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DATA SHEET

100G QSFP28 CWDM4 TRANSCEIVER

DESCRIPTION

The 100G QSFP28 CWDM4 transceiver is designed for use in 100 Gigabit Ethernet links over single mode fiber. The optical transmitter integrated with four lasers with center wavelengths of 1271 nm, 1291 nm, 1311 nm and 1331 nm. The optical signals are then multiplexed into a single-mode fiber through an industry standard LC connector. On the receiver side, four lanes of optical data streams are optically de-multiplexed by an integrated optical de-multiplexer and transformed to an electrical CAUI-4 compliant output driver.

A serial EEPROM in the transceiver allows the user to access transceiver monitoring and configuration data via the 2-wire QSFP Management Interface. This interface uses a single address, A0h, with a memory map divided into a lower and upper area. Basic digital diagnostic (DD) data is held in the lower area while specific data are held in a series of tables in the high memory area.

KEY FEATURES

- Links up to 2km on SMF with FEC
- Operating case temperature: 0~70°C
- Power consumption: 3.5W
- Integrated CWDM DFB TOSA (1271,1291,1311,1331nm) and PIN ROSA
- Supports 25.78125Gbps Data rate per wavelength
- Build in CDR on both TX and RX
- DDM function implemented
- Hot pluggable QSFP28 form factor
- Duplex LC receptacles
- Single +3.3V power supply

APPLICATIONS

- 100G Ethernet
- Proprietary High Speed Interconnections
- Data Center Networking

COMPLIANCES

- Compliant with CWDM4 MSA
- Compliant with IEEE 802.3 CAUI-4
- Compliant with SFF-8636/8661/ 8679
- Compliant with RoHS-6

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DATA SHEET

100G QSFP28 CWDM4 TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	0	+25	+70	ºC
Storage Temperature	-40	------	+85	ºC
Operation Humidity*	10	------	85	%
Storage Humidity	10	------	85	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.135	+3.3	+3.465	V
Power Dissipation (Each lane)			3.5	W
Total Data Rate		103.125		Gb/s
Data Rate (Each lane)		25.78125		Gb/s
Transmission Distance			2	Km

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Bit Rate (each Lane)	25.78125 +/- 100ppm			Gb/s
Line Wavelength (CH0)	1264.5		1277.5	nm
Line Wavelength (CH1)	1284.5		1297.5	nm
Line Wavelength (CH2)	1304.5		1317.5	nm
Line Wavelength (CH3)	1324.5		1337.5	nm
Side Mode Suppression Ratio (SMSR)	30			dB
Average Launch Power (each lane)	-6.5		2.5	dBm
Transmitter OMA (each lane)	-4		2.5	dBm
Extinction Ratio (ER)	3.5			dB
Average launch power (OFF transmitter, each lane)			-30	dBm
Transmitter eye mask definition (X1, X2, X3, Y1, Y2, Y3)	(0.31, 0.4, 0.45, 0.34, 0.38, 0.4)			
Transmitter reflectance			-12	dB
Input differential impedance (each line)		100		Ω

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Bit Rate (each Lane)	25.78125 +/- 100ppm			Gb/s
Line Wavelength (CH0)	1264.5		1277.5	nm
Line Wavelength (CH1)	1284.5		1297.5	nm
Line Wavelength (CH2)	1304.5		1317.5	nm
Line Wavelength (CH3)	1324.5		1337.5	nm
Average RX Power (each lane)	-11.5		2.5	dBm
Receiver Sensitivity (unstressed, each lane)			-10	dBm

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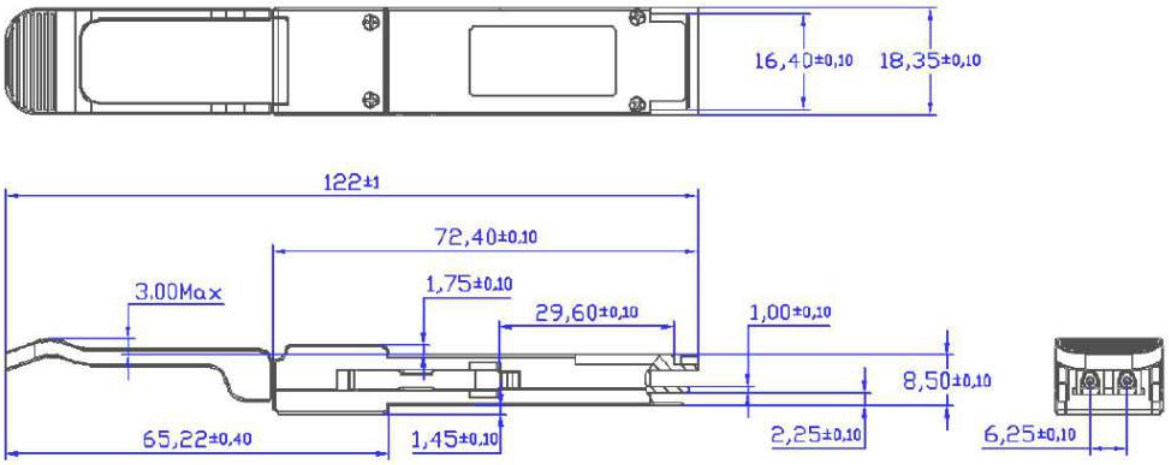
DATA SHEET

100G QSFP28 CWDM4 TRANSCEIVER

DIMENSIONS

Unit: mm



ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPQ81CIRLCC000CL4	QSFP28	100G	2Km	DDM/RoHS

CONTACT INFORMATION

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DATA SHEET

100G QSFP28 LR4 TRANSCEIVER

DESCRIPTION

The 100G QSFP28 LR4 transceiver is designed for use in 100 Gigabit Ethernet links over single mode fiber.

The optical transmitter is integrated with four lasers with center wavelengths of 1295.56 nm, 1300.05 nm, 1304.58 nm and 1309.14 nm. This module contains 4-lane optical transmitter, 4-lane optical receiver and module management block, including 2 wire serial interface. The optical signals are multiplexed to a single-mode fiber through an industry standard LC connector.

A serial EEPROM in the transceiver allows the user to access transceiver monitoring and configuration data via the 2-wire QSFP Management Interface. This interface uses a single address, A0h, with a memory map divided into a lower and upper area. Basic digital diagnostic (DD) data is held in the lower area while specific data are held in a series of tables in the high memory area.

KEY FEATURES

- Up to 10km transmission on SMF
- Operatingcasetemperature:0~70°C
- Maximum Power consumption:4.5W
- 4xLAN-WDM lanes MUX/DEMUX design
- Supports 25.78Gbps Data rate per wavelength
- Built-in CDR on both TX and RX
- DDM function implemented
- Hot pluggable QSFP28 form factor
- Duplex LC receptacles
- Single +3.3V power supply

APPLICATIONS

- 100GBASE-LR4 100G Ethernet
- Telecom networking
- Data Center Interconnect
- Enterprise networking

COMPLIANCES

- Compliant with QSFP28MSA
- Compliant with IEEE 802.3ba100GBASE-LR4
- Compliant with SFF-8636/8661/ 8679
- Compliant with RoHS-6

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DATA SHEET

100G QSFP28 LR4 TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	0	+25	+70	ºC
Storage Temperature	-40	------	+85	ºC
Operation Humidity*	10	------	85	%
Storage Humidity	10	------	85	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.135	+3.3	+3.465	V
Power Dissipation (Each lane)			4.5	W
Total Data Rate		103.125		Gb/s
Data Rate (Each lane)		25.78125		Gb/s
Transmission Distance			10	Km

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Bit Rate (each Lane)	25.78125 +/- 100ppm			Gb/s
Line Wavelength (CH0)	1294.53		1296.59	nm
Line Wavelength (CH1)	1299.02		1301.09	nm
Line Wavelength (CH2)	1303.54		1305.63	nm
Line Wavelength (CH3)	1308.09		1310.19	nm
Side Mode Suppression Ratio (SMSR)	30			dB
Average Launch Power (each lane)	-4.3		4.5	dBm
Transmitter OMA (each lane)	1.3		4.5	dBm
Extinction Ratio (ER)	4			dB
Average launch power (OFF transmitter, each lane)			-30	dBm
Transmitter eye mask definition (X1, X2, X3, Y1, Y2, Y3)	(0.31, 0.4, 0.45, 0.34, 0.38, 0.4)			
Transmitter reflectance			-12	dB
Input differential impedance (each line)		100		Ω

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Bit Rate (each Lane)	25.78125 +/- 100ppm			Gb/s
Line Wavelength (CH0)	1294.53		1296.59	nm
Line Wavelength (CH1)	1299.02		1301.09	nm
Line Wavelength (CH2)	1303.54		1305.63	nm
Line Wavelength (CH3)	1308.09		1310.19	nm
Average RX Power (each lane)	-10.6		4.5	dBm
Receiver Sensitivity (unstressed, each lane)			-8.6	dBm
Receiver Sensitivity (stressed, each lane)			-6.8	dBm
LOSA	-30			dBm
LOSD			-11	dBm
Hysteresis	0.5			dB

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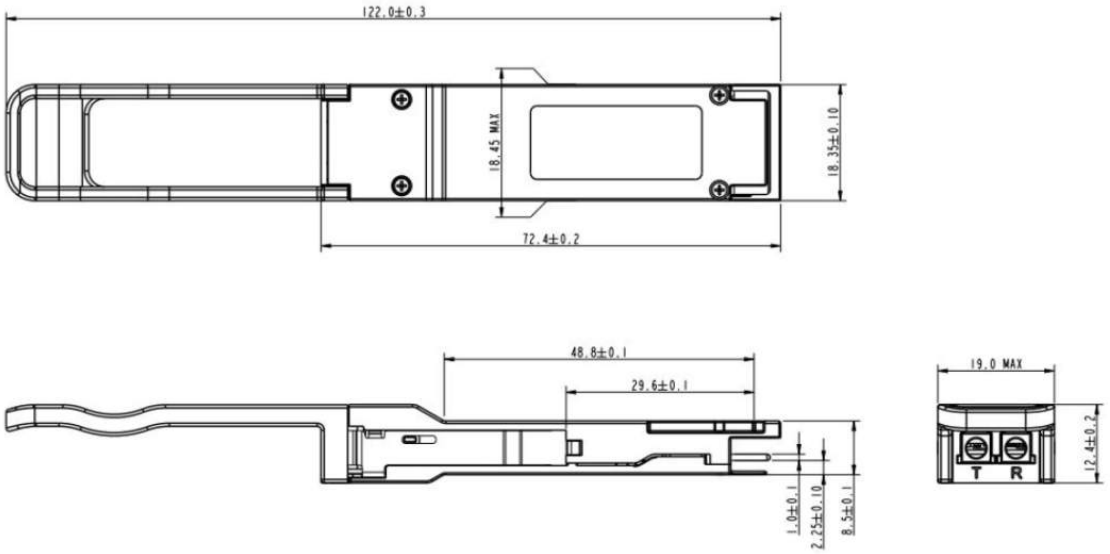
DATA SHEET

100G QSFP28 LR4 TRANSCEIVER

DIMENSIONS

Unit: mm



ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPQ81CLRLCC000LR4	QSFP28	100G	10Km	DDM/RoHS

CONTACT INFORMATION

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DATA SHEET

100G QSFP28 PSM4 TRANSCEIVER

DESCRIPTION

The 100G QSFP28 PSM4 transceiver is designed to meet the requirements of optical fiber interface for 500m reach over eight single mode fiber in large data centers. The optical module offers 4 independent transmit and receive channels, each capable of 25Gbps operation. Mechanical dimensions, connectors and the footprint of this product are QSFP+ specifications compliant. The optical interface uses MPO connector. The transceiver proven circuit to provide reliable long life, high performance, and consistent service.

KEY FEATURES

- Up to 500m reach
- Operating case temperature: 0~70°C
- Maximum Power consumption less than 3.5W
- Integrated 4-channel Tx and Rx
- Uncooled 1310nm DFB Laser
- Single channel rate up to 25 Gbps
- Internal CDR on both Transmitter and Receiver channels
- DDM function implemented
- Hot pluggable QSFP28 form factor
- Single 1x12 MPO receptacle optical interface
- Single +3.3V power supply

APPLICATIONS

- 100GBASE-PSM4 100G Ethernet
- Data Center Interconnect
- Enterprise networking

COMPLIANCES

- Compliant with QSFP28MSA
- Compliant with IEEE802.3bm
- Compliant with SFF-8665, SFF-8679, SFF-8636
- Compliant with RoHS-6

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DATA SHEET

100G QSFP28 PSM4 TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	0	+25	+70	ºC
Storage Temperature	-40	------	+85	ºC
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	85	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.1	+3.3	+3.5	V
Power Dissipation			3.5	W
Total Data Rate		103.125		Gb/s
Data Rate (Each lane)		25.781		Gb/s
Transmission Distance			500	m

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Bit Rate (each Lane)		25.781 +/- 100ppm		Gb/s
Wavelength	1295	1310	1355	nm
Average Launch Power (each lane)	-6		2	dBm
Transmitter OMA (each lane)			2	dBm
Extinction Ratio (ER)	3.5			dB

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Bit Rate (each Lane)		25.781 +/- 100ppm		Gb/s
Wavelength	1295	1310	1355	nm
Receiver Sensitivity (unstressed, each lane)			-9	dBm
Receiver Reflectance			-26	dBm
LOSA	-18			dBm
LOSD			-15	dBm
Hysteresis	0.5		3	dB

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DATA SHEET

100G QSFP28 PSM4 TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPQ81CLRLCC000LR4	QSFP28	100G	10Km	DDM/RoHS

CONTACT INFORMATION

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DATA SHEET

100G QSFP28 SR4 TRANSCEIVER

DESCRIPTION

The 100G QSFP28 SR4 transceiver is a four-channel, pluggable, parallel, fiber-optic QSFP28 SR4 for 100-Gigabit Ethernet. This transceiver is a high-performance module for short-range multi-lane data communication and interconnect applications. It integrates four data lanes in each direction with 100Gbps bandwidth. Each lane can operate at 25Gbps up to 70m using OM3 fiber or 100m using OM4 fiber. These modules are designed to operate over multimode fiber systems using a nominal wavelength of 850nm. The optical interface uses 12-fibe MTP/MPO connector. The transceiver proven circuit to provide reliable long life, high performance, and consistent service.

