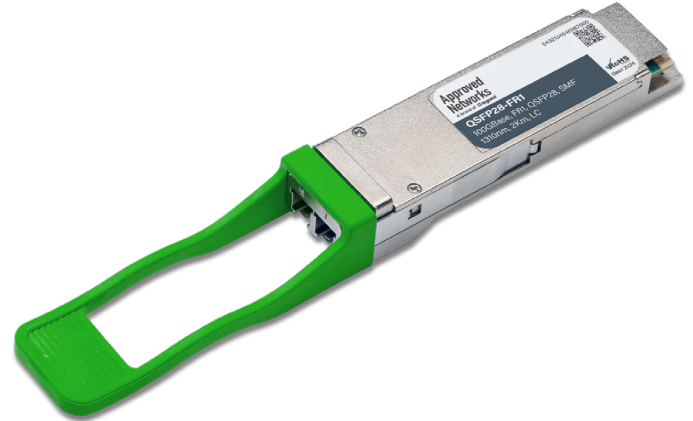


Features:

- Compliant with QSFP28 Standard SFF-8636 Rev 2.10a
- Compliant with 100G Lambda MSA 100G-FR Rev 2.0
- High speed I/O electrical interface (CAUI-4)
- Single 3.3V Supply Voltage
- Maximum power consumption 4W
- 0-70 °C Case Operating Temperature
- 1311nm EML laser and PIN Receiver Array
- QSFP28 MSA package with duplex LC connector
- Two Wire Serial Interface with Digital Diagnostic Monitoring
- Complies with EU Directive 2011/65/EU (RoHS compliant)
- Class 1 Laser



1. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ	Max.	Unit	Notes
Storage Temperature	T _s	-40	-	+85	°C	
Supply Voltage	V _{cc}	-0.3	-	3.6	V	
Relative Humidity (non-condensing)	RH	5	-	95	%	
Data Input Voltage – Differential	IVDIP-VDINI	-	-	1.0	V	
Control Input Voltage	V _I	-0.3	-	V _{cc} +0.3	V	
Control Output Current	I _O	-20	-	20	mA	

2. Recommended Operating Conditions

Parameter	Symbol	Min.	Typ	Max.	Unit	Notes
Operating Case Temperature	T _{OPR}	0	-	70	°C	
Power Supply Voltage	V _{cc}	3.135	3.3	3.465	V	
Instantaneous peak current at hot plug	ICC_IP	-	-	1600	mA	
Sustained peak current at hot plug	ICC_SP	-	-	1320	mA	

Maximum Power Dissipation	PD	-	-	4	W	
Maximum Power Dissipation, Low Power Mode	PDLP	-	-	1.5	W	
Signalling Rate	SR	-	53.125	-	GBd	
Control Input Voltage High	VIH	Vcc*0.7	-	Vcc+0.3	V	
Control Input Voltage Low	VIL	-0.3	-	Vcc*0.3	V	
Two Wire Serial Interface Clock Rate	-	-	-	400	kHz	
Power Supply Noise	-	-	-	66	mVpp	10Hz-10MHz
Rx Differential Data Output Load	-	-	100	-	ohms	
Operating Distance	-	2	-	2000	m	

3. Transmitter Optical Specifications

Parameter	Symbol	Min.	Typ	Max.	Unit	Notes
Wavelength	λ_c	1304.5	1311	1317.5	nm	
Side mode suppression ratio	SMSR	30	-	-	dB	
Average Optical Launch Power	POUT	-2.4	-	4	dBm	
Average Launch Power Tx_Off	POUT_OFF	-	-	-15	dBm	
Extinction Ratio	ER	3.5	-	-	dB	
Outer Optical Modulation Amplitude	OMA _{outer}	-0.2	-	4.2	dBm	
Launch Power in OMA _{outer} minus TDECQ for ER ≥ 4.5dB	OMA _{outer} -TDECQ	-1.6	-	-	dBm	
Launch Power in OMA _{outer} minus TDECQ for ER < 4.5dB	OMA _{outer} -TDECQ	-1.5	-	-	dBm	
Transmitter and dispersion eye closure	TDECQ	-	-	3.4	dB	
TDECQ - 10*log ₁₀ (Ceq)		-	-	3.4	dB	
Transmitter transition time		-	-	17	ps	
RIN _{17:1OMA}	RIN	-	-	-136	dB/Hz	
Optical return loss tolerance	ORLT	-	-	17.1	dB	
Transmitter reflectance	TR	-	-	-26	dB	

