100G Dual Port Fiber Bypass Module

Product Description



The 850nm 100G Dual QSFP28 SR4 dual port bypass module is designed as alternative 100Gbps dual QSPF+ SR4 transceiver. Its innovated design able the fiber bypass function become selectable within single PCI card. The 850nm 100G Dual QSFP28 SR4 dual port bypass module is design expressly for Intrusion Prevention System (IPS) provides complete visibility to network traffic, It also introduces a point of failure should the IPS lose power, cable fail or application freeze.

This interconnecting system include dual ways transceivers offers 4 channels and maximum bandwidth of 100Gbps. It integrates four data lanes in each direction with 100 Gbps aggregate bandwidth. Each lane can operate at 103.1Gbps up to 70 m using OM3 fiber or 100 m using OM4 fiber. The optical interface uses a 12/8-fiber MTP® (MPO) connector.

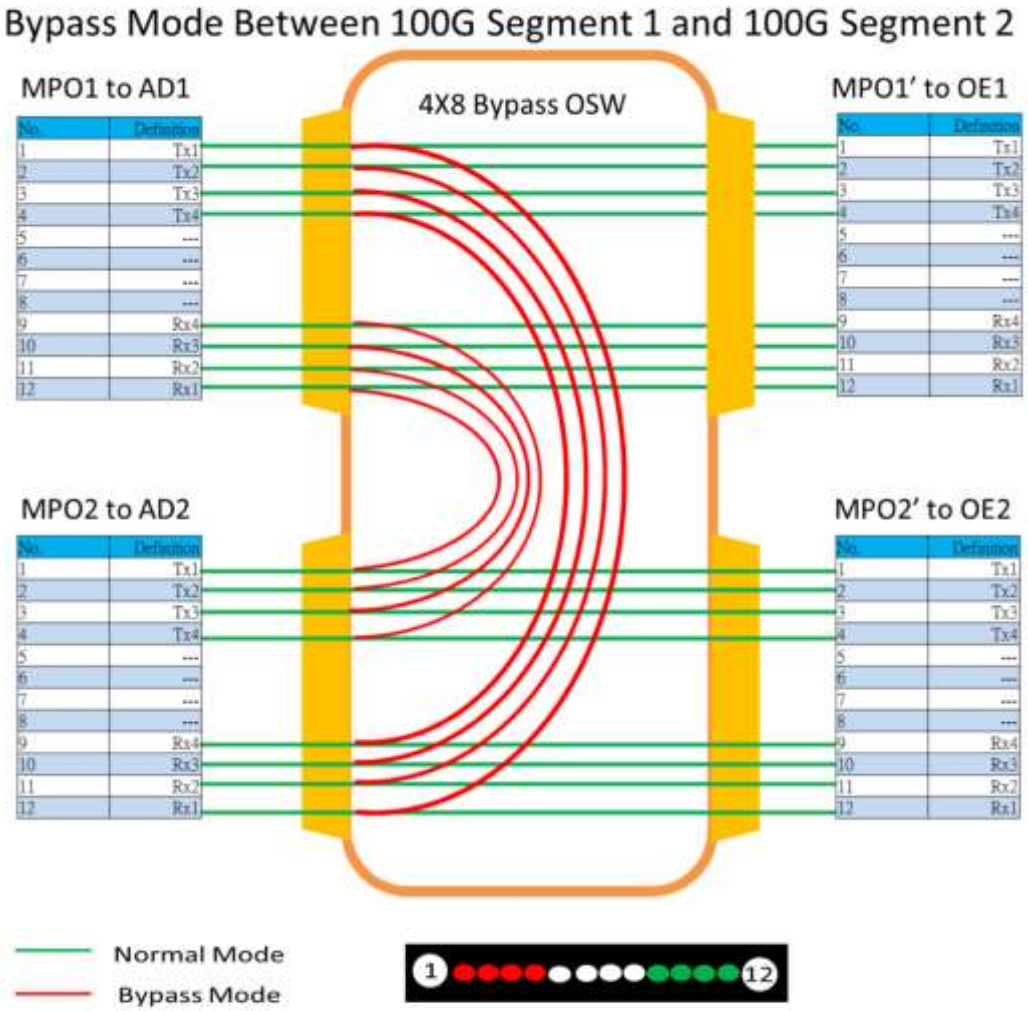
Features

- Compliant with 100G Ethernet
- IEEE 802.3ba 100GBASE-SR4 standards
- Compliant with SFF-8436 QSFP28 specification Revision 3.5
- Unretimed XLPPI electrical interface
- Utilizes a standard 12/8 line optical fiber with MP-MTP optical connector
- Link up to 70m using OM3 MMF
- Laser Class 1 Product with comply with Requirements of IEC 60825-1 and IEC 60825-2

Applications

- Client-side 100G Telecom connectionss
- STTA/SAS Storage
- In-Line Sercurity
- Web Acceleration Apliances

100G Dual QSFP28 SR Dual Port Bypass Module – Optical Path



Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	Ts	-40		85	°C	
3.3V Supply Voltage	Vcc3(3.3V)	-0.5		3.6	V	Vcc3(3.3V)
Relative Humidity	—	0		85	%	2
Data Input Voltage — Single Endes		-0.5		Vcc+0.5	V	
Transceiver Rx damage Threshold / Lane	DT	5.5			dBm	

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operation Temperature	Ts	0	40	70	°C	1
3.3V Supply Voltage	Vcc(3.3V)	3.14	3.3	3.47	V	Vcc (3.3V)
3.3V Supply Current	Icc		2100	2300	mA	Icc (Total)
Data Rate per Channel	bps		25.78125		Gbps	

