LANVIEW
PROFESSIONAL NETWORK SOLUTIONS

100GE QSFP28 ZR4 Transceiver



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Product Features

- ✓ QSFP28 MSA compliant
- ✓ Hot pluggable 38 pin electrical interface
- ✓ 4 LAN-WDM lanes MUX/DEMUX design
- ✓ 4x25G electrical interface
- ✓ EML laser and PIN+SOA receiver
- ✓ Maximum power consumption 6.5W
- ✓ LC duplex connector
- ✓ Supports 103.125Gb/s aggregate bit rate
- ✓ Up to 80km transmission on single mode fiber
- ✓ Operating case temperature: 0℃ to 70℃
- ✓ Single 3.3V power supply
- ✓ RoHS 2.0 compliant

Applications

- ✓ 100GBASE-ZR4 100G Ethernet
- ✓ Telecom networking

Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883 Method 3015
- ESD to the Duplex LC Receptacle: compatible with IEC 61000-4-2
- Immunity compatible with IEC 61000-4-3
- EMI compatible with FCC Part 15 Class B EN55022 Class B (CISPR 22B) VCCI Class B
- Laser Eye Safety compatible with FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2

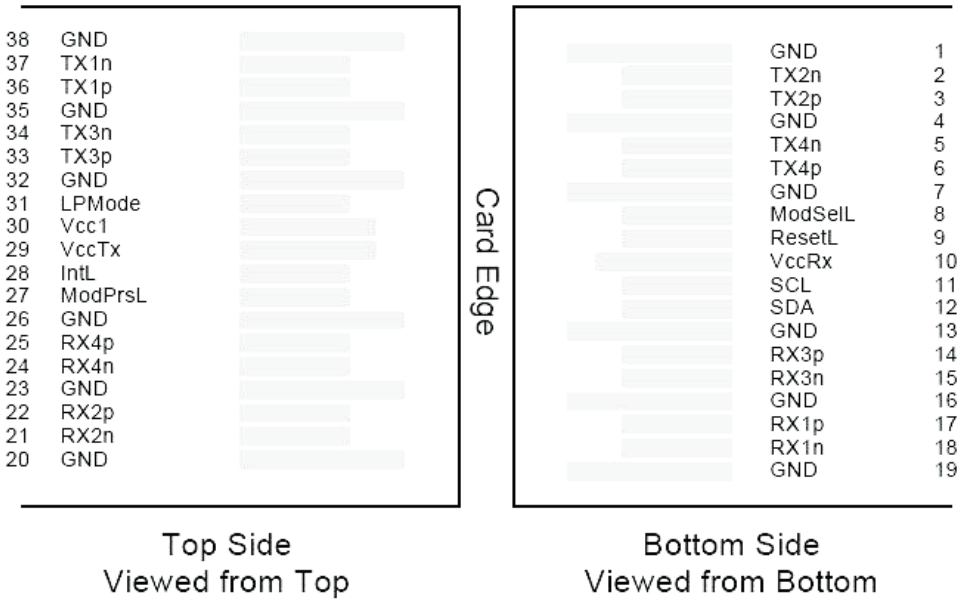
Pin Descriptions

Pin	Symbol	Name	Ref.
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data input	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Ground	1
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	VccRx	3.3V Power Supply Receiver	
11	SCL	2-Wire Serial Interface Clock	
12	SDA	2-Wire Serial Interface Data	
13	GND	Ground	1
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Ground	1
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Ground	1
20	GND	Ground	1
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	1
24	Rx4n	Receiver Non-Inverted Data Output	
25	Rx4p	Receiver Inverted Data Output	
26	GND	Ground	1
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	VccTx	+3.3 V Power Supply transmitter	
30	Vcc1	+3.3 V Power Supply	
31	LPMode	Low Power Mode .	
32	GND	Ground	1
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	

Pin	Symbol	Name	Ref.
35	GND	Ground	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data input	
38	GND	Ground	1

