VCCOB-85B40G
Chip-on-Board for 40Gbps QSFP SR4 Application

Data Sheet

Overview

The VCCOB-85B40G is a high-performance Chip-on-Board (COB) optical module optimized for 40Gbps QSFP SR4 applications. It integrates four independent full-duplex channels, enabling high-speed data transmission over multimode fiber via an MTP/MPO optical connector. Designed for robust deployment, this model supports a wide operating case temperature range of -40°C to +85°C, making it suitable for harsh environments and industrial-grade applications. Compliant with IEEE 802.3ba-2010 and SFF-8436 standards, the VCCOB-85B40G offers compatibility with a wide range of 40G Ethernet systems. The module features an XLPPI electrical interface, supports a maximum power consumption of 1.5W, and meets RoHS-6 compliance standards.

Features

- 4 independent full-duplex channels
- MTP/MPO optical connector
- Compliant with IEEE 802.3ba-2010 and SFF-8436 standards
- Operating case temperature: -40°C to +85°C
- XLPPI electric interface (with 1.5W max power)
- RoHS-6 compliant

Applications

- Data Center
- 40G Ethernet

Specifications

Absolute Maximum Ratings					
Parameters	Symbol	Min.	Max.	Unit	Conditions
Storage Temperature	T_s	-40	85	°C	
Supply Voltage	V_{cc}	-0.5	3.6	V	
Damage Threshold per Lane	DT	3.4		dBm	

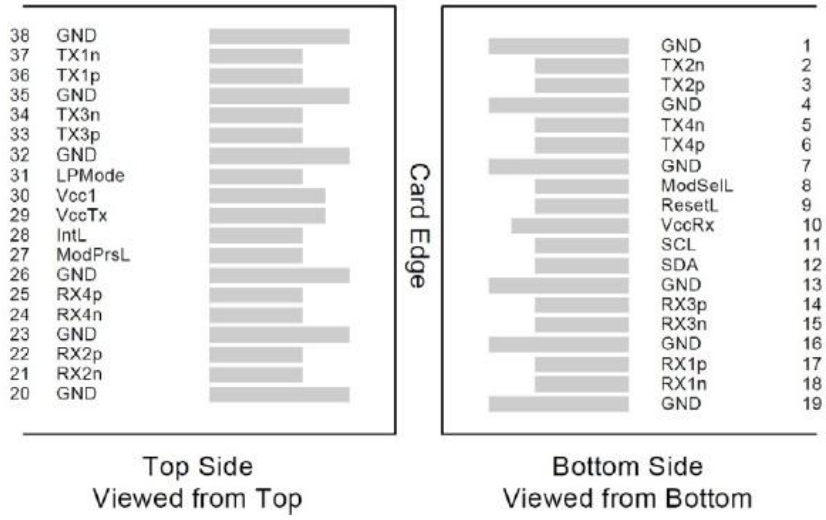
Recommended Operating Conditions					
Parameters	Symbol	Min.	Typ.	Max.	Unit
Operating Temperature	T_{op}	-40		85	°C
Power Supply Voltage	V_{cc}	3.135	3.3	3.465	V
Signal Rate per Channel			10.3125		Gbps
Receiver Differential Data Output Load			100		Ohm

Electrical Characteristics					
Parameters	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	Vcc_1, Vcc_{Tx}, Vcc_{Rx}		3.3		V
Supply Current	Icc		180	350	mA
Transmitter (per Lane) (From Table 86A-2 of IEEE 802.3ba)					
Data Input Differential Impedance	Z_{IN}	80	100	120	Ohm
Data Input Differential Voltage	ΔV_{IN}	100		1200	mVpp
Receiver (per Lane) (From Table 86A-3 of IEEE 802.3ba)					
Output Differential Load Impedance	Z_L	80	100	120	dB
Rx Output Differential Voltage			380		mV
Single Ended output Voltage Tolerance (1)		-0.3		4	V

Notes:
1. Referred to TP1 signal common.

Optical Characteristics					
Parameters	Symbol	Min.	Typ.	Max.	Unit
Transmitter (per Lane) (From Table 86-6 of IEEE 802.3ba)					
Center Wavelength	λ	840	850	860	nm
Spectral Width (RMS)	$\Delta\lambda$			0.65	nm
Average Launch Power per Lane	P_{avg}	-7.6		2.4	dBm
Transmit OMA per Lane	Tx_{Oma}	-5.6		3	dBm
Peak Power per Lane	P_{Peak_T}			4	dBm
Extinction Ratio	ER	3			dB
Optical Return Loss Tolerance	ORL			12	dB
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			
Average Launch Power OFF Transmitter per Lane	P_{off}	-30			dBm
Receiver (per Lane) (From Table 86-6 of IEEE 802.3ba)					
Center Wavelength	λ	840		860	nm
Saturation Power	P_{Sat}			2.4	dBm
Receiver Reflectance	Rfl			12	dB
Optical Modulation Amplitude (OMA) per Lane				3	dBm
Receiver Sensitivity per Lane	P_{sens}			-9.5	dBm
Peak Power per Lane	P_{Peak-R}			4	dBm

