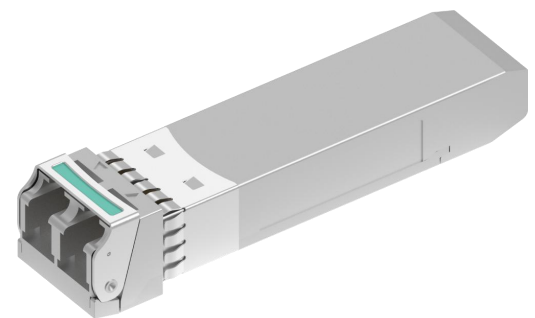


SFP28 MWDM 20Km I-temp

FBC-D25MxxK20T

Features

- Hot-pluggable SFP28 form factor
- Supports CPRI wireless data rate
- Cooled DML transmitter and APD receiver
- 7nm channel spacing MWDM systems
- Internal CDR circuits on both receiver and transmitter channels
- Maximum power dissipation: 2W
- Maximum link length: 20Km on SMF
- Duplex LC connector
- Operating case temperature range: -40 to +85°C
- Single 3.3V power supply
- RoHS compliant (lead free)



Applications

- CPRI Option 10, eCPRI
- 25G Ethernet

Description

The FIBERSTAMP SFP28 MWDM 20km Transceiver is a "Limiting module", designed for CPRI option10,25GBASE, link length up to 20km on G.652 SMF, link budget can reach 15dB.They are compliant with SFF-8431 Rev 4.1, SFF-8432 and SFF-8472 Rev 12.3.The transmitter section incorporates a DML laser, and the receiver section consists of an 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, and received optical power and module supply voltage.

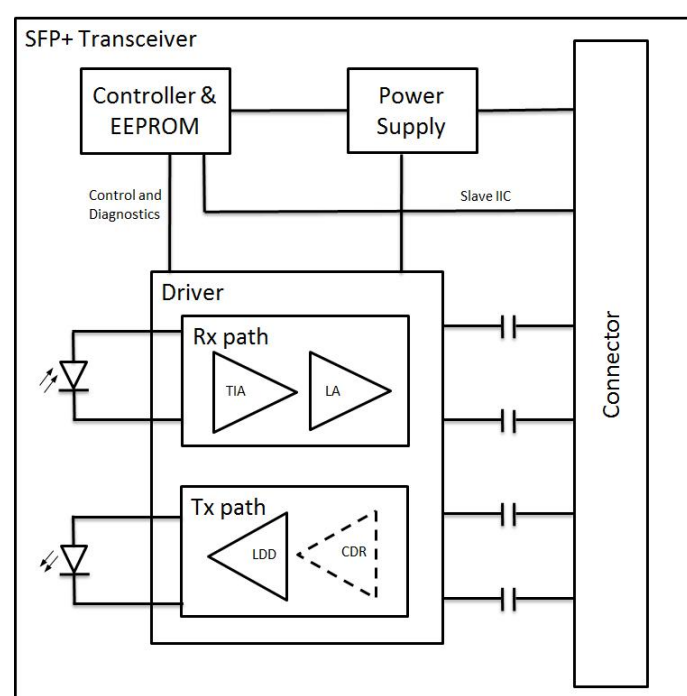


Figure 1. Module Block Diagram

The SFP28 is a Enhanced Small Form Factor Pluggable SFP28 transceivers, and can be contacted through I2C serial interface.



Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.5	+3.8	V
Operating Case temperature	Top	-40	+85	°C
Operating Relative Humidity	RHop	0	85	%
Storage and Transportation Temperature	Tst	-40	+85	°C
Storage and Transportation Relative Humidity	-	0	85	%
Max Link Length	Lmax		20	km

Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
	Vcc	3.13	3.3	3.47	V
Supply current	Icc	-	450	-	mA
Operating Case temperature	Tca	-40	-	+85	°C
Module Power Dissipation [1]	Pm	-	-	2	W
ESD(High speed pins) [2]	-	-	-	1000	V

Notes:

1. Power consumption over -40~85°C case temperature and BOL
2. Human body model per JEDEC JESD22-A114-B,compliant with INF-077i Rev.4.5 August 31,2005

Transmitter Optical Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Laser Safety	Class I according to IEC60825				
Optical Wavelength	λ	1267.5, 1274.5, 1287.5, 1294.5, 1307.5, 1314.5,			nm
Data rate	BR	24.33	25.78125	-	Gbps
Wavelength Deviation	Δλ	-2.5		+2.5	nm
Average Optical Power [1]	Pout	2	-	7	dBm
Optical Transmit Power (disabled)	Pout_off	-	-	-30	dBm
Spectral Width (-20dB)	Δλ20	-	-	1	nm
Side Mode Suppression Ratio [2]	SMSR	30	-	-	dB
Extinction Ratio	ER	3.5	-	-	dB

Notes:

1. Average power measured at output over the operating temperature
2. Ratio of the average output power in the dominant longitudinal mode to the power in the most significant side mode peak under full modulation condition
3. Laser Safety: All transceivers in this datasheet are Class I Laser products per FDA/CDRH and IEC-60825 standards. They must be operated under specified operating conditions.



