

Product

Features

- Up to 25.78Gb/s bi-directional data links
- Electrical interface specifications per SFF-8431
- Management interface specifications per SFF-8432 and SFF-8472
- Build-in dual CDR with bypass function
- SFP28 MSA package with duplex LC connector
- DWDM-rated EML Transmitter
- APD receiver
- 100GHz ITU Grid, C-Band
- Up to 10km on 9/125um SMF
- Single +3.3V power supply
- Class 1 laser safety certified
- 2.0W maximum power consumption
- Operating temperature Options:
Commercial: 0 to +70°C
Industrial: -40 to +85°C

Applications

- High speed storage area networks
- 25G high speed interconnection
- 25G DWDM Network
- CPRI/eCPRI

Descriptions

The GL28-DWxxLR10x SFP28 transceivers are high performance, cost effective modules supporting data rate of 25.78Gbps and 10km transmission distance with SMF. The transceiver consists of three sections: a cooled EML DFB laser transmitter, a APD photodiode integrated with a trans-impedance preamplifier (TIA) and MCU control unit. All modules satisfy class I laser safety requirements.

Ordering Information

Product part Number	Data Rate (Gbps)	Media	Wavelength (nm)	Transmission Distance(km)	Temperature Range	
					T _{case} / °C	
GL28-DWxxLR10C	25.78	SMF	1528.77~1563.05	10	0~70	Commercial
GL28-DWxxLR10I	25.78	SMF	1528.77~1563.05	10	-40~85	Industrial

Table 2. Wavelength Guide for “xx” value (100GHz ITU-T channel)

Channel #	Product Part Number	Frequency (THz)	Center Wavelength (nm)
18	GL28-DW18LR10x	191.8	1563.05
19	GL28-DW19LR10x	191.9	1562.23

20	GL28-DW20LR10x	192.0	1561.42
21	GL28-DW21LR10x	192.1	1560.61
22	GL28-DW22LR10x	192.2	1559.79
23	GL28-DW23LR10x	192.3	1558.98
24	GL28-DW24LR10x	192.4	1558.17
25	GL28-DW25LR10x	192.5	1557.36
26	GL28-DW26LR10x	192.6	1556.55
27	GL28-DW27LR10x	192.7	1555.75
28	GL28-DW28LR10x	192.8	1554.94
29	GL28-DW29LR10x	192.9	1554.13
30	GL28-DW30LR10x	193.0	1553.33
31	GL28-DW31LR10x	193.1	1552.52
32	GL28-DW32LR10x	193.2	1551.72
33	GL28-DW33LR10x	193.3	1550.92
34	GL28-DW34LR10x	193.4	1550.12
35	GL28-DW35LR10x	193.5	1549.32
36	GL28-DW36LR10x	193.6	1548.51
37	GL28-DW37LR10x	193.7	1547.72
38	GL28-DW38LR10x	193.8	1546.92
39	GL28-DW39LR10x	193.9	1546.12
40	GL28-DW40LR10x	194.0	1545.32
41	GL28-DW41LR10x	194.1	1544.53
42	GL28-DW42LR10x	194.2	1543.73
43	GL28-DW43LR10x	194.3	1542.94
44	GL28-DW44LR10x	194.4	1542.14
45	GL28-DW45LR10x	194.5	1541.35
46	GL28-DW46LR10x	194.6	1540.56
47	GL28-DW47LR10x	194.7	1539.77
48	GL28-DW48LR10x	194.8	1538.98
49	GL28-DW49LR10x	194.9	1538.19
50	GL28-DW50LR10x	195.0	1537.40
51	GL28-DW51LR10x	195.1	1536.61
52	GL28-DW52LR10x	195.2	1535.82
53	GL28-DW53LR10x	195.3	1535.04
54	GL28-DW54LR10x	195.4	1534.25
55	GL28-DW55LR10x	195.5	1533.47

56	GL28-DW56LR10x	195.6	1532.68
57	GL28-DW57LR10x	195.7	1531.90
58	GL28-DW58LR10x	195.8	1531.12
59	GL28-DW59LR10x	195.9	1530.33
60	GL28-DW60LR10x	196.0	1529.55
61	GL28-DW61LR10x	196.1	1528.77

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V _{cc}	-0.5	4.5	V
Storage Temperature	T _s	-40	+85	°C
Operating Humidity	-	5	85	%