Note：

1. Consuming Temperature

2. Non Condensation

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
3.3V Supply Voltage (Include Vcc1, Vcc2, VccTX1, VccTR2 VccRx1, VccRx2)	Vcc3(3.3V)	3.14	3.3	3.47	V	
Data Rate per Lane	bps		25.78125		Gbps	
Control Input Voltage High	V_{IH}	2.4		V_{cc}+0.3	V	
Control Input Voltage Low	V_{IL}	-0.3		0.8	V	
Two Wire serial(TWS) Interface Clock Rate				400	KHz	
Transmitter Differential input Impedance	Z_d		100		Ω	1
Receiver Differential Output Impedance	Z_d		100		Ω	2
Link distance on OM2 MMF		0.5		30	m	
Link distance on OM3 MMF		0.5		70	m	
Link distance on OM4 MMF		0.5		100	m	
Transmitter						
TRx Power-On Initiation Time				2000	mS	3
Data Differential Input Voltage Swing	V_{DIFF}	200		900	mV	1
Differential Input Voltage	V_{DT}	0.5		2.4	V	1
Differential Input Return Loss	Per IEEE 802.3ba Section 86A.4.1.1				dB	4
Differential to Command Mode Input Return Loss		10			dB	4
J2 Jitter Tolerance	Jt2	0.17			UI	
J9 Jitter Tolerance	Jt9	0.29			UI	
Eye Mask Coordinate：X1, X2, X3; Y1, Y2, Y3	Specification Value：0.3, 0.38, 0.45; 0.35, 0.41, 0.5				UI;mV	
Receiver						
Data Differential Output Voltage Swing	V_{DIFF}	400		800	mV	2
Output Transition Time 20% to 80%	Tr, Tf	12			pS	
Differential Output Return Loss	Per IEEE 802.3b Section 86A.4.2.1				dB	4
Differential to Command Mode Output Return Loss	Per IEEE 802.3ba Section 86A.4.2.2				dB	4
J2 Jitter Output	Jo2			0.42	UI	
J9 Jitter Output	Jo9			0.95	UI	
Eye Mask Coordinate：X1, X2, X3; Y1, Y2, Y3	Specification Value：0.28, 0.5, 0.5; 0.33, 0.33, 0.4				UI;mV	
Optical Bypass Switch						
Optical Switch Supply Voltage	Vcc5(5V)	4.5	5.0	5.5	V	3.3V to 5V
Operation Current (Total)	I_{SW}			240	mA	
Latching Voltage-High	V_{LATH}	4.5	5.0	5.5	V	
Latching Voltage-Low	V_{LATL}	0		0.8	V	
Latching Resistance	R_{LAT}		125		Ω	±10%

Switching Time (Input Pulse ≧20ms)	t_{ST}			5.0	msec	

Note：

1. Internally AC couples and terminated to 100-Ohms differential load.
2. Internally AC coupled, but requires a 100-Ohms differential termination at or internal to Serializer/Deserialer.
3. "Initialization Time" is the time from when the supply voltage hot swap time reach and remain above the minimum "Recommended Operating Conditions" to the time when the module enables TWS access. The module at that point is fully functional.
4. Hit ratio= 5×10E-5 per sample.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Center Wavelength, each lane	λ_C	840	850	860	nm	
Spectral Width - RMS	$\Delta\lambda$		0.6		nm	
Average Output Optical Power, each lane	Po	-8.4		2.4	dBm	1
Optical Extinction Ratio	ER	2			dB	
Output Optical Modulation Amplitude, per lane	OMA	-6.4		3.0	dBm	1
Launch Power(OMA) minus TDEC per Lane		-7.3			dB	1
TDEC per Lane				4.3	dB	
Relative Intensity Noise	RIN			-128	dB/Hz	
Disable Output Optical Power	P_{O-OFF}			-30	dB	
Optical Return Loss Tolerance	12				dB	
Eye Mask Coordinate： X1, X2, X3; Y1, Y2, Y3	Specification Value： 0.3, 0.38, 0.45; 0.35, 0.41, 0.5				UI	2
Receiver						
Center Wavelength, each lane	λ_C	840	850	860	nm	
Damage threshold		3.4			dBm	
Average Receiver Power, each lane	P_{in}	-10.3		2.4	dBm	3
Stressed Sen itivity (OMA)				-5.2	dBm	3
Receiver Reflectance				-12	dBm	
LOS Assert	P_A	-30			dBm	
LOS De-Assert	P_D			-13	dBm	
LOS Hysteresis	P_A-P_D	0.5	2		dB	
Stressed Receiver Eye Mask Coordinate： X1, X2, X3; Y1, Y2, Y3	Specification Value： 0.28, 0.5, 0.5; 0.33, 0.33, 0.4				UI	4
Optical Bypass Switch						
Center Wavelength	λ_C	670	850	980	nm	
Insertion Loss (Normal Mode)	IR	-4.0		0	dB	5

Insertion Los (Bypass Mode)	IRL	-4.0		0	dB	6
Return Loss (Bypass Mode)	ORL	30			dB	

Note：

1. Output power is power couples into a OM3 50/125um Multi-mode fiber (MMF).
2. Hit ratio= 1.5×10E-3 per sample.
3. Measured with 25.78125Gbps of PRBS-31 at 10-12 BER.
4. Hit ratio= 5×10E-5 per sample.
5. Normal Mode (Bypass Mode Off).
6. Bypass Mode (Normal Mode Off).