Receiver Optical Specifications

Parameter	Symbol	Min	Typical	Max	Unit	Note
Input Operating Wavelength	λ	1260	-	1620	nm	
Data rate	BR	24.33	25.78125	-	Gbps	
Maximum Input Power	RX-overload	-4	-		dBm	
Average Receive Power	Pavg	-18		-4	dBm	
Sensitivity(OMA)	Rsen1[1]	-	-	-19	dBm	
Sensitivity(OMA)	Rsen2[2]			-19	dBm	
Loss of Signal Asserted	LOSA	-30	-	-	dBm	
LOS De-Asserted	LOSD	-	-	-20	dBm	
LOS Hysteresis	LOSH	0.5	-		dB	

Notes:

1. Measured with PRBS 2³¹-1,BER <5E⁻⁵, 24.33Gbps.
2. Measured with PRBS 2³¹-1,BER <5E⁻⁵, 25.78Gbps.

Transmitter Specifications – Electrical

Parameter	Symbol	Min	Typical	Max	Unit
Data Rate	BR	24.33	25.78125	-	Gbps
Input differential impedance	Rim	80	100	120	Ω
Differential data Input	VtxDIFF	-	-	900	mVpp
Transmit Disable Voltage	VD	2.0	-	Vcc+0.3	V
Transmit Enable Voltage	Ven	-0.3	-	+0.8	V
Transmit Disable Assert Time	t _{off}	-	-	100	us
Tx Enable Assert Time	t _{on}	-	-	2	ms
Tx_Fault Assert Time for cooled SFP28	Tx_f_on	-	-	50	ms
Tx_Fault Reset Time [1]	t _{reset}	10	-	-	us
Initialization Time for cooled SFP28	t _{start_up}	-	-	10	s

Notes:

1. Time Tx_Disable must be held high to reset Tx_Fault

Receiver Specifications – Electrical

Parameter	Symbol	Min	Typical	Max	Unit
Data Rate	BR	-	25.78125	-	Gbps
Differential Output Impedance	Rout	80	100	120	Ω
Differential Output Swing	Vout P-P	-	-	900	mVpp
Rise/Fall Time	Tr / Tf	9.5	-	-	ps
Loss of Signal –Asserted	VOH	2	-	Vcc+0.3	V
Loss of Signal –Negated	VOL	0	-	+0.4	V
LOS Assert/Deassert Time Delay	T _{los on/off}	-	-	100/100	us



Digital Diagnostic Functions

Parameter	Symbol	Min.	Max	Unit	Notes
Accuracy					
Transceiver Temperature	DMI_Temp	-3	+3	°C	
TX Output optical power	DMI_TX	-2	+2	dB	
RX Input optical power	DMI_RX	-2	+2	dB	
Transceiver Supply voltage	DMI_VCC	-3%	+3%	V	Full operating range
Bias current monitor	DMI_Ibias	-10%	10%	mA	

Support Wavelength(nm)

