



Features

- Supports 103Gbps aggregate bit rate
- Up to 80km for G.652 SMF
- Single 3.3V Power Supply and Low Power dissipation < 5W
- 4x25Gbps EML-based LAN-WDM cooling transmitter
- SOA+PIN and TIA array on the receiver side
- 4x25Gbps retimed electrical interface
- Duplex LC receptacles
- I2C interface with integrated Digital Diagnostic Monitoring
- Operating Case Temperature: 0°C ~70°C

Standard

- Compliant with QSFP28 MSA Specification and IEEE 802.3bm 100GBASE-SR4
- Class 1 FDA and IEC60825-1 Laser Safety Compliant

Applications

- 100GBASE-SR4 Ethernet

1. Absolute Maximum Ratings

Exceeding any one of these values may destroy the device immediately.

Parameter	Symbol	Min	Max	Units
Storage Temperature	Ts	-40	+85	°C
Maximum Supply Voltage	VCC	-0.5	3.6	V
Operating Relative Humidity	RH	5	85	%

2. Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Units
Operating Case Temperature	Tc	0		70	°C
Power Supply Voltage	Vcc	3.135	3.3	3.465	V
Power Dissipation	PD			5	W

3. Optical and Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Units
Transmitter					
Signaling Rate, each lane	BRAVE		25.78		Gbps
Data Rate Variation		-100		100	Ppm
Lane_0 Center Wavelength	$\lambda C0$	1294.53	1295.56	1296.59	nm
Lane_1 Center Wavelength	$\lambda C1$	1299.02	1300.05	1301.09	nm
Lane_2 Center Wavelength	$\lambda C2$	1303.54	1304.58	1305.63	nm
Lane_3 Center Wavelength	$\lambda C3$	1308.09	1309.14	1310.19	nm
Side-mode Suppression ratio	SMSR	30			dB
Total Average Output Power	Po			12.5	dBm
Average Launch Power each lane*(Note1)	Peach	2		6	dBm
Optical Modulation Amplitude (OMA) each lane	TXOMA			3.6	dBm
Average launch power of OFF transmitter each lane	Poff			-30	dBm
Transmitter and Dispersion Penalty (TDP), each lane	TDP			2.5	dB
Extinction Ratio, each lane	ER	8			dB
Relative Intensity Noise	RIN			-130	dB/hz
Transmitter Reflectance	REFLT			-12	dB
Optical Return Loss Tolerance				20	dB
Transmitter eye mask definition {X1, X2,X3, Y1, Y2, Y3}*(Note2)		{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}			
Receiver					
Signaling rate, each lane	BRAVE		25.78		Gbps
Data Rate Variation		-100		100	Ppm
Lane_0 Center Wavelength	$\lambda C0$	1294.53	1295.56	1296.59	nm
Lane_1 Center Wavelength	$\lambda C1$	1299.02	1300.05	1301.09	nm
Lane_2 Center Wavelength	$\lambda C2$	1303.54	1304.58	1305.63	nm
Lane_3 Center Wavelength	$\lambda C3$	1308.09	1309.14	1310.19	nm
Average Receive Power, each lane *(Note3)	RPOW	-28		3	dBm
Damage threshold, each Lane	RDAM		4		dBm
Receive Power, each Lane (OMA)	RxOMA	3			dBm
Receive Sensitivity (OMA), each Lane	RxSENS			-28	dBm

Receiver Reflectance	REFLR			-26	dB
LOS Assert, each Lane	LOSA	-39			dBm
LOS De-Assert, each Lane	LOSD			-29	dBm
LOS Hysteresis, each Lane		0.5			dB

Notes:

1. Average launch power, each lane (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.
2. Hit ratio 5×10^{-5} .
3. Receiver sensitivity (OMA), each lane (max) at 5×10^{-5} BER is a normative specification.

4. Performance Specifications - Electrical

Parameter	Symbol	Min	Typ	Max	Units
Transmitter					
Differential data input swing per lane	Vin	300		900	mVp-p
Input Impedance (Differential)	Zin	90	100	110	%
Receiver					
Output Amplitude (Differential)	Vout	300		900	mVpp
Output Impedance (Differential)	Zout	90	100	110	%
Output Rise/Fall Time (20%~80%)	tr/tf			20	ps

