

25G LWDM SFP28 Optical Transceiver

25G LWDM SFP28 optical transceiver is high performance optical transceiver, suitable for CPRI option 10 / eCPRI and other high-speed optical networks application. It supports 9 channel LAN-WDM wavelengths and $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$ industrial operating temperature. The transmitter consists of a cooled EML laser, and the receiver consists of an APD photodiode integrated with TIA. The C-band wavelength is also available with a customer request.

Features

- Cooled EML transmitter
- High sensitivity APD receiver
- Transmission distance up to 30km^1
- Built-in digital diagnostic function
- Duplex LC Connector
- Single +3.3V power supply
- Power consumption < 2.0W
- RoHS-6 compliant (lead-free)
- 2,000hrs reliability test completed



Note 1: It is able to transmit 30km without FEC. With FEC, the distance increases to 40km.

Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
Transmitter Section						
Center Wavelength	λ_t	1273.5		1309.1	nm	2
Output Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Optical Power	P_o	0		+6	dBm	
Extinction Ratio	ER	7			dB	
Receiver Section						
Wavelength	λ_r	1270		1320	nm	
Receiver Sensitivity (OMA)	S_{EN}			-19	dBm	3
Stressed Receiver Sensitivity (OMA)	S_{EN2}			-16.5	dBm	3
Overload	Sat	-5			dBm	
Receiver Reflectance	R_{RF}			26	dB	

Note 2: The center wavelengths are ranged from 1273.5 to 1309.1 nm with 800GHz spacing.

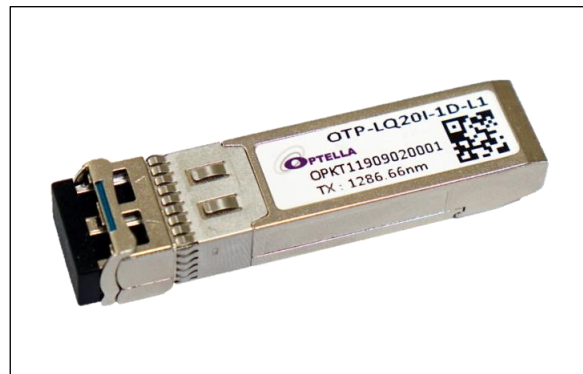
Note 3: The test condition is PRBS2³¹-1 and 5E-5 BER.

28G Fibre Channel SFP28 Optical Transceiver

28G Fibre Channel SFP28 optical transceiver is high performance 32G FC optical transceiver, suitable for high-speed storage area networks (SAN). It supports 9 channel LAN-WDM wavelengths and $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$ industrial operating temperature. The transmitter consists of a cooled EML laser, and the receiver consists of an APD photodiode integrated with TIA. The operating wavelength and the type of photodiode can be changed as a customer request.

Features

- Cooled EML transmitter data rate up to 28.05G
- High sensitivity APD receiver
- Transmission distance up to 30km¹
- Built-in digital diagnostic function
- Duplex LC Connector
- Single +3.3V power supply
- Power consumption < 2.0W
- RoHS-6 compliant (lead-free)



Note 1: It is able to transmit 30km without FEC. With FEC, the distance increases to 40km.

Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
Transmitter Section						
Center Wavelength	λ_t	1273.5		1309.1	nm	2
Output Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Optical Power	P_o	0		+6	dBm	
Extinction Ratio	ER	7			dB	
Receiver Section						
Wavelength	λ_r	1270		1320	nm	
Receiver Sensitivity (OMA)	S_{EN}			-19	dBm	3
Stressed Receiver Sensitivity (OMA)	S_{EN2}			-16.5	dBm	3
Overload	Sat	-5			dBm	
Receiver Reflectance	R_{RF}			26	dB	

Note 2: The center wavelengths are ranged from 1273.5 to 1309.1 nm with 800GHz spacing.

Note 3: The test condition is PRBS2³¹-1 and 5E-5 BER.

25G Bidirectional SFP28 Optical Transceiver

25G bidirectional SFP28 optical transceiver is high performance optical transceiver, suitable for 25BASE-BR40 PMD in IEEE 802.3cp and other bidirectional optical networks application. It supports 1289nm/1314nm wavelengths, and -40°C ~ 85°C industrial operating temperature. The transmitter consists of an uncooled DML laser, and the receiver consists of an APD photodiode integrated with TIA. This transceiver can be applied for cost-effective optical access networks and 5G mobile x-haul networks as well.

