

100G QSFP28 AOC Optical Engine

Product Specification Data

Product Name: QM_100G_QSFP28_AOC_OE

Part Number: 10000012 /10000822

Record Number: TS09036

Version: A4

Date: 2025.02.24

Features

- Multi rate of up to 25.78125Gbps
- Maximum link length of 70m on OM3 MMF and 100m on OM4 MMF
- Hot pluggable QSFP28 form factor
- QSFP28 mechanical specification compliant with SFF-8661
- Operating case temperature
Commercial: 0°C~70°C
- 3.3V single power supply
- Low power consumption



Applications

- IEEE 802.3bm 100GBASE-SR4 at 25.78125Gbps per lane
- InfiniBand QDR, EDR
- Other optical links

Standards

- Compliant with SFF-8636
- Compliant with IEEE 802.3bm 100GBASE-SR4 standard

ESD

- ESD compatible with MIL-STD-883 method 3015

Laser Safety

- Laser eye safety compatible with FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2

Order Information

Table 1-Order Information

Part No.	Bit Rate (Gbps)	Laser (nm)	Distance	Fiber Type	DDMI	Connector	Temp ^{note1}
10000012/10000822	25.78125	850	0.5~100m	MMF	YES	N/A	0°C~+70°C

Note: 1 Case Temperature

Absolute Maximum Ratings

Table2- Absolute Maximum Ratings

Parameters	Symbol	Min.	Typical	Max.	Unit	Notes
Storage Temperature	T_s	-40		+85	°C	
Supply Voltage	V_{CC}	-0.5		+3.6	V	
Operating Humidity	RH	+5		+85	%	1

Note: 1 No condensation

Recommended Operating Condition

Table 3- Recommended operating Conditions

Parameters	Symbol	Min.	Typical	Max.	Unit	Notes
Power Supply Voltage	V_{CC}	3.135	3.3	3.465	V	
Power Consumption	P_c			2.5	W	
Operating Case Temperature	T_c	0		70	°C	
Bit Rate	BR	10.3125	25.78125		Gbps	Per lane

Electrical Characteristics

Table 4- Electrical Characteristics

Parameters		Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter							
Differential Data Input Swing		V_{out}	200		1000	mV	
Input Differential Impedance		Z_D	90	100	110	Ω	
ModSelL	Module Select	V_{OL}	$V_{EE}-0.3$		0.4	V	
	Module Unselect	V_{OH}	2.0		$V_{CC}+0.3$	V	
LPMode	Low Power Mode	V_{IL}	$V_{EE}-0.3$		0.8	V	
	Normal Operation	V_{IH}	2.0		$V_{CC}+0.3$	V	
ResetL	Reset	V_{IL}	$V_{EE}-0.3$		0.8	V	
	Normal Operation	V_{IH}	2.0		$V_{CC}+0.3$	V	
Receiver							

Differential Data Output Swing		$V_{in,p-p}$	200		1000	mV	
Output Differential Impedance		Z_D	90	100	110	Ω	
ModPrsL	Normal Operation	V_{OL}	$V_{EE}-0.3$		0.4	V	
IntL	Interrupt	V_{OL}	$V_{EE}-0.3$		0.4	V	
	Normal Operation	V_{OH}	2.0		$V_{CC}+0.3$	V	
Bit Error Rate		BER			5E-5		1

Note: 1 PRBS2³¹-1@25.78125Gbps

Optical Characteristics

Table 5-Optical Characteristics

Parameters	Symbol	Min.	Typical	Max.	Unit	Notes
Optical transmitter Characteristics						
Bit Rate	BR		25.78125		Gb/s	Per lane
Link Length on (OM3) MMF	L	0.5		70	m	
Link Length on (OM4) MMF	L	0.5		100	m	
Center Wavelength Range	λ_c	840	850	860	nm	
Optical Receiver Characteristics						
Bit Rate	BR		25.78125		Gb/s	Per lane
Center Wavelength Range	λ_c	840	850	860	nm	

