PRODUCT FEATURES

- Supports 103.1Gbps aggregate bit rate
- 4x25Gbps electrical interface
- Maximum link length of 10km on Single Mode Fiber
- Hot pluggable QSFP28 footprint
- Duplex LC receptacles
- Single3.3V power supply
- Maximum power dissipation<4W
- RoHS-6 compliant and lead-free
- I^2C management interface
- 0°C to +70°C case operating temperature

APPLICATIONS

- 100GBASE-LR4 100G Ethernet

COMPLIANCE

- QSFP28 MSA SFF-8665
- IEEE802.3ba 100GBASE-LR4
- ROHS

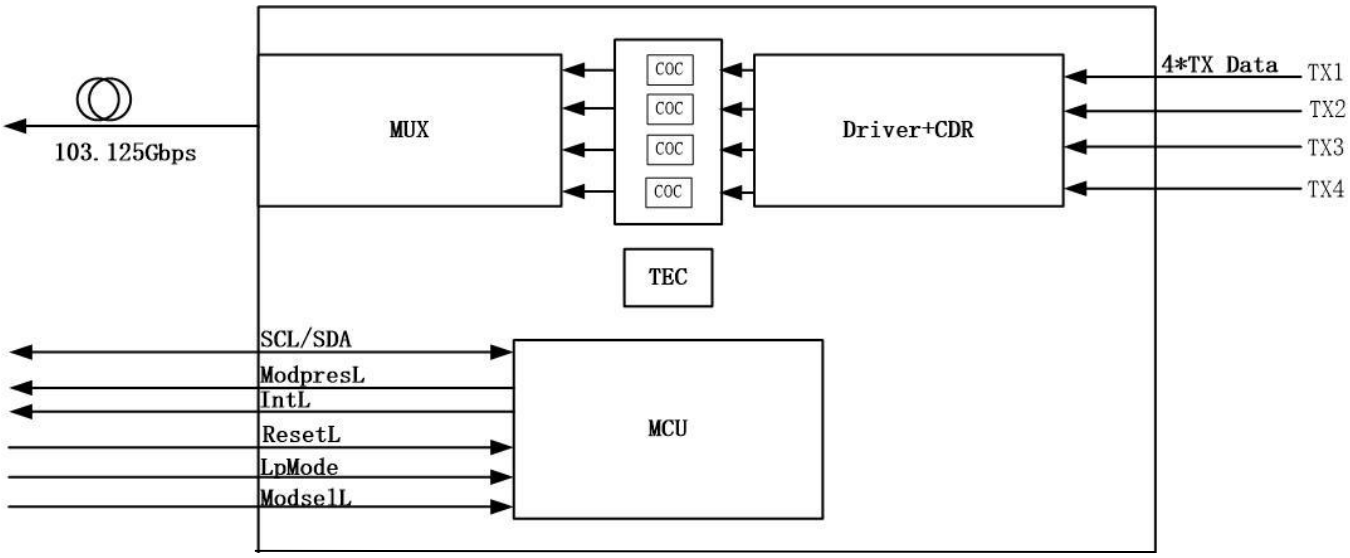
Ordering information

Part Number	Data Rate (Gb/s)	Media	Wavelength (nm)	Operating distance (km)	Temperature (℃)
IP-CALK10B31CT	103.125	SMF	LAN-WDM	10	0~70