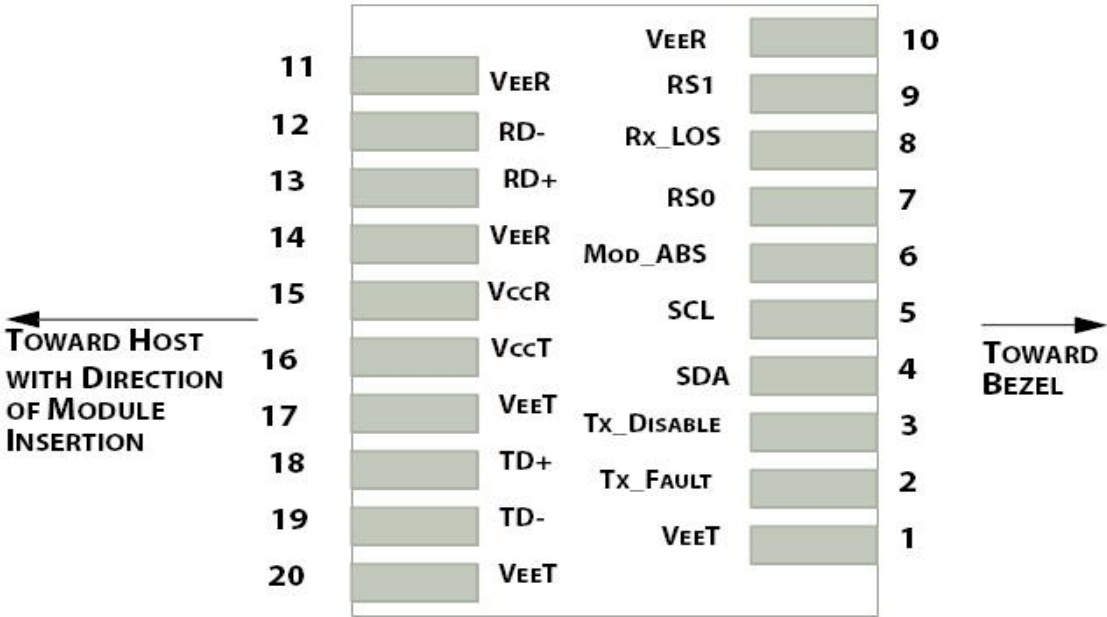
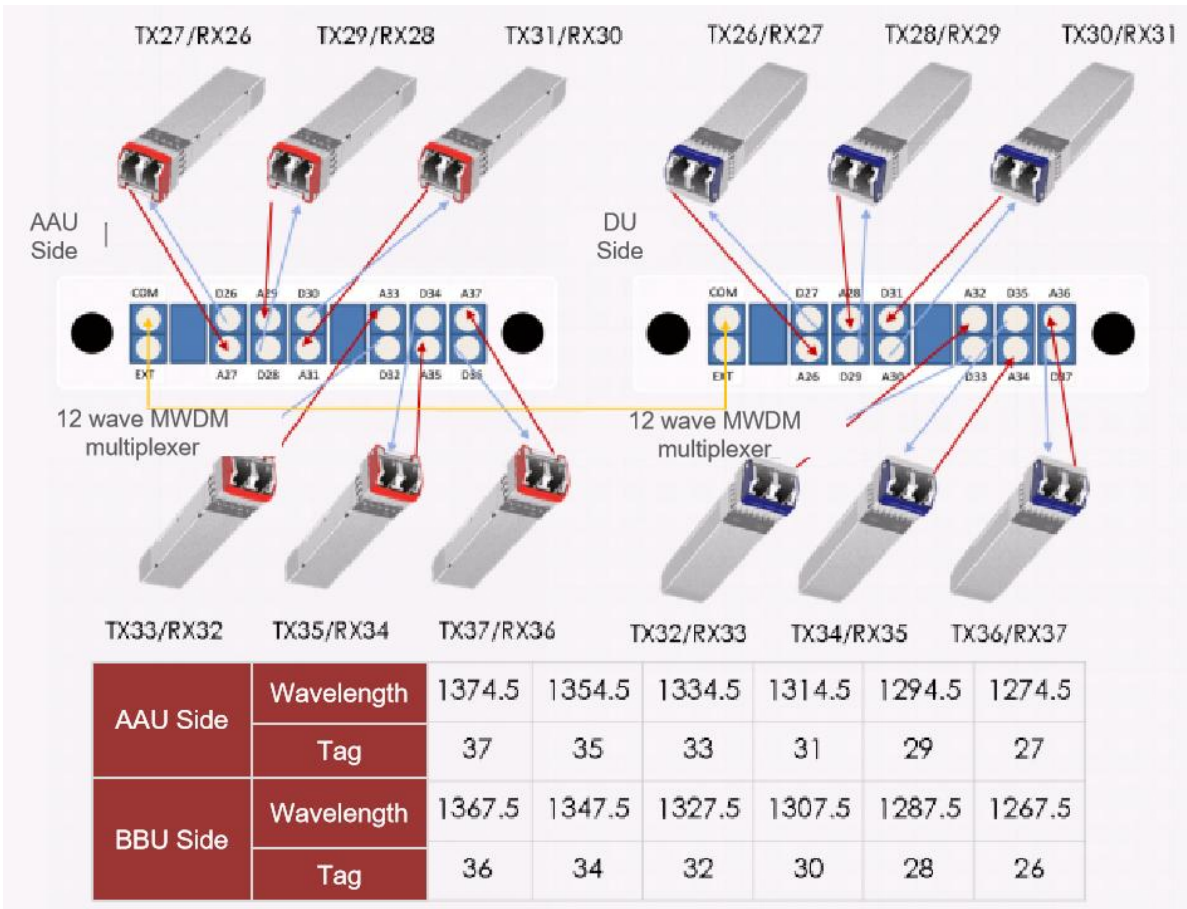


Figure2. Electrical Pin-out Details

Pin Descriptions

Pin	Symbol	Name/Description
1	VEET [1]	Transmitter Ground
2	Tx_FAULT[2]	Transmitter Fault
3	Tx_DIS[3]	Transmitter Disable. Laser output disabled on high or open