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Case Operating Temperature Range	T _c	0	-	70	°C
		-40	-	85	
Power Supply Voltage	V _{cc}	3.135	3.30	3.465	V
Power Supply Current	I _{cc}			600	mA
Data Rate			25.78	-	Gbps

Optical and Electrical Characteristics

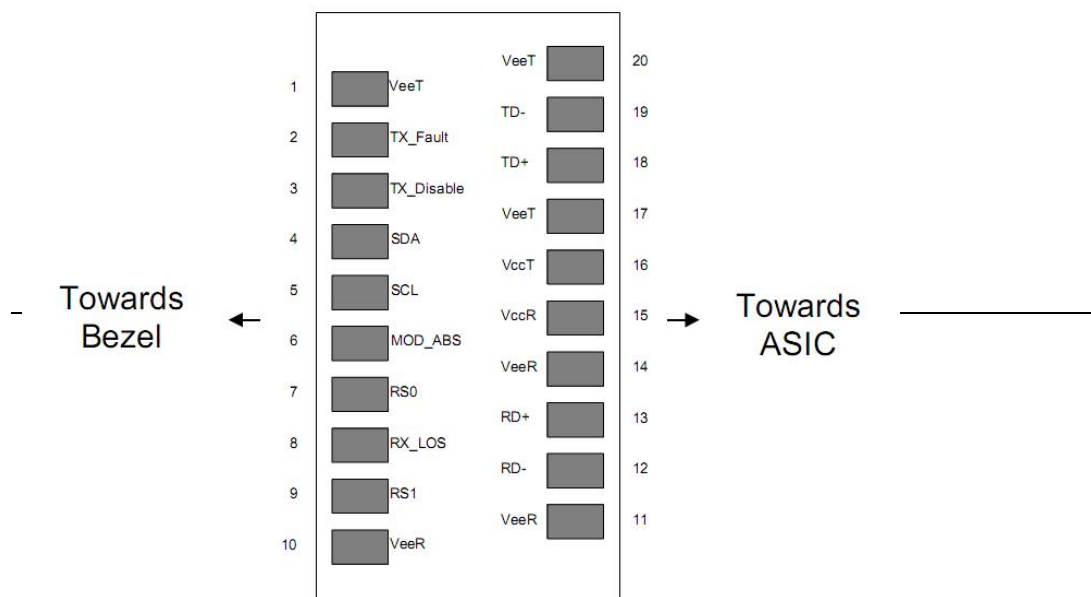
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Transmitter						
Centre Wavelength Range	λ_c	1528.77	-	1563.05	nm	
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side-Mode Suppression Ratio	SMSR	30	-		dB	
Average Output Power	P _{out}	0		+5.0	dBm	1
Extinction Ratio	ER	4.5			dB	
Data Input Swing Differential	V _{IN}	180		850	mV	2
Input Differential Impedance	Z _{IN}	90	100	110	Ω	
TX Disable	Disable		2.0	V _{cc}	V	

	Enable		0		0.8	V	
TX Fault	Fault		2.0		V _{cc}	V	
	Normal		0		0.8	V	
Receiver							
Centre Wavelength	λ_c		1528		1565	nm	
Receiver Sensitivity					-19	dBm	3
Receiver Overload			-4.0			dBm	3
LOS De-Assert	LOS _D				-19	dBm	
LOS Assert	LOS _A		-35			dBm	
LOS Hysteresis			0.5			dB	
Data Output Swing Differential	V _{out}		300		900	mV	4
LOS	High		2.0		V _{cc}	V	
	Low				0.8	V	

Notes:

1. The optical power is launched into SMF.
2. PECL input, internally AC-coupled and terminated.
3. Measured with a PRBS 2³¹-1 test pattern @25.78Gbps, BER ≤5E×10⁻⁵.
4. Internally AC-coupled.

