DWDM - No protocol-specific ref clock required |                                                                                                                         |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |      |
| XFP-16GDWER-XX                                                                     | XFP, 16/8/4 G FC and 10G FCoE, SM DWDM (XX + ITU C-Band Channels 20-60 for 100 GHZ), 10-40km, with Digital Diagnostics. | 1529.55-1561.42 | 0              | 4   | -14            | 0   | 3                       | 800                             | 10 - 40            | 0 - 70               | Yes               | 3.5       | LC         | N/A  |
| Dual Fiber, Multi-rate 16 Gbps XFPs - No protocol-specific ref clock required      |                                                                                                                         |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |      |
| XFP-16GD-SX                                                                        | XFP 16/8/4 G FC and 10G FCoE, MM, 850nm, 125m with Digital Diagnostics                                                  | 850             | -7.8           | -1  | -7.7           | 0   | N/A                     | N/A                             | 0 - 0.125          | 0-70                 | Yes               | 1.2       | LC         | N/A  |
| XFP-16GD-LR                                                                        | XFP 16/8/4 G FC and 10G FCoE, SM, 1310nm, 10km, with Digital Diagnostics.                                               | 1310            | -4             | 2   | -10.9          | 2   | N/A                     | N/A                             | 0 - 10             | 0-70                 | Yes               | 2         | LC         | N/A  |
| XFP-16GD-ER                                                                        | XFP 16/8/4 G FC and 10G FCoE, SM, 1550nm, 40km, with Digital Diagnostics.                                               | 1550            | -1             | 3   | -14            | 1   | 3                       | 800                             | 10 - 40            | 0-70                 | Yes               | 3.5       | LC         | N/A  |

## Optical QSFP Transceivers

| Transceiver Specifications |                   |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |      |
|----------------------------|-------------------|-----------------|----------------|-----|----------------|-----|-------------------------|---------------------------------|--------------------|----------------------|-------------------|-----------|------------|------|
| Part Number                | Description       | Wavelength (nm) | Tx Power (dBm) |     | Rx Power (dBm) |     | Dispersion Penalty (dB) | Dispersion Tolerance (ps/nm/km) | Span Distance (km) | Operating Temp. (°C) | Digital Diagnost. | Power (W) | Conn. Type | OSNR |
|                            |                   |                 | Min            | Max | Min            | Max |                         |                                 |                    |                      |                   | Max       |            | Min  |
| QSFP 40G                   |                   |                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |      |
| QSFP-40G-SX                | 40G SR4 MM, 100 m | 840 - 860       | -7.6           | 2.4 | -12            | 2.4 | 3.5                     | N/A                             | 0 - 0.1            | 0 - 70               | Yes               | 1.5       | MPO        | N/A  |
| QSFP-40G-LR                | 40G LR4 SM, 10 km | 1271 - 1331     | -7             | 2.3 | -13.7          | 2.3 | 2.3                     | N/A                             | 1 - 10             | 0 - 70               | Yes               | 3.5       | LC         | N/A  |
| QSFP-40G-IR                | 40G IR4 SM, 10 km | 1271- 1331      | -7             | 2   | -11.5          | 2.3 | 2.3                     | N/A                             | 0 - 2              | 20 - 65              | Yes               | 3.5       | LC         | N/A  |

