SFP-25DWxx-15C

SFP28 25Gb/s DWDM Transceiver

Features

- Hot-pluggable SFP28 footprint
- Data rate from 24.33Gbps to 25.78Gbps
- 100GHz ITU, C Band DWDM Cooled EML laser
- Up to 15km reach with APD receiver
- Full Duplex LC connector
- Single 3.3V power supply
- Built-in digital diagnostic functions
- Power dissipation :

  Commercial <1.8W

  Industrial <2.0W
- Operating case temperature

  Commercial: 0°C to +70°C

  Industrial: -40°C to +85°C

Application

- 25G Ethernet
- CPRI & eCPRI

Standard

- Compliant to SFF-8431
- Compliant to SFF 8472
- RoHS Compliant.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	Ts	-40	-	85	ºC	
Relative Humidity	RH	0	-	85	%	
Power Supply Voltage	VCC	-0.3	-	4.00	V	

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	Tcase	0	-	70	ºC	SFP-25DWxx-15C
		-40		85	ºC	SFP-25DWxx-15CI
Power Supply Voltage	VCC	3.14	3.3	3.47	V	
Power Supply Current	ICC	-		550	mA	SFP-25DWxx-15C
				600	mA	SFP-25DWxx-15CI
Data Rate	BR		25.78		Gbps	TX Rate/RX Rate
Transmission Distance	TD		15		km	
Coupled fiber	Single mode fiber					9/125um SMF

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Wavelength	λ	1528.77		1563.05		
Center Wavelength Spacing			100		GHz	
Average Launched Power	PO	0		5	dBm	
Extinction Ratio	ER	6		-	dB	
Average Launched Power(Laser Off)	Poff	-	-	-30	dBm	
Side-Mode Suppression Ratio	SMSR	30	-	-	dB	
Relative Intensity Noise	RIN 20 OMA			-130	dB/Hz	
Receiver						
Center Wavelength	λIN	1260	-	1620	nm	
Receiver Overload	Poverload	-5			dBm	
Receiver Sensitivity @5E-5 BOL	Psen BOL			-18.5	dBm	Note1
Receiver Sensitivity @5E-5 EOL	Psen EOL			-18	dBm	Note1
Receiver Sensitivity @5E-5 EOL after 15km fiber transmission	Psen1 EOL			-14	dBm	Note1
Los Of Signal Assert	PA	-35	-	-	dBm	
Los Of Signal De-assert	PD	-	-	-24	dBm	
LOS -Hysteresis	PHys	0.5		6	dB	

Note1: Measured at 5E-5, ER>6dB, PRBS 231 -1

Electrical Interface Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Data Input Swing Differential	VIN	190		700	mV	
Differential line input Impedance	RIN	80	100	120	Ohm	
Transmitter Fault Output-High	VFaultH	2	-	Vcc+0.3	V	
Transmitter Fault Output-Low	VFaultL	VEE	-	VEE +0.8	V	
Transmitter Disable Voltage- High	VDisH	2	-	Vcc+0.3	V	
Transmitter Disable Voltage- low	VDisL	VEE	-	VEE +0.8	V	
Receiver						
Differential line Output Impedance	ROUT	80	100	120	Ohm	
Differential Data Output Voltage	VDR	350	-	850	mVp-p	
LOS Output Voltage-High	VLOSH	2	-	Vcc+0.3	V	
LOS Output Voltage-Low	VLOSL	VEE	-	VEE +0.8	V	
Others、						
Cold-Start time	Tstart-cooled			35	s	

Transmitter Input Equalization

Code (Note1) In A2h, Byte 114 bit4-7	Transmitter Input Equalization	
	Nominal	Units
11xx	Reserved	
1011	Reserved	
1010	10	dB
1001	9	dB
1000	8	dB
0111	7	dB
0110	6	dB
0101	5	dB
0100	4	dB
0011	3	dB
0010	2	dB
0001	1	dB
0000	0	No EQ

Note:

1. Only A2h, Byte 114 bit4-7 is assigned for Tx equalization control.

Receiver Output Emphasis

Code (Note1) In A2h, Byte 115 bit4-7	Receiver Output Emphasis At nominal Output Amplitude	
	Nominal	Units
1xxx	Vendor Specific	
0111	7	dB
0110	6	dB
0101	5	dB
0100	4	dB
0011	3	dB
0010	2	dB
0001	1	dB
0000	0	No Emphasis

Note:

