

SNR-QSFP28-CWDM4-10

QSFP28, 100GBASE CWDM4 Series

SNR-QSFP28-CWDM4-10 Series

Single-Mode 100GBASE CWDM4 10Km QSFP28 Transceiver

Compliant with 100G 4WDM-10 MSA

RoHS6 Compliant

Features

- ◆ Supports 103Gbps
- ◆ Single 3.3V Power Supply
- ◆ Power dissipation < 3.5W
- ◆ 2m to 10km over SMF
- ◆ RoHS-6 compliant (lead-free)
- ◆ 4x25G electrical interface
- ◆ Duplex LC receptacles
- ◆ Commercial case temperature range of 0°C to 70°C
- ◆ 4*25Gbps DFB-based CWDM transmitter
- ◆ PIN and TIA array on the receiver side
- ◆ I2C interface with integrated Digital Diagnostic Monitoring



Applications

- ◆ 100G CWDM4 applications with FEC
- ◆ 100G 4WDM-10

Ordering Information

Part No.	Data Rate	Fiber	Distance *(note2)	Interface	Temp.	DDMI
SNR-QSFP28-CWDM4-	103Gbps	SMF	10km	LC	0~+70°C	Yes

Note1: Customized version

Note2: Over SMF

*The product image only for reference purpose

SNR-QSFP28-CWDM4-10

QSFP28, 100GBASE CWDM4 Series

Regulatory Compliance*

Product Certificate	Certificate Number	Applicable Standard
TUV	R50135086	EN 60950-1:2006+A11+A1+A12+A2
		EN 60825-1:2014
		EN 60825-2:2004+A1+A2
UL	E317337	UL 60950-1
		CSA C22.2 No. 60950-1-07
EMC CE	AE 50285865 0001	EN 55022:2010
		EN 55024:2010
FCC	WTF14F0514417E	47 CFR PART 15 OCT., 2013
FDA	/	CDRH 1040.10
ROHS	/	2011/65/EU

*The above certificate number updated to June 2014, because some certificate will be updated every year, such as FDA and ROHS.

Product Description

SNR-QSFP28-CWDM4-10 transceiver module is designed for use in 100 Gigabit Ethernet links over 10Km single mode fiber. They are compliant with the QSFP28 MSA, CWDM4 MSA, 100G 4WDM-10 MSA, and portions of IEEE 802.3bm.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Ts	-40	+85	°C
Supply Voltage	Vcc	-0.5	3.6	V
Operating Relative Humidity	RH	5	85	%
Receiver Damage Threshold, per Lane	Rxdmg	5.5		dBm

*Exceeding any one of these values may damage the device permanently.

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	Tc	0	25	70	°C
Power Supply Voltage	Vcc	3.135	3.3	3.465	V
Power Dissipation	P _D			3.5	W

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max	Unit	Notes
Transmitter						
Differential data input swing per lane				900	mV _{p-p}	
Input Impedance (Differential)	Z _{in}			10	%	

SNR-QSFP28-CWDM4-10

QSFP28, 100GBASE CWDM4 Series

Stressed input parameters					
Eye width		0.46		UI	
Applied pk-pk sinusoidal jitter		IEEE 802.3bm Table 88-13			
Eye height		95		mv	
DC common mode voltage		-350	2850	mv	
Receiver					
Differential output amplitude		200	900	mv _{p-p}	
Output Impedance (Differential)	Z _{out}		10	%	
Output Rise/Fall Time	t _r /t _f	12		ps	20%~80%
Eye width		0.57		UI	
Eye height differential		228		mv	
Vertical eye closure			5.5	dB	

Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Signaling Speed per Lane	BR _{AVE}		25.78		Gbps
Data Rate Variation		-100		+100	ppm
Lane_0 Center Wavelength	λ _{C0}	1264.5		1277.5	nm
Lane_1 Center Wavelength	λ _{C1}	1284.5		1297.5	nm
Lane_2 Center Wavelength	λ _{C2}	1304.5		1317.5	nm
Lane_3 Center Wavelength	λ _{C3}	1324.5		1337.5	nm
Total Average Output Power	P _o			8.5	dBm
Average Launch Power each Lane*(Note3)	P _{each}	-6.5		2.5	dBm
Transmit OMA each Lane *(Note4)	TxOMA	-4.0		2.5	dBm
Difference in launch power between any two lanes (Average and OMA)	P _{D-2lane}			6.0	dB
Launch power in OMA minus TDP, each lane	OMA-TDP	-5.0			dBm
Transmitter and Dispersion Penalty per Lane *(Note5)	TDP			3	dB
Average launch power of OFF transmitter, each lane	P _{off}			-30	dBm
Side Mode Suppression Ratio	SMSR	30			dB
Optical Return Loss Tolerance		20			dB
Transmitter Reflectance *(Note6)				-20	dB

SNR-QSFP28-CWDM4-10

QSFP28, 100GBASE CWDM4 Series

Extinction Ratio	ER	3.5			dB
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}*(Note7)		{0.31, 0.4, 0.45, 0.34, 0.38, 0.4}			
Receiver					
Signaling Speed per Lane	BR _{AVE}		25.78		Gbps
Data Rate Variation		-100		+100	ppm
Damage threshold	Rxdmg	3.5			dBm
Lane_0 Center Wavelength	λ_{C0}	1264.5		1277.5	nm
Lane_1 Center Wavelength	λ_{C1}	1284.5		1297.5	nm
Lane_2 Center Wavelength	λ_{C2}	1304.5		1317.5	nm
Lane_3 Center Wavelength	λ_{C3}	1324.5		1337.5	nm
Average receive power *(Note8)	Rxpow	-13		2.5	dBm
Receive Power (OMA) per Lane	RxOMA			2.5	dBm
Unstressed Receiver Sensitivity (OMA) per Lane *(Note9)	Rxsens			-11.5	dBm
Stressed Receiver Sensitivity (OMA) per Lane *(Note10)	RX _{SRS}			-8.6	dBm
Optical Return Loss	ORL			-26	dB
Conditions of stressed receiver sensitivity test					
Vertical Eye Closure Penalty *(Note11)	VECP		2.6		dB
Stressed J2 Jitter *(Note11)	J2		0.33		UI
Stressed J4 Jitter *(Note11)	J4		0.48		UI
SRS eye mask definition {X1, X2, X3, Y1, Y2, Y3} *(Note11)		{0.39, 0.5, 0.5, 0.39, 0.39, 0.4}			
LOS Assert	LOSA	-25			dBm
LOS De-Assert	LOSD			-15	dBm
LOS Hysteresis		0.5			dB

Note3: 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.

Note4: Even if the TDP < 1.0dB, the OMA (min) must exceed this value.

Note5: TDP does not include a penalty for multi-path interference (MPI).

Note6: Transmitter reflectance is defined looking into the transmitter.

Note7: Hit ratio of 5×10^{-5}

Note8: Average receive power, each lane (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.

Note9: Sensitivity is specified at 5×10^{-5} BER.

Note10: Measured with conformance test signal at TP3 for BER = 5×10^{-5} .

Note11: Vertical eye closure penalty, stressed eye J2 Jitter, stressed eye J4 Jitter, and SRS eye mask definition are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