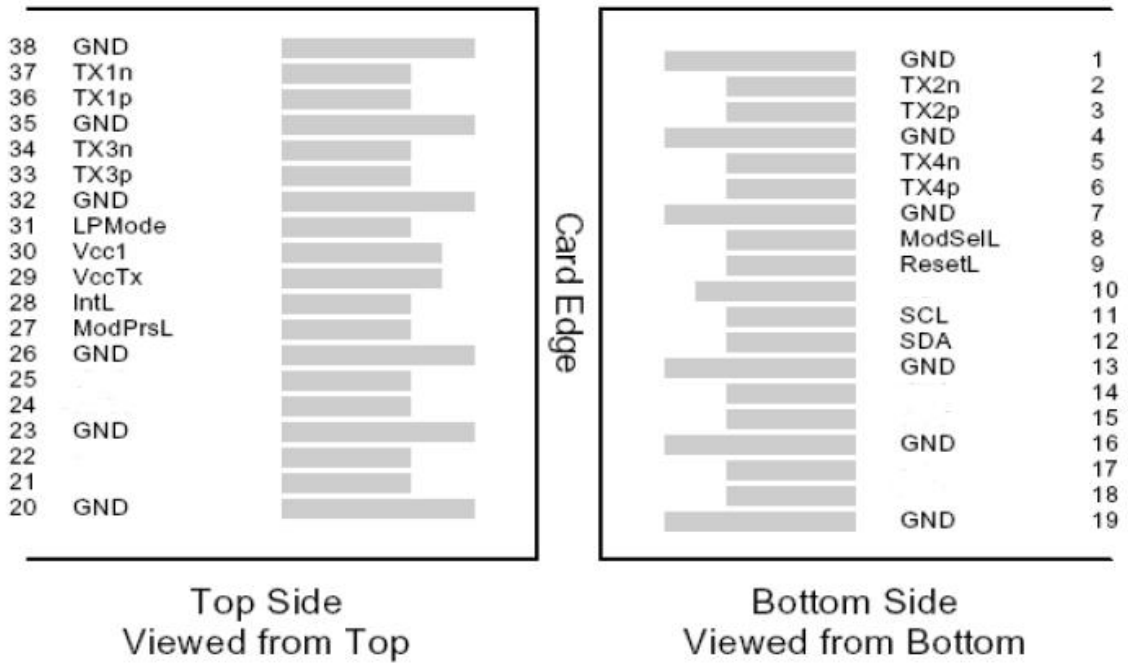
PRODUCT DESCRIPTION

IP-CALK10B31CT are designed for use in 100 Gigabit Ethernet links on up to 10km reach over SMF. The laser drivers control 4- Distributed Feedback Laser (DFB) with center wavelength of 1296nm, 1300nm, 1305nm and 1309 nm. The optical signals are multiplexed to a single –mode fiber through an industry standard LC connector. They are compliant with the QSFP28 MSA and IEEE 802.3bm 100GBASE-LR4 and CAUI-4. Digital diagnostic functions are available via an I2C interface, as specified by the QSFP+ MSA. The optical transceiver is compliant per the RoHS Directive 2011/65/EU.

I. Block Diagram



II. Pin Diagram



QSFP28 38pin connector

III. Pin Descriptions

Pin	Symbol	Name/Description	Notes
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	
6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Ground	1
8	ModSe1L	Module Select	
9	ResetL	Module Reset	
10	NC	NC	
11	SCL	2-wire serial interface clock	
12	SDA	2-wire serial interface data	
13	GND	Ground	1
14	NC	NC	
15	NC	NC	
16	GND	Ground	1
17	NC	NC	

18	NC	NC	
19	GND	Ground	1
20	GND	Ground	1
21	NC	NC	
22	NC	NC	
23	GND	Ground	1
24	NC	NC	
25	NC	NC	
26	GND	Ground	1
27	ModPrSL	Module Present	
28	IntL	Interrupt	
29	VccTx	+3.3V Power supply transmitter	
30	Vcc1	+3.3V Power Supply	
31	LPMode	Low Power Mode	
32	GND	Ground	1
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	1

Note：

1. Circuit ground is internally isolated from chassis ground.

IV. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	T_S	-40		85	ºC	
Storage Ambient Humidity	H_A	5		95	%	
Maximum Supply Voltage	V_{CC}	-0.5		4.0	V	
Signal Input Voltage		-0.3		Vcc+0.3	V	

V. Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Total Average Output Power	P_{OUT}			10.5	dBm	
Average Output Power, each lane		-4.3		4.5	dBm	
Optical Modulation Amplitude (OMA),		-1.3		4.5	dBm	

each lane						
Extinction Ratio	ER	4			dB	
Center Wavelength	λc	1294.53 ~ 1296.59 1299.02 ~ 1301.09 1303.54 ~ 1305.63 1308.09 ~ 1310.19			nm	
Spectral Width				1	nm	
Transmitter OFF Output Power	POff			-30	dBm	
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}		{0.25,0.4,0.45,0.25,0.28,0.4}				Hit ratio $5x10^{-5}$

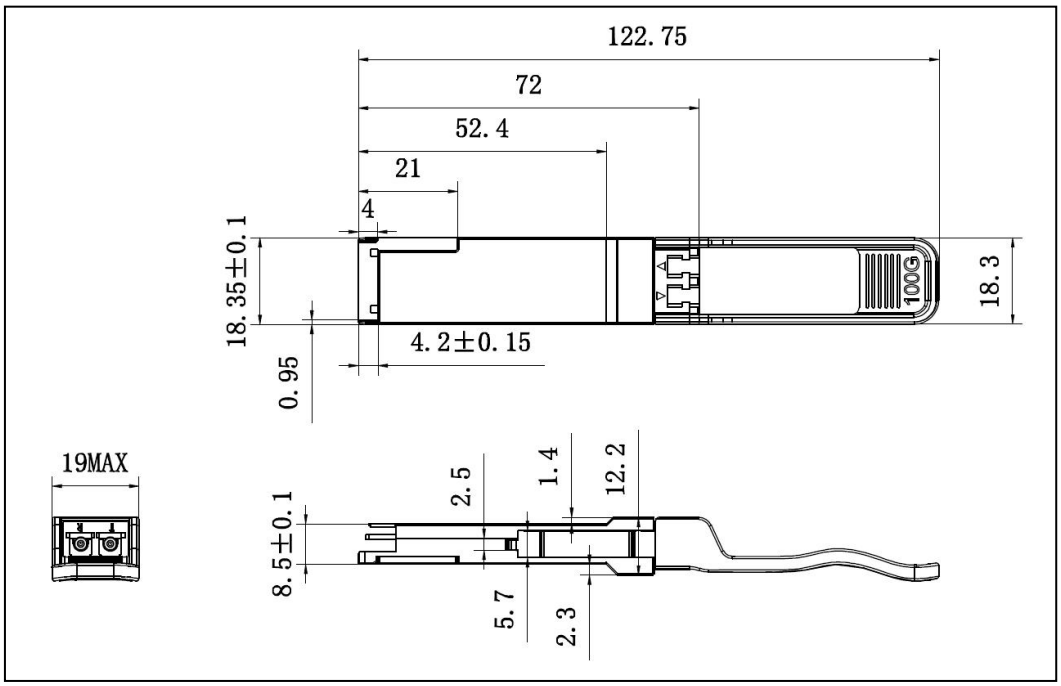
VI. Electrical Interface Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Supply Voltage	V_{CC}	3.135		3.465	V	
Supply Current	I_{CC}			1.15	A	
Module total power	P			4	W	
Transmitter						
Signaling rate per lane		25.78125±100ppm			Gbps	
Differential pk-pk input voltage	Vin, pp, diff	350			mV	
Differential input Resistance	Rtin		100		Ohm	

VII. Digital Diagnostic Functions

IP-CALK10B31CT transmitter support the I2C-based diagnostics interface specified by the SFF8636.

VIII.Mechanical Specifications (Unit: mm)



IX. Contact Information

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Revision History

Version No.	Date	Description
1.0	June 24, 2019	Preliminary datasheet
1.1	Oct. 8，2021	Update contact Information
1.2	Jul.8,2022	Update mechanical specifications
1.3	Jun.30, 2024	Update contact information.