1. Only A2h, Byte 115 bit4-7 is assigned for Rx emphasis control.

Pin Description

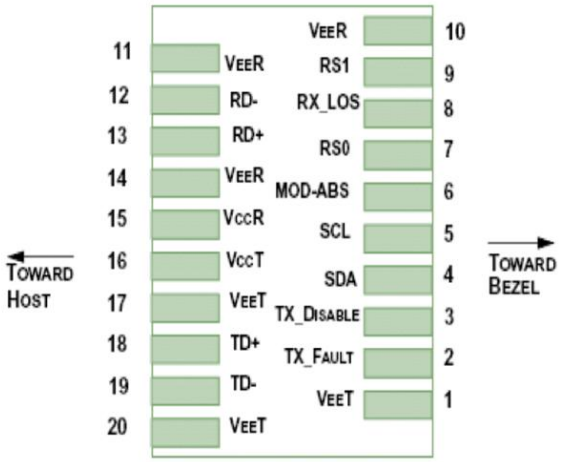


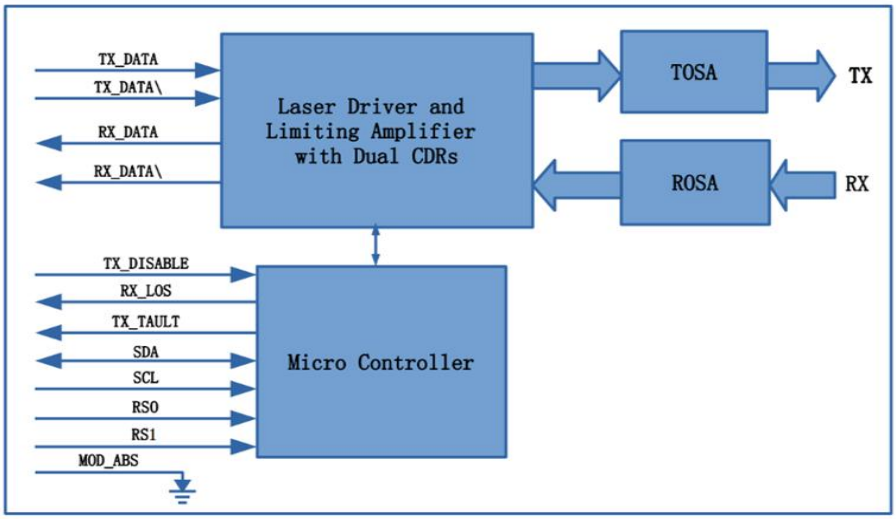
Diagram of Host Board Connector Block Pin Numbers and Name

Pin	Symbol	Name/Description	NOTE
1	VEET	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault.	2
3	TDIS	Transmitter Disable. Laser output disabled on High or open.	3
4	SDA	2-wire Serial Interface Data Line	4
5	SCL	2-wire Serial Interface Clock Line	4
6	MOD_ABS	Module Absent. Grounded within the module	4
7	RS0	Rate Select 0, internal pull down	5
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	6
9	RS1	Rate Select 1, internal pull down	1
10	VEER	Receiver Ground (Common with Transmitter Ground)	1

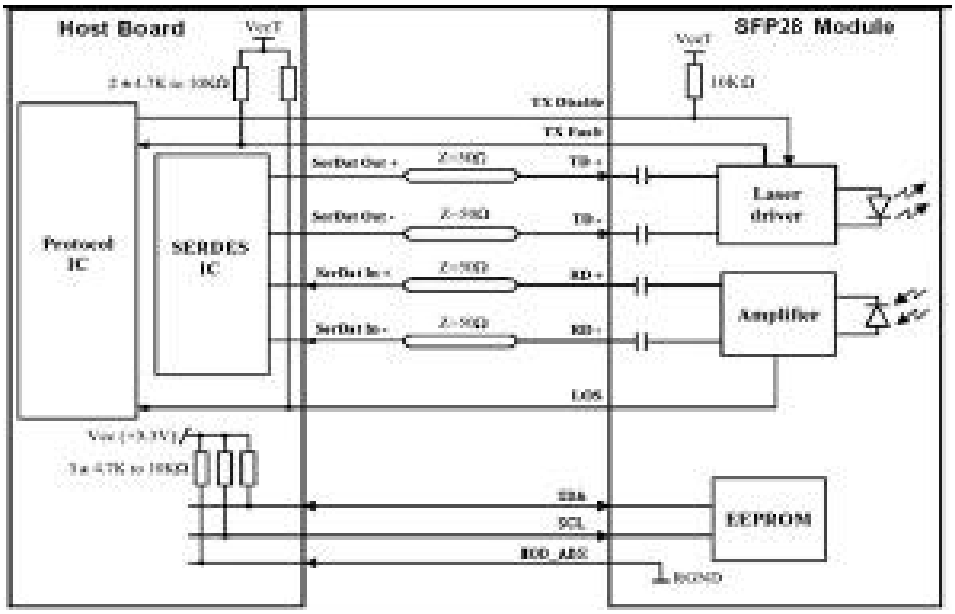
Pin	Symbol	Name/Description	NOTE
11	VEER	Receiver Ground (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	VEER	Receiver Ground (Common with Transmitter Ground)	1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VEET	Transmitter Ground (Common with Receiver Ground)	1