KEY FEATURES

- Up to 70m using OM3 MMF and 100m using OM4 MMF
- Operating case temperature: 0~70°C
- Maximum Power consumption less than 3W
- 4 channels 850nm VCSEL array
- 4 channels PIN photo-detector array
- Single channel rate up to 25 Gbps
- Internal CDR on both Transmitter and Receiver channels
- DDM function implemented
- Hot pluggable QSFP28 form factor
- Single 1x12 MPO receptacle optical interface
- Single +3.3V power supply

APPLICATIONS

- 100GBASE-SR4 100G Ethernet
- Data Center Interconnect
- Enterprise networking

COMPLIANCES

- Compliant with QSFP28MSA
- Compliant with IEEE802.3bm
- Compliant with SFF-8665,SFF-8679, SFF-8636
- Compliant with RoHS-6

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DATA SHEET

100G QSFP28 SR4 TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	0	+25	+70	ºC
Storage Temperature	-40	------	+85	ºC
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	85	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.1	+3.3	+3.5	V
Power Dissipation			3	W
Total Data Rate		103.125		Gb/s
Data Rate (Each lane)		25.78		Gb/s
Transmission Distance			70-100	m

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Bit Rate (each Lane)		25.78 +/- 100ppm		Gb/s
Wavelength	840	850	860	nm
Average Launch Power (each lane)	-8.5		2.5	dBm
Transmitter OMA (each lane)	-6.4		3	dBm
Extinction Ratio (ER)	3			dB

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Bit Rate (each Lane)		25.78 +/- 100ppm		Gb/s
Wavelength	840	850	860	nm
Receiver Sensitivity (unstressed, each lane)			-10.2	dBm
Receiver Sensitivity (stressed, each lane)			-5.2	dBm
Receiver Reflectance			-12	dBm
LOSA	-30			dBm
LOSD			-7.5	dBm
Hysteresis	0.5			dB

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DATA SHEET

100G QSFP28 SR4 TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPQ81CS1MOC000SR4	QSFP28	100G	70-100m	DDM/RoHS

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DATA SHEET

100G/200G CFP2-DCO COHERENT MODULE TRANSCEIVER

DESCRIPTION

The Jabil Photonics CFP2-DCO module can be used on host board to support transmission over DWDM links in Metro networks, Data Center Interconnect (DCI), and Long Haul (LH) applications, as well as Point-to-Point (P2P) coherent transmission up to 80km unamplified link for 5G wireless and MSO access market.

KEY FEATURES

- Proprietary SiPh PIC engine with in-house design and assembly
- Linear operation enabling 100Gbps DP-QPSK and 200Gbps DP-16QAM
- Ultra-narrow linewidth laser with gridless DWDM wavelength tuning across extended C-band
- Supports staircase FEC and soft-decision FEC
- Supports CAUI-4 for 100GBE and OTL4.4 for OTU4 host interfaces
- Built-in mini EDFAs ensures high output power and extended reach
- Commercial case temperature range of 0°C~70°C
- Duplex LC receptacles
- RoHS-6 compliant.

APPLICATIONS

- Metro & Long Haul WDM
- Data Center Interconnect
- Point to Point high rate links

COMPLIANCES

- Compliant with latest OIF Implementation Agreement OIF-CFP2-DCO-01.0
- Compliant with MSA CFP2 Hardware Specification Revision 1.0
- Compliant with CFP MSA Management Interface Specification Version 2.6 r06a
- Compliant with OIF-CEI-04.0, December 29, 2017
- Compliant with IEEE 802.3 (MDIO)

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DATA SHEET

100G/200G CFP2-DCO COHERENT MODULE TRANSCEIVER

Mode	FEC	Interop	Gbaud	Max. B2B ROSNR
100G Diff QPSK	7% HD-FEC	Yes	27.95	16dB
100G QPSK	7% UFEC	-	28.31	15dB
100G QPSK	20% SD-FEC	-	31.87	13dB
200G 16QAM	20% SD-FEC	-	32.03	22dB

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	0	+25	+70	ºC
Storage Temperature	-40	------	+85	ºC
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	90	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.2	+3.3	+3.4	V
Power Consumption				
100G DQPSK HDFEC (interop)		18	20	W
100G QPSK UFEC		23	25	W
100G QPSK SDFEC		23	25	W
200G 16QAM SDFEC		28	30	W

OPTICAL SPECIFICATIONS

TRANSMITTER

TX Specifications	Min	Typical	Max	Unit	NOTE
Optical power settable range	-5		2	dBm	
Optical power stability	-0.3		+0.3	dB	
Optical power accuracy			1	dB	
Frequency range	191.25		196.10	THz	
Frequency accuracy	-1.5		1.5	GHz	
Laser linewidth			300	kHz	
Tx OSNR (in-band) TX OSNR (out-of-band)	33 40			dB	
Tx enable time (warm start)	-		1	s	
Tx enable time (cold start)			150	s	
TX_DIS assert time	-		10	ms	
TX output power when disabled			-35	dBm	
Tx PDL dB			1	dB	
Optical Return Loss	27			dB	

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DATA SHEET

100G/200G CFP2-DCO COHERENT MODULE TRANSCEIVER

OPTICAL SPECIFICATIONS

RECEIVER

RX Specifications	Min	Typical	Max	Unit	NOTE
Max input power			10	dBm	
Input power Range 100G DQPSK HD-FEC (Input OSNR>16dB) 100G QPSK UFEC (Input OSNR >15dB 100G QPSK SD-FEC (Input OSNR >13dB) 200G 16QAM SD-FEC (Input OSNR >22dB)	-18		+2	dBm	
Rx Sensitivity 100G DQPSK HD-FEC 100G QPSK UFEC 100G QPSK SD-FEC 200G 16QAM SD-FEC	 -26 -26 -30 -22			dBm	OSNR > 30dB
Rx Optical Input power monitor range	-31		10	dBm	
Rx Optical Input Power accuracy	-1		+1	dB	
CD range 100G DQPSK HD-FEC 100G QPSK UFEC 100G QPSK SD-FEC 200G 16QAM SD-FEC			 12,000 12,000 40,000 10,000	ps/nm	CD compensation range selectable through MDIO interface for best power consumption
Rx cold start time			60	sec	
Rx re-acquisition time			35	ms	
SOP tracking			300	Krad/s	100G, 1dB ROSNR penalty
Mean PMD/DGD Tolerance (QPSK)			15	ps	Less than 0.5dB OSNR penalty
Filter Tolerance (QPSK)	30			GHz	FWHM filter bandwidth. Less than 0.5dB penalty.
Optical Input Power Transient Tolerance (QPSK)			5.0	dB	100µs rise/fall time < 0.5dB OSNR penalty
PDL Tolerance (QPSK)			3	dB	Noise is added after PDL insertion. Pre-FEC BER is at threshold.

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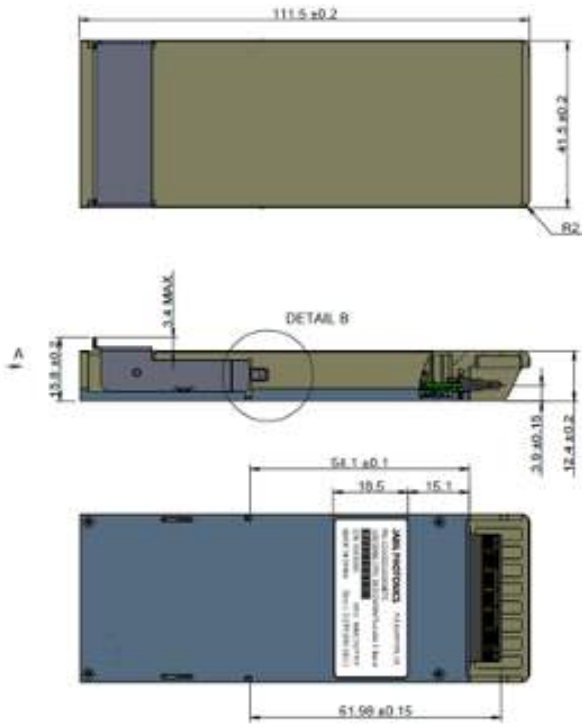
DATA SHEET

100G/200G CFP2-DCO COHERENT MODULE TRANSCEIVER

DIMENSIONS



ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPC22CDCLCC000DTC	CFP2	100/200G	Up to 2000Km	DCO version DDM/RoHS

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DATA SHEET

SFP+ 10G BASE-BX BIDIRECTIONAL 10 KM TRANSCEIVER

DESCRIPTION

This transceiver is designed for bidirectional application over 20Km link.
Two codes are available for the two directions:

- Tx 1270 nm / Rx 1330 nm (upstream)
- Tx 1330 nm / Rx 1270 nm (downstream)

KEY FEATURES

- Up to 10Km transmission on SMF
- SFP+ package with LC connector
- 1270nm (1330nm) DFB Laser and PIN photodetector
- Hot-pluggable SFP+ footprint
- Up to 10.7Gbps Data Links
- +3.3V single power supply
- Power dissipation<1.5W
- 2-wire interface with integrated Digital Diagnostic monitoring
- Low EMI and excellent ESD protection
- Case temperature range : -5°C to 70°C

APPLICATIONS

- SDH STM-64/SONET OC192 at 9.953Gbps
- 10G Ethernet at 10.3125Gbps
- 10G Fiber channel at 10.5187Gbps
- OC192 over FEC at 10.709Gbps

COMPLIANCES

- Compliant with SFF-8472 SFP+ MSA.
- Compliant to SFP+ SFF-8431 and SFF-8432.
- RoHS Compliant6

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DATA SHEET

SFP+ 10G BASE-BX BIDIRECTIONAL 10 KM TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	0		+70	°C
Storage Temperature	-40	------	+85	°C
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	95	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.1	+3.3	+3.5	V
Power Dissipation			1.5	W
Transmission Distance			10	Km

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Wavelength (Tx1270)	1260	1270	1280	nm
Wavelength (Tx1330)	1310	1330	1350	nm
Average Launch Power (each lane)	-4		1	dBm
Extinction Ratio (ER)	4			dB
Spectrum Band Width (RMS)			1	nm
SMSR	30			dB

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Wavelength (Rx1330)	1310	1330	1350	nm
Wavelength (Rx1270)	1260	1270	1280	nm
Receiver Sensitivity			-15	dBm
Input Saturation Power (Overload)	0			Psat
LOSA	-26			dBm
LOSD			-20	dBm
Hysteresis	0.5		5	dB

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DATA SHEET

SFP+ 10G BASE-BX BIDIRECTIONAL 10 KM TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPSB10LRLCC000L23	SFP+	10G	10 Km	DDM/RoHS - Tx 1270 nm / Rx 1330 nm
JPSB10LRLCC000L32	SFP+	10G	10 KM	DDM/RoHS Tx 1330 nm / Rx 1270 nm

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DATA SHEET

SFP+ 10G BASE-BX BIDIRECTIONAL 20 KM TRANSCEIVER

DESCRIPTION

This transceiver is designed for bidirectional application over 20Km link.
Two codes are available for the two directions:

- Tx 1270 nm / Rx 1330 nm (upstream)
- Tx 1330 nm / Rx 1270 nm (downstream)

KEY FEATURES

- Up to 20Km transmission on SMF
- SFP+ package with LC connector
- 1270nm (1330nm) DFB LD with isolator and PIN/ TIA receiver
- Hot-pluggable SFP+ footprint
- Up to 10.7Gbps Data Links
- +3.3V single power supply
- Power dissipation<1.5W
- 2-wire interface with integrated Digital Diagnostic monitoring
- Low EMI and excellent ESD protection
- Case temperature range : -5°C to 70°C

APPLICATIONS

- SDH STM-64/SONET OC192 at 9.953Gbps
- 10G Ethernet at 10.3125Gbps
- 10G Fiber channel at 10.5187Gbps
- OC192 over FEC at 10.709Gbps

COMPLIANCES

- Compliant with SFF-8472 SFP+ MSA.
- Compliant to SFP+ SFF-8431 and SFF-8432.
- RoHS Compliant6

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DATA SHEET

SFP+ 10G BASE-BX BIDIRECTIONAL 20 KM TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	0		+70	°C
Storage Temperature	-40	------	+85	°C
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	95	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.1	+3.3	+3.5	V
Power Dissipation			1.5	W
Transmission Distance			20	Km

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Wavelength (Tx1270)	1260	1270	1280	nm
Wavelength (Tx1330)	1310	1330	1350	nm
Average Launch Power (each lane)	-1		4	dBm
Extinction Ratio (ER)	4			dB
Spectrum Band Width (RMS)			1	nm
SMSR	30			dB

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Wavelength (Rx1330)	1310	1330	1350	nm
Wavelength (Rx1270)	1260	1270	1280	nm
Receiver Sensitivity			-15	dBm
Input Saturation Power (Overload)	0			Psat
LOSA	-26			dBm
LOSD			-20	dBm
Hysteresis	0.5		5	dB

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DATA SHEET

SFP+ 10G BASE-BX BIDIRECTIONAL 20 KM TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPSB10LRLCC000L23	SFP+	10G	20 Km	DDM/RoHS - Tx 1270 nm / Rx 1330 nm
JPSB10LRLCC000L32	SFP+	10G	20 KM	DDM/RoHS Tx 1330 nm / Rx 1270 nm

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DATA SHEET

SFP+ 10G CWDM 10KM C-TEMP TRANSCEIVER

DESCRIPTION

This transceiver is designed for CWDM links up to 20Km. With the explosion in the access of 10Gb/s for backhauling or fronthauling of 5G signals, this module represents a viable economical solution.