Recommended Interface Circuit

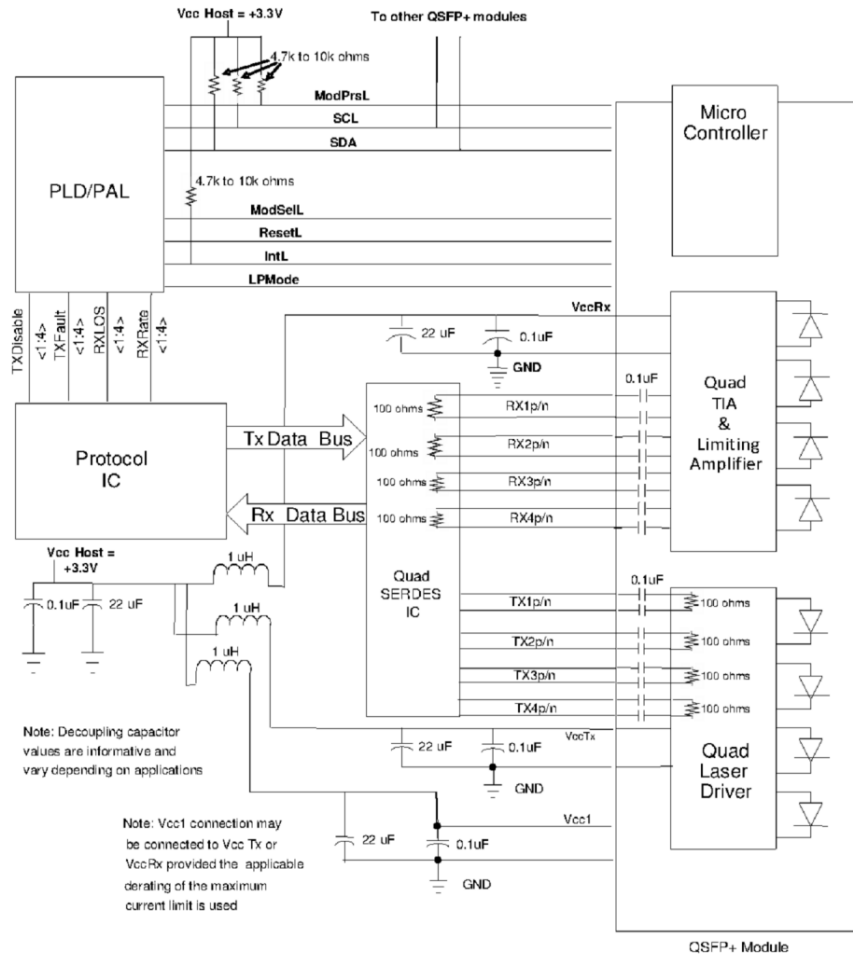


Figure 1, Recommended Interface Circuit

Pin arrangement

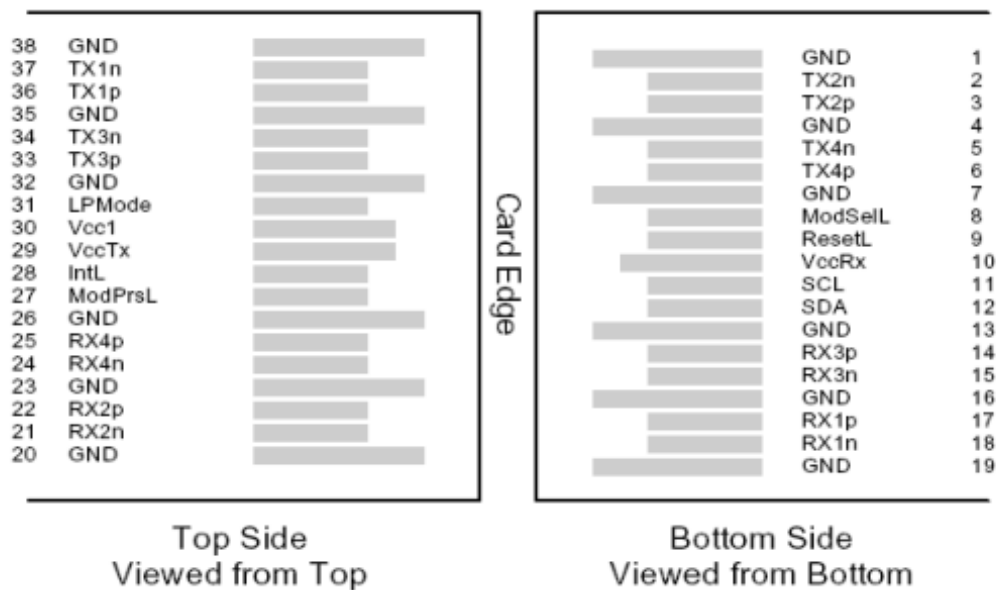


Figure 2, Pin View

Pin Function Definitions

Table 6-Pin Function Definitions

Pin	Logic	Symbol	Name/Description	Notes
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	
7		GND	Ground	1
8	LVTTL-I	ModSelL	Module Select	
9	LVTTL-I	ResetL	Module Reset	
10		V _{CC} Rx	+3.3V Power Supply Receiver	
11	LVC MOS-I/O	SCL	2-Wire Serial Interface Clock	
12	LVC MOS-I/O	SDA	2-Wire Serial Interface Data	
13		GND	Ground	1
14	CML-O	Rx3p	Receiver Inverted Data Output	
15	CML-O	Rx3n	Receiver Non-Inverted Data Output	
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Inverted Data Output	
18	CML-O	Rx1n	Receiver Non-Inverted Data Output	
19		GND	Ground	1