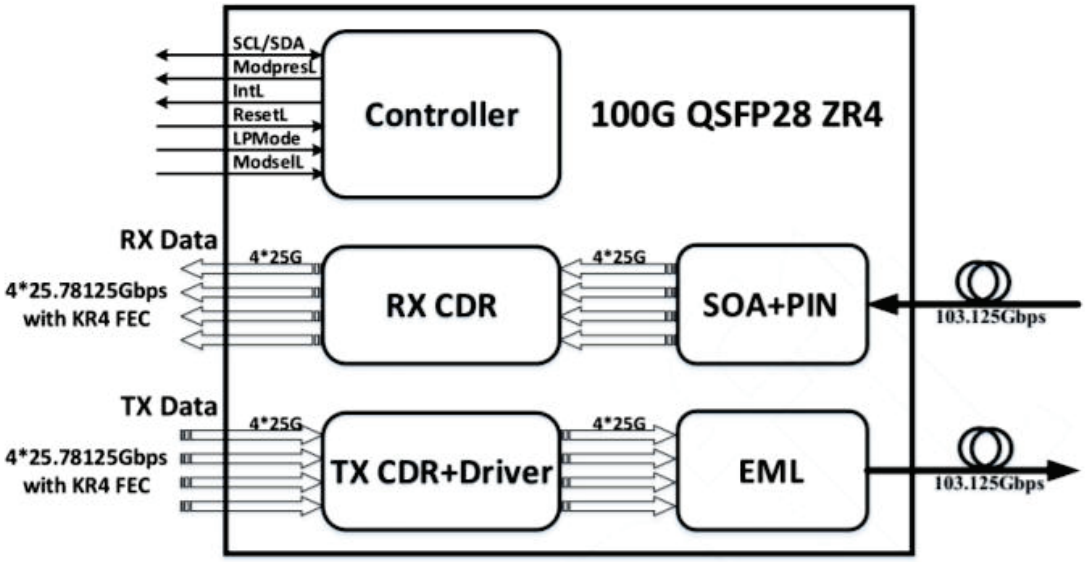
Notes:

1. Circuit ground is internally isolated from chassis ground.



Pin-out of Connector Block on Host Board

Transceiver Block Diagrams



Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Maximum Supply Voltage	Vcc	0		+3.6	V	
Storage Temperature	TS	-40		+85	℃	
Operating Humidity	RH	0		85	%	

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Power Supply Voltage	Vcc	3.13	3.30	3.47	V	
Power Supply Current	Icc			1.8759	A	
Power dissipation				6.5	W	
Case Operating Temperature	Tc	0		+70	℃	Commercial
9/125um G.652 SMF	Lmax			80	km	

Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Transmitter						
Data Rate, each lane			25.78125		Gbps	
Differential Voltage pk-pk	Vpp			900	mV	1
Common Mode Voltage	Vcm	-350		2850	mV	
Transition time	Trise/Tfall	10			ps	2
Differential Termination Resistance Mismatch				10	%	
Eye width	EW15	0.46			UI	
Eye height	EH15	95			mV	
Receiver						
Data Rate, each lane			25.78125		Gbps	
Differential Termination Resistance Mismatch				10	%	1
Differential output voltage swing	Vout, pp			900	mV	
Common Mode Noise, RMS	Vrms			17.5	mV	
Transition time	Trise/Tfall	12			ps	2
Eye width	EW15	0.57			UI	
Eye height	EH15	228			mV	

Notes:
1. At 1 MHz.
2. 20%~80%.

