



SFP28 MWDM 10Km I-Temp FBC-D25MxxK10T

Features

- Hot-pluggable SFP28 form factor
- Supports CPRI wireless data rate
- Cooled DML transmitter and PIN receiver
- 7nm channel spacing MWDM systems
- Internal CDR circuits on both receiver and transmitter channels
- Maximum power dissipation: 2W
- Maximum link length: 10Km on SMF
- Duplex LC connector
- Operating case temperature range: -40 to +85°C
- Single 3.3V power supply 100 million
- RoHS compliant (lead free)

Applications

- CPRI Option 10、eCPRI
- 25G Ethernet

Description

The FIBERSTAMP SFP28 MWDM 10km Transceiver is a "Limiting module", designed for CPRI option 10,25GBASE, link length up to 10km 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 a PIN 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.

Controller & EEPROM	Power Supply	
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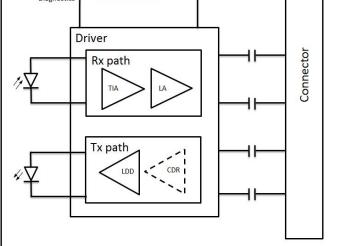


Figure 1. Module Block Diagram

The SFP28 is an 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	Тор	-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		10	km

Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Supply Voltage	Vcc	3.13	3.3	3.47	V
Supply current	lcc	-	450	-	mA
Operating Case temperature	Тса	-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 2	I according to IEC	260825	
Optical Wavelength	λ	1267.5, 1274.5, 1327.5, 1334.5,	1287.5, 1294.5, 1347.5, 1354.5,		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
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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

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	2	_		dBm	
Average Receive Power	Pavg	-13		2	dBm	
Sensitivity(OMA)	Rsen1 ^[1]	-	-	-14	dBm	
Sensitivity(OMA)	Rsen2 ^[2]			-14	dBm	
Loss of Signal Asserted	LOSA	-30	-	-	dBm	
LOS De-Asserted	LOSD	-	-	-15	dBm	
LOS Hysteresis	LOSH	0.5	-		dB	

Notes:

1. Measured with PRBS 2^31-1,BER <5E^-5, 24.33Gbps.

2. Measured with PRBS 2^31-1,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

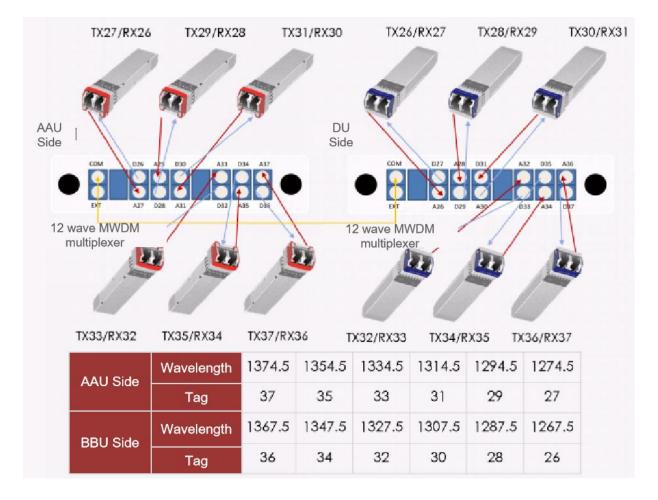




Digital Diagnostic Functions

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)



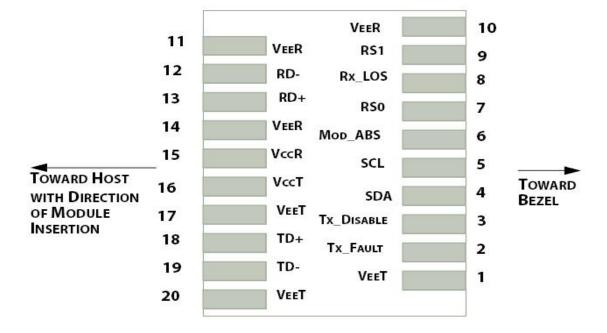


Figure 2. Electrical Pin-out Details





Pin Descriptions

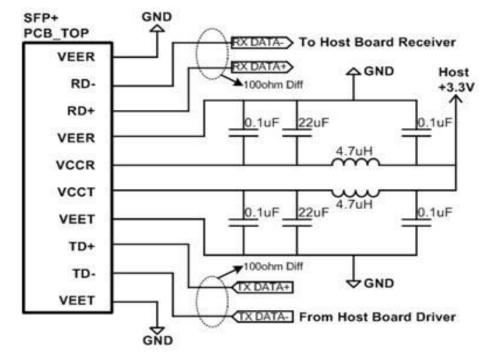
Pin	Symbol	Name/Description
1	VEET [1]	Transmitter Ground
2	Tx_FAULT[2]	Transmitter Fault
3	Tx_DIS[3]	Transmitter Disable. Laser output disabled on high or open
4	SDA [2]	2-wire Serial Interface Data Line
5	SCL [2]	2-wire Serial Interface Clock Line
6	MOD_ABS [4]	Module Absent. Grounded within the module
7	RSO	Rate Select 0
8	RX_LOS [2]	Loss of Signal indication. Logic 0 indicates normal operation
9	RS1	Rate Select 1
10	VEER [1]	Receiver Ground
11	VEER [1]	Receiver Ground
12	RD-	Receiver Inverted DATA out. AC Coupled
13	RD+	Receiver DATA out. AC Coupled
14	VEER [1]	Receiver Ground
15	VCCR	Receiver Power Supply
16	VCCT	Transmitter Power Supply
17	VEET [1]	Transmitter Ground
18	TD+	Transmitter DATA in. AC Coupled
19	TD-	Transmitter Inverted DATA in. AC Coupled
20	VEET [1]	Transmitter Ground

Notes:

1. Module circuit ground is isolated from module chassis ground within the module.

- 2. Should be pulled up with 4.7k 10k ohms on host board to a voltage between 3.15V and 3.6V.
- 3. Tx_Disable is an input contact with a 4.7 k Ω to 10 k Ω pullup to VccT inside the module.
- 4. Mod_ABS is connected to VeeT or VeeR in the SFP28 module. The host may pull this contact up to Vcc_Host with a resistor in the range 4.7 kΩ to10 kΩ.Mod_ABS is asserted "High" when the SFP+ module is physically absent from a host slot.