It is a hot pluggable duplex-LC optical transceiver designed for using in 10Gbps serial applications such as SONET OC192/SDH STM64, 10Gigabit Ethernet and 10Gbps fiber channel applications. It operates with single +3.3V power supplies. The transceiver is compatible with the industry standard SFP+ connector and cage and conforms to the SFP+ multi-source agreement (MSA).

This transceiver consists of optical subassemblies (TOSA/ROSA) for both transmitter and the receiver, and an electrical subassembly, which are packaged together in a metal enclosure. The transmitter is a high-performance CWDM-DFB transmitter and the receiver is a high sensitivity PIN to provide superior performance for Ethernet applications up to 20km optical links.

KEY FEATURES

- RoHS Compliant
- Support multi protocol from 8.5Gb/s to 11.3Gb/s
- Hot pluggable SFP+ footprint
- Compliant with SFF 8472 and IEE802.3ae
- Transmission distance of 10km over single mode fiber
- PIN Receiver and Duplex LC connector
- Single Power 3.3V supply voltages
- Temperature range: 0°C to 70°C
- Class 1 Laser Safety Conformance

APPLICATIONS

- 10G Ethernet 10GBASE-ZR/ZW
- 20km 10G CWDM Network

COMPLIANCES

- Compliant to SFF-8402, SFF-8432.
- Compliant to IEEE802.3ba
- DDM Compliant with SFF-8472 SFP+ MSA.
- RoHS Compliant6

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DATA SHEET

SFP+ 10G CWDM 10KM C-TEMP TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	0		+70	°C
Storage Temperature	-40	------	+85	°C
Operation Humidity*	5	------	95	%
Storage Humidity	5	------	95	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.1	+3.3	+3.45	V
Power Dissipation			1.8	W
Transmission Distance			10	Km

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Wavelength	1270	-	1610	nm
Average Optical Power	-3		2	dBm
Side Mode Suppression Ratio	30			dB
Extinction Ratio (ER)	4			dB

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	1270	-	1610	nm
Receiver Sensitivity			-14.5	dBm
Received Overload	0			dBm
LOSA	-30			dBm
Hysteresis	0.5			dB

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DATA SHEET

SFP+ 10G CWDM 10KM C-TEMP TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPSP10LRLCC000Cxx	SFP+	10G	10Km	DDM/RoHS

xx = channel number (CWDM grid)

CONTACT INFORMATION

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DATA SHEET

SFP+ 10G CWDM 20KM C-TEMP TRANSCEIVER

DESCRIPTION

This transceiver is designed for CWDM links up to 20Km. With the explosion in the access of 10Gb/s for backhauling or fronthauling of 5G signals, this module represents a viable economical solution.

It is a hot pluggable duplex-LC optical transceiver designed for using in 10Gbps serial applications such as SONET OC192/SDH STM64, 10Gigabit Ethernet and 10Gbps fiber channel applications. It operates with single +3.3V power supplies. The transceiver is compatible with the industry standard SFP+ connector and cage and conforms to the SFP+ multi-source agreement (MSA).

This transceiver consists of optical subassemblies (TOSA/ROSA) for both transmitter and the receiver, and an electrical subassembly, which are packaged together in a metal enclosure. The transmitter is a high-performance CWDM-DFB transmitter and the receiver is a high sensitivity PIN to provide superior performance for Ethernet applications up to 20km optical links.

KEY FEATURES

- RoHS Compliant
- Support multi protocol from 8.5Gb/s to 11.3Gb/s
- Hot pluggable SFP+ footprint
- Compliant with SFF 8472 and IEE802.3ae
- Transmission distance of 20km over single mode fiber
- TOSA high-performance CWDM-DFB transmitter and high sensitivity PIN receiver
- Single Power 3.3V supply voltages
- Temperature range: 0°C to 70°C
- Class 1 Laser Safety Conformance

APPLICATIONS

- 10G Ethernet 10GBASE-ZR/ZW
- 20km 10G CWDM Network

COMPLIANCES

- Compliant to SFF-8402, SFF-8432.
- Compliant to IEEE802.3ba
- DDM Compliant with SFF-8472 SFP+ MSA.
- RoHS Compliant6

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DATA SHEET

SFP+ 10G CWDM 20KM C-TEMP TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	0		+70	°C
Storage Temperature	-40	------	+85	°C
Operation Humidity*	5	------	95	%
Storage Humidity	5	------	95	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.1	+3.3	+3.45	V
Power Dissipation			1.8	W
Transmission Distance			20	Km

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Wavelength	1270	-	1610	nm
Average Optical Power	-1		4	dBm
Side Mode Suppression Ratio	30			dB
Extinction Ratio (ER)	4			dB

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	1270	-	1610	nm
Receiver Sensitivity			-15	dBm
Received Overload	0			dBm
LOSA	-30			dBm
Hysteresis	0.5			dB

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DATA SHEET

SFP+ 10G CWDM 20KM C-TEMP TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPSP10L2LCC000Cxx	SFP+	10G	20Km	DDM/RoHS

xx = channel number (CWDM grid)

CONTACT INFORMATION

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JABIL photonics

DATA SHEET

SFP+ 10G CWDM 80KM C-TEMP TRANSCEIVER

DESCRIPTION

This transceiver is designed for CWDM links up to 80Km on G.652D SMF fiber designed for CPRI, 10GBASE-ZR, SDH/SONET, OTN and 10G Fiber Channel applications. Module is compliant with SFF-8431 Rev 4.1, SFF-8432 and SFF-8472 Rev 10.3. The transmitter incorporates a cooled EML laser and the receiver consists of a APD photodiode integrated with TIA .

Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472, which allows real-time access to device operating parameters such as case temperature, laser bias current, transmitted optical power, received optical power and module supply voltage.

KEY FEATURES

- Up to 10.3Gb/s bi-directional data links
- Up to 80km on G.652D SMF
- Electrical interface specifications per SFF-8432
- Management interface specifications per SFF-8432 and SFF-8472
- SFP+ MSA package with duplex LC connector
- Cooled EML transmitter and APD receiver
- Single +3.3V power supply
- Class 1 laser safety certified
- Operating temperature:0°C to +70°C commercial
- RoHS Compliant

APPLICATIONS

- 10G SONET/SDH/OTN
- 10G Ethernet
- 10G Fiber Channel
- 80km 10G CWDM Network

COMPLIANCES

- Compliant to SFF-8402, SFF-8432.
- Compliant to IEEE802.3ba
- DDM Compliant with SFF-8472 SFP+ MSA.
- RoHS Compliant6

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DATA SHEET

SFP+ 10G CWDM 80KM C-TEMP TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	0		+70	ºC
Storage Temperature	-40	------	+85	ºC
Operation Humidity*	5	------	95	%
Storage Humidity	5	------	95	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.135	+3.3	+3.465	V
Power Dissipation			1.5	W
Transmission Distance			80	Km

OPTICAL SPECIFICATIONS

BOOSTER

Parameter	Min.	Typ.	Max.	Unit
Wavelength	1260	-	1620	nm
Average Optical Power	0		4	dBm
Side Mode Suppression Ratio	30			dB
Extinction Ratio (ER)	6			dB
Transmitter and Dispersion Penalty			2	dB

PREAMPLIFIER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	1260	-	1620	nm
Receiver Sensitivity			-22	dBm
LOSA	-34			dBm
LOSD			-24	dBm
Hysteresis	0.5			dB

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DATA SHEET

SFP+ 10G CWDM 80KM C-TEMP TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPSP10ZRLCC000Cxx	SFP+	10G	80Km	DDM/RoHS

xx = channel number (CWDM grid)

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DATA SHEET

SFP+ 10G DWDM 80KM I-TEMP TRANSCEIVER

DESCRIPTION

This transceiver is Multi-Vendor MSA Compatible SFP+ (Small Form factor Pluggable), operating over pair of single mode fiber (SMF) for 80Km DWDM application. This transceiver uses top quality EML Laser transmitter with operating at specific wavelength in ITU-T DWDM Grid 100 GHz C-Band and PIN Photodiode receiver. It supports DDM optical diagnostics and operates in Industrial temperature range (-40°/+85°C) .

KEY FEATURES

- Up to 10.3Gb/s bi-directional data links
- 100GHz ITU Grid, C-Band
- Up to 80km on 9/125µm SMF
- Electrical interface specifications per SFF-8431
- Management interface specifications per SFF-8431 and SFF-8472
- SFP+ MSA package with duplex LC connector
- DWDM-rated EML Transmitter
- Single +3.3V power supply
- Class 1 laser safety certified
- Operating temperature:0°C to +70°C commercial, and -40°C to +85°C industrial
- RoHS Compliant

APPLICATIONS

- 10G Ethernet 10GBASE-ZR/ZW
- 80km 10G DWDM Network

COMPLIANCES

- Compliant to SFF-8402, SFF-8432.
- Compliant to IEEE802.3ba
- DDM Compliant with SFF-8472 SFP+ MSA.
- RoHS Compliant6

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DATA SHEET

SFP+ 10G DWDM 80KM I-TEMP TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	-40		+85	℃
Storage Temperature	-40	------	+85	℃
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	85	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.135	+3.3	+3.465	V
Power Dissipation			1.8	W
Transmission Distance			80	Km

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Wavelength	1528.77	-	1563.86	nm
Average Optical Power	0		4	dBm
Optical Modulation Amplitude, 25GE	-2			dBm
Side Mode Suppression Ratio	30			dB
Extinction Ratio (ER)	9			dB
Transmitter and Dispersion Penalty			3	dB
Optical Return Loss Tolerance			21	dB

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	1528	-	1565	nm
Receiver Sensitivity			-23	dBm
OSNR	27			dB
Max OSNR Path Penalty			4	dB
LOSA	-35			dBm
LOSD			-25	dBm
Hysteresis	0.5			dB

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DATA SHEET

SFP+ 10G DWDM 80KM I-TEMP TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPSP10ZRLCI000Dxx	SFP+	10G	80Km	DDM/RoHS

xx = channel number (100GHz grid)

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DATA SHEET

SFP+ 10GBASE-ER/EW / S-64.2, 1550NM SMF 40KM TRANSCEIVER

DESCRIPTION

This transceiver is designed for use in 10-Gigabit Ethernet links up to 40km over single mode fiber. The module consists of 1550 EML Laser, InGaAs PIN and Preamplifier in a high-integrated optical sub-assembly. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF8472. The module data link up to 40km in 9/125um single mode fiber.

KEY FEATURES

- Maximum link length of 40km
- Hot-pluggable SFP+ footprint
- Supports 9.5 to 10.3Gb/s bit rates
- Power dissipation < 1.5W
- Single 3.3V power supply
- 1550nm EML transmitter, PIN photo-detector
- Duplex LC connector
- Power dissipation < 1.5W
- Built-in digital diagnostic functions
- Case temperature range : -5°C to 70°C

APPLICATIONS

- 10GBASE-ER/EW 10G Ethernet

COMPLIANCES

- Compliant with SFF-8472 SFP+ MSA.
- Compliant to SFP+ SFF-8431 and SFF-8432.
- Compliant to 802.3ae 10GBASE-ER.
- RoHS Compliant6

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DATA SHEET

SFP+ 10GBASE-ER/EW / S-64.2, 1550NM SMF 40KM TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	-5		+70	°C
Storage Temperature	-40	------	+85	°C
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	85	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.14	+3.3	+3.46	V
Power Dissipation			1.5	W
Transmission Distance			40	Km

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Wavelength	1530	1550	1565	nm
Average Launch Power (each lane)	-2		4	dBm
Extinction Ratio (ER)	6			dB
Spectrum Band Width (RMS)			1	Nm
SMSR	30			dB
Transmitter OFF Output Power			-40	dBm
Optical Rise/Fall Time		100	260	Ps
Transmitter and Dispersion Penalty			3	dB
Output Eye Mask	Compliant with IEEE 0802.3ae			

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	1270		1610	nm
Receiver Sensitivity			-15	dBm
Input Saturation Power (Overload)	0.5			Psat
LOSA	-28			dBm
LOSD			-19	dBm
Hysteresis	0.5			dB

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DATA SHEET

SFP+ 10GBASE-ER/EW / S-64.2, 1550NM SMF 40KM TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPSP10ERLCC000L15	SFP+	10G	40 Km	DDM/RoHS

CONTACT INFORMATION

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DATA SHEET

SFP+ 10GBASE-LR/LW / I-64.1 / 10G FC, 1310NM SMF 10KM TRANSCEIVER EXTENDED TEMPERATURE

DESCRIPTION

This transceiver is hot pluggable duplex-LC optical transceiver designed for using in 10Gbps serial applications such as SONET OC192/SDH STM64, 10Gigabit Ethernet and 10Gbps Fiber Channel applications. It operates with single +3.3V power supplies. The transceiver conforms to the 10Gbps SFP+ multi-source agreement (MSA).