Features

- Uncooled DML transmitter
- High sensitivity APD receiver
- Transmission distance up to 40km
- Operating temperature: -40°C ~ 85°C
- Built-in digital diagnostic function
- Simplex LC Connector
- Single +3.3V power supply
- Power consumption < 1.5W
- RoHS-6 compliant (lead-free)



Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
Transmitter Section						
Downstream Wavelength	λ_{TD}	1306		1322	nm	
Upstream Wavelength	λ_{TU}	1281		1297	nm	
Output Spectral Width (-20dB)	$\Delta\lambda$			1.0	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Optical Power	P_o	0		+6	dBm	
Extinction Ratio	ER	4			dB	
Transmitter and dispersion penalty	TDP			2.7	dB	
RIN _{20OMA}	RIN			-130	dB/Hz	
Receiver Section						
Downstream Wavelength	λ_{RD}	1306		1322	nm	
Upstream Wavelength	λ_{RU}	1281		1297		
Receiver Sensitivity (OMA)	S_{EN}			-19	dBm	1
Stressed Receiver Sensitivity (OMA)	S_{EN2}			-16.5	dBm	1
Overload	Sat	-4			dBm	
Receiver Reflectance	R_{RF}			-26	dB	

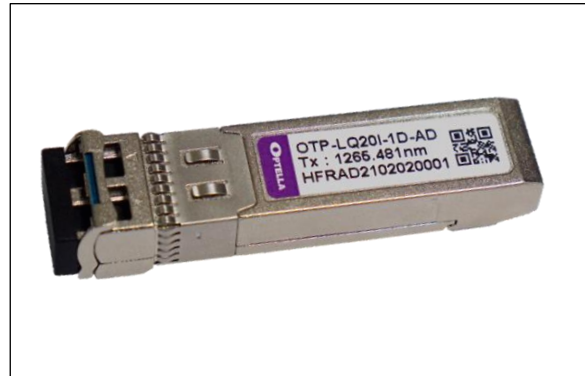
Note 1. The test condition is PRBS2³¹-1 and 5E-5 BER.

25G DWDM SFP28 Optical Transceiver

25G DWDM SFP28 optical transceiver is high performance optical transceiver and supports 64 wavelengths with 0.8nm spacing at O-band ranging from 1,264nm to 1,356nm, avoiding in-between 1297 and 1322nm to prevent four-wave mixing crosstalk. So, it enables link capacity up to 1.2Tb/s (64 x 25Gb/s). It can be applied for DWDM optical networks, including 5G x-haul with channel-by-channel upgradability, and it is suitable for PtP and ring network topology.

Features

- Cooled DML transmitter
- High sensitivity APD receiver
- Built-in digital diagnostic function
- Duplex LC Connector
- Single +3.3V power supply
- Power consumption < 2.5W
- RoHS-6 compliant (lead-free)



Wavelength Plan

#	Wavelength	#	Wavelength	#	Wavelength	#	Wavelength
1	1263.88	17	1283.36	33	1323.51	49	1343.08
2	1264.68	18	1284.18	34	1324.32	50	1343.91
3	1265.48	19	1285.01	35	1325.12	51	1344.74
4	1266.28	20	1285.84	36	1325.93	52	1345.57
5	1267.09	21	1286.66	37	1326.74	53	1346.40
6	1267.89	22	1287.49	38	1327.54	54	1347.23
7	1268.69	23	1288.32	39	1328.35	55	1348.06
8	1269.50	24	1289.15	40	1329.16	56	1348.90
9	1271.12	25	1290.82	41	1330.78	57	1350.57
10	1271.92	26	1291.65	42	1331.60	58	1351.41
11	1272.73	27	1292.49	43	1332.41	59	1352.24
12	1273.55	28	1293.32	44	1333.23	60	1353.08
13	1274.36	29	1294.16	45	1334.04	61	1353.92
14	1275.17	30	1295.00	46	1334.86	62	1354.77
15	1275.98	31	1295.94	47	1335.68	63	1355.61
16	1276.80	32	1296.68	48	1336.50	64	1356.45

10G PON ONU Optical Transceiver

It is a small form factor (10 Gb/s) pluggable transceiver for the low-cost Point-to-Multi Point(P2MP) Fiber-to-the-Home (FTTH) PON networks. It supports single fiber bi-directional data links with symmetric 10G upstream and 10G downstream. The transmitter section incorporates a DFB laser, and the receiver section consists of an APD photodiode integrated with TIA. This transceiver is compatible with IEEE 802.3av 10GBASE-PR-U3 PMD and ITU-T G.9807.1(XGS-PON) PMD as well.