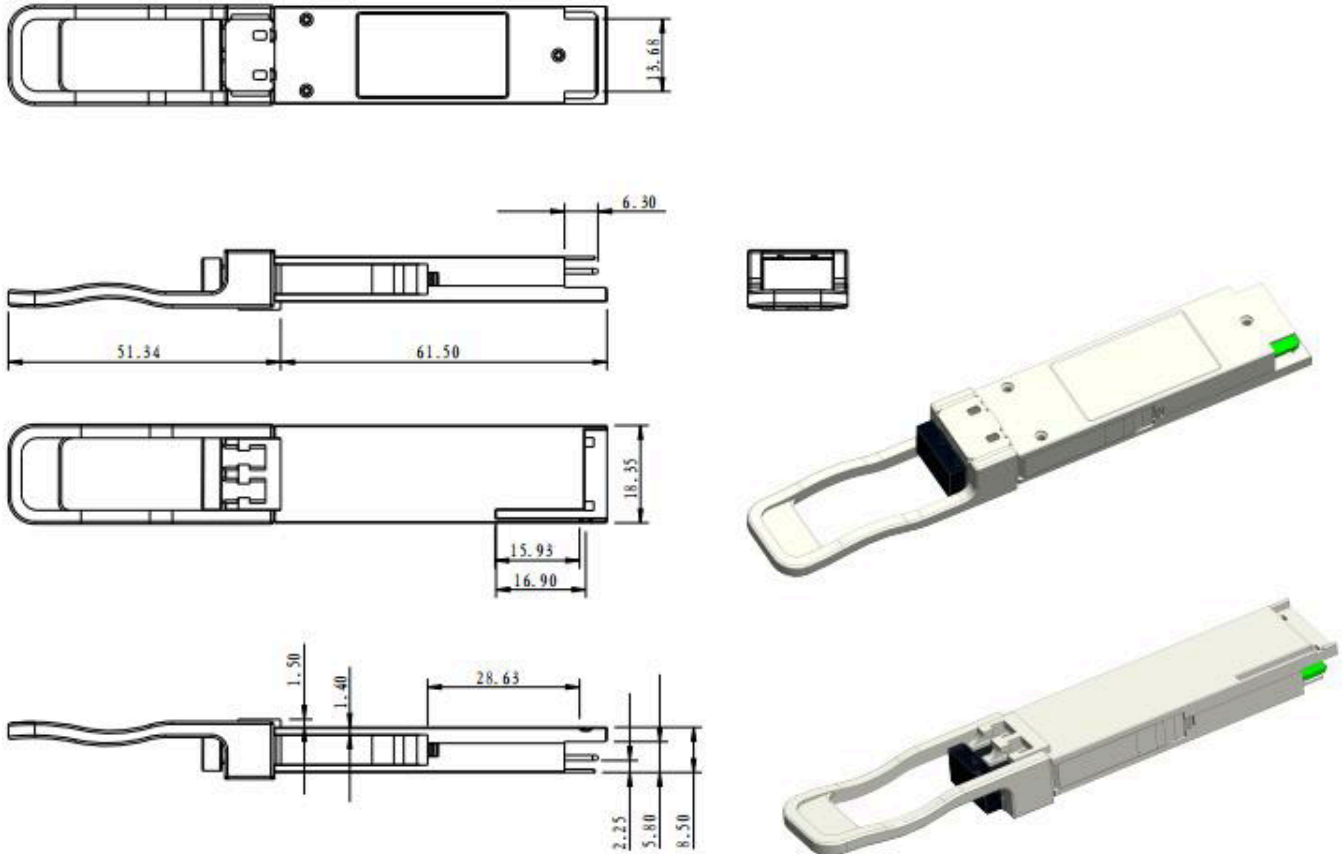
5. Digital Diagnostic Functions

100G QSFP28 transceivers provide an enhanced digital diagnostics.

Parameter	Range	Unit	Accuracy	Calibration
Temperature	0 to 70	°C	±3°C	Internal / External
Voltage	3.1 to 3.5	V	±3%	Internal / External
Bias Current, each lane	1 to 15	mA	±10%	Internal / External
TX Power, each lane	-8.4 to 2.4	dBm	±3dB	Internal / External
RX Power, each lane	-10.3 to 2.4	dBm	±3dB	Internal / External

Note: The transceivers provide serial ID memory contents and diagnostic information about the present operating conditions by the 2-wire serial interface (SCL, SDA). The diagnostic information with internal calibration or external calibration all are implemented, including received power monitoring, transmitted power monitoring, bias current monitoring, supply voltage monitoring and temperature monitoring.

6. 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.

7. Ordering Information

OEM	Part Number	OEM	Part Number
Arista	QSFP-100G-ZR4-AN-LP-A	Extreme Networks	10403-ZR4-LP-A
Cisco	QSFP-100G-ZR4-S-LP-A	Juniper	JNP-QSFP-100G-ZR4-LP-A
Alcatel-Lucent	3HE11239AA-ZR-LP-A	Nokia	100GQSFP28E-ZR4-N-LP-A
Alcatel-Lucent	3HE16558AA-LP-A	MSA	AN-QSFP28-ZR4-LP-A
Calix	100-04997-ZR4-LP-A	OnePort	OP-QSFP28-ZR4-LP-A
Ciena	XCVR-Q30V31-80KM-LP-A		

8. Contact Information

Tel: 800.590.9535

Web: <http://www.approvednetworks.com>