This transceiver consists of optical subassemblies (OSA) for both transmitter and the receiver, and an electrical subassembly, which is packaged together in a metal enclosure. The TOSA is a high- performance 1310nm DFB with isolator, and the ROSA is high speed PIN type detector with a built-in preamplifier.

KEY FEATURES

- 1310nm DFB and PIN receiver
- LVTTL (open collector) digital diagnostic monitoring signals
- Compliant with specifications for IEEE-802.3ae 10Gigabit Ethernet at 10.3Gbps and 10G Fiber Channel at 10.52Gbps
- Conforms to 10Gbps SFP+ Multi-Source Agreement
- Class 1 Laser Safety Conformance
- Compatible with industry standard SFP electrical connector & cage
- Industry standard duplex LC optical connector
- Operates with 9/125 µm signal-mode optical fibers
- Case temperature range : -40°C to 85°C

APPLICATIONS

- 10G Ethernet at 10.3125Gbps for up to 10km reach
- 10G Fiber channel at 10.5187Gbps
- OC192 over FEC at 10.709Gbps
- SDH STM-64/SONET OC192 at 9.953Gbps

COMPLIANCES

- Compliant with SFF-8472 SFP+ MSA.
- Compliant to SFP+ SFF-8431 and SFF-8432.
- RoHS Compliant6

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DATA SHEET

SFP+ 10GBASE-LR/LW / I-64.1 / 10G FC, 1310NM SMF 10KM TRANSCEIVER EXTENDED TEMPERATURE

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	-40		+85	°C
Storage Temperature	-40	------	+85	°C
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	85	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.1	+3.3	+3.5	V
Power Dissipation		2.4		W
Transmission Distance			10	Km

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	1270	1310	1355	nm
Average Launch Power	-8.2	-	0.5	dBm
Extinction Ratio (ER)	3.5			dB
SMSR	30			dB
Bandwidth@-20dB			1	nm

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	1100		1600	nm
Receiver Sensitivity			-12.6	dBm
Input Saturation Power (Overload)	0			dBm
LOSA	-25			dBm
Hysteresis	0.5		5	dB

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DATA SHEET

SFP+ 10GBASE-LR/LW / I-64.1 / 10G FC, 1310NM SMF 10KM TRANSCEIVER EXTENDED TEMPERATURE

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPSP10LRLCE000L13	SFP+	10G	10Km	DDM/RoHS Extended Temperature

CONTACT INFORMATION

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DATA SHEET

SFP+ 10GBASE-LR/LW / I-64.1 / 10G FC, 1310NM SMF 10KM TRANSCEIVER

DESCRIPTION

This transceiver is hot pluggable duplex-LC optical transceiver designed for using in 10Gbps serial applications such as SONET OC192/SDH STM64, 10Gigabit Ethernet and 10Gbps Fiber Channel applications. It operates with single +3.3V power supplies. The transceiver conforms to the 10Gbps SFP+ multi-source agreement (MSA).

This transceiver consists of optical subassemblies (OSA) for both transmitter and the receiver, and an electrical subassembly, which is packaged together in a metal enclosure. The TOSA is a high- performance 1310nm DFB with isolator, and the ROSA is high speed PIN type detector with a built-in preamplifier.

KEY FEATURES

- 1310nm DFB and PIN receiver
- LVTTL (open collector) digital diagnostic monitoring signals
- Compliant with specifications for IEEE-802.3ae 10Gigabit Ethernet at 10.3Gbps and 10G Fiber Channel at 10.52Gbps
- Conforms to 10Gbps SFP+ Multi-Source Agreement
- Class 1 Laser Safety Conformance
- Compatible with industry standard SFP electrical connector & cage
- Industry standard duplex LC optical connector
- Operates with 9/125 µm signal-mode optical fibers
- Case temperature range : 0°C to 70°C

APPLICATIONS

- 10G Ethernet at 10.3125Gbps for up to 10km reach
- 10G Fiber channel at 10.5187Gbps
- OC192 over FEC at 10.709Gbps
- SDH STM-64/SONET OC192 at 9.953Gbps

COMPLIANCES

- Compliant with SFF-8472 SFP+ MSA.
- Compliant to SFP+ SFF-8431 and SFF-8432.
- RoHS Compliant6

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DATA SHEET

SFP+ 10GBASE-LR/LW / I-64.1 / 10G FC, 1310NM SMF 10KM TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	0		+70	°C
Storage Temperature	-40	------	+85	°C
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	85	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.1	+3.3	+3.5	V
Power Dissipation		2.4		W
Transmission Distance			10	Km

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	1270	1310	1355	nm
Average Launch Power	-8.2	-	0.5	dBm
Extinction Ratio (ER)	3.5			dB
SMSR	30			dB
Bandwidth@-20dB			1	nm

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	1100		1600	nm
Receiver Sensitivity			-12.6	dBm
Input Saturation Power (Overload)	0			dBm
LOSA	-25			dBm
Hysteresis	0.5		5	dB

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DATA SHEET

SFP+ 10GBASE-LR/LW / I-64.1 / 10G FC, 1310NM SMF 10KM TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPSP10LRLCC000L13	SFP+	10G	10Km	DDM/RoHS

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DATA SHEET

SFP+ 10GBASE-SR/SW, 850NM MMF TRANSCEIVER EXTENDED TEMPERATURE

DESCRIPTION

This transceiver is hot pluggable duplex-LC optical transceiver designed for using in 10Gbps serial applications such as SONET OC192/SDH STM64, 10Gigabit Ethernet and 10Gbps Fiber Channel applications. It operates with single +3.3V power supplies. The transceiver conforms to the 10Gbps SFP+ multi-source agreement (MSA).

This transceiver consists of optical subassemblies (OSA) for both transmitter and the receiver, and an electrical subassembly, which is packaged together in a metal enclosure. The TOSA is a high-performance 850nm VCSEL, and the ROSA is high speed PIN detector with a built-in preamplifier.

KEY FEATURES

- Built-in digital diagnostic functions
- 850nm VCSEL and PIN receiver
- LVTTL (open collector) digital diagnostic monitoring signals
- Compliant with specifications for IEEE-802.3ae 10Gigabit Ethernet at 10.3Gbps and 10G Fiber Channel at 10.52Gbps
- Conforms to 10Gbps SFP+ Multi-Source Agreement
- Class 1 Laser Safety Conformance
- Compatible with industry standard SFP electrical connector & cage
- Industry standard duplex LC optical connector
- Operates with 50/125 µm multi-mode optical fibers
- Case temperature range : -40°C to 85°C

APPLICATIONS

- SDH STM-64/SONET OC192 at 9.953Gbps
- 10G Ethernet at 10.3125Gbps
- 10G Fiber channel at 10.5187Gbps
- OC192 over FEC at 10.709Gbps

COMPLIANCES

- Compliant with SFF-8472 SFP+ MSA.
- Compliant to SFP+ SFF-8431 and SFF-8432.
- RoHS Compliant6

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DATA SHEET

SFP+ 10GBASE-SR/SW, 850NM MMF TRANSCEIVER EXTENDED TEMPERATURE

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	-40		+85	°C
Storage Temperature	-40	------	+85	°C
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	85	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.1	+3.3	+3.5	V
Power Dissipation		2.4		W
Transmission Distance			300/500	m

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	830		870	nm
Average Launch Power	-6		-1	dBm
Extinction Ratio (ER)	3.5			dB
Optical Modulation Amplitude	-5			dBm
Optical Channel Penalty			1	dB
Spectrum			1	nm

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	830		870	nm
Receiver Sensitivity		-15	-14	dBm
Input Saturation Power (Overload)	0.			dB
LOSA	-25			dBm
Hysteresis	1		4	dB

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DATA SHEET

SFP+ 10GBASE-SR/SW, 850NM MMF TRANSCEIVER EXTENDED TEMPERATURE

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPSP10S3LCE000L85	SFP+	10G	200/500m	DDM/RoHS – Extended Temperature

CONTACT INFORMATION

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DATA SHEET

SFP+ 10GBASE-SR/SW, 850NM MMF TRANSCEIVER

DESCRIPTION

This transceiver is hot pluggable duplex-LC optical transceiver designed for using in 10Gbps serial applications such as SONET OC192/SDH STM64, 10Gigabit Ethernet and 10Gbps Fiber Channel applications. It operates with single +3.3V power supplies. The transceiver conforms to the 10Gbps SFP+ multi-source agreement (MSA).

This transceiver consists of optical subassemblies (OSA) for both transmitter and the receiver, and an electrical subassembly, which is packaged together in a metal enclosure. The TOSA is a high-performance 850nm VCSEL, and the ROSA is high speed PIN detector with a built-in preamplifier.

KEY FEATURES

- Built-in digital diagnostic functions
- 850nm VCSEL and PIN receiver
- LVTTL (open collector) digital diagnostic monitoring signals
- Compliant with specifications for IEEE-802.3ae 10Gigabit Ethernet at 10.3Gbps and 10G Fiber Channel at 10.52Gbps
- Conforms to 10Gbps SFP+ Multi-Source Agreement
- Class 1 Laser Safety Conformance
- Compatible with industry standard SFP electrical connector & cage
- Industry standard duplex LC optical connector
- Operates with 50/125 µm multi-mode optical fibers
- Case temperature range : 0°C to 70°C

APPLICATIONS

- SDH STM-64/SONET OC192 at 9.953Gbps
- 10G Ethernet at 10.3125Gbps
- 10G Fiber channel at 10.5187Gbps
- OC192 over FEC at 10.709Gbps

COMPLIANCES

- Compliant with SFF-8472 SFP+ MSA.
- Compliant to SFP+ SFF-8431 and SFF-8432.
- RoHS Compliant6

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DATA SHEET

SFP+ 10GBASE-SR/SW, 850NM MMF TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	0		+70	°C
Storage Temperature	-40	------	+85	°C
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	85	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.1	+3.3	+3.5	V
Power Dissipation		2.4		W
Transmission Distance			300/500	m

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	830		870	nm
Average Launch Power	-6		-1	dBm
Extinction Ratio (ER)	3.5			dB
Optical Modulation Amplitude	-5			dBm
Optical Channel Penalty			1	dB
Spectrum			1	nm

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	830		870	nm
Receiver Sensitivity		-15	-14	dBm
Input Saturation Power (Overload)	0.			dB
LOSA	-25			dBm
Hysteresis	1		4	dB

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DATA SHEET

SFP+ 10GBASE-SR/SW, 850NM MMF TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPSP10S3LCC000L85	SFP+	10G	200/500m	DDM/RoHS – Commercial Temperature

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DATA SHEET

SFP+ 10GBASE-ZR/ZW, 1550NM SMF 80KM TRANSCEIVER

DESCRIPTION

This transceiver is designed for use in 10-Gigabit Ethernet links up to 80km over single mode fiber. The module consists of 1550 EML Laser, InGaAs PIN and Preamplifier in a high-integrated optical sub-assembly. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF8472. The module data link up to 80km in 9/125um single mode fiber.

