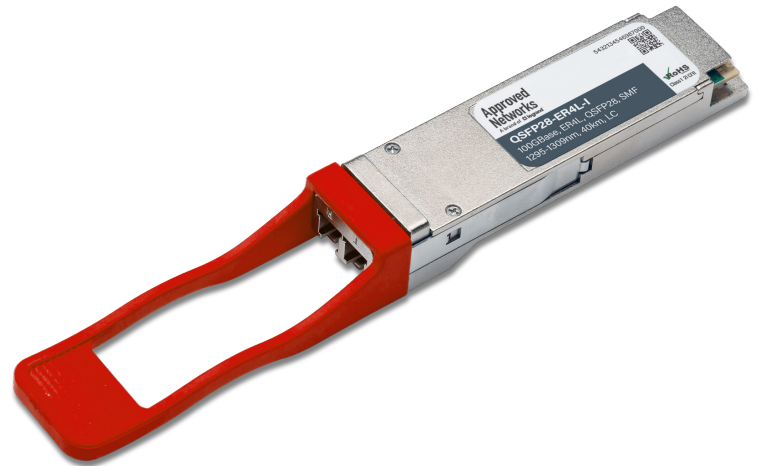


Features

- Support line rates from 103.125 Gb/s
- Transmission data rate up to 25.78125Gbps per channel
- Up to 30 km reach for G.652 SMF without FEC
- Up to 40km reach for G.652 SMF with FEC
- LAN WDM EML laser and APD receiver
- High speed I/O electrical interface (CAUI-4)
- I2C interface with integrated Digital Diagnostic monitoring
- QSFP28 MSA package with duplex LC connector
- Single +3.3V power supply; dissipation Industrial:<5.5W



- Temperature Range: Industrial: -40°C ~+85°C
- Complies with EU Directive 2015/863/EU

Applications

- IEEE 802.3ba(100GBASE-ER4 Ethernet)
- 100G Datacom& Telecom connections

1. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit
Storage Temperature	TS	-40	-	+85	°C
Supply Voltage	VCC	-0.5	-	3.6	V
Relative Humidity	RH	5	-	95	%

2. Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Operating Case Temperature		-40		85		
Power Supply Voltage	VCC	3.13	3.3	3.47	V	
Power Supply Current	ICC			1.67	A	
Maximum Power Dissipation	PD			5.5	W	
Aggregate Bit Rate	BRAVE		103.125		Gb/s	

Lane Bit Rate	BRLANE		25.78125		Gb/s	
Transmission Distance	TD			30	km	
Coupled fiber	9/125um Single mode fiber					SMF

3. Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Transmitter					
Signaling Speed per Lane			25.78125		Gbps
Lane Wavelength	L0	1294.53	1295.56	1296.59	nm
	L1	1299.02	1300.05	1301.09	nm
	L2	1303.54	1304.58	1305.63	nm
	L3	1308.09	1309.14	1310.19	nm
Total Average Launch Power ¹	PT			12.5	dBm
Average Launch Power per Lane ¹	Pavg	-2.5		6.5	dBm
OMA, each Lane ¹	POMA	0		6.5	dBm
Difference in launch power between any two lanes(Average and OMA) between any Two Lanes (OMA)	Ptx,diff			3	dB
Average Output Power (Laser Turn off)	Poff			-30	dBm
Side Mode Suppression Ratio	SMSR	30			dB
Extinction Ratio, 100GE	ER	4.5			dB
RIN20OMA	RIN			-130	dB/Hz
Optical Return Loss Tolerance	TOL			20	dB
Transmitter Reflectance	RT			-12	dB
Optical Eye Mask 2	{0.25,0.4, 0.45, 0.25, 0.28, 0.4}			%	2
Receiver					
Signaling rate, each lane			25.78125		Gbps
Center Wavelength Lane 0	λ_0	1294.53	1295.56	1296.59	nm
Center Wavelength Lane 1	λ_1	1299.02	1300.05	1301.09	nm
Center Wavelength Lane 2	λ_2	1303.54	1304.58	1305.63	nm
Center Wavelength Lane 3	λ_3	1308.09	1309.14	1310.19	nm
Damage threshold , each lane	Pdamage	-6			dBm
Average Receive Power, each lane					
Receiver sensitivity (OMA), each lane (100GbE) (BER = 1×10^{-12}) ³	SEN			-15	dBm

Receiver sensitivity (OMA), each lane (100GbE) (BER = 5×10^{-5}) ⁴	SEN			-18.5	dBm
Los Assert	LosA	-35			dBm
Los De-assert	LosDA			-18	dBm
Los Hysteresis	LosH	0.5			dB

Notes:

1. The optical power is launched into SMF.
2. Measured with a PRBS 231-1 test pattern @25.78125, Hit ratio $\leq 5E-5$.
3. Measured with a PRBS 231-1 test pattern @25.78125 Gb/s, BER $\leq 1E-12$.
4. Measured with a PRBS 231-1 test pattern @25.78125 Gb/s, BER $\leq 5E-5$.