20		GND	Ground	1
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	1
24	CML-O	Rx4n	Receiver Inverted Data Output	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	1
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		V _{CC} Tx	+3.3V Power Supply Transmitter	
30		V _{CC} 1	+3.3V Power Supply	

31	LVTTL-I	LPMode	Low Power Mode	
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Inverted Data Input	
34	CML-I	Tx3n	Transmitter Non-Inverted Data Input	
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Inverted Data Input	
37	CML-I	Tx1n	Transmitter Non-Inverted Data Input	
38		GND	Ground	1

Note: 1 Circuit ground is internally isolated from chassis ground

Monitoring Specification

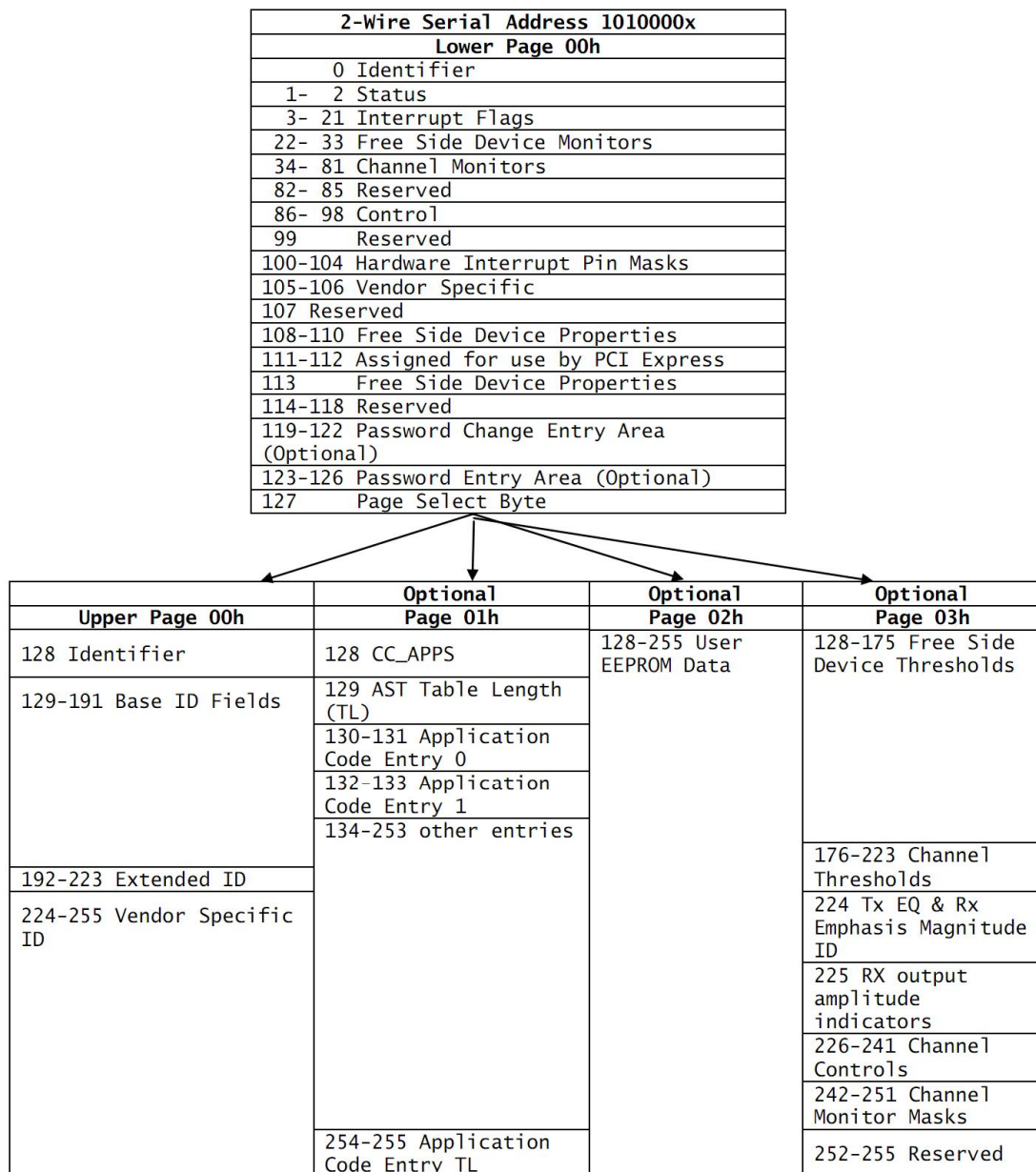
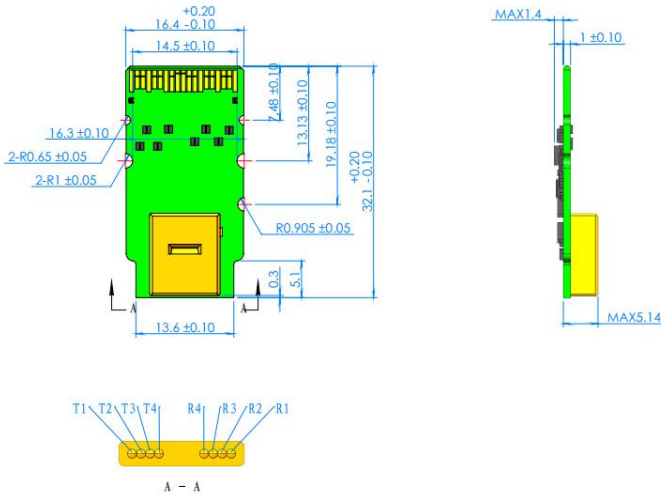
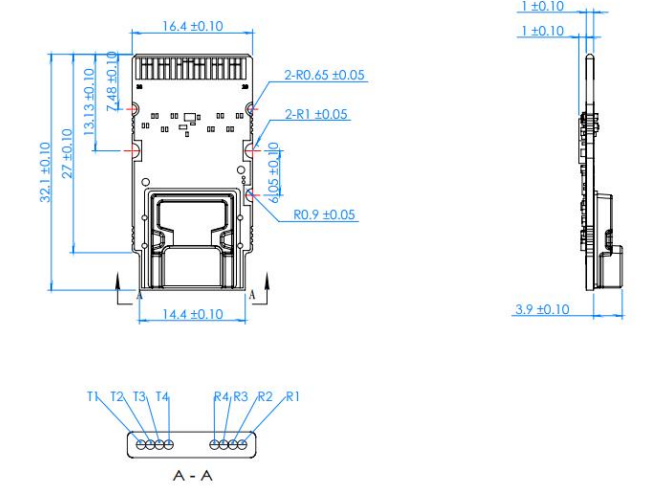


