

PRODUCT FEATURES

- OSFP MSA compliant
- 4x53.125GBaud electrical interface
- Up to 50m on OM4 with MMF
- MPO-12, APC receptacles
- Commercial case temperature 0~70℃
- Single 3.3V power supply
- Maximum power consumption 9 Watts
- CMIS 5.0 standard interface
- Aligned to IEEE802.3 db

APPLICATIONS

- 400GBASE-SR4 400G Ethernet
- Data Center Interconnect

COMPLIANCE

- OSFP MSA.
- IEEE802.3 db
- RoHS 2.0
- CMIS 5.0

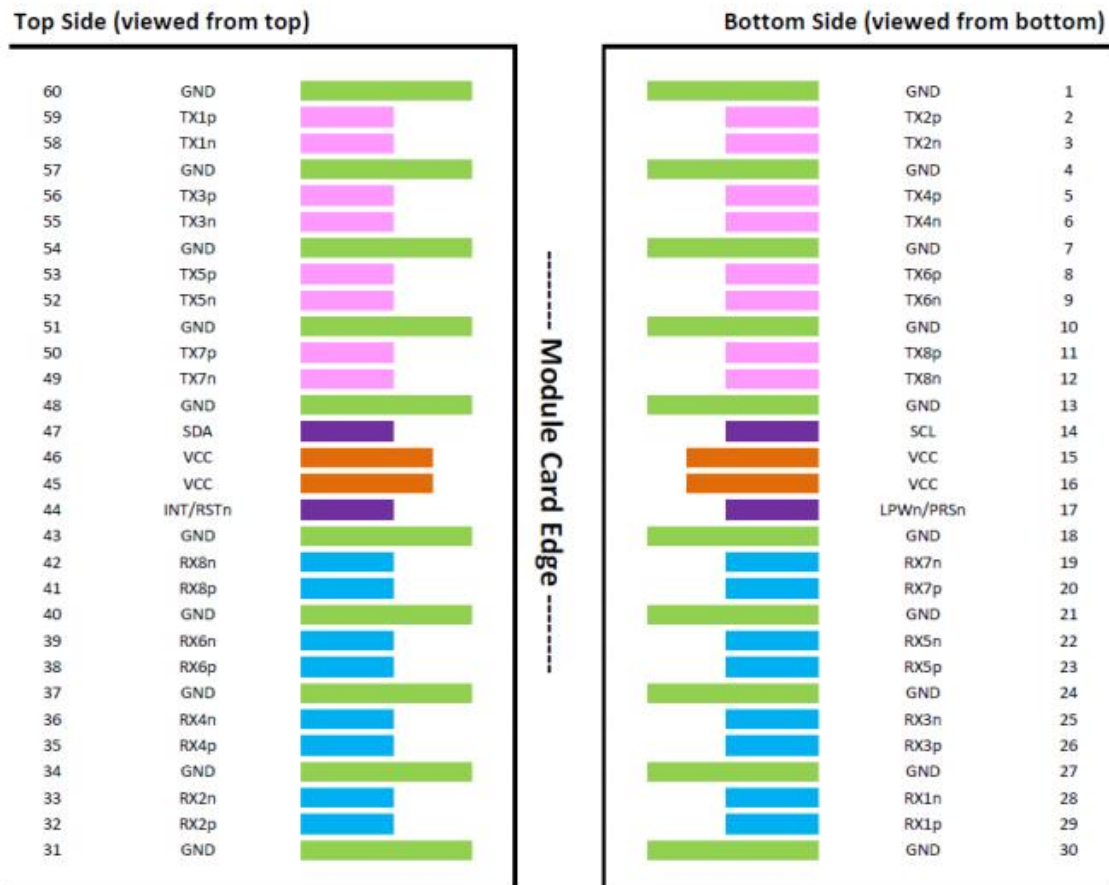
Ordering information

Part Number	Data Rate(Gb/s)	Media	Wavelength(nm)	Operating distance(m)	Temperature(℃)
IP-AUMM50M85C	4x106.25	MMF	850	50	0~70

PRODUCT DESCRIPTION

The IP-AUMM50M85C is an OSFP optical transceiver for 4x53.125GBaud optical links for 400Gbit/s. Transmission is based on VCSEL 850nm with electrical driver, while the receiver side is based on PIN photodetector and TIA. Module is equipped with DSP to provide channel equalization. The receptacle of the optical type is MPO-12.

