

LPWSMM85-S10C

QSFP-DD, 400G SR8, MPO16 , 850nm MMF100m

Features

- Supports 8x53.12Gb/s aggregate bit rate
- 8x26.5625GBd(PAM4) 400GAUI-8 electrical interface
- 8x VCSEL 850nm arrays and 8x PIN PD arrays
- Signal synchronization by inside CDR
- Hot-pluggable QSFP-DD footprint
- Maximum link length of 100m on OM4 fiber with FEC
- Optical connector: MPO-16(APC)
- +3.3V single power supply
- Low power Consumption < 10W
- IEEE802.3cd 400GBASE-SR8 Specification compliant
- Case operating temperature : 0°C to +70°C
- RoHS6 compliant



Applications

- 400G Ethernet
- Data centers and cloud networks

Ordering information

Part NO.	Bit Rate	Laser	Distance *1	Fiber Media	DDMI	Connector	Temp *2
LPWSHM85-S10C	425.Gbps	850nm VCSEL	100m (OM4)	MMF	YES	MPO 1X16 (APC)	0~70

Note:

1. 100M for OM4 fiber, and 60m for OM3 fiber, with FEC

2. Case Temperature.

I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Supply Voltage	V _{cc}	0	-	3.6	V	
Storage Temperature	T _{st}	-40		85	°C	
Storage Relative Humidity	H _A	0		85	%	Non-condensation
Receiver damage Threshold	R _{in} _{dam}	5			dBm	each lane

II. Recommended Operating Conditions

Specifications	Symbol	Min.	Typ.	Max.	Unit	Ref.
Supply Voltage	V _{cc}	3.135	3.3	3.465	V	
Operating Case Temperature	T _c	0		70	°C	
Power Dissipation	P _d	-	-	10	W	
Link distance on OM4 MMF	d			100	meters	

III. Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Transmitter(per lane)						
Signaling Rate per Lane	SR	26.5625 ± 100 ppm			Gbd	
Modulation format	-	PAM4			-	
Center Wavelength	λ _c	840		860	nm	
Average Output Power per lane	P _{OUT}	-6.5		4	dBm	
Outer Optical Modulation Amplitude per lane	OMA _{OUT}	-4.5		3	dBm	
Extinction Ratio	ER	3			dB	
RMS Spectral Width	σ			0.6	nm	
Launch power in OMA _{OUT} minus TDECQ	P _{TDECQ}	-5.9			dBm	
Transmitter and dispersion eye closure (each lane)	TDECQ			4.5	dB	
Transmitter OFF Output Power	P _{Off}			-30	dBm	
Optical Return Loss Tolerance	ORLT			12	dB	