QSFP Transceiver PAD Layout



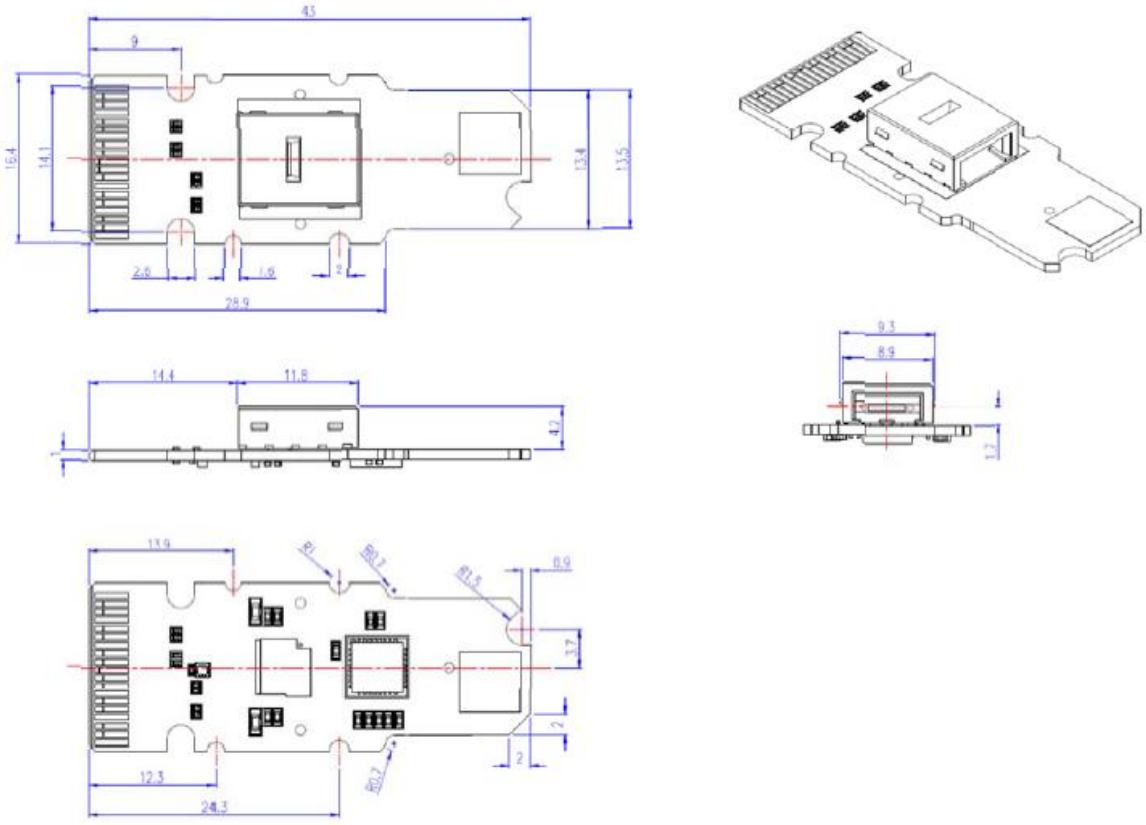
Pin Function Definition

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		Vcc Rx	+3.3 V Power supply receiver	2
11	LVCMOS-I/O	SCL	2-wire serial interface clock	
12	LVCMOS-I/O	SDA	2-wire serial interface data	
13		GND	Ground	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver 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		Vcc Tx	+3.3 V Power supply transmitter	2
30		Vcc1	+3.3 V Power Supply	2
31	LVTTL-I	LPMode	Low Power Mode	
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Input	
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Input	
38		GND	Ground	1

Note 1: GMD is the symbol for signal and supply (power) common for the QSFP module. All are common within the QSFP module and all module voltage are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.

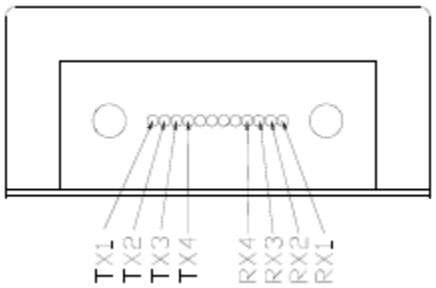
Note 2: V_{CCRx}, V_{CC1}, V_{CCTx} are the receiver and transmitter power supplies and shall be applied concurrently.

Outline Dimensions (unit: mm)



Optical Interface

(MT Connector)



Additional Notes

- The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product.
- Specifications are subject to change without notice.