## Optical CFP Transceivers

### Transceiver Specifications

| Part Number     | Description                                                                                                                                                        | Wavelength (nm)                                                                  | Tx Power (dBm) |     | Rx Power (dBm) |     | Dispersion Penalty (dB) | Dispersion Tolerance (ps/nm/km) | Span Distance (km) | Operating Temp. (°C) | Digital Diagnost. | Power (W) | Conn. Type | OSNR                        |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------|-----|----------------|-----|-------------------------|---------------------------------|--------------------|----------------------|-------------------|-----------|------------|-----------------------------|
|                 |                                                                                                                                                                    |                                                                                  | Min            | Max | Min            | Max |                         |                                 |                    |                      |                   | Max       |            | Min                         |
| CFP 100G        |                                                                                                                                                                    |                                                                                  |                |     |                |     |                         |                                 |                    |                      |                   |           |            |                             |
| CFP-100G-LR4    | 4x25G, 100GE/OTU4, SM, 10 km                                                                                                                                       | 1294.53– 1296.59<br>1299.02 – 1301.09<br>1303.54 – 1305.63<br>1308.09 – 1310.19  | -4.3           | 4.5 | -10.6          | 4.5 | 2.2                     | N/A                             | 0 - 10             | -5 - 70              | Yes               | 14        | LC         | N/A                         |
| CFP100GDWER4-xx | 4x28G MLSE DWDM CFP for Metro 20km,100Ghz spacing. Requires on-board FEC with minimum 8dB OSNR gain.<br><br>xx per ITU grid 21 ,25, 29, 33, 37, 41, 45, 49, 53, 57 | 1529.55-1560.61                                                                  | 0              | 4   | -20            | -5  | 2                       | 400                             | 0-20 km            | 0-70 C               | Yes               | 28        | LC         | >35dB @ BER=2x10e-3         |
| CFP-100G-SR10   | 10x10G, 100GE/OTU4, MM, 300 m                                                                                                                                      | 850                                                                              | -6.5           | 1   | -9.5           | 2.4 | N/A                     | N/A                             | 0 - 0.3            | 0 - 70               | Yes               | 8         | MPO        | N/A                         |
| CFP-100G-ER4    | 4x25G / 4x28G 100Gbase-ER4 and OTN OTU-4                                                                                                                           | 1294.53 – 1296.59<br>1299.02 – 1301.09<br>1303.54 – 1305.63<br>1308.09 – 1310.19 | -2.7           | 2.9 | -20.9          | 4.5 | 2.2                     | N/A                             | 0-40               | -5 - 70              | Yes               | 14        | LC         | N/A                         |
| CFP-100G-DWCHT  | CFP 100G SM DWDM Coherent Single Wavelength Tunable 50Ghz spacing.<br><br>Reach beyond 1200 km over SMF without inline chromatic dispersion compensation           | 1528.38 - 1563.05 tunable                                                        | set-table*     | 5   | set-table*     | -25 | 0                       | 0.5                             | 0 - 1200           | -5 - 70              | Yes               | 30        | LC         | > 30dB @ post FEC BER<1e-15 |

\*Coherent CFP power setting may require a system software upgrade. Nominal transmit power is 0dBm.

## Optical CFP2 Transceivers



### Transceiver Specifications

| Part Number                | Description                                         | Wavelength (nm)                                                                 | Tx Power (dBm) |     | Rx Power (dBm) |     | Dispersion Penalty (dB) | Dispersion Tolerance (ps/nm/km) | Span Distance (km) | Operating Temp. (°C) | Digital Diagnost. | Power (W) | Conn. Type | OSNR |
|----------------------------|-----------------------------------------------------|---------------------------------------------------------------------------------|----------------|-----|----------------|-----|-------------------------|---------------------------------|--------------------|----------------------|-------------------|-----------|------------|------|
|                            |                                                     |                                                                                 | Min            | Max | Min            | Max |                         |                                 |                    |                      |                   | Max       |            | Min  |
| CFP2 Form-Factor Pluggable |                                                     |                                                                                 |                |     |                |     |                         |                                 |                    |                      |                   |           |            |      |
| CFP2-100G-LR4              | 4x25G CFP2, 100GE/OTU4, SM, 10Km, dual LC connector | 1294.53– 1296.59<br>1299.02 – 1301.09<br>1303.54 – 1305.63<br>1308.09 – 1310.19 | -4.3           | 4.5 | -10.6          | 4.5 | 2.2                     | N/A                             | 0 - 10             | 0 - 70               | Yes               | 8         | LC         | N/A  |
| CFP2-100G-SR10             | 10x10G CFP2, 100GE/OTU4, MM, 100m, MPO connector    | 850                                                                             | -7.6           | 2.4 | -9.5           | 2.4 | N/A                     | N/A                             | 100 m              | 0 - 70               | Yes               | 6         | MPO        | N/A  |

## Pluggable Optics

MRV offers a wide spectrum of pluggable transceivers (SFP, SFP+, XFP, QSFP and CFP), which provide a modular approach to all product portfolio network design.

- All rates for dual fiber & single fiber up, to 100G CFP
- Embedded power monitoring (digital diagnostics)
- Interoperable and MSA
- Digital video SDI, HD-SDI and DVB-ASI SFPs
- Tunable DWDM XFP, SPF+, and CFP
- SFP+ 10G CWDM and 10G DWDM (50Ghz & 100Ghz)
- QSFP for 40G and 10Gx4
- 100G CFP
- MRV quality assurance for best performance

## About MRV Communications

MRV Communications is a global leader in converged packet and optical solutions that empower the optical edge. For more than two decades, the most demanding service providers, Fortune 1000 companies and governments worldwide have trusted MRV® to provide best-in-class solutions and services for their mission-critical networks. We help our customers overcome the challenge of orchestrating the ever-increasing need for capacity while improving service delivery and lowering network costs for critical applications such as cloud connectivity, high-capacity business services, mobile backhaul and data center connectivity.

## NOTES



MRV operates Worldwide sales and service offices across four continents.

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[www.mrv.com](http://www.mrv.com)



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