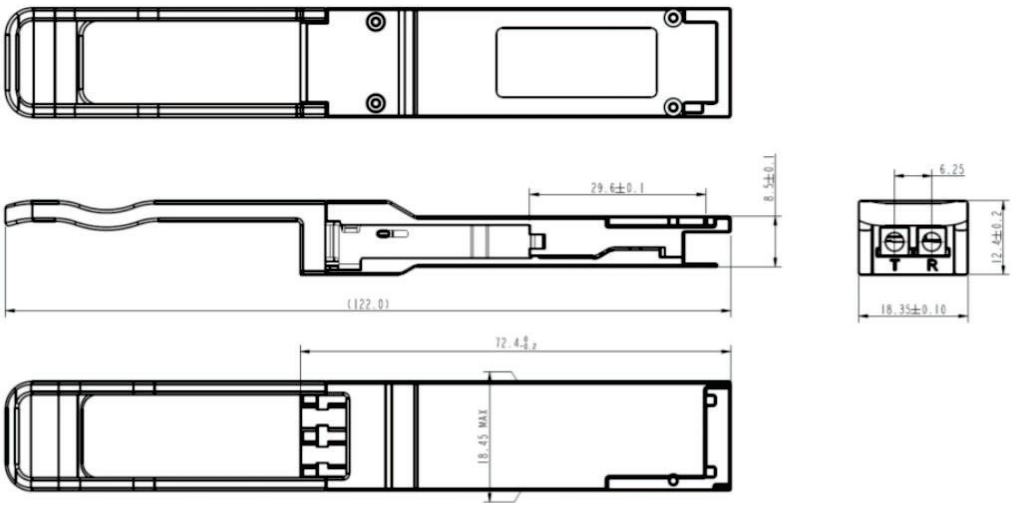
Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Transmitter						
Signaling Speed per Lane			25.78125 ± 100 ppm		Gb/s	
Optical Wavelength	L0	1294.53		1296.59	nm	
	L1	1299.02		1301.09	nm	
	L2	1303.54		1305.63	nm	
	L3	1308.09		1310.19	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Total Average Launch Power		8		12.5	dBm	
Average launch power, each lane		2		6.5	dBm	

Difference in launch power between any two lanes(Average and OMA)			3	dBm	
Average launch power of OFF transmitter, each lane			-30	dBm	
Extinction Ratio	ER	6		dB	
RIN OMA			-130	dB/Hz	
Optical return loss tolerance			20	dB	
Transmitter reflectance			-12	dB	
Transmitter eye mask definition {X1,X2, X3, Y1, Y2, Y3}		{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}			1
Mask margin		5		%	
Receiver					
Signaling Speed per Lane		25.78125 ± 100 ppm		Gb/s	
Receive wavelengths	L0	1294.53	1296.59	nm	
	L1	1299.02	1301.09	nm	
	L2	1303.54	1305.63	nm	
	L3	1308.09	1310.19	nm	
Average receiver power, each lane		-28	-7	dBm	
Receiver power, each lane (OMA)			-7	dBm	
Receiver reflectance			-26	dB	
Receiver sensitivity Average, each lane			-28	dBm	1
Receiver 3 dB electrical upper cutoff frequency, each lane			31	GHz	
Damage threshold, each lane		6.5		dBm	
LOS De-Assert	LOSD		-29	dBm	
LOS Assert	LOSA	-40		dBm	
LOS Hysteresis		0.5		dB	