Pin Description



Pin	Signal Name	Description	Plug Seq.	Notes
1	V _{EET}	Transmitter Ground	1	
2	TX FAULT	Transmitter Fault Indication	3	Note 1
3	TX DISABLE	Transmitter Disable	3	Note 2
4	SDA	SDA Serial Data Signal	3	
5	SCL	SCL Serial Clock Signal	3	
6	MOD_ABS	Module Absent. Grounded within the module	3	
7	RS0	Not Connected	3	
8	LOS	Loss of Signal	3	Note 3
9	RS1	Not Connected	3	
10	V _{EER}	Receiver ground	1	
11	V _{EER}	Receiver ground	1	
12	RD-	Inv. Received Data Out	3	Note 4
13	RD+	Received Data Out	3	Note 4
14	V _{EER}	Receiver ground	1	
15	V _{CCR}	Receiver Power Supply	2	
16	V _{CCT}	Transmitter Power Supply	2	
17	V _{EET}	Transmitter Ground	1	
18	TD+	Transmit Data In	3	Note 5
19	TD-	Inv. Transmit Data In	3	Note 5
20	V _{EET}	Transmitter Ground	1	

Notes:

Plug Seq.: Pin engagement sequence during hot plugging.

- 1) TX Fault is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor on the host board to a voltage between 2.0V and V_{cc}+0.3V. Logic 0 indicates normal operation; Logic 1 indicates a laser fault of some kind. In the low state, the output will be pulled to less than 0.8V.
- 2) Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
- 3) LOS is open collector output. Should be pulled up with 4.7k~10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.
- 4) RD-/+: These are the differential receiver outputs. They are internally AC-coupled 100 differential lines which should be terminated with 100Ω (differential) at the user SERDES.
- 5) TD-/+: These are the differential transmitter inputs. They are internally AC-coupled, differential lines with 100Ω differential termination inside the module.