1. Pin Diagram



2. Pin Descriptions

Name	Direction	Description
TX[4:1]p	input	Transmit differential pairs non-inverted from host to module.
TX[4:1]n	input	Transmit differential pairs inverted from host to module.
RX[4:1]p	output	Receive differential pairs non-inverted from module to host.
RX[4:1]n	output	Receive differential pairs inverted from module to host.
SCL	bidir	2-wire serial clock signal. Requires pull-up resistor to 3.3V on host.
SDA	bidir	2-wire serial data signal. Requires pull-up resistor to 3.3V on host.
PWn/PRSn	bidir	Multi-level signal for low power control from host to module and module presence indication from module to host.
INT/RSTn	bidir	Multi-level signal for interrupt request from module to host and reset control from host to module.
VCC	power	3.3V power for module.
GND	ground	Module Ground. Logic and power return path.

3. Pin list

Pin#	Symbol	Description	Logic	Direction	Plug Sequence ²	Note
1	GND	Ground			1	
2	TX2p	TX Non-Inverted	CML-I	Input from Host	3	
3	TX2n	TX Inverted	CML-I	Input from Host	3	
4	GND	Ground			1	
5	TX4p	TX Non-Inverted	CML-I	Input from Host	3	
6	TX4n	TX Inverted	CML-I	Input from Host	3	
7	GND	Ground			1	
8	-	-	-	-	3	
9	-	-	-	-	3	
10	GND	Ground			1	
11	-	-	-	-	3	
12	-	-	-	-	3	
13	GND	Ground			1	
14	SCL	2-wire Serial interface clock	LVCMOS-I/O	Bi-directional	3	1
15	VCC	+3.3V Power		Power from Host	2	
16	VCC	+3.3V Power		Power from Host	2	
17	LPWn/PRSn	Low-Power Mode / Module Present	Multi-Level	Bi-directional	3	
18	GND	Ground			1	
19	-	-	-	-	3	
20	-	-	-	-	3	
21	GND	Ground			1	
22	-	-	-	-	3	
23	-	-	-	-	3	
24	GND	Ground			1	
25	RX3n	RX Inverted	CML-O	Output to Host	3	
26	RX3p	RX Non-Inverted	CML-O	Output to Host	3	
27	GND	Ground			1	
28	RX1n	RX Inverted	CML-O	Output to Host	3	
29	RX1p	RX Non-Inverted	CML-O	Output to Host	3	
30	GND	Ground			1	
31	GND	Ground			1	
32	RX2p	RX Non-Inverted	CML-O	Output to Host	3	
33	RX2n	RX Inverted	CML-O	Output to Host	3	
34	GND	Ground			1	
35	RX4p	RX Non-Inverted	CML-O	Output to Host	3	
36	RX4n	RX Inverted	CML-O	Output to Host	3	
37	GND	Ground			1	
38	-	-	-	-	3	
39	-	-	-	-	3	
40	GND	Ground			1	
41	-	-	-	-	3	
42	-	-	-	-	3	
43	GND	Ground			1	
44	INT/RSTn	Module Interrupt / Module Reset	Multi-Level	Bi-directional	3	
45	VCC	+3.3V Power		Power from Host	2	
46	VCC	+3.3V Power		Power from Host	2	
47	SDA	2-wire Serial interface data	LVCMOS-I/O	Bi-directional	3	1
48	GND	Ground			1	
49	TX7n	TX Inverted	CML-I	Input from Host	3	
50	TX7p	TX Non-Inverted	CML-I	Input from Host	3	

51	GND	Ground			1	
52	TX5n	TX Inverted	CML-I	Input from Host	3	
53	TX5p	TX Non-Inverted	CML-I	Input from Host	3	
54	GND	Ground			1	
55	TX3n	TX Inverted	CML-I	Input from Host	3	
56	TX3p	TX Non-Inverted	CML-I	Input from Host	3	
57	GND	Ground			1	
58	TX1n	TX Inverted	CML-I	Input from Host	3	
59	TX1p	TX Non-Inverted	CML-I	Input from Host	3	
60	GND	Ground			1	

Notes:

1. Open-Drain with pull up resistor on Host.
2. Plug Sequence specifies the mating sequence of the host connector and module. The sequence is 1,2,3.

4. Absolute Maximum Ratings

It has to be noted that the operation in excess of any individual absolute maximum ratings might cause permanent damage to this module.

