

32G-IR-DxxS-BR

SFP28, 32/16/8G FC, Secure Optics DWDM 100GHz grid, 192.00 - 196.00THz (41ch), 10km, 7dB, LC, D200-D600

BROCADE

OVERVIEW

The 32G-IR-DxxS-BR is a versatile DWDM transceiver in SFP28 form-factor supporting a wide range of Fiber Channel (FC) services (8G to 32G). The transceiver is provided in versions covering all C-band channels in the 100GHz DWDM grid as specified in the ITU-T G.694.1 standard. The transceiver is approved by Brocade and supports the authentication protocol required for the Gen7 system platforms.

The transceiver has an inbuilt 3-mode CDR (Clock Data Recovery) function;

- High data rate mode for 32G FC
- Low data rate mode for 16G FC
- Bypass mode for 8 GFC

The optical performance provides a bridgeable distance of up to 10km (without dispersion compensation) for 32G FC. This transceiver provides digital diagnostic functions via a 2-wire serial interface as defined by the SFF-8472 specification.

The transceiver module is compliant to RoHS-6/6.

TECHNICAL DATA

| Parameter | Value |
|-----------------------|---------------------|
| Technology | DWDM 100GHz SFP28 |
| Transmission media | SM (2x LC) |
| Typical reach | 10km |
| Nominal wavelengths | 192.00 - 196.00 THz |
| Bit rate support | 28.05 Gbps |
| | 14.025 Gbps |
| | 8.500 Gbps |
| Protocol support | 32G FC |
| | 16G FC |
| | 8G FC |
| Power budget | 0 – 7.0 dB |
| Dispersion tolerance | -170 to +170 ps/nm |
| Power consumption | < 2.0W |
| Operating temperature | 0°C to +70°C |
| Storage temperature | -40°C to +85°C |

| Parameter | Value |
|--------------------------|-----------------------------|
| Transmitter data: | |
| Output power | Min: -3.0 dBm ²⁾ |
| | Max: +2.0 dBm ²⁾ |
| Transmit wavelengths | 192.00 - 196.00 THz |
| | 100GHz (ITU-T G.694.1) |
| Receiver data: | |
| Minimum input power | -10.0 dBm ^{1) 2)} |
| Overload (max power) | +2.0 dBm ^{1) 2)} |
| Wavelength range | 1480 - 1580 nm |
| DDM | Yes |
| MSA compliance | SFP28 MSA |
| | SFF-8402 |

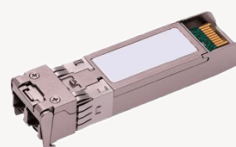
¹⁾ @ 28.05 Gbps (32G FC) and BER < 10⁻⁶ using PRBS 2³¹-1

²⁾ Average power

Safety/regulatory compliance:

TUV/UL/FDA (contact Smartoptics for latest certification information)

RoHS compliance



ORDERING INFORMATION

| Ordering number | Frequency THz | Wavelength nm | Ordering number | Frequency THz | Wavelength nm |
|-----------------|---------------|---------------|-----------------|---------------|---------------|
| 32G-IR-D20S--BR | 192.00 | 1561.42 | 32G-IR-D41S--BR | 194.10 | 1544.53 |
| 32G-IR-D21S--BR | 192.10 | 1560.61 | 32G-IR-D42S--BR | 194.20 | 1543.73 |
| 32G-IR-D22S--BR | 192.20 | 1559.79 | 32G-IR-D43S--BR | 194.30 | 1542.94 |
| 32G-IR-D23S--BR | 192.30 | 1558.98 | 32G-IR-D44S--BR | 194.40 | 1542.14 |
| 32G-IR-D24S--BR | 192.40 | 1558.17 | 32G-IR-D45S--BR | 194.50 | 1541.35 |
| 32G-IR-D25S--BR | 192.50 | 1557.36 | 32G-IR-D46S--BR | 194.60 | 1540.56 |
| 32G-IR-D26S--BR | 192.60 | 1556.55 | 32G-IR-D47S--BR | 194.70 | 1539.77 |
| 32G-IR-D27S--BR | 192.70 | 1555.75 | 32G-IR-D48S--BR | 194.80 | 1538.98 |
| 32G-IR-D28S--BR | 192.80 | 1554.94 | 32G-IR-D49S--BR | 194.90 | 1538.19 |
| 32G-IR-D29S--BR | 192.90 | 1554.13 | 32G-IR-D50S--BR | 195.00 | 1537.40 |
| 32G-IR-D30S--BR | 193.00 | 1553.33 | 32G-IR-D51S--BR | 195.10 | 1536.61 |
| 32G-IR-D31S--BR | 193.10 | 1552.52 | 32G-IR-D52S--BR | 195.20 | 1535.82 |
| 32G-IR-D32S--BR | 193.20 | 1551.72 | 32G-IR-D53S--BR | 195.30 | 1535.04 |
| 32G-IR-D33S--BR | 193.30 | 1550.92 | 32G-IR-D54S--BR | 195.40 | 1534.25 |
| 32G-IR-D34S--BR | 193.40 | 1550.12 | 32G-IR-D55S--BR | 195.50 | 1533.47 |
| 32G-IR-D35S--BR | 193.50 | 1549.32 | 32G-IR-D56S--BR | 195.60 | 1532.68 |
| 32G-IR-D36S--BR | 193.60 | 1548.51 | 32G-IR-D57S--BR | 195.70 | 1531.90 |
| 32G-IR-D37S--BR | 193.70 | 1547.72 | 32G-IR-D58S--BR | 195.80 | 1531.12 |
| 32G-IR-D38S--BR | 193.80 | 1546.92 | 32G-IR-D59S--BR | 195.90 | 1530.33 |
| 32G-IR-D39S--BR | 193.90 | 1546.12 | 32G-IR-D60S--BR | 196.00 | 1529.55 |
| 32G-IR-D40S--BR | 194.00 | 1545.32 | | | |