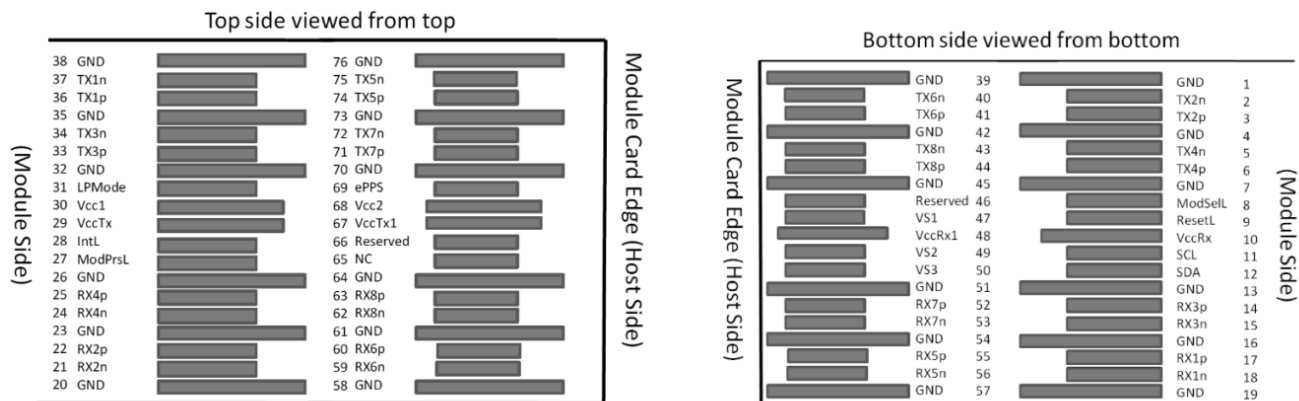
Receiver(per lane)						
Signaling Rate per Lane	SR	26.5625 $\pm$ 100 ppm			Gbd	
Modulation format	-	PAM4			-	
Input Optical Wavelength	λ_{IN}	840		860	nm	
Average Receive Power per lane	Pin	-8.4		4	dBm	
Receiver Power (OMA _{OUT}) each lane	R _{OMA}			3	dBm	
Rx Sensitivity(OMA _{OUT}) per lane (SECQ=1.4 dB)	R _{SENS}			-6.5	dBm	1
Stressed Rx Sensitivity(OMA) per lane	SR _{SENS}			-3	dBm	
Damage threshold	P _{DT}	5			dBm	
Receiver Reflectance	R _{fl}			-12	dBm	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOSD			-9	dBm	
LOS Hysteresis	LOSH	0.5			dB	

Note1. BER<2.4E-4,Pattern PRBS31Q.

IV. Electrical Interface Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Supply Voltage	V _{CC}	3.135		3.465	V	
Power Dissipation	P _d			10	W	
Transmitter(per Lane)						
Input different impedance	R _{in}	90	100	110	Ω	
Single ended input voltage tolerance	V _{inT}	-0.3		4.0	V	
Differential Input Voltage Amplitude	V _{in,pp}			900	mV	
Receiver (per Lane)						
Error Bit Rate	BER			2.4E-4		
Output different impedance	R _{out}	90	100	110	Ω	
Single-ended output voltage	V _{outR}	-0.3		4.0	V	
Differential Output Voltage Amplitude	V _{out,pp}			900	mV	