KEY FEATURES

- Maximum link length of 80km
- Hot-pluggable SFP+ footprint
- Supports 9.5 to 10.3Gb/s bit rates
- Power dissipation < 1.5W
- Single 3.3V power supply
- 1550nm EML transmitter, PIN photo-detector
- Duplex LC connector
- Power dissipation < 1.5W
- Built-in digital diagnostic functions
- Case temperature range : -5°C to 70°C

APPLICATIONS

- 10GBASE-ZR/ZW 10G Ethernet

COMPLIANCES

- Compliant with SFF-8472 SFP+ MSA.
- Compliant to SFP+ SFF-8431 and SFF-8432.
- Compliant to 802.3ae 10GBASE-ZR.
- RoHS Compliant6

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DATA SHEET

SFP+ 10GBASE-ZR/ZW, 1550NM SMF 80KM TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	-5		+70	°C
Storage Temperature	-40	------	+85	°C
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	85	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.14	+3.3	+3.46	V
Power Dissipation			1.5	W
Transmission Distance			80	Km

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Wavelength	1530	1550	1565	nm
Average Launch Power (each lane)	0		5	dBm
Extinction Ratio (ER)	6			dB
Spectrum Band Width (RMS)			1	Nm
SMSR	30			dB
Transmitter OFF Output Power			-40	dBm
Optical Rise/Fall Time		100	260	Ps
Transmitter and Dispersion Penalty			3	dB
Output Eye Mask	Compliant with IEEE 0802.3ae			

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	1270		1610	nm
Receiver Sensitivity			-23	dBm
Input Saturation Power (Overload)	0.5			Psat
LOSA	-36			dBm
LOSD			-24	dBm
Hysteresis	0.5			dB

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DATA SHEET

SFP+ 10GBASE-ZR/ZW, 1550NM SMF 80KM TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPSP10ZRLCC000L15	SFP+	10G	80 Km	DDM/RoHS

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DATA SHEET

SFP28 25G LR, 1310NM SMF TRANSCEIVER EXTENDED TEMPERATURE

DESCRIPTION

This transceiver is designed for 24.33Gbps and 25.78Gbps data rate over SMF and support up to 10km link length. Digital Diagnostic Monitoring interface is available via an I2C interface.

KEY FEATURES

- Compatible with CPRI option10 24.33Gbps and 25GBASE 25.78Gbps
- Up to 10km transmission on SMF
- 1310nm DML laser transmitter
- SFP28 MSA compliant
- Built-in digital diagnostic functions
- Single +3.3V power supply
- Operating case temperature: -40 to +85 °C
- RoHS 6 Compliant

APPLICATIONS

- 25GBASE-LR
- 24.33Gbps CPRI

COMPLIANCES

- Compliant to SFF-8402, SFF-8432.
- Compliant to IEEE802.3ba
- DDM Compliant with SFF-8472 SFP+ MSA.
- RoHS Compliant6

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DATA SHEET

SFP28 25G LR, 1310NM SMF TRANSCEIVER EXTENDED TEMPERATURE

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	-40		+85	°C
Storage Temperature	-40	------	+85	°C
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	85	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.135	+3.3	+3.465	V
Power Dissipation			1.2	W
Transmission Distance			10	Km

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Wavelength	1295	1310	1325	nm
Average Optical Power	-4.5		2.5	dBm
Optical Modulation Amplitude, 25GE	-2			dBm
OMA–TDP, 25GE	-3			dBm
Transmitter OFF Output Power			-30	dBm
Side Mode Suppression Ratio	30			dB
Extinction Ratio (ER)	3.5			dB
Transmitter and Dispersion Penalty			2.7	dB
Optical Return Loss Tolerance			11	dB

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	1260	1310	1355	nm
Stressed OMA Sensitivity, 25GE			-8.3	dBm
OMA Sensitivity, 25GE@1E-12			-9.6	dBm
Average Rx Sensitivity, 25GE@1E-12			-11.4	dBm
Receiver Overload	2.5			dBm
Receiver Reflectance			-26	dB
LOSA	-30		-17	dBm
LOSD			-17	dBm
Hysteresis	0.5			dB

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DATA SHEET

SFP28 25G LR, 1310NM SMF TRANSCEIVER EXTENDED TEMPERATURE

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPS825LRLCE000L13	SFP28	25G	10Km	DDM/RoHS

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DATA SHEET

SFP28 25G LR, 1310NM SMF TRANSCEIVER

DESCRIPTION

This transceiver is designed for 24.33Gbps and 25.78Gbps data rate over SMF and support up to 10km link length. Digital Diagnostic Monitoring interface is available via an I2C interface.

KEY FEATURES

- Compatible with CPRI option10 24.33Gbps and 25GBASE 25.78Gbps
- Up to 10km transmission on SMF
- 1310nm DML laser transmitter
- SFP28 MSA compliant
- Built-in digital diagnostic functions
- Single +3.3V power supply
- Operating case temperature: 0 to +70 °C
- RoHS 6 Compliant

APPLICATIONS

- 25GBASE-LR
- 24.33Gbps CPRI

COMPLIANCES

- Compliant to SFF-8402, SFF-8432.
- Compliant to IEEE802.3ba
- DDM Compliant with SFF-8472 SFP+ MSA.
- RoHS Compliant6

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DATA SHEET

SFP28 25G LR, 1310NM SMF TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	0		+70	°C
Storage Temperature	-40	------	+85	°C
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	85	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.135	+3.3	+3.465	V
Power Dissipation			1.2	W
Transmission Distance			10	Km

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Wavelength	1295	1310	1325	nm
Average Optical Power	-4.5		2.5	dBm
Optical Modulation Amplitude, 25GE	-2			dBm
OMA–TDP, 25GE	-3			dBm
Transmitter OFF Output Power			-30	dBm
Side Mode Suppression Ratio	30			dB
Extinction Ratio (ER)	3.5			dB
Transmitter and Dispersion Penalty			2.7	dB
Optical Return Loss Tolerance			11	dB

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	1260	1310	1355	nm
Stressed OMA Sensitivity, 25GE			-8.3	dBm
OMA Sensitivity, 25GE@1E-12			-9.6	dBm
Average Rx Sensitivity, 25GE@1E-12			-11.4	dBm
Receiver Overload	2.5			dBm
Receiver Reflectance			-26	dB
LOSA	-30		-17	dBm
LOSD			-17	dBm
Hysteresis	0.5			dB

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DATA SHEET

SFP28 25G LR, 1310NM SMF TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPS825LRLCC000L13	SFP28	25G	10Km	DDM/RoHS

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JABIL photonics

DATA SHEET

SFP28 25G SR, 850NM MMF TRANSCEIVER EXTENDED TEMPERATURE

DESCRIPTION

This transceiver is an 850 nm VCSEL 25Gigabit SFP28 module. It is support up to 70m on OM3 MMF and 100m on OM4 MMF. The transceiver has a duplex LC optical interface and all mechanical characteristics are compliant with the current SFP+ specification (SFF-8431 and SFF-8432).

KEY FEATURES

- Compatible with CPRI option10 24.33Gbps and 25GBASE 25.78Gbps
- Operating data rate up to 28.05Gbps
- 100m transmission over OM4 MMF
- 70m transmission over OM3 MMF
- 850nm VCSEL laser and PIN photo-detector
- Internal CDR on both Transmitter and Receiver channel
- Maximum power dissipation<1W
- SFP28 MSA compliant
- Built-in digital diagnostic functions
- Single +3.3V power supply
- Operating case temperature: -40 to +85 °C
- RoHS 6 Compliant
- Duplex LC Connector Interface, Hot Pluggable

APPLICATIONS

- 25GbE
- CPRI

COMPLIANCES

- Compliant to SFF-8402, SFF-8432.
- Compliant to IEEE802.3.
- DDM Compliant with SFF-8472 SFP+ MSA.
- RoHS Compliant6

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DATA SHEET

SFP28 25G SR, 850NM MMF TRANSCEIVER EXTENDED TEMPERATURE

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	-40		+85	°C
Storage Temperature	-40	------	+85	°C
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	85	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.1	+3.3	+3.5	V
Power Dissipation			1	W
Transmission Distance			100	m

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Wavelength	840	850	860	nm
Average Launch Power	-4.5		2.5	dBm
Extinction Ratio (ER)	2			dB

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	840	850	860	nm
Receiver Sensitivity			-6	dBm
LOSA	-30			dBm
LOSD			-11	dBm
Hysteresis	0.5			dB

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DATA SHEET

SFP28 25G SR, 850NM MMF TRANSCEIVER EXTENDED TEMPERATURE

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPS825S1LCE000L85	SFP28	25G	100m	DDM/RoHS

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DATA SHEET

SFP28 25G SR, 850NM MMF TRANSCEIVER

DESCRIPTION

This transceiver is an 850 nm VCSEL 25Gigabit SFP28 module. It is support up to 70m on OM3 MMF and 100m on OM4 MMF. The transceiver has a duplex LC optical interface and all mechanical characteristics are compliant with the current SFP+ specification (SFF-8431 and SFF-8432).

KEY FEATURES

- Compatible with CPRI option10 24.33Gbps and 25GBASE 25.78Gbps
- Operating data rate up to 28.05Gbps
- 100m transmission over OM4 MMF
- 70m transmission over OM3 MMF
- 850nm VCSEL laser and PIN photo-detector
- Internal CDR on both Transmitter and Receiver channel
- Maximum power dissipation<1W
- SFP28 MSA compliant
- Built-in digital diagnostic functions
- Single +3.3V power supply
- Operating case temperature: 0 to +70 °C
- RoHS 6 Compliant
- Duplex LC Connector Interface, Hot Pluggable

APPLICATIONS

- 25GbE
- CPRI

COMPLIANCES

- Compliant to SFF-8402, SFF-8432.
- Compliant to IEEE802.3.
- DDM Compliant with SFF-8472 SFP+ MSA.
- RoHS Compliant6

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DATA SHEET

SFP28 25G SR, 850NM MMF TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	0		+70	°C
Storage Temperature	-40	------	+85	°C
Operation Humidity*	5	------	85	%
Storage Humidity	5	------	85	%

(*) not condensing

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage	3.1	+3.3	+3.5	V
Power Dissipation			1	W
Transmission Distance			100	m

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Wavelength	840	850	860	nm
Average Launch Power	-4.5		2.5	dBm
Extinction Ratio (ER)	2			dB

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Input Wavelength	840	850	860	nm
Receiver Sensitivity			-6	dBm
LOSA	-30			dBm
LOSD			-11	dBm
Hysteresis	0.5			dB

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DATA SHEET

SFP28 25G SR, 850NM MMF TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
JPS825S1LCC000L85	SFP28	25G	100m	DDM/RoHS

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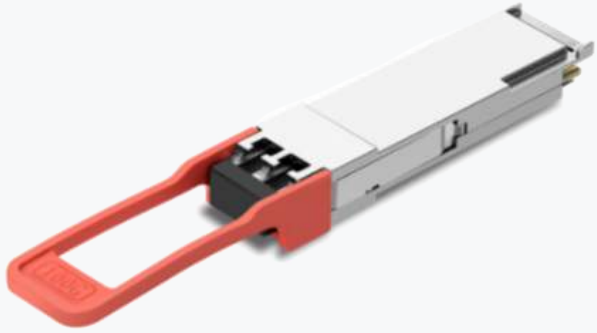
DATA SHEET

QSFP28 100G 40KM TRANSCEIVER

DESCRIPTION

This transceiver is designed for ER4 (up to 40km) application, supporting rates from 103Gbps to 112Gbpsm with EML transmitter and APD receiver.



KEY FEATURES

- Supports 103Gbps and 112Gbps
- Single 3.3V Power Supply
- Power dissipation < 5W
- Up to 40km over SMF
- Commercial case temperature range of 0°C to 70°C
- Four 25Gbps/28Gbps EML LAN-WDM Channels on transmitter side
- APD and TIA array on the receiver side
- 4x25Gbps/28Gbps electrical interface
- Duplex LC receptacles
- I2C interface with integrated Digital Diagnostic Monitoring
- Safety Certification: TUV/UL/FDA
- RoHS Compliant

APPLICATIONS

- 100G 40km applications with FEC on host side
- 100G Datacom and Telecom connections
- OTU4 4L1-9D1F

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DATA SHEET

QSFP28 100G 40KM TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Storage Temperature	-40	------	+85	℃
Supply Voltage	-0.5	------	3.6	V
Operating Relative Humidity	5	------	85	%

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Case Operating Temperature	0	------	70	℃
DC Supply Voltage	3.135	3.3	3.465	V
Power Dissipation	------	------	5	W

OPTICAL SPECIFICATIONS

100GBASE OPERATION

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Signaling Speed per Lane		25.78		Gbps
Data Rate Variation	-100		+100	ppm
Lane_0 Center Wavelength	1294.53	1295.56	1296.59	nm
Lane_1 Center Wavelength	1299.02	1300.05	1301.09	nm
Lane_2 Center Wavelength	1303.54	1304.58	1305.63	nm
Lane_3 Center Wavelength	1308.09	1309.14	1310.19	nm
Spectral Width (-20dB)			1	nm
Total Average Output Power			12.5	dBm
Average Launch Power each Lane*(Note1)	-2.5		6.5	dBm
Optical Modulation Amplitude (OMA), each lane*(2)	0.5		6.5	dBm
Average Launch Power of OFF Transmitter per Lane			-30	dBm
Side-mode Suppression Ratio	30			dB
Transmitter dispersion penalty, each Lane*(3)			2.0	dB
Difference in Launch Power between any two lanes (OMA)			4	dB
Optical Return Loss Tolerance			20	dB
Transmitter reflectance*(4)			-26	

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DATA SHEET

QSFP28 100G 40KM TRANSCEIVER

OPTICAL SPECIFICATIONS

100GBASE OPERATION

TRANSMITTER

Parameter	Min.	Typ.	Max	Unit
Extinction Ratio	4.5			dB
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}*(Note5)	{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}			

