WTQFPQSP2440CN1 QSFP+ Transceiver

40Gb/s SWDM4 MMF 240m with Duplex LC / Product Overview 3



Part Number WTQFPQSP2440CN1	**Data Rate 40Gb/s**	**Wavelength 850/880/910/940**
Reach 240m MMF	**Temperature 0°C~+70°C**	

1. Product Overview

The 40G QSFP+ SWDM4 transceiver modules are designed for use in 40G Ethernet links over duplex multimode fiber. Four channels/lanes in the 850-940nm region @ 10Gbps to transport the Ethernet signal. Digital diagnostics functions are available via an I2C interface, as specified by the QSFP+ MSA.

Features

- Compliant with QSFP+ MSA
- Compliant with SWDM MSA
- Compliant with SFF-8636
- Compliant with IEEE 802.3ba
- Hot-pluggable QSFP+ form factor
- 4x10Gb/s VCSEL-based SWDM transmitter
- Supports 41.2Gbps aggregate bit rate
- Power dissipation<3.5W
- Maximum link length of 240m on OM3 MMF and 350m on OM4 MMF
- Case temperature range of 0°C to 70°C
- Duplex LC receptacles
- XLPPI electrical interface

Applications

- 40G Ethernet over Duplex MMF

2. Ordering Information

Part No.	Bit Rate (Gbps)	Laser (nm)	Distance（km）	Temp
WTQFPQSP2440CN1	40Gb/s	850/880/910/940	240m MMF	0°C~+70°C

3. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units	Note
Storage Temperature	TS	-40	+85	degC	
Power Supply Voltage	VCC	-0.5	3.6	V	
Relative Humidity	RH	0	85	%	

4. Recommended Operating Conditions

Parameter	Symbol	Min	Max	Units	Notes
Case Temp-Operating	TOP	0	70	degC	
Supply Voltage	VCC	3.14	3.46	V	
Power Consumption	P		3.5	W	
Link Distance (OM3 MMF)		2	240	M	
Link Distance (OM4 MMF)		2	350	M	
Link Distance (OM5 MMF)		2	440	m	

5. Recommended Operating Conditions

Transmitter electrical input signal characteristics (TP1)	Min	Typical	Max	Units	Conditions
Single ended input voltage tolerance	-0.3		4	V	Referred to TP1 signal common
AC common-mode input voltage tolerance	15			mV	RMS
Differential input return loss	See 86A.4.1.1	See 86A.4.1.1	See 86A.4.1.1	dB	10MHz to 11.1GHz
Diffrential to common-mode input return loss	10			dB	10MHz to 11.1GHz
J2 Jitter tolerance	0.17			UI	
J9 Jitter tolerance	0.29			UI	
Data Dependent Pulse Width Shrinkage (DDPWS) tolerance	0.07			UI	
	Specification values	Specification values	Specification values		
Eye mask coordinates: X1, X2 Y1, Y2	0.11,0.31 95,350	0.11,0.31 95,350	0.11,0.31 95,350	UI mV	Hit Ratio=5E-5
Crosstalk calibration signal VMA	850	850	850	mV	While calibrating compliance signal
Crosstalk calibration signal transition times, 20% to 80%	34	34	34	ps	While calibrating compliance signal
Receiver electrical output signal characteristics (TP4)	Min	Typical	Max	Units	Conditions
Single ended output voltage tolerance range	-0.3		4	V	Referred to signal common
AC common-mode output voltage (RMS)			7.5	mV	
Termination mismatch at 1MHz			5	%	

Transmitter electrical input signal characteristics (TP1)	Min	Typical	Max	Units	Conditions
Differential output return loss	See 86A.4.2.1	See 86A.4.2.1	See 86A.4.2.1	dB	10MHz to 11.1 GHz
Common-mode output return loss	See 86A.4.2.2	See 86A.4.2.2	See 86A.4.2.2	dB	10MHz to 11.1 GHz
Output transition time,20% to 80%	28			ps	
J2 Jitter output			0.42	UI	

6. Recommended Operating Conditions

J9 Jitter output			0.65	UI	
	Specification values	Specification values	Specification values		
Eye mask coordinates: X1, X2 Y1, Y2	0.29,0.5 150,425	0.29,0.5 150,425	0.29,0.5 150,425	UI mV	Hit ratio=5E-5
Crosstalk source VMA, each lane	700	700	700	mV	At TP1a
Crosstalk source transition times,20% to 80%	37	37	37	PS	At TP1a