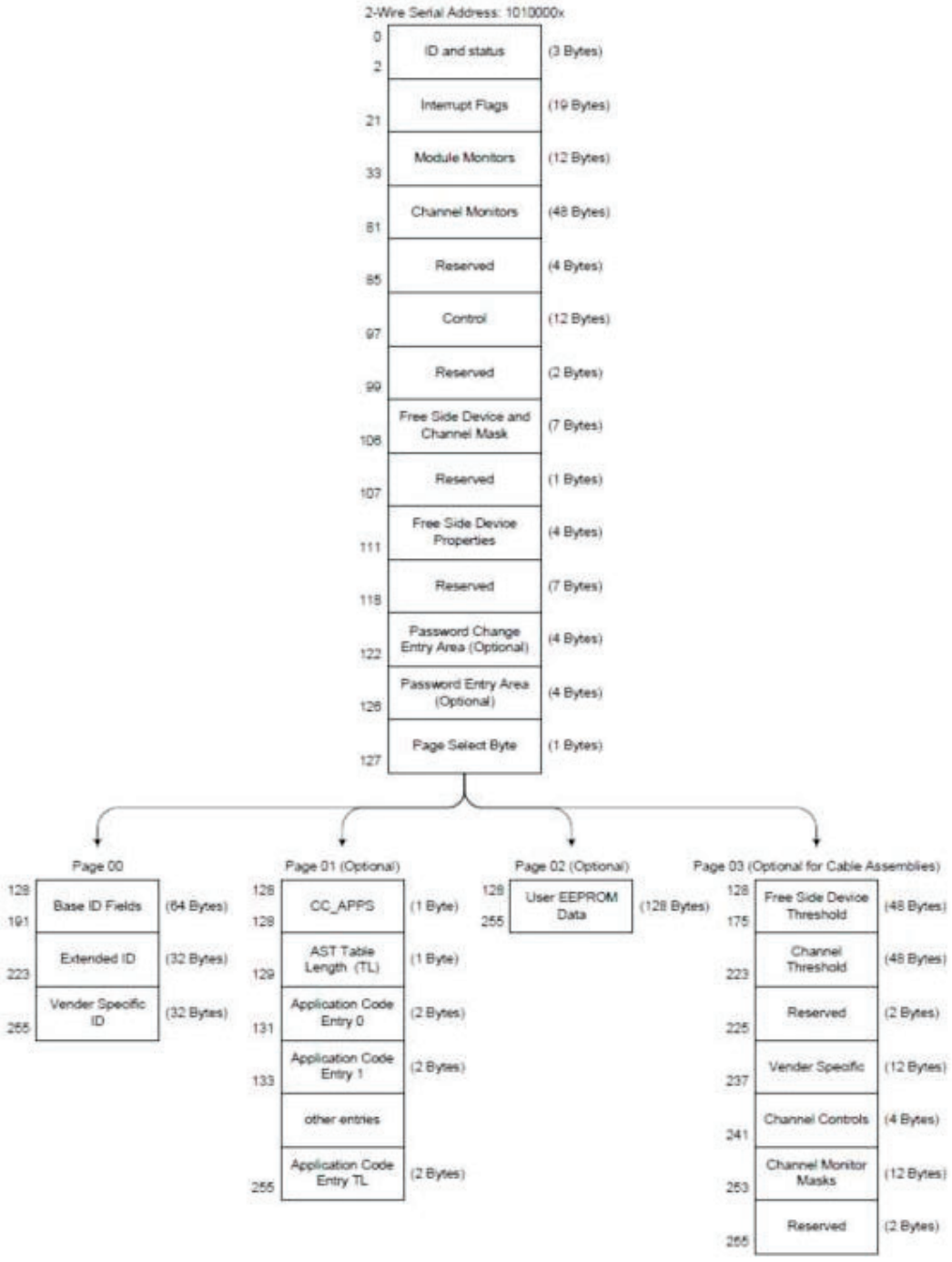
Notes:
1. Sensitivity is specified at BER@5E-5 with FEC

Mechanical Specifications



EEPROM Information

• EEPROM memory map specific data field description is as below:



Digital Diagnostic Monitoring Interface

Five transceiver parameter values are monitored. The following table defines the Monitory parameter's accuracy.

Parameter	Related Bytes(A0[00] memory)	Accuracy	Notes
Temperature	22 to 23	±3°C	1,2
Voltage	26 to 27	<3%	2
Bias Current	42 to 49	<10%	2
TX Power	50 to 57	<3dB	2
RX Power	34 to 41	<3dB	2

Notes:
1. Actual temperature test point is fixed on module case around Laser.
2. Full operating temperature range.