Mechanical Dimensions

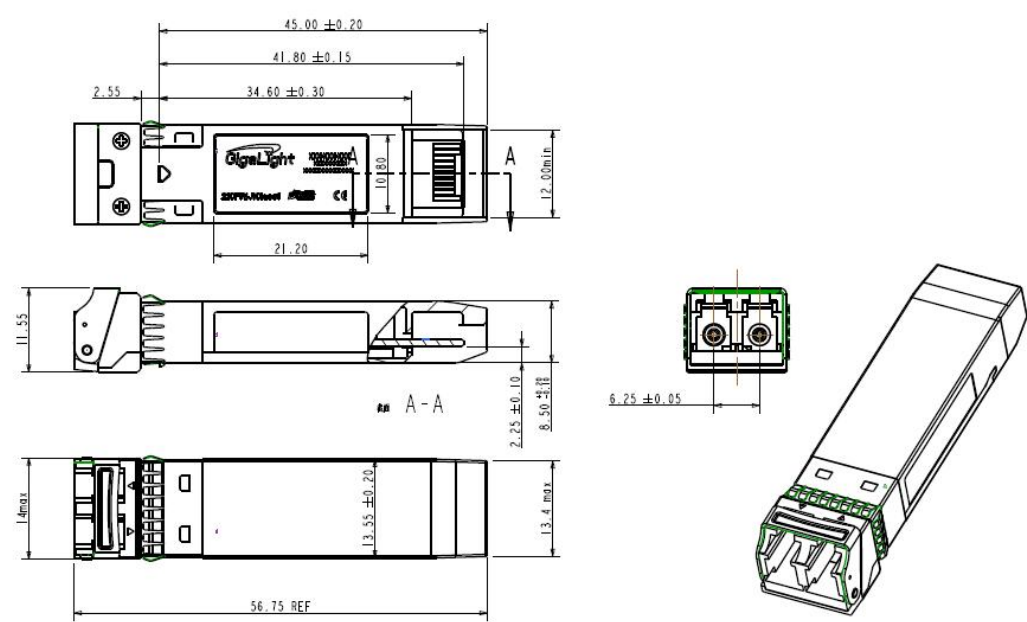


Figure4. Mechanical Specifications

FIBERSTAMP FBC-D25MxxK20T transceiver are compatible with the SFF-8432 specification for improved pluggable form factor, and shown here for reference purposes only.

Regulatory Compliance

FIBERSTAMP SFP28 transceiver is designed to be Class I Laser safety compliant. They meet the requirements of the following standards:

Feature	Standard
Laser Safety	IEC 60825-1:2014 (3rd Edition)
Electrical Safety	EN 62368-1: 2014
Environmental protection	Directive 2011/65/EU with amendment(EU)2015/863
CE EMC	EN55032: 2015
FCC	FCC Part 15, Subpart B

References

“Specifications for Enhanced Small Form Factor Pluggable Module SFP+”, SFF-8431, Rev 4.1, July 6, 2009.

“Improved Pluggable Formfactor”,SFF-8432, Rev 4.2, Apr 18,2007

IEEE802.3cc – 2017

“Diagnostic Monitoring Interface for Optical Transceivers” SFF-8472, Rev 10.3, Dec 1,2007

⚠CAUTION:

Use of controls or adjustment or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Ordering information

Part Number	Product Description
FBC-D25M01K20T	25Gbps 20km MWDM SFP28,-40~+85°C,1267.5nm, blue
FBC-D25M02K20T	25Gbps 20km MWDM SFP28,-40~+85°C,1274.5nm, red
FBC-D25M03K20T	25Gbps 20km MWDM SFP28,-40~+85°C,1287.5nm, blue
FBC-D25M04K20T	25Gbps 20km MWDM SFP28,-40~+85°C,1294.5nm, red



Part Number	Product Description
FBC-D25M05K20T	25Gbps 20km MWDM SFP28,-40~+85°C,1307.5nm, blue
FBC-D25M06K20T	25Gbps 20km MWDM SFP28,-40~+85°C,1314.5nm, red
FBC-D25M07K20T	25Gbps 20km MWDM SFP28,-40~+85°C,1327.5nm, blue
FBC-D25M08K20T	25Gbps 20km MWDM SFP28,-40~+85°C,1334.5nm, red
FBC-D25M09K20T	25Gbps 20km MWDM SFP28,-40~+85°C,1347.5nm, blue
FBC-D25M10K20T	25Gbps 20km MWDM SFP28,-40~+85°C,1354.5nm, red
FBC-D25M11K20T	25Gbps 20km MWDM SFP28,-40~+85°C,1367.5nm, blue
FBC-D25M12K20T	25Gbps 20km MWDM SFP28,-40~+85°C,1374.5nm, red

Important Notice

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