V. Pin Diagram



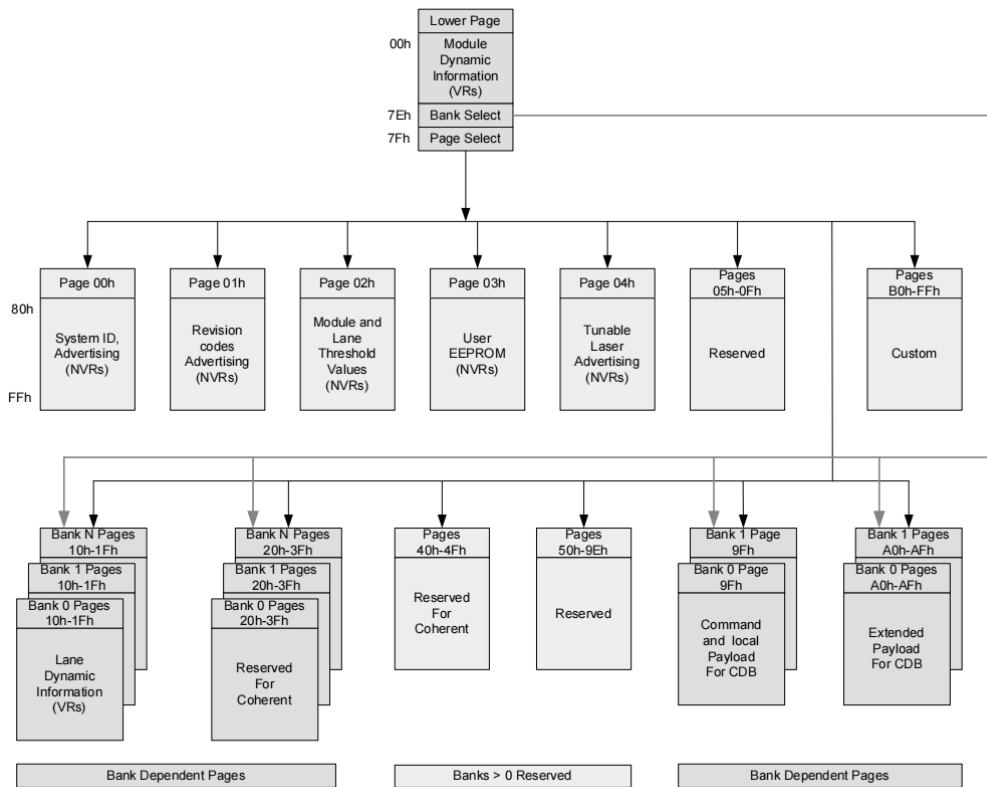
Pin Descriptions

Pin NO.	Logic	Symbol	Definition	PinNO.	Logic	Symbol	Definition
1		GND	Ground	39		GND	Ground
2	CML-I	Tx2n	Transmitter Inverted Data Input	40	CML-I	Tx6n	Transmitter Inverted Data Input
3	CML-I	Tx2p	Transmitter Non-inverted Data Input	41	CML-I	Tx6p	Transmitter Non-inverted Data Input
4		GND	Ground	42		GND	Ground
5	CML-I	Tx4n	Transmitter Inverted Data Input	43	CML-I	Tx8n	Transmitter Inverted Data Input
6	CML-I	Tx4p	Transmitter Non-inverted Data Input	44	CML-I	Tx8p	Transmitter Non-inverted Data Input
7		GND	Ground	45		GND	Ground
8	LVTTL-I	ModSelL	Module Select	46		Reserved	
9	LVTTL-I	ResetL	Module Reset	47		VS1	Module Vendor Specific 1
10		VccRx	+3.3V Power Supply Receiver	48		VccRx1	3.3V Power Supply
11	LVCMS-I/O	SCL	2-wire serial interface clock	49		VS2	Module Vendor Specific 2
12	LVCMS-I/O	SDA	2-wire serial interface data	50		VS3	Module Vendor Specific 3
13		GND	Ground	51		GND	Ground
14	CML-O	Rx3p	Receiver Non-inverted Data Output	52	CML-O	Rx7p	Receiver Non-inverted Data Output
15	CML-O	Rx3n	Receiver Inverted Data Output	53	CML-O	Rx7n	Receiver Inverted Data Output
16		GND	Ground	54		GND	Ground
17	CML-O	Rx1p	Receiver Non-inverted Data Output	55	CML-O	Rx5p	Receiver Non-inverted Data Output
18	CML-O	Rx1n	Receiver Inverted Data Output	56	CML-O	Rx5n	Receiver Inverted Data Output
19		GND	Ground	57		GND	Ground
20		GND	Ground	58		GND	Ground
21	CML-O	Rx2n	Receiver Inverted Data Output	59	CML-O	Rx6n	Receiver Inverted Data Output
22	CML-O	Rx2p	Receiver Non-inverted Data Output	60	CML-O	Rx6p	Receiver Non-inverted Data Output
23		GND	Ground	61		GND	Ground

24	CML-O	Rx4n	Receiver Inverted Data Output	62	CML-O	Rx8n	Receiver Inverted Data Output
25	CML-O	Rx4p	Receiver Non-inverted Data Output	63	CML-O	Rx8p	Receiver Non-inverted Data Output
26		GND	Ground	64		GND	Ground
27	LVTTL-O	ModPrsL	Module Present	65		NC	Not connected
28	LVTTL-O	IntL	Interrupt	66		Reserve d	
29		VccTx	+3.3V Power Supply Transmitter	67		VccTx1	3.3V Power Supply
30		Vcc1	+3.3V Power Supply	68		Vcc2	3.3V Power Supply
31	LVTTL-I	InitMode	Initialization mode	69		Reserve d	
32		GND	Ground	70		GND	Ground
33	CML-I	Tx3p	Transmitter Non-inverted Data Input	71	CML-I	Tx7p	Transmitter Non-inverted Data Input
34	CML-I	Tx3n	Transmitter Inverted Data Input	72	CML-I	Tx7n	Transmitter Inverted Data Input
35		GND	Ground	73		GND	Ground
36	CML-I	Tx1p	Transmitter Non-inverted Data Input	74	CML-I	Tx5p	Transmitter Non-inverted Data Input
37	CML-I	Tx1n	Transmitter Inverted Data Input	75	CML-I	Tx5n	Transmitter Inverted Data Input
38		GND	Ground	76		GND	Ground