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Storage Temperature	TS	-40		85	°C	
Storage Ambient Humidity	HA	0		85	%	
Maximum Supply Voltage	VCC	-0.5		3.6	V	

5. Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Operating Case Temperature	Tcase	0	25	70	°C	
Supply Voltage	VCC	3.135	3.3	3.465	V	
Relative Humidity	RH	5		85	%	
Data Rate (Optical)	DRO		4*106.25		Gbps	
Data Rate (Electrical)	DRE		4*106.25		Gbps	

6. Electrical Characteristics (EOL, Tcase=0~70°C, VCC=3.135~3.465 V)

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Power Dissipation	P _d			9	W	
Transmitter						
Data Rate, each lane	DRE		106.25		Gbps	
Differential Voltage pk-pk	VIN	350		900	mV	
Input differential impedance	ZIN		100		Ohm	
Differential Termination Resistance Mismatch				10	%	
Receiver						
Data Rate, each lane	DRE		106.25		Gbps	
Output differential impedance	Zout		100		Ohm	
Differential Termination Resistance Mismatch				10	%	
Differential output voltage	VOUT			1000	mV	

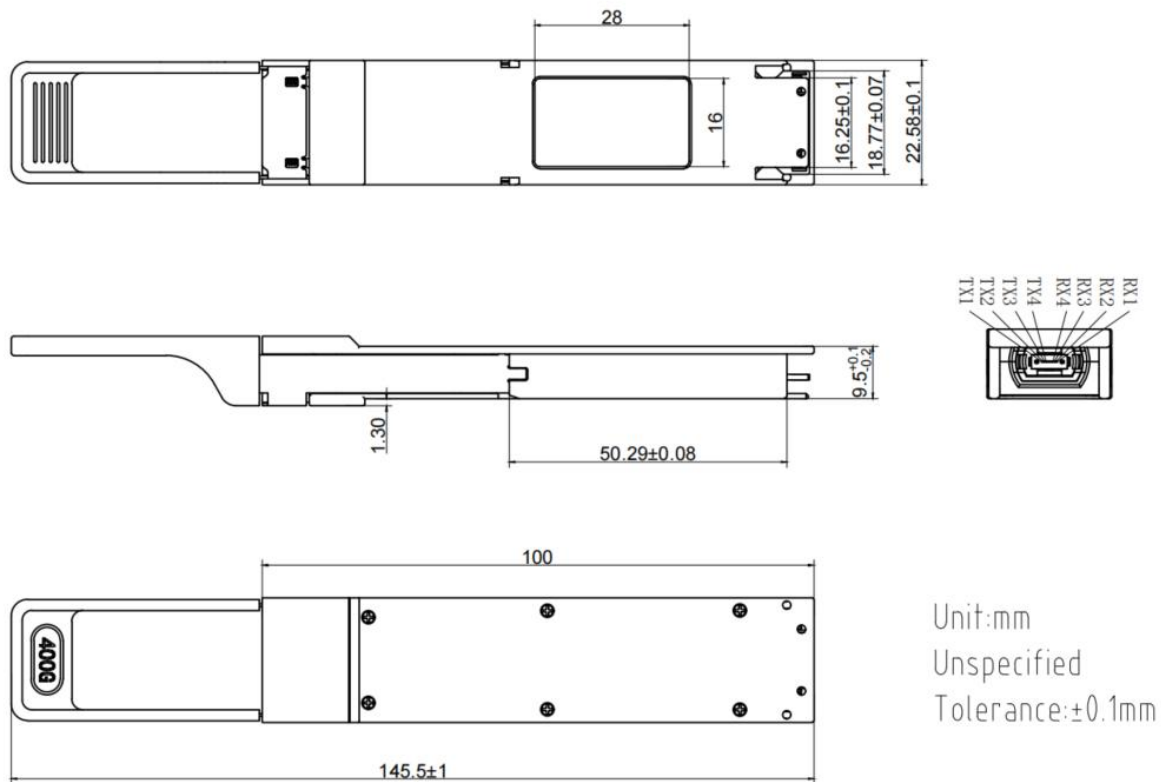
7. Optical Characteristics (EOL, Tcase=0~70℃, VCC=3.135~3.465 V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Signaling Speed per Lane	DRO	106.25			Gbps	
Center Wavelength	λ		850		nm	
RMS Spectral Width	$\Delta\lambda$			0.65	nm	
Average launch power		-4.6		4	dBm	
TX TDECQ				4.4	dB	
TX ER		2.5			dB	
Receiver sensitivity				-4.4 -6.2+TECQ	dBm	

Note:

1.Rx Sensitivity -4.6 for $TECQ \leq 1.8$, RX Sensitivity -6.2+TECQ for $1.8 < TECQ \leq 4.4$

8. Mechanical Specifications



9. Regulatory Compliance

Feature	Reference Standards	Performance
ESD-HBM	JESD22-A114-B	1KV high speed Pins, 2KV other Pins
ESD-Air Discharge	IEC 61000-4-2	+/-15KV
ESD-Contact Discharge	IEC 61000-4-2	+/-8KV
EMC-RE	FCC Part 15 Class B	
EMC-RS	IEC 61000 4-3	
ROHS 2.0	2011/65/EU	

10. Contact Information

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11. Revision History

Version No.	Date	Description
1.0	May 14, 2024	Preliminary datasheet
1.1	Jun.30, 2024	Update contact information.