RECIEVER

Parameter	Min	Typ	Max	Unit
Signaling Speed per Lane		25.78		Gbps
Data Rate Variation	-100		+100	ppm
Receiver Overload per Lane	-3			dBm
Lane_0 Center Wavelength	1294.53	1295.56	1296.59	nm
Lane_1 Center Wavelength	1299.02	1300.05	1301.09	nm
Lane_2 Center Wavelength	1303.54	1304.58	1305.63	nm
Lane_3 Center Wavelength	1308.09	1309.14	1310.19	nm
Average Receive Power per Lane*(6)	-20.5		-3.5	dBm
Damage threshold per lane(min) *(7)			-2.5	dBm
Receive Sensitivity in OMA per Lane*(8)			-18.5	dBm
Stressed Receiver Sensitivity (OMA) per Lane*(9)			-16	dBm
Receive Sensitivity in OMA per Lane*(10)			-14.8	dBm
Stressed Receiver Sensitivity (OMA) per Lane*(11)			-13	dBm
Receiver Reflectance			-26	dB
LOS Assert	-35			dBm
LOS De-Assert			-25	dBm
LOS Hysteresis	0.5			dB

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DATA SHEET

QSFP28 100G 40KM TRANSCEIVER

OPTICAL SPECIFICATIONS

OTU4 4L1-9D1F OPERATION

TRANSMITTER

Parameter	Min.	Typical	Max.	Unit
Signaling Speed per Lane		27.95		Gbps
Data Rate Variation	-20		+20	ppm
Lane_0 Center Wavelength	1294.53	1295.56	1296.59	nm
Lane_1 Center Wavelength	1299.02	1300.05	1301.09	nm
Lane_2 Center Wavelength	1303.54	1304.58	1305.63	nm
Lane_3 Center Wavelength	1308.09	1309.14	1310.19	nm
Spectral Width (-20dB)			1	nm
Total Average Output Power			11.1	dBm
Average Launch Power per Lane*(Note1)	0.6		5.1	dBm
Average launch power of OFF transmitter per lane			-30	dBm
Side-mode suppression ratio	30			dB
Maximum optical path penalty , each lane*(12)			1.5	dB
Difference in launch power between any two lanes (OMA)			4	dB
Optical Return Loss Tolerance			20	dB
Transmitter reflectance*(4)			-26	
Extinction Ratio	7			dB
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}*(13)		G.959.1 Compliant		

RECIEVER

Parameter	Min	Typical	Max.	Unit
Signaling Speed per Lane		27.95		Gbps
Data Rate Variation	-20		+20	ppm
Receiver overload per Lane	-3			dBm
Lane_0 Center Wavelength	1294.53	1295.56	1296.59	nm
Lane_1 Center Wavelength	1299.02	1300.05	1301.09	nm
Lane_2 Center Wavelength	1303.54	1304.58	1305.63	nm
Lane_3 Center Wavelength	1308.09	1309.14	1310.19	nm
Average Receive Power per Lane*(6)	-17.4		4.9	dBm

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DATA SHEET

QSFP28 100G 40KM TRANSCEIVER

OPTICAL SPECIFICATIONS

OTU4 4L1-9D1F OPERATION

TRANSMITTER

Parameter	Min	Typical	Max	Unit
Damage threshold per lane(min)*(7)			-2.5	dBm
Equivalent Sensitivity per Lane*(14)			-18.9	dB
Receiver Reflectance			-26	dB
LOS Assert	-35			dBm
LOS De-Assert			-25	dBm
LOS Hysteresis	0.5			dB

NOTES

1. Average launch power, each lane (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.
2. Even if the TDP < 1.0dB, the OMA (min) must exceed 0.5 dBm.
3. Measured at 103Gbps & BER = $5*10^{-5}$.
4. Transmitter reflectance is defined looking into the transmitter.
5. Vertical eye closure penalty, stressed eye J2 Jitter, stressed eye J4 Jitter, and SRS eye mask definition are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.
6. Average receive power, each lane (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.
7. The receiver shall be able to tolerate, without damage, continuous exposure to an optical signal having this average power level.
8. Receiver sensitivity (OMA), each lane (max) at $5*10^{-5}$ BER is a normative specification.
9. Measured with conformance test signal at TP3 for BER = $5*10^{-5}$.
10. Measured at 103Gbps & pre FEC BER = $1*10^{-12}$.
11. Measured with conformance test signal at TP3 for BER = $1*10^{-12}$.
12. Measured at 112Gbps & pre FEC BER = $5*10^{-5}$.
13. Filtered, measured with a PRBS 2^{31}-1 test pattern @27.95Gbps.
14. Specified at a pre FEC BER of $5*10^{-5}$.

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DATA SHEET

QSFP28 100G 40KM TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
Q8QPERLCC00E0LW	QSFP28	100G	40Km	C-temp EML LAN-WDM

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DATA SHEET

QSFP28 100G TO 4X25G SFP28 ACTIVE OPTICAL CABLES

DESCRIPTION

Active Optical Cable for SR applications (4x25G) for up to 15m connection between QSFP28 port and 4x SFP28 ports

KEY FEATURES

- Support 4x25GBASE-SR application
- Compliant to QSFP28 MSA SFF-8636 and SFP28 MSA SFF-8431 and SF-8472
- Multi rate of up to 25.78125Gbps per lane
- +3.3V single power supply
- Low power consumption
- UL certification cables (optional)
- Operating case temp (Commercial): 0°C to +70°C
- RoHS 6/6 compliant

APPLICATIONS

- 4x25Gbe-SR
- Other optical links

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DATA SHEET

QSFP28 100G TO 4X25G SFP28 ACTIVE OPTICAL CABLES

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Storage Temperature	-10	------	+70	ºC
Relative Humidity	5	------	85	%
DC Supply Voltage	-0.5	------	3.6	V

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Case Operating Temperature	0	------	70	ºC
Power Supply Voltage	3.14	3.3	3.47	V
Power Dissipation	-	-	2.5	W
Bit Rate per Lane	10.3125	25.78125	-	Gbps

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DATA SHEET

QSFP28 100G TO 4X25G SFP28 ACTIVE OPTICAL CABLES

ELECTRICAL SPECIFICATIONS

Parameter		Min.	Typ.	Max.	Unit
ModSelL	Module Select	0	-	0.8	V
	Module Unselect	2.5	-	Vcc	V
Low Power	Mode LPMode	0	-	0.8	V
	Normal Operation	2.5	-	Vcc+0.3	V
ResetL	Reset	0	-	0.8	V
	Normal Operation	2.5	-	Vcc+0.3	V
ModPrsL	Normal Operation	0	-	0.4	V
IntL	Interrupt	0	-	0.4	V
	Normal Operation	2.4	-	Vcc	V

ELECTRICAL TRANSMITTER CHARACTERISTICS

Parameter	Min.	Typ.	Max.	Unit
Differential Data Input Swing	200	-	1600	mV
Input Differential Impedance	90	100	110	Ω

ELECTRICAL TRANSMITTER CHARACTERISTICS

Parameter	Min.	Typ.	Max.	Unit
Differential Date Output Swing	200	-	800	mVpp
Output Differential Impedance (1)			E-12	
Input Differential Impedance	90	100	110	Ω

NOTES

1. PRBS2^31-1@25.78125Gbps

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DATA SHEET

QSFP28 100G TO 4X25G SFP28 ACTIVE OPTICAL CABLES

ELECTRICAL CHARACTERISTICS FOR SFP28

ELECTRICAL TRANSMITTER CHARACTERISTICS

Parameter		Min.	Typ.	Max.	Unit
Differential Data Input Swing		200	-	1600	mVpp
Input Differential Impedance		90	100	110	Ω
Tx_Fault	Normal Operation	0	-	0.8	V
	Transmitter Fault	2.0	-	Vcc	V
Tx_Disable	Normal Operation	0	-	0.8	V
	Laser Disable	2.0	-	Vcc+0.3	V

ELECTRICAL RECEIVER CHARACTERISTICS

Parameter		Min.	Typ.	Max.	Unit
Differential Date Output Swing		400	-	800	mV
Bit Error Rate		-	-	E-12	-
Output Differential Impedance		90	100	110	Ω
Rx_LOS	Normal Operation	0	-	0.8	V
	Transmitter Fault	2.0	-	Vcc	V

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DATA SHEET

QSFP28 100G TO 4X25G SFP28 ACTIVE OPTICAL CABLES

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other Info
Q8QP01ACC000TS8	QSFP28	100G	1m	C-temp AOC
Q8QP05ACC000TS8	QSFP28	100G	5m	C-temp AOC
Q8QP15ACC000TS8	QSFP28	100G	15m	C-temp AOC

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DATA SHEET

GPON OLT CLASS C+ SFP TRANSCEIVER

DESCRIPTION

This transceiver is designed for GPON OLT application. It provides single fiber bi-directional data links asymmetric (TX 2488Mbps/ RX1244Mbps) application for up to 60km. Both C-Temp and I-Temp versions are available for this item.

KEY FEATURES

- Single fiber bi-directional data links asymmetric TX 2488Mbps/RX1244Mbps application
- 1490nm continuous-mode DFB laser transmitter and 1310nm burst-mode APD-TIA receiver
- Small Form Factor Pluggable package with SC/UPC Connector
- Single 3.3V power supply
- DDMI function available with internally calibrated mode
- Digital burst RSSI function to monitor the input optical power level
- LVPECL compatible data input/output interface
- LVTTL transmitter disable control
- LVTTL transmitter laser fault alarm
- Fast LVTTL receiver Signal Detect (SD) indication response
- Low EMI and excellent ESD protection
- International Class1 laser safety certified
- Operating temperature range:
  Commercial: -5°C~70°C
  Industrial: -40°C~85°C
- RoHS6 Compliance

APPLICATIONS

- Gigabit-capable Passive Optical Networks (GPON)

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DATA SHEET

GPON OLT CLASS C+ SFP TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Storage Temperature	-40	------	+85	℃
Storage Humidity	5	------	90	%
Operating Humidity	5	------	85	%
Power Supply Voltage	0	------	+3.6	V
Receiver Damaged Threshold	+4	------	-------	dBm

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	-5		70	℃
	-40		85	℃
Power Supply Voltage	3.13	3.3	3.47	V
Power Consumption			1.65	W
Data Rate		TX 2.488 / RX 1.244		Gbps

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DATA SHEET

GPON OLT CLASS C+ SFP TRANSCEIVER

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Average Output Power	+3		+7	dBm
Center Wavelength	1480		1500	nm
Spectrum Width(-20dB)			1	nm
Side Mode Suppression Ratio	30			
Extinction Ratio (1)	8.2			dB
Transmitter and Dispersion Penalty (2)			1	dB
Transmitter OFF Power			-39	dBm
Output Eye Diagram	Compliant with ITU-T G.984.2			
Transmitter Reflectance			-10	dB

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Center Wavelength	1260		1360	nm
Receiver Sensitivity (3)			-30	dBm
Input Saturation Power (Overload)	-12			dBm
Dynamic Range	15			dB
Receiver Reflectance			-15	dB

NOTES

1. PRBS 2^{23}-1 +72CID @2.488Gbit/s
2. Transmit on 60km SMF
3. PRBS 2^{23}-1 +72CID @1244Mbps, transmitter is operating, BER ≤1×10^{-10}

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
SF0260SCC000L43	SFP	TX 2.488G / RX 1.244G	60Km	C-temp T:1490nm R:1310nm
SF0260SCI000L43	SFP	TX 2.488G / RX 1.244G	60Km	I-temp T:1490nm R:1310nm

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DATA SHEET

GPON OLT CLASS B+ SFP TRANSCEIVER

DESCRIPTION

This transceiver is designed for GPON OLT application. It provides single fiber bi-directional data links asymmetric (TX 2488Mbps/ RX1244Mbps) application for up to 20km. Both C-Temp and I-Temp versions are available for this item.

KEY FEATURES

- Single fiber bi-directional data links asymmetric TX 2488Mbps/RX1244Mbps application
- 1490nm continuous-mode DFB laser transmitter and 1310nm burst-mode APD-TIA receiver
- Small Form Factor Pluggable package with SC/UPC Connector
- Single 3.3V power supply
- DDMI function available with internally calibrated mode
- Digital burst RSSI function to monitor the input optical power level
- LVPECL compatible data input/output interface
- LVTTL transmitter disable control
- LVTTL transmitter laser fault alarm
- Fast LVTTL receiver Signal Detect (SD) indication response
- Low EMI and excellent ESD protection
- International Class1 laser safety certified
- Operating temperature range:
  Commercial: -5°C~70°C
  Industrial: -40°C~85°C
- RoHS6 Compliance

APPLICATIONS

- Gigabit-capable Passive Optical Networks (GPON)

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DATA SHEET

GPON OLT CLASS B+ SFP TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Storage Temperature	-40	------	+85	℃
Storage Humidity	5	------	90	%
Operating Humidity	5	------	85	%
Power Supply Voltage	0	------	+3.6	V
Receiver Damaged Threshold	+4	------	------	dBm

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operating Case Temperature	-5		70	℃
Power Supply Voltage	3.13	3.3	3.47	V
Power Consumption			1.65	W
Data Rate		TX 2.488 / RX 1.244		Gbps

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DATA SHEET

GPON OLT CLASS B+ SFP TRANSCEIVER

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Average Output Power	4		9	dBm
Center Wavelength	1260	1270	1280	nm
Spectrum Width (-20dB)			1.0	nm
Side Mode Suppression Ratio	30			
Extinction Ratio (1)	6			dB
Transmitter and Dispersion Penalty (2)			1	dB
Transmitter OFF Power			-39	dBm
Output Eye Diagram	Compliant with ITU-T G.984.2			
Transmitter Reflectance			-10	dB

RECIEVER

Parameter	Min.	Typ.	Max.	Unit
Center Wavelength	1575	1577	1580	nm
Receiver Sensitivity (3)			-28	dBm
Input Saturation Power (Overload)	-8			dBm
Dynamic Range	15			dB
Receiver Reflectance			-15	dB

NOTES

1. PRBS 2^{23}-1 +72CID @2.488Gbit/s
2. Transmit on 20km SMF
3. PRBS 2^{23}-1 +72CID @1244Mbps, transmitter is operating, BER ≤1×10^{-10}

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DATA SHEET

GPON OLT CLASS B+ SFP TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other Info
SF02L2SCC000L43	SFP	TX 2.488G / RX 1.244G	20Km	C-temp T:1490nm R:1310nm
SF02L2SCI000L43	SFP	TX 2.488G / RX 1.244G	20Km	I-temp T:1490nm R:1310nm

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DATA SHEET

SFP+ 10G BIDIRECTIONAL 1270/1330NM TRANSCEIVER

DESCRIPTION

This transceiver is designed for bidirectional application. Two codes are available for the two directions:

- Tx 1270 nm / Rx 1330 nm (upstream)
- Tx 1330 nm / Rx 1270 nm (downstream)

Different items are available covering 10km to 60km.