SNR-QSFP28-CWDM4-10

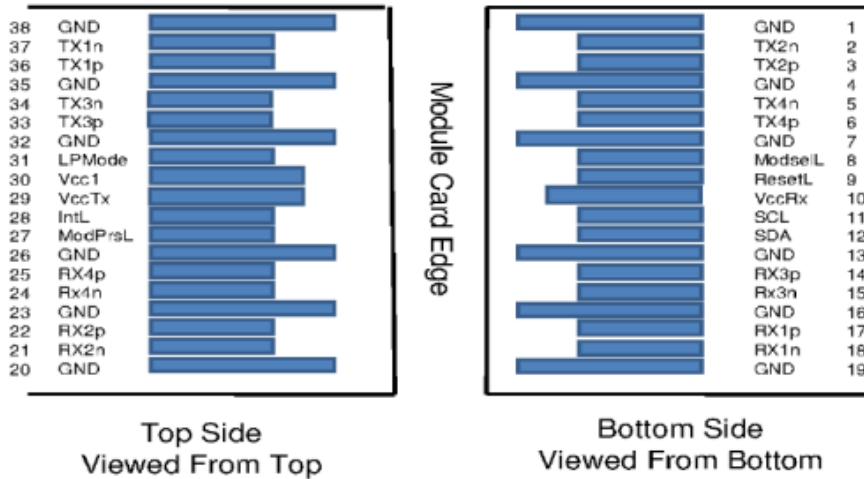
QSFP28, 100GBASE CWDM4 Series

4WDM-10 illustrative power budget

Description	Value	Unit
Power budget (for max TDP)	9.5	dB
Operating distance	10	km
Channel insertion loss ^{*(Note12)}	6.5	dB
Maximum discrete reflectance	-26	dB
Allocation for penalties (for max TDP)	3.0	dB
Additional insertion loss allowed	0	dB

Note12: The channel insertion loss budget may include up to 0.2 dB MPI loss penalty to support worst case transmitter/receiver with worst case connector.

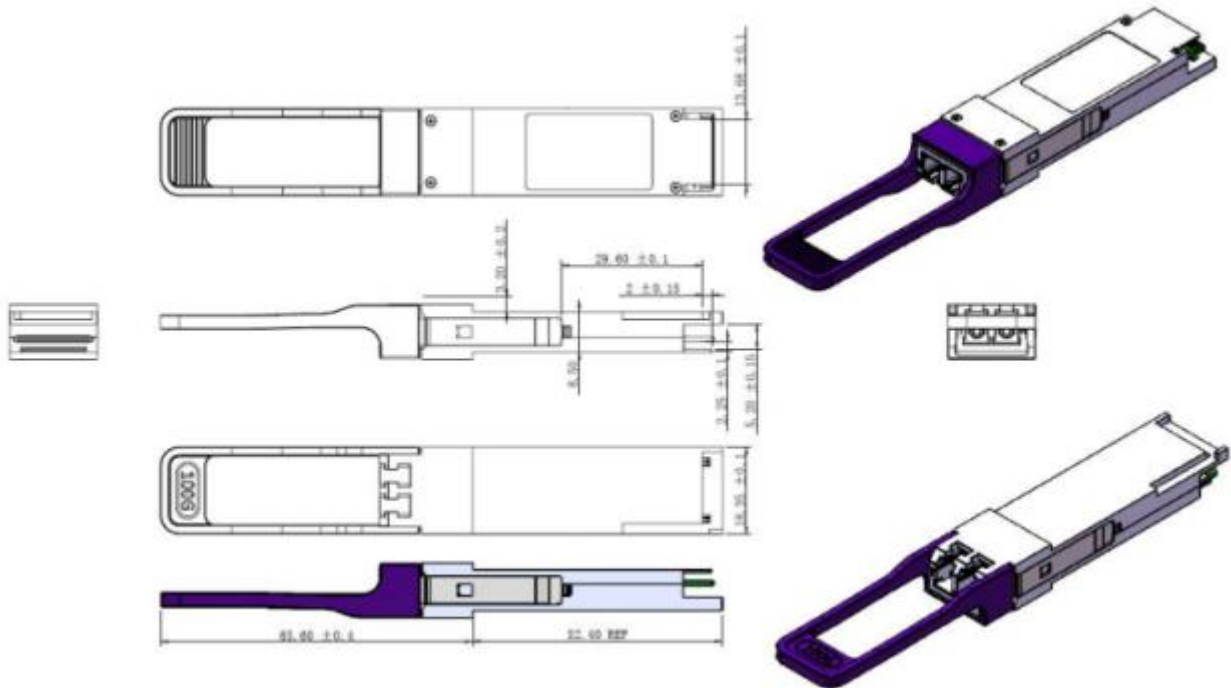
QSFP28 Transceiver Electrical Pad Layout



SNR-QSFP28-CWDM4-10

QSFP28, 100GBASE CWDM4 Series

Mechanical Specifications



GUARANTEE:



CONTACT:

Address: Building 56/2, Predelnaya Street, Yekaterinburg, Russia

Tel: +7(343) 379-98-38

Fax: +7(343) 379-98-38

E-mail: info@nag.ru

Online shop: <http://shop.nag.ru>