Figure 3, Memory Map

Mechanical Outline Dimensions

10000012:	10000822:
 Top view dimensions: 16.4^{+0.20}/_{-0.10}, 14.5^{+0.10}, 16.3^{+0.10}, 2-R0.65^{+0.05}, 2-R1^{+0.05}, 7.48^{+0.10}, 13.13^{+0.10}, 19.18^{+0.10}, 32.1^{+0.20}/_{-0.10}, 13.6^{+0.10}, 0.3, 5.1, R0.905^{+0.05}. Side view dimensions: MAX1.4, 1^{+0.10}, MAX5.14. Cross-section A-A labels: T1, T2, T3, T4, R4, R3, R2, R1.	 Top view dimensions: 16.4^{+0.10}, 13.13^{+0.10}, 7.48^{+0.10}, 2-R0.65^{+0.05}, 2-R1^{+0.05}, 6.05^{+0.10}, R0.9^{+0.05}, 14.4^{+0.10}, 32.1^{+0.10}, 27^{+0.10}. Side view dimensions: 1^{+0.10}, 1^{+0.10}, 3.9^{+0.10}. Cross-section A-A labels: T1, T2, T3, T4, R4, R3, R2, R1.

(Unit:mm)

Product list

Part Number	Product Name	Note
10000012	光引擎_850nm_100G_QSFP28_AOC_100m_MPO_1*4_J97	J97
10000822	光引擎_850nm_100G_QSFP28_AOC_100m_MPO_1*4_X25	X25