KEY FEATURES

- Compliant to SFP+ MSA
- RoHS Compliant
- Operating data rate up to 11.3Gbps
- Two types:
  A: 1270nm DFB Transmitter/ 1330nm Receiver
  B: 1330nm DFB Transmitter/ 1270nm Receiver
- Single +3.3V±5% power supply
- LC single connector
- Hot pluggable 20pin connector
- Power Dissipation < 1.5W
- Optional 10/20/40/60 transmission distance on 9/125um SMF
- PIN for 10/20/40km, APD for 60km
- Operating Case Temperature Standard: -40°C~+85°C, 0~70°C
- Digital Monitoring SFF-8472 Rev 10 compliant

APPLICATIONS

- 10GBASE-LR/LW
- 10G Ethernet
- OBSAI rates 3.072 Gb/s, 6.144Gb/s
- CPRI rates 2.4576 Gb/s, 4.9152Gb/s, 6.144Gb/s,9.8304 Gb/s

COMPLIANCES

- IEEE 802.3ae
- SFF-8431 Rev 4
- SFF-8472 Rev 10

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DATA SHEET

SFP+ 10G BIDIRECTIONAL 1270/1330NM TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Storage Temperature	-40	------	+85	℃
Relative Humidity	5	------	95	%
Supply Voltage	-0.3	------	4.0	V

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operating Case Temperature Range	-40		85	℃
Power Supply Voltage	3.14	3.3	3.46	V
Bit Rate		10.3		Gb/s
Bit Error Ratio			10E-12	

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DATA SHEET

SFP+ 10G BIDIRECTIONAL 1270/1330NM TRANSCEIVER

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter		Min.	Typ.	Max.	Unit
Wavelength (Tx1270)		1260	1270	1280	nm
Wavelength (Tx1330)		1320	1330	1340	nm
Optical Output Power	10km	-8.2		0.5	dBm
	20km	-2		3	
	40km	2		7	
	60km	2		7	
Extinction Ratio (ER)		3.5			dB
Bandwidth@-20dB				1	nm
SMSR		30			dB

RECIEVER

Parameter		Min.	Typ.	Max.	Unit
Wavelength (Rx1330)		1320	1330	1340	nm
Wavelength (Rx1270)		1260	1270	1280	nm
Receiver Sensitivity (1)	10km			-14.4	dBm
	20km			-15	
	40km			-16	
	60km			-19	
Overload Input Optical Power	10~40km	1			dBm
	60km	-8			
LOSA		-38			dBm
LOSD				-30	dBm
Hysteresis (2)		0.5	3	5	dB

NOTES

1. Measured with a PRBS 2^{31}-1 test pattern, @10.3Gb/s, EX=5dB, BER<10^{-12}
2. The LOS Hysteresis to minimize "chatter" on the output line. In principle, hysteresis alone does not guarantee chatter-free operation

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DATA SHEET

SFP+ 10G BIDIRECTIONAL 1270/1330NM TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other Info
SP10LRLCI000L23	SFP+	10G	10 Km	Tx 1270 nm / Rx 1330 nm
SP10LRLCI000L32	SFP+	10G	10 Km	Tx 1330 nm / Rx 1270 nm
SP10L2LCI000L23	SFP+	10G	20 Km	Tx 1270 nm / Rx 1330 nm
SP10L2LCI000L32	SFP+	10G	20 Km	Tx 1330 nm / Rx 1270 nm
SP10ERLCI000L23	SFP+	10G	40 Km	Tx 1270 nm / Rx 1330 nm
SP10ERLCI000L32	SFP+	10G	40 Km	Tx 1330 nm / Rx 1270 nm
SP1060LCI000L23	SFP+	10G	60 Km	Tx 1270 nm / Rx 1330 nm
SP1060LCI000L32	SFP+	10G	60 Km	Tx 1330 nm / Rx 1270 nm

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DATA SHEET

SFP28 25G 1270NM 1330NM BIDI 10KM TRANSCEIVER

DESCRIPTION

The transceiver is intended for 10km reach service from 24.33Gb/s to 25.78Gb/s single mode high-speed communications equipment where low-cost, extraordinary performance and reliability are essential. It utilizes internal clock and data recovery (CDR) units on transmitter and the receiver chains for low jitter compliance. The differential AC coupled Tx and Rx data interfaces are CML compatible. The device is Class I laser safety compliant.

KEY FEATURES

- LC BiDi optical interface
- Up to 10km transmission distance
- 24.33Gb/s to 25.78Gb/s data links
- +3.3 V power supply
- Low DC power consumption
- Hot-pluggable SFP28 footprint
- High performance 1270/1330nm DML laser
- High sensitivity PIN/TIA optical receiver
- Single Mode operation
- BER < $5X10^{-5}$
- Built-in CDR
- Case Operating temperature ranges:
  Industrial: -40 to 85°C
  Commercial: 0 to 70°C
- RoHS compliance

APPLICATIONS

- 25G BASE-LR Ethernet
- CPRI 25G

COMPLIANCES

- SFF-8472
- SFF-8431
- SFF-8432

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DATA SHEET

SFP28 25G 1270NM 1330NM BIDI 10KM TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Storage Temperature	-40	------	+85	°C
Case Operating Temperature (Commercial)	0	------	70	°C
Case Operating Temperature (Industrial)	-40	------	+85	°C
Relative Humidity - Storage	0	------	95	%
Relative Humidity - Operating	0	------	85	%
DC Supply Voltage	0	------	3.6	V

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Case Operating Temperature (Commercial)	0	------	70	°C
Case Operating Temperature (Industrial)	-40	------	85	ºC
Supply Voltage	3.135	3.3	3.465	V
Module Supply Current			410	mA

JABIL photonics

DATA SHEET

SFP+ 10G BIDIRECTIONAL 1270/1330NM TRANSCEIVER

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Transmitter Laser Type		1270/1330nm DML		
Average Output Power	-2		4	dBm
Extinction Ratio	3.5			dB
Wavelength	1260	1270	1280	nm
	1320	1330	1340	
Spectral Line RMS Width @ -20dB			1	nm
Side Mode Suppression Mode	30			dB
Average Output Power (Laser Off)			-30	dBm
Dispersion Penalty			2.7	dB

RECIEVER

Parameter	Min.	Typ.	Max.	Unit
Receiver Type		PIN/TIA		
Wavelength	1320	1330	1340	nm
	1260	1270	1280	
Received Sensitivity (OMA) (1)			-12	dBm
Optical Power Overload (1)	2			dBm
Rx_LOS of Signal Assert	-30			dBm
Rx_LOS of Signal De-assert			-15	dBm
Rx_LOS of Signal Hysteresis	0.5		5	dB

NOTES

1. Measured at 25.78Gb/s with PRBS 2^{31}–1 NRZ test pattern for BER < $5x10^{-5}$

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DATA SHEET

SFP28 25G 1270NM 1330NM BIDI 10KM TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other Info
S825LRLCC000L23	SFP28	25G	10km	C-temp TX 1270nm/RX 1330nm
S825LRLCC000L32	SFP28	25G	10km	C-temp TX 1330nm/RX 1270nm
S825LRLCI000L23	SFP28	25G	10km	I-temp TX 1270nm/RX 1330nm
S825LRLCI000L32	SFP28	25G	10km	I-temp TX 1330nm/RX 1270nm

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DATA SHEET

SFP28 25G DWDM 10KM TRANSCEIVER

DESCRIPTION

The transceiver is intended for DWDM 10km reach service up to 25.78Gb/s high-speed communications equipment where low-cost, extraordinary performance and reliability are essential. It utilizes internal clock and data recovery (CDR) units on transmitter and the receiver chains for low jitter compliance. The differential AC coupled Tx and Rx data interfaces are CML compatible. The device is Class I laser safety compliant.

KEY FEATURES

- LC duplex optical interface
- Up to 10km transmission distance
- Up to 25.78Gb/s data links
- Single3.3 V power supply
- Low DC power consumption
- Hot-pluggable SFP28 footprint
- High performance EML laser
- High sensitivity PIN/TIA optical receiver
- Single mode operation
- BER < $5X10^{-5}$
- Built-in CDR
- Case Operating temperature ranges:
  Commercial: 0°C to 70°C
  Industrial: -40°C to 85°C
- RoHS compliance

APPLICATIONS

- 25G DWDM Network
- 25G high speed interconnection

COMPLIANCES

- SFF-8472
- SFF-8431
- SFF-8432

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DATA SHEET

SFP28 25G DWDM 10KM TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Storage Temperature	-40	------	+85	ºC
Case Operating Temperature (Commercial)	0	------	70	ºC
Case Operating Temperature (Industrial)	-40	------	+85	ºC
Relative Humidity - Storage	0	------	95	%
Relative Humidity - Operating	0	------	85	%
DC Supply Voltage	0	------	3.6	V

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operation Temperature	0	------	70	ºC
Storage Temperature	-40	------	85	ºC
Operation Humidity	3.135	3.3	3.465	V
Storage Humidity			600	mA

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DATA SHEET

SFP28 25G DWDM 10KM TRANSCEIVER

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Transmitter Laser Type		EML		
Average Output Power	-3		5	dBm
Center wavelength Spacing	-	100	-	GHZ
Extinction ratio	4			dB
Wavelength	1528.77		1563.05	nm
Spectral Line RMS Width @ -20dB			1	nm
Side Mode Suppression Mode	30			dB
Optical Return Loss Tolerance			20	dB
Average Output Power (Laser Off)			-30	dBm

OPTICAL SPECIFICATIONS

RECEIVER

Parameter	Min.	Typ.	Max.	Unit
Receiver Type		PIN/TIA		
Wavelength	1260		1650	nm
Received Sensitivity (OMA) (1)			-12	dBm
Optical Power Overload (1)	2			dBm
Rx_LOS of Signal Assert	-30			dBm
Rx_LOS of Signal De-assert			-17	dBm
Rx_LOS of Signal Hysteresis	0.5		5	dB

NOTES

1. Measured at 25.78Gb/s with PRBS 2^{31}–1 NRZ test pattern for BER < $5x10^{-5}$

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DATA SHEET

SFP28 25G DWDM 10KM TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
S825LRLCC000D18	SFP28	25G	10km	C-temp CH18
S825LRLCC000D19	SFP28	25G	10km	C-temp CH19
S825LRLCC000D20	SFP28	25G	10km	C-temp CH20
S825LRLCC000D21	SFP28	25G	10km	C-temp CH21
S825LRLCC000D22	SFP28	25G	10km	C-temp CH22
S825LRLCC000D23	SFP28	25G	10km	C-temp CH23
S825LRLCC000D24	SFP28	25G	10km	C-temp CH24
S825LRLCC000D25	SFP28	25G	10km	C-temp CH25
S825LRLCC000D26	SFP28	25G	10km	C-temp CH26
S825LRLCC000D27	SFP28	25G	10km	C-temp CH27
S825LRLCC000D28	SFP28	25G	10km	C-temp CH28
S825LRLCC000D29	SFP28	25G	10km	C-temp CH29
S825LRLCC000D30	SFP28	25G	10km	C-temp CH30
S825LRLCC000D31	SFP28	25G	10km	C-temp CH31
S825LRLCC000D32	SFP28	25G	10km	C-temp CH32
S825LRLCC000D33	SFP28	25G	10km	C-temp CH33
S825LRLCC000D34	SFP28	25G	10km	C-temp CH34
S825LRLCC000D35	SFP28	25G	10km	C-temp CH35
S825LRLCC000D36	SFP28	25G	10km	C-temp CH36
S825LRLCC000D37	SFP28	25G	10km	C-temp CH37
S825LRLCC000D38	SFP28	25G	10km	C-temp CH38
S825LRLCC000D39	SFP28	25G	10km	C-temp CH39
S825LRLCC000D40	SFP28	25G	10km	C-temp CH40
S825LRLCC000D41	SFP28	25G	10km	C-temp CH41
S825LRLCC000D42	SFP28	25G	10km	C-temp CH42
S825LRLCC000D43	SFP28	25G	10km	C-temp CH43
S825LRLCC000D44	SFP28	25G	10km	C-temp CH44
S825LRLCC000D45	SFP28	25G	10km	C-temp CH45
S825LRLCC000D46	SFP28	25G	10km	C-temp CH46
S825LRLCC000D47	SFP28	25G	10km	C-temp CH47
S825LRLCC000D48	SFP28	25G	10km	C-temp CH48
S825LRLCC000D49	SFP28	25G	10km	C-temp CH49
S825LRLCC000D50	SFP28	25G	10km	C-temp CH50
S825LRLCC000D51	SFP28	25G	10km	C-temp CH51
S825LRLCC000D52	SFP28	25G	10km	C-temp CH52
S825LRLCC000D53	SFP28	25G	10km	C-temp CH53
S825LRLCC000D54	SFP28	25G	10km	C-temp CH54