4. Electrical Characteristics

High-Speed Signal: Compliant to CAUI-4 (IEEE 802.3bm)

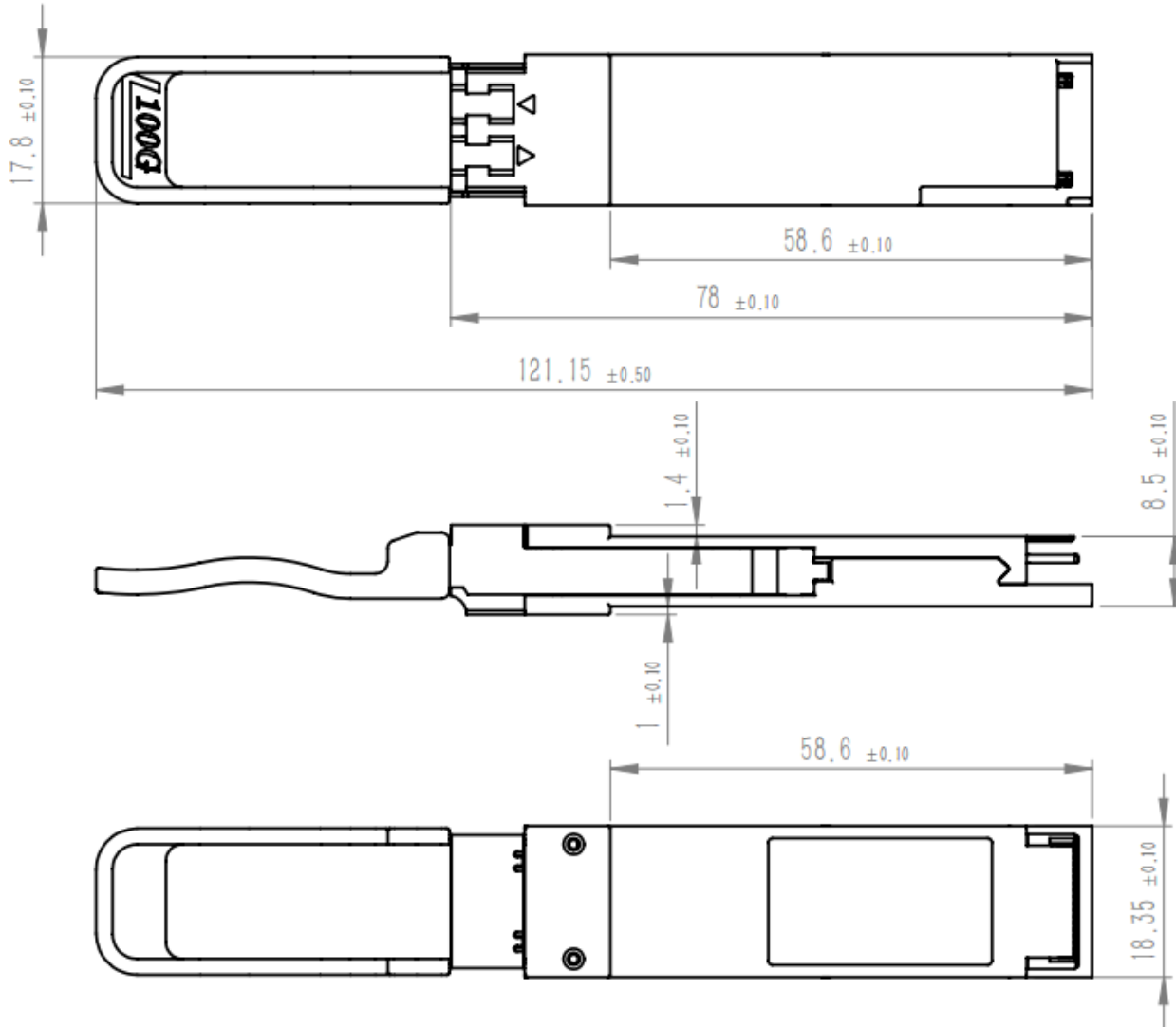
Low-Speed Signal: Compliant to SFF-8679.

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

Notes:

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

5. Mechanical Diagram



Note: External physical characteristics are subject to variation. This may include, but is not limited to, external case designs, pull tab colors and/or shapes, removal latch styles or colors, and label sizes and placement. These variations do not affect the function or characteristics of the transceivers.

6. Ordering Information

OEM	Part Number	OEM	Part Number
Alcatel-Lucent	3HE11239AA-I-A	Juniper	QSFP-100G-ER4L-I-A
Arista	QSFP-100G-ERL4-I-A	MSA	AN-QSFP28-ER4L-I
Cisco	QSFP-100G-ER4L-S-I-A	MSA Champion ONE	100GQ28E-ER4L-H
Dell	407-BBZX-I-A	MSA OnePort	OP-QSFP28-ER4L-I

7. Contact Information

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