Recommended Host Board Power Supply Filter Network

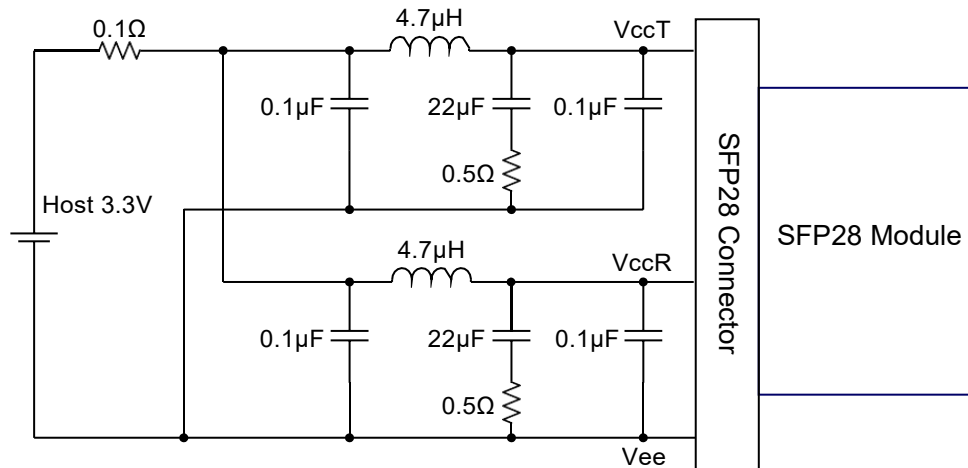


Figure 2. Recommended Host Board Power Supply Filter Network

Recommended Application Interface Block

Diagram

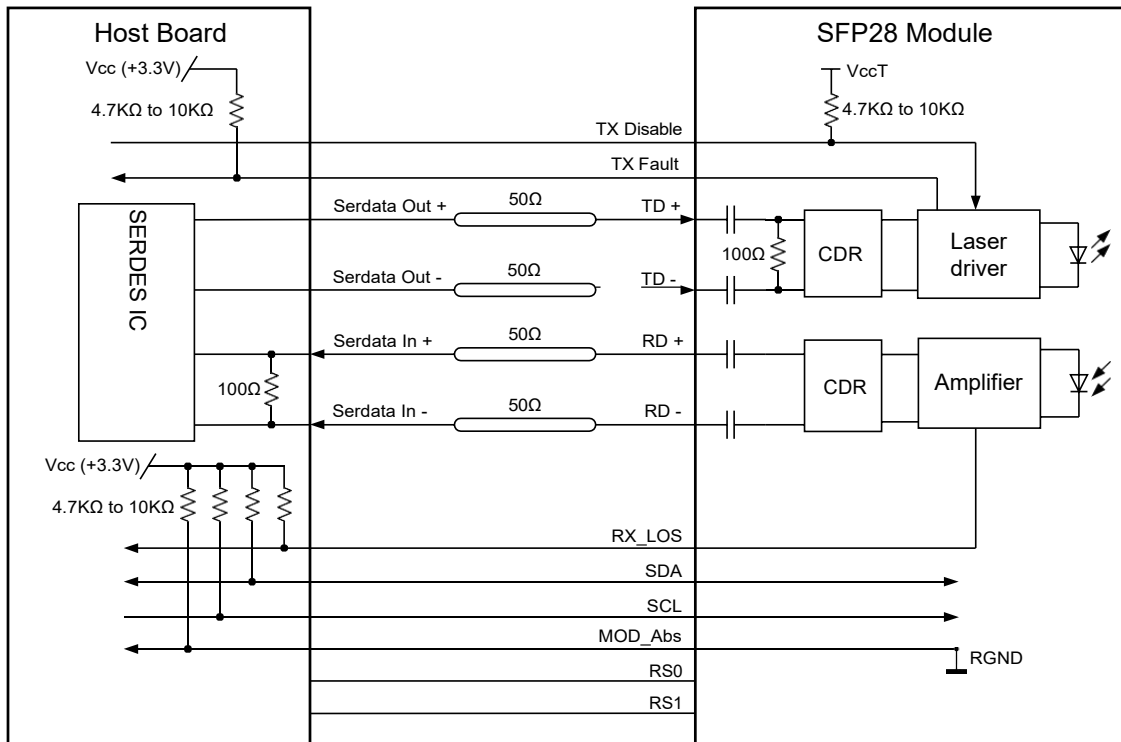
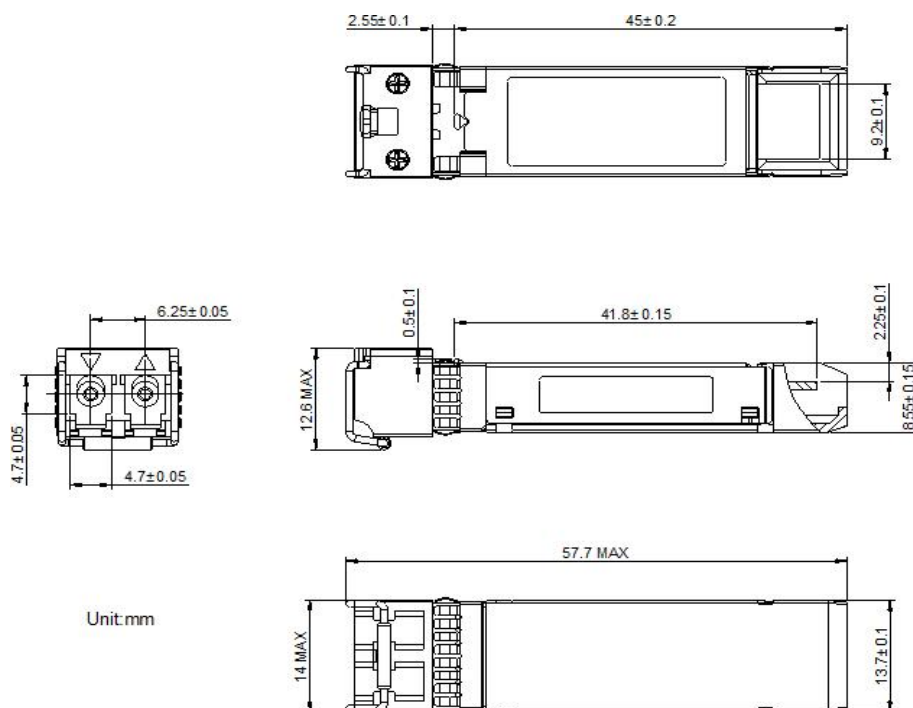


Figure 3. Recommended Application Interface Block Diagram

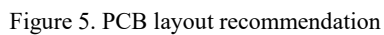
Mechanical specifications

Figure 4. Outline Drawing



Notes:

1. Datum and basic dimensions established by customer
2. Pads and vias are chassis ground, 11 places
3. Thru holes, plating optional



Regulatory Compliance

Feature	Reference	Performance
Electrostatic discharge (ESD)	IEC/EN 61000-4-2	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022 Class B (CISPR 22A)	Compatible with standards
Laser Eye Safety	IEC/EN 60825-1, 2	Class 1 laser product
ROHS	2002/95/EC	Compatible with standards
EMC	EN61000-3	Compatible with standards