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DATA SHEET

SFP28 25G DWDM 10KM TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
S825LRLCC000D55	SFP28	25G	10km	C-temp CH55
S825LRLCC000D56	SFP28	25G	10km	C-temp CH56
S825LRLCC000D57	SFP28	25G	10km	C-temp CH57
S825LRLCC000D58	SFP28	25G	10km	C-temp CH58
S825LRLCC000D59	SFP28	25G	10km	C-temp CH59
S825LRLCC000D60	SFP28	25G	10km	C-temp CH60
S825LRLCC000D61	SFP28	25G	10km	C-temp CH61
S825LRLCI000D18	SFP28	25G	10km	I-temp CH18
S825LRLCI000D19	SFP28	25G	10km	I-temp CH19
S825LRLCI000D20	SFP28	25G	10km	I-temp CH20
S825LRLCI000D21	SFP28	25G	10km	I-temp CH21
S825LRLCI000D22	SFP28	25G	10km	I-temp CH22
S825LRLCI000D23	SFP28	25G	10km	I-temp CH23
S825LRLCI000D24	SFP28	25G	10km	I-temp CH24
S825LRLCI000D25	SFP28	25G	10km	I-temp CH25
S825LRLCI000D26	SFP28	25G	10km	I-temp CH26
S825LRLCI000D27	SFP28	25G	10km	I-temp CH27
S825LRLCI000D28	SFP28	25G	10km	I-temp CH28
S825LRLCI000D29	SFP28	25G	10km	I-temp CH29
S825LRLCI000D30	SFP28	25G	10km	I-temp CH30
S825LRLCI000D31	SFP28	25G	10km	I-temp CH31
S825LRLCI000D32	SFP28	25G	10km	I-temp CH32
S825LRLCI000D33	SFP28	25G	10km	I-temp CH33
S825LRLCI000D34	SFP28	25G	10km	I-temp CH34
S825LRLCI000D35	SFP28	25G	10km	I-temp CH35
S825LRLCI000D36	SFP28	25G	10km	I-temp CH36
S825LRLCI000D37	SFP28	25G	10km	I-temp CH37
S825LRLCI000D38	SFP28	25G	10km	I-temp CH38
S825LRLCI000D39	SFP28	25G	10km	I-temp CH39
S825LRLCI000D40	SFP28	25G	10km	I-temp CH40
S825LRLCI000D41	SFP28	25G	10km	I-temp CH41
S825LRLCI000D42	SFP28	25G	10km	I-temp CH42
S825LRLCI000D43	SFP28	25G	10km	I-temp CH43
S825LRLCI000D44	SFP28	25G	10km	I-temp CH44
S825LRLCI000D45	SFP28	25G	10km	I-temp CH45
S825LRLCI000D46	SFP28	25G	10km	I-temp CH46
S825LRLCI000D47	SFP28	25G	10km	I-temp CH47

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DATA SHEET

SFP28 25G DWDM 10KM TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
S825LRLCI000D48	SFP28	25G	10km	I-temp CH48
S825LRLCI000D49	SFP28	25G	10km	I-temp CH49
S825LRLCI000D50	SFP28	25G	10km	I-temp CH50
S825LRLCI000D51	SFP28	25G	10km	I-temp CH51
S825LRLCI000D52	SFP28	25G	10km	I-temp CH52
S825LRLCI000D53	SFP28	25G	10km	I-temp CH53
S825LRLCI000D54	SFP28	25G	10km	I-temp CH54
S825LRLCI000D55	SFP28	25G	10km	I-temp CH55
S825LRLCI000D56	SFP28	25G	10km	I-temp CH56
S825LRLCI000D57	SFP28	25G	10km	I-temp CH57
S825LRLCI000D58	SFP28	25G	10km	I-temp CH58
S825LRLCI000D59	SFP28	25G	10km	I-temp CH59
S825LRLCI000D60	SFP28	25G	10km	I-temp CH60
S825LRLCI000D61	SFP28	25G	10km	I-temp CH61

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DATA SHEET

XGSPON ONU SFP+ 20KMTRANSCEIVER

DESCRIPTION

This transceiver is designed for XGS PON ONU application. It provides single fiber bi-directional data links symmetric application for up to 20Km.

KEY FEATURES

- Single fiber bi-directional data links
- 1270nm DFB laser transmitter and 1577nm APD receiver
- 9.953Gbps burst mode transmission
- 9.953Gbps continuous mode receiver data rate
- SFP+ package with SC/UPC Receptacle Connector
- Single 3.3V power supply
- Digital diagnostic monitoring interface
- CML compatible data input/output interface
- Provide TX burst mode signal detect function
- LVTTL transmitter laser fault alarm
- Low EMI and excellent ESD protection
- Class I laser safety standard IEC-60825 compliant
- RoHS6 Compliance

APPLICATIONS

- 10-Gigabit-capable passive optical networks

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DATA SHEET

XGSPON ONU SFP+ 20KMTRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Storage Temperature	-40	n/a	+85	℃
Storage Humidity	5	n/a	90	%
Operating Humidity	5	n/a	85	%
Power Supply Voltage	0	n/a	+3.6	V
Receiver Damaged Threshold	+4	n/a	n/a	dBm

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Operating Case Temperature	-5		70	℃
Power Supply Voltage	3.13	3.3	3.47	V
Power Consumption			1.65	W
Data Rate		Tx 9.953 Rx 9.953		Gbps

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DATA SHEET
XGSPON ONU SFP+ 20KMTRANSCEIVER

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Average Output Power	4		9	dBm
Center Wavelength	1260	1270	1280	nm
Spectrum Width(-20dB)			1	nm
Side Mode Suppression Ratio	30			
Extinction Ratio (1)	6			dB
Optical Rise Time			50	ps
Optical Fall Time			50	ps
Transmitter OFF Power			-45	dBm
Output Eye Diagram	Compliant with ITU-T G.9807			
Burst Turn On Time			100	ns
Burst Turn Off Time			100	ns
Optical Return Loss Tolerance			15	dB
Transmitter Reflectance			-10	dB
Transmitter and Dispersion Penalty			1.5	dB

RECEIVER

Parameter		Min.	Typ.	Max.	Unit
Center Wavelength		1575	1577	1580	nm
Receiver Sensitivity (2)				-28.5	dBm
Input Saturation Power (Overload) (2)		-8			dBm
LOS De-assert Level				-29	dBm
LOS Assert Level		-45			dBm
LOS Hysteresis		0.5		6	dB
Receiver Reflectance				-12	dB
WDM Filter Isolation	ISO1 1560nm	35			dB
	ISO2 1600nm	35			dB

NOTES

1. PRBS 2^{31}-1 @9.953 Gbit/s
2. Measured with 1577nm, PRBS 2^{31}-1 @10.3125Gbps, ER=6dB, BER ≤1×10^{-3}

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DATA SHEET

XGSPON ONU SFP+ 20KMTRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
SP09L2SCC000L25	SFP+	T:9.953G R:9.953G	20Km	C-temp T:1270nm R:1577nm

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DATA SHEET

SFP+ 10G TUNABLE DWDM 80KM TRANSCEIVER

DESCRIPTION

The 10 Gb/s SFP+ tunable transceiver is an integrated fiber optic transceiver that provides a high-speed serial link at signaling rates up to 11. 3 Gb/s. The module complies with the 10 Gigabit Enhanced Small Form Factor Pluggable (SFP+) multisource agreement-MSA (SFF- 8431) and SFF- 8432, SFF- 8690, SFF 8472. It complies with the ITU- T G.698.1 standard with 50 GHz channel spacing for SO NET/SDH, IEEE DWDM 10GBASE- ZR for 80 km reach (Ethernet) and DWDM 10GFC for 80 km reach (Fiber Channel) applications.

The transceiver integrates the receiver and transmitter path on one module. The transceiver contain a C-band-tunable integrated Mach-Zehnder (MZ) laser, enabling data transmission over single-mode fiber through an industry-standard LC connector. On the receiver side, the 10 Gbps data stream is recovered from an APD/ trans- impedance amplifier, and passed to an output driver. This module features a hot-pluggable electrical interface.

KEY FEATURES

- Supports up to 11.3Gb/s bit rates
- Monolithically integrated full C- band tunable transmitter and APD receiver
- 50 GHz ITU channel spacing with integrated wavelength locker
- Maximum link length of 80km
- Metal enclosure, for lower EMI
- 2- wire interface with integrated Digital Diagnostic monitoring
- Hot-pluggable SFP+ footprint
- Specifications compliant with SFF-8472 V 10.3& SFF-8690 V 1.4
- Compliant with SFP+ MSA with LC connector
- Power dissipation < 1.65W
- Case temperature range: - 5°C to 70° C
- Case temperature range: - 40°C to 85° C

APPLICATIONS

- DWDM 10GBASE- ZR/ZW 10G Ethernet
- DWDM 80km 10G Fiber Channel
- DWDM SO NET O C-192& SDH STM-64

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DATA SHEET

SFP+ 10G TUNABLE DWDM 80KM TRANSCEIVER

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Storage Temperature	-40	------	+85	℃
Storage Humidity	5	------	85	%
Power Supply Voltage	-0.3	------	3.6	V
Signal Input Voltage	Vcc- 0.3	------	Vcc+0.3	V

OPERATING SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Unit
Case Operating Temperature (C-Temp)	-5	------	70	℃
Case Operating Temperature (I-Temp)	-40	------	80	℃
Power Supply Voltage	3.14	3.3	3.47	V
Power Supply Current	------		500	mA
Data Rate		10.3125		Gbps
Transmission Distance			80	Km
Coupled Fiber	Single mode fiber			

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DATA SHEET

SFP+ 10G TUNABLE DWDM 80KM TRANSCEIVER

OPTICAL SPECIFICATIONS

TRANSMITTER

Parameter	Min.	Typ.	Max.	Unit
Average Optical Power (1)	-1		3	dBm
Frequency Stability (BOL) (2)	$fc - 1.5$		$fc + 1.5$	GHz
Frequency Stability (EOL) (2)	$fc - 2.5$		$fc + 2.5$	GHz
Center Wavelength Spacing (3)				GHz
Optical Extinction Ratio	8.2	50		dB
Side Mode Suppression Ratio	35			dB
Average Launch Power (Laser off)		-30		dBm
Output Eye Mask	Compliant with IEEE 802.3ae			

NOTES

1. Output power is power coupled into a 9/125 mm single-mode fiber.
2. fc refer to the Frequency row of Wavelength Guide Table, and test condition reflect power to transmitter lower than - 27dBm.
3. Corresponds to approximately 0.4 nm.

RECEIVER

Parameter	Min.	Typ.	Max.	Unit	Note
Rx Sensitivity with dispersion 0 ps/nm			-23	dBm	@9.95, 10.3, 10.5Gbps BER=10^-12
			-27		@10.709G bps, BER=10^- 4
			-27		@11.1G bps, BER=10^ - 4
			-26.5		@11.3G bps, BER=10^ - 4
Rx Sensitivity with dispersion – 400 to +1450 ps/nm			-21		@9.95, 10.3, 10.5G bps, BER=10^-12
			-25		@10.709G bps, BER=10^- 4
			-25		@11.1G bps, BER=10^ - 4
			-24		@11.3G bps, BER=10^ - 4
Input Saturation Power (Overload)	-6			dBm	
Wavelength Range	1480		1580	nm	
LOS De- Assert			-27	dBm	
LOS Assert	-36			dBm	
LOS Hysteresis	0.5			dB	

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DATA SHEET

SFP+ 10G TUNABLE DWDM 80KM TRANSCEIVER

ORDERING INFORMATION

Jabil Part Number	Package	Rate	Reach	Other info
SP10ZRLCC000DTC	SFP+	10G	80Km	C-temp CH11.5~CH60.5 WITHOUT CDR
SP10ZRLCC00CDTC	SFP+	10G	80Km	C-temp CH11.5~CH60.5 WITH CDR
SP10ZRLCI000DTC	SFP+	10G	80Km	I-temp CH11.5~CH60.5 WITHOUT CDR
SP10ZRLCI00CDTC	SFP+	10G	80Km	I-temp CH11.5~CH60.5 WITH CDR

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