7. Recommended Operating Conditions

Parameter	Units	Specification
Temperature Monitor	°C	± 3
Voltage Monitor	V	± 5 %
I_bias Monitor	mA	± 10 %
Received Power (Rx) Monitor	dB	± 3.0
Transmit Power (Tx) Monitor	dB	± 3.0

8. Optical Parameters

Parameter	Lane	Min	Typical	Max	Units	Notes
Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Signaling rate, each lane		10.3125, 9.953±100ppm	10.3125, 9.953±100ppm	10.3125, 9.953±100ppm	Gb/s	
Lane Wavelength Range	Lane0 Lane1 Lane2 Lane3	844 874 904 934		858 888 918 948	nm	
Difference in launch power between any two lanes				4.5	dB	

Parameter	Lane	Min	Typical	Max	Units	Notes
RMS Spectral width @850nm @880nm,910nm,940 nm	Lane0 Lane1,2,3			0.53 0.59	nm	
Optical Modulation Amplitude (OMA), each lane		-5.5		3	dBm	
Average Launch power per Lane		-7.5		3	dBm	
Launch Power Tx OMA-TDP	Lane0 Lane1 Lane2 Lane3	-6.4 -6.0 -6.5 -7.0			dBm	
Transmitter and Dispersion Eye Closure	Lane0 Lane1 Lane2 Lane3			3.7 4.0 4.5 5.0	dB	
Extinction Ratio		2			dB	
Optical Return Loss Tolerance		12			dB	
Average Launch Power per Lane @ TX Off State				-30	dBm	
Encircled Flux		>=86% at 19um <=30% at 4.5um	>=86% at 19um <=30% at 4.5um	>=86% at 19um <=30% at 4.5um		
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3} Hit ratio 5x10-5 hits per sample		{0.23,0.34,0.43,0.27,0.35, 0.4}	{0.23,0.34,0.43,0.27,0.35, 0.4}	{0.23,0.34,0.43,0.27,0.35, 0.4}	{0.23,0.34,0.43,0.27,0.35, 0.4}	
Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver
Signaling rate, each lane		10.3125, 9.953±100ppm	10.3125, 9.953±100ppm	10.3125, 9.953±100ppm	Gb/s	

9. Optical Parameters

Lane Wavelength Range	Lane0	844		858	nm	
Lane Wavelength Range	Lane1	874		888	nm	
Lane Wavelength Range	Lane2	904		918	nm	
Lane Wavelength Range	Lane3	934		948	nm	
Damage threshold, each lane		3.8			dBm	
		-12.9				
		-12.5				
Average Receive Power, each lane				2.4	dBm	
		-12.2				
		-11.9				
Receiver Power, each lane (OMA)				3	dBm	

Lane Wavelength Range	Lane0	844		858	nm	
Receiver sensitivity OMA, per lane				-9.1	dBm	
Difference in receive power between any two lanes (OMA)				5	dB	
RX_Los_Assert		-30			dBm	
RX_Los_De-ASSERT				-13	dBm	
RX_Los_Hysteresis		0.5			dB	
Return reflectance				12	dB	

10. Pin Descriptions

PIN	Symbol	Name/Description	Notes
1	GND	Transmitter Ground (Common with Receiver Ground)	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data output	
4	GND	Transmitter Ground (Common with Receiver Ground)	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data output	
7	GND	Transmitter Ground (Common with Receiver Ground)	1
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	VccRx	3.3V Power Supply Receiver	2
11	SCL	2-Wire serial Interface Clock	
12	SDA	2-Wire serial Interface Data	
13	GND	Transmitter Ground (Common with Receiver Ground)	
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Transmitter Ground (Common with Receiver Ground)	1
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Transmitter Ground (Common with Receiver Ground)	1
20	GND	Transmitter Ground (Common with Receiver Ground)	1
21	Rx2n	Receiver Inverted Data Output	

PIN	Symbol	Name/Description	Notes
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Transmitter Ground (Common with Receiver Ground)	1
24	Rx4n	Receiver Inverted Data Output	1
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Transmitter Ground (Common with Receiver Ground)	1
27	ModPrsl	Module Present	
28	IntL	Interrupt	
29	VccTx	3.3V power supply transmitter	2
30	Vcc1	3.3V power supply	2
31	LPMode	Low Power Mode，not connect	
32	GND	Transmitter Ground (Common with Receiver Ground)	1
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Output	
35	GND	Transmitter Ground (Common with Receiver Ground)	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Output	
38	GND	Transmitter Ground (Common with Receiver Ground)	1

11. Revision History

Version	Date	Description	Prepared by
V6	2025	Unified WincoTek datasheet format	WincoTek
V6.1	2026-10-23	Engineering and format review	WincoTek