4. Receiver Optical Specifications

Parameter	Symbol	Min.	Typ	Max.	Unit	Notes
Wavelength	λ_c	1304.5	1311	1317.5	nm	
Damage Threshold		5	-	-	dBm	
Average receive power		-6.4	-	4.5	dBm	
Receive power (OMA _{outer})	RP	-	-	4.7	dBm	
Receiver reflectance	RR	-	-	-26	dB	
Receiver sensitivity (OMA _{outer})	RS	max (-4.5, SECQ-5.9)			dBm	
Stressed receiver sensitivity	SRS	-	-	-2.5	dBm	
Stressed Receiver Sensitivity Test Conditions:						
Stressed eye closure for PAM4 (SECQ)	SECQ	-	-	3.4	dB	
SECQ - $10 \cdot \log_{10}(C_{eq})$		-	-	3.4	dB	

5. Electrical Specifications

Low-Speed Signal: Compliant to SFF-8679

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

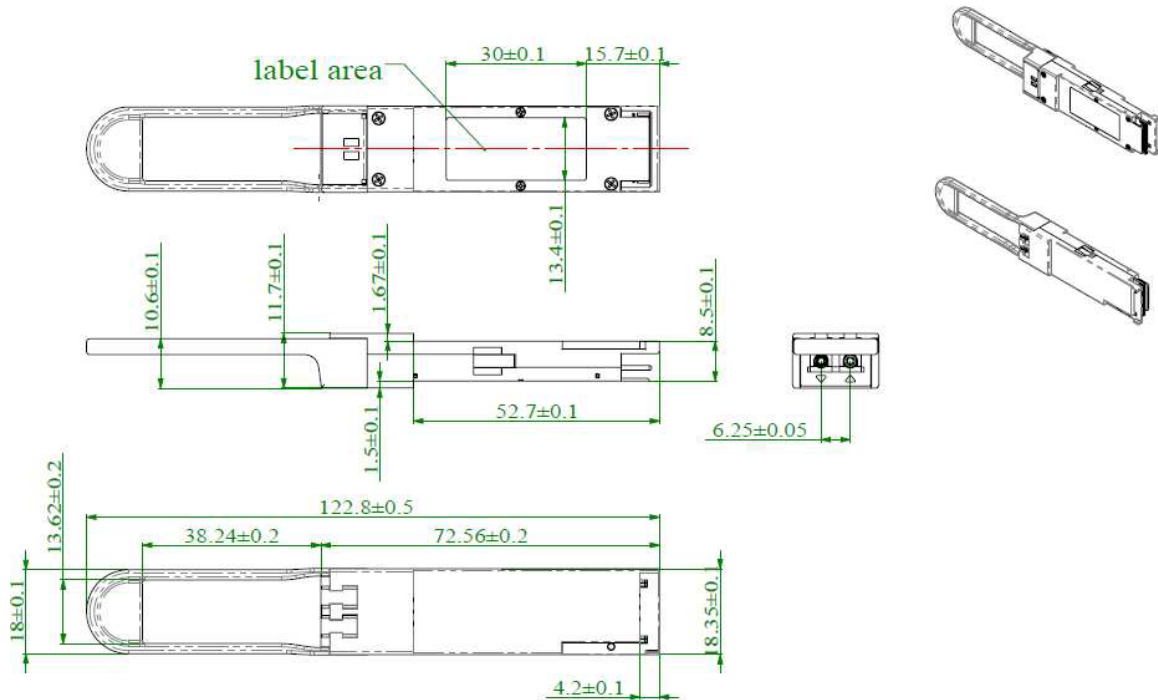
Parameter	Symbol	Min.	Typ	Max.	Unit	Notes
Transmitter (Module Input)						
Differential Data Input Amplitude	V _{IN} , P-P	95	-	900	mV _{pp}	1
Differential Termination Mismatch		-	-	10	%	
LPMode, Reset and ModSelL	V _{IL}	-0.3	-	V _{CC} *0.3	V	
	V _{IH}	V _{CC} *0.7	-	V _{CC} +0.3	V	
Receiver (Module Output)						
Differential Data Output Amplitude	V _{OUT} ,P-P	250	-	900	mV _{pp}	1
Differential Termination Mismatch		-	-	10	%	
Output Rise/Fall Time, 20%~80%	T _R	9.5	-	-	ps	
ModPrsL and IntL	V _{OL}	0	-	0.4	V	I _{OL} =4mA
	V _{OH}	V _{CC} -0.5	-	V _{CC} +0.3	V	I _{OL} =-4mA

Notes:

- Amplitude customization beyond these specs is dependent on validation in customer system

Support for 100GAUI-4 at 26.5625 Gbd when using KP4 FEC in chip-to-module interface

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-FR-A	Avago	AFCT-89SFDZ-A
Cisco	QSFP-100G-FR-S-A	Dell	407-BCIF-C1
Cisco	QSFP-100G-FR-S-C1	Juniper	QSFP-100G-FR-JN-A
MSA	AN-QSFP28-FR	MSA Champion ONE	100GQSFP28E-FR1
MSA OnePort	OP-QSFP28-FR1		

8. Contact Information

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