VI. Digital Diagnostic Functions

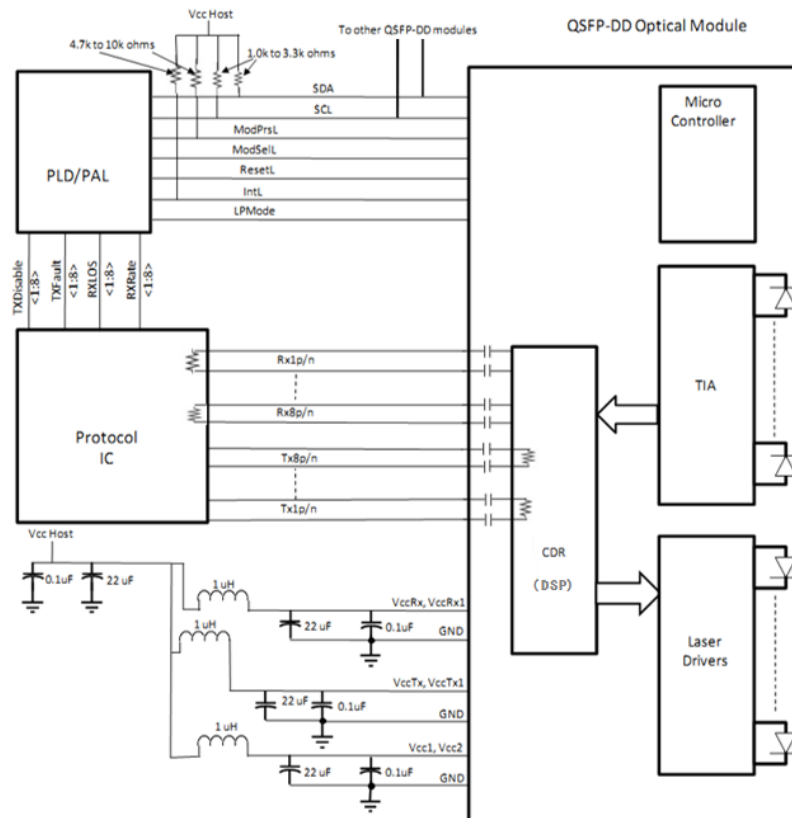
Compatible with CMIS rev4.0 and upper



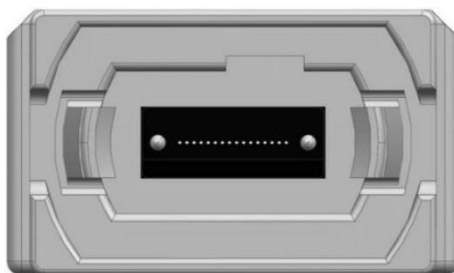
VII. Digital Diagnostic Monitor Accuracy

Parameter	Accuracy	Unit
Internally Measured Transceiver Temperature	+/-3	°C
Internally Measured Transceiver Supply Voltage	+/-3	%
Measured Tx Bias Current	+/-10	%
Measured Tx Output Power	+/-3	dB
Measured Rx Received Average Optical Power	+/-3	dB

VIII. Recommended Interface Circuit



IX. Optical interface arrangement



MPO-16 APC connector

X. Mechanical Specifications

(Unit:mm)