RATE SELECT OPERATION

The 32G-IR-DxxS--BR supports high data rates 25.78G/28.05G with CDR engaged and Low data rate 14.025G with CDR half-rate engaged, 8.5G with CDR bypassed

| RS0 | RS1 | Rx data rate | Tx data rate |
|--------|--------|----------------|----------------|
| High/1 | High/1 | 28.05Gbps | 28.05Gbps |
| Low/0 | Low/0 | 14.025/8.5Gbps | 14.025/8.5Gbps |

LOOPBACK CONFIGURATION

E-wrap Loopback: User can configure e-wrap loopback by writing 0x01 to byte 111 of A2H. The default value of byte 111 of A2H is 0x00. Please note that the changed value will not be saved at power-off.

O-wrap Loopback: User can configure e-wrap loopback by writing 0x04 to byte 111 of A2H. The default value of byte 111 of A2H is 0x00. Please note that the changed value will not be saved at power-off.

GENERAL DEFINITIONS

| | |
|-------------------------------|---|
| Technology: | Grey; Transceiver type for non-WDM applications. Electrical or optical. CWDM; Transceiver type for CWDM applications using G.694.2 channel grid. DWDM; Transceiver type for DWDM applications using G.694.1 channel grid. BiDi; Transceiver pair using two different wavelength channels operating on a single-fiber. DAC: Direct Attach Cable (DAC). Electrical or optical cable with attached connectors. |
| Transmission Media: | Type of fiber, e.g. Multimode (MM) or Singlemode (SM). Number of and connector type within brackets (e.g. 2x LC, 1x MPO). |
| Typical reach: | Nominal distance performance based on dispersion and power budget properties, i.e. w/o dispersion compensation and optical amplification. |
| Bit rate range: | Supported bit rate range in Gigabit or Megabit per second (Gbps or Mbps). |
| Protocols: | Protocols within supported bit rate range. |
| Nominal wavelength: | Typical wavelength from transmitter. |
| Interface standards: | Referenced interface standards e.g. IEEE 802.3 standard for 10GbE services. |
| Power budget: | Min and max power budget between Transmitter and Receiver. |
| Dispersion tolerance/penalty: | Maximum amount of tolerated dispersion and required reduction of power budget to maintain stipulated Bit Error Rate (BER) and at a given bit rate. |
| Temperature range: | Max operating case temperature range. Commercial temperature range (C-temp): 0°C to +70°C (32°F to +158°F) Extended temperature range (E-temp): typically -20°C to +75°C (-4°F to +167°F) Industrial temperature range (I-temp): -40°C to +85°C (-40°F to +185°F) |
| Power consumption: | Worst case power consumption. Will vary over temperature. |
| Transmitter Output power: | Average output power. Provided in min and max values. |
| Receiver minimum input power: | Minimum average input power at specified BER, normally $1E^{-12}$. |
| Receiver max input power: | Maximum average input power giving a BER, normally $1E^{-12}$. |
| DDM: | Digital Diagnostic Monitoring functionality as defined in SFF-8472 MSA. |

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