Host Board SFP28 Connector Recommendations









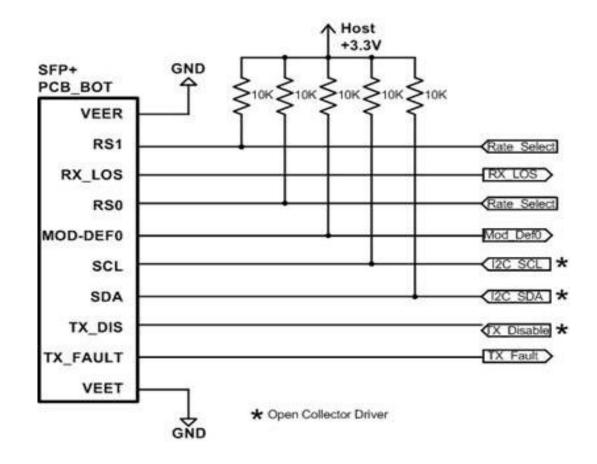


Figure3.Recommended Interface Circuit

Mechanical Dimensions

FIBERSTAMP GSS-Mxx250-LRT SFP28 Transceiver are compatible with the SFF-8432 specification for improved pluggable form factor, and shown here for reference purposes only.

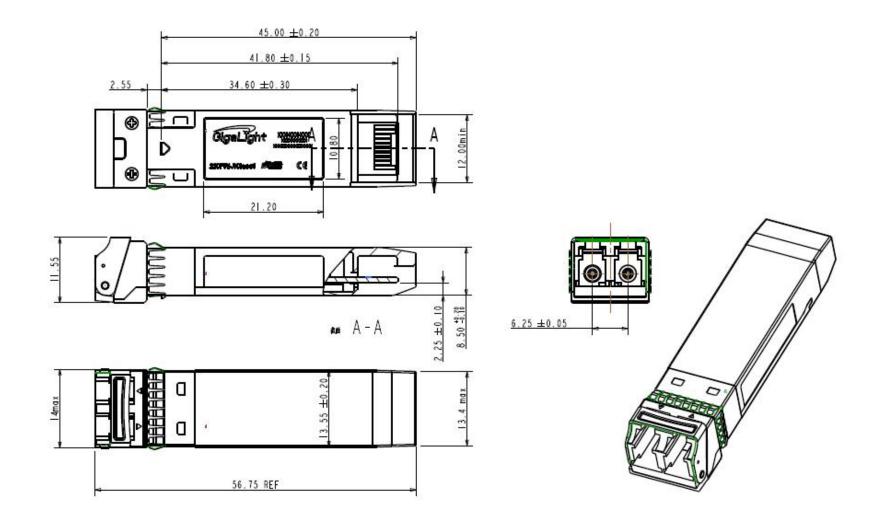


Figure 4. Mechanical Specifications





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 (3 rd Edition) IEC 60825-2:2004/AMD2:2010			
Electrical Safety	EN 62368-1: 2014 IEC 62368-1:2014			
Environmental protection Directive 2011/65/EU with amendment(EU)2015/863				
CE EMC	EN55032: 2015 EN55035: 2017			
FCC	FCC Part 15, Subpart B ANSI C63.4-2014			

References

- 1. "Specifications for Enhanced Small Form Factor Pluggable Module SFP+", SFF-8431, Rev 4.1, July 6, 2009.
- 2. "Improved Pluggable Formfactor", SFF-8432, Rev 4.2, Apr 18, 2007
- 3. IEEE802.3cc 2017
- 4. "Diagnostic Monitoring Interface for Optical Transceivers" SFF-8472, Rev 10.3, Dec 1,2007

ACAUTION:

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

Part Number	Product Description
FBC-D25M01K10T	25Gbps 10km MWDM SFP28,-40~+85°C,1267.5nm, blue
FBC-D25M02K10T	25Gbps 10km MWDM SFP28,-40~+85°C,1274.5nm, red
FBC-D25M03K10T	25Gbps 10km MWDM SFP28,-40~+85°C,1287.5nm, blue
FBC-D25M04K10T	25Gbps 10km MWDM SFP28,-40~+85°C,1294.5nm, red
FBC-D25M05K10T	25Gbps 10km MWDM SFP28,-40~+85°C,1307.5nm, blue
FBC-D25M06K10T	25Gbps 10km MWDM SFP28,-40~+85°C,1314.5nm, red
FBC-D25M07K10T	25Gbps 10km MWDM SFP28,-40~+85°C,1327.5nm, blue
FBC-D25M08K10T	25Gbps 10km MWDM SFP28,-40~+85°C,1334.5nm, red
FBC-D25M09K10T	25Gbps 10km MWDM SFP28,-40~+85°C,1347.5nm, blue
FBC-D25M10K10T	25Gbps 10km MWDM SFP28,-40~+85°C,1354.5nm, red
FBC-D25M11K10T	25Gbps 10km MWDM SFP28,-40~+85°C,1367.5nm, blue
FBC-D25M12K10T	25Gbps 10km MWDM SEP28 -40~+85°C 1374 5pm red

Important Notice

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