1. Circuit ground is internally isolated from chassis ground.
2. T_{FAULT} is an open collector/drain output, which should be pulled up with a 4.7k – 10k Ohms resistor on the host board if intended for use. Pull up voltage should be between 2.0V to Vcc + 0.3V. A high output indicates a transmitter fault caused by either the TX bias current or the TX output power exceeding the preset alarm thresholds. A low output indicates normal operation. In the low state, the output is pulled to <0.8V.
3. Laser output disabled on T_{DIS}>2.0V or open, enabled on T_{DIS}<0.8V.
4. Should be pulled up with 4.7kΩ- 10kΩ host board to a voltage between 2.0V and 3.6V. MOD_ABS pulls line low to indicate module is plugged in.
5. Internally pulled down per SFF-8431 Rev 4.1.
6. LOS is open collector output. It should be pulled up with 4.7kΩ – 10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

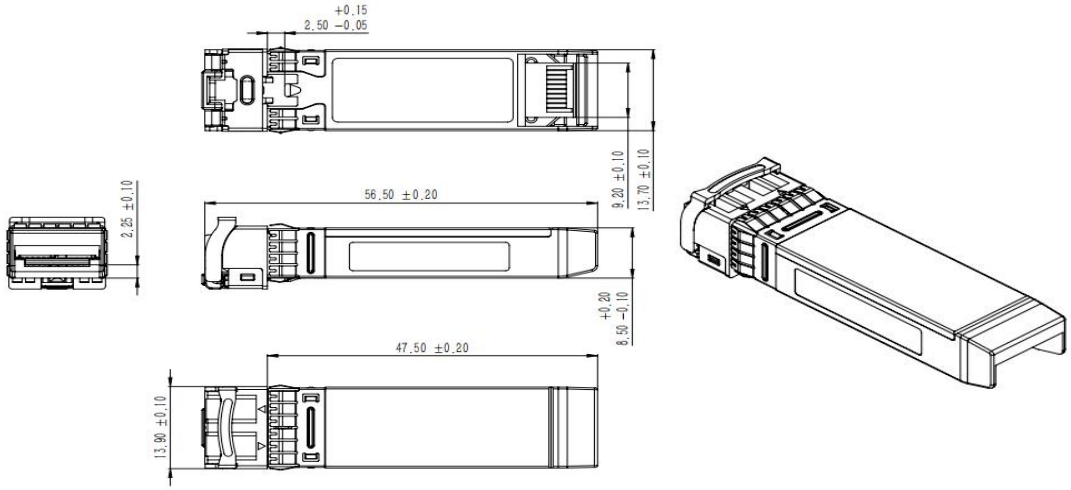
Block Diagram of Transceiver



Recommended Interface Circuit



Mechanical Specifications



Appendix A. Document Revision

Version No.	Date	Description
1.0	2019-07-27	Initial release
1.1	2020-05-15	Update outline dimensions
1.2	2020-10-10	Update power consumption 2.3/2.0W to 2.0/1.8W
1.3	2020-12-2	Update Average Launched Power from -1~5 to 0~5 dBm

Product Selection

SFP-25DWxx-15C, xx is the channel number

Channel	Wavelength (nm)	Frequency(THZ)	Channel	Wavelength (nm)	Frequency (THZ)
Non-ITU	**Frequency between 191.8-196.1THZ**		**C39**	1546.12	193.90
C18	1563.05	191.80	**C40**	1545.32	194.00
C19	1562.23	191.90	**C41**	1544.53	194.10
C20	1561.42	192.00	**C42**	1543.73	194.20
C21	1560.61	192.10	**C43**	1542.94	194.30
C22	1559.79	192.20	**C44**	1542.14	194.40
C23	1558.98	192.30	**C45**	1541.35	194.50
C24	1558.17	192.40	**C46**	1540.56	194.60
C25	1557.36	192.50	**C47**	1539.77	194.70
C26	1556.55	192.60	**C48**	1538.98	194.80
C27	1555.75	192.70	**C49**	1538.19	194.90
C28	1554.94	192.80	**C50**	1537.40	195.00
C29	1554.13	192.90	**C51**	1536.61	195.10
C30	1553.33	193.00	**C52**	1535.82	195.20
C31	1552.52	193.10	**C53**	1535.04	195.30
C32	1551.72	193.20	**C54**	1534.25	195.40
C33	1550.92	193.30	**C55**	1533.47	195.50
C34	1550.12	193.40	**C56**	1532.68	195.60
C35	1549.32	193.50	**C57**	1531.90	195.70
C36	1548.51	193.60	**C58**	1531.12	195.80
C37	1547.72	193.70	**C59**	1530.33	195.90
C38	1546.92	193.80	**C60**	1529.55	196.00
Non-ITU	**Peak wavelength between 1528.77nm-1563.05**		**C61**	1528.77	196.10

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