Features

- 10G DFB laser at 1270nm with burst Tx
- 10G APD at 1577nm receiver
- Simplex SC Connector Bi-directional
- Compliant with SFF-8431 and SFF-8472
- RoHS-6 Compliant (lead-free)
- Operating Temperature: 0°C ~ 70°C
- Single +3.3V power supply
- Power consumption < 1.5W



Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
Transmitter Section						
Wavelength	λ_t	1260	1270	1280	nm	
Output Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Optical Power	P_o	+4		+9	dBm	
Average Optical Power - OFF	P_{OFF}			-45	dBm	
Extinction Ratio	ER	6			dB	
Receiver Section						
Wavelength	λ_r	1575		1580	nm	
Receiver Sensitivity	S_{EN}			-28.5	dBm	
WDM Filter Isolation	ISO(1560)		35		dB	
	ISO(1600)		35		dB	
Overload	Sat	-8			dBm	
Receiver Reflectance	R_{RF}			-12	dB	

25G Bidirectional OSA

25G BOSA consists of a uncooled DFB laser, a monitor photodiode and an APD ROSA, and satisfies 25GBASE-BR40 PMD specifications in IEEE 802.3cp. It is suitable for bi-directional transmission systems.

Features

- Data rate up to 25Gb/s for both up-& downstream channel
- Integrated WDM filter for bi-directional transmission
- 25Ω single-ended data input
- Operating temperature: -40 °C ~ 85 °C
- LC receptacle interface
- Power consumption < 0.4W
- SFP28 form-factor compatible



Optical Characteristics

Parameter	Symbol	Conditions				Unit
			Min.	Typ.	Max	
Optical output power	P	CW, I _{op} =I _{th} +20mA	2	-	6	dBm
Transmitter wavelength	λ _c	Upstream	1281		1297	nm
		Downstream	1306		1322	nm
Spectral width	Δλ	CW, -20dB, I _{op} =I _{th} +20mA	-	0.2	0.4	nm
SMSR	S _r	CW, I _{op} =I _{th} +20mA	35	-	-	dB
Sensitivity	SEN	PRBS31, 5E-5	-	-	-21	dBm
APD supply voltage	V _{apd}		20	-	35	V
Saturation Power	P _{sat}		-4	-	-	dBm
Small-Signal Bandwidth	BW	P=-20dBm		17	-	GHz
Optical Overload	OL		-3	-	-	dBm
Optical Cross-talk	CT		-	-	-25	dB

25G Cooled DML TOSA

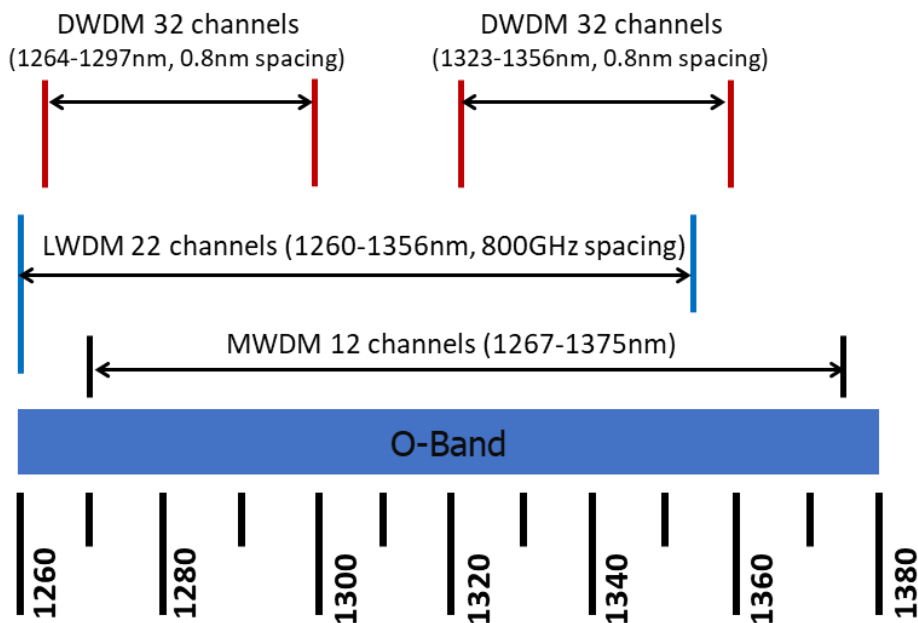
25G cooled DML TOSAs consist of a DFB laser, a monitor photodiode and a micro-TEC support, and support LWDM, MWDM and DWDM at O-band wavelength region. It guarantees highly stable operation under I-temp operation. It is designed for use in small form-factor pluggable (SFP) transceivers and other types of optical modules for high-speed telecommunication and 5G x-haul applications.

Features

- Cooled DML integrated into TO-56
- Data rate up to 25Gb/s
- 25Ω single-ended data input
- Operating temperature: -40°C ~ 85°C
- LC receptacle interface
- Power consumption < 0.5W
- SFP28 form-factor compatible



Wavelength Plan



The wavelength band between 1298-1321nm in DWDM application is deferred to avoid four-wave mixing crosstalk. It can be used for guard-band for bi-directional transmission.