Módulo Óptico
100G QSFP28 40km C-temp

TQ13L2E-CN

Módulo óptico (gbics) 100G QSFP28 , realiza conexão de até 40km.

Observações

Somente remova a tampa quando for realizar a conexão do cordão/cabo, evitando assim sujeiras indesejadas no conector. Nunca olhe diretamente no interior do módulo óptico. A radiação óptica pode ser prejudicial aos olhos.

100G QSFP28 LR4 20km Transceiver

FEATURES

- Hot pluggable QSFP28 MSA form factor
- Compliant to IEEE 802.3ba 100GBASE-LR4
- Up to 10km reach for G.652 SMF
- Single +3.3V power supply
- Operating case temperature: 0~70°C
- Transmitter: cooled 4x28Gb/s LAN WDM TOSA (1295.56, 1300.05, 1304.58, 1309.14nm)
- Receiver: 4x28Gb/s PIN ROSA
- 4x28G Electrical Serial Interface (CEI-28G-VSR)
- Maximum power consumption 3.5W
- Duplex LC receptacle
- RoHS-6 compliant

Applications

- 100GBASE-LR4 Ethernet Links
- Infiniband QDR and DDR interconnects
- Client-side 100G Telecom connections
- OTU4 rate connections

ORDERING INFORMATION

Form Factor	Data Rate (Gbps)	Media	Distance (km)	Wavelength (nm)	Temperature (℃)
QSFP+	100	SMF	20	LWDM4	0~70

1. ABSOLUTE MAXIMUM PARAMETERS

Exceeding the limits below may damage the active optical cable permanently.

Parameter	Symbol	Min.	Max.	Unit.
Supply Voltage	VCC	-0.5	3.6	V
Storage Temperature	Tst	-40	+85	ºC
Humidity(non-condensing)	Rh	0	+85	%

2. RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min.	Typ.	Max.	Unit.
Supply Voltage	Vcc	3.13	3.3	3.47	V
Operating Case temperature	Tca	0		+70	ºC
Data Rate Per Lane			25.78125		GBd
Power Dissipation	P			3.5	W

3. ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Min.	Typ.	Max.	Unit.	Notes
Power Consumption	P			3.5	W	
Supply Current	Icc			1.12	A	
Transceiver Power-on Initialization Time		2.0		2000	ms	
Single-ended Input Voltage Tolerance		0		4.0	V	
AC Common Mode Input Voltage Tolerance					mV	
Differential Input Voltage Swing Threshold					mVpp	
Differential Input Voltage Swing	Vin,pp			700	mVpp	
Differential Input Impedance	Zin		100	110	Ohm	
Single-ended Output Voltage		0.3		4.0	V	
AC Common Mode Output Voltage		15		7.5	mV	
Differential Output Voltage Swing	Vout,pp	150		850	mVpp	
Differential Output Impedance	Zout	85	100	110	Ohm	

4. OPTICAL CHARACTERISTICS

Optical Transmitter Characteristics						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit.**	**Notes**
Signaling Speed per Lane			25.78125		GBd	
Lane Wavelength (range)	L0	1294.53		1296.59	nm	

	L1	1299.02		1301.09		
	L2	1303.54		1305.63		
	L3	1308.09		1310.19		
Total Average Launch Power	Pout			10.5	dBm	
Average Launch Power per Lane	TXPx	-4.3		4.5	dBm	
OMA, each Lane	POMA	-1.3		4.5	dBm	
Difference in Launch Power between any Two Lanes (OMA)	Ptx,diff			5	dB	
Launch Power in OMA minus Transmitter and Dispersion Penalty (TDP), each Lane		-2.3			dBm	
TDP, each Lane	TDP			2.2	dB	
Extinction Ratio	ER	4			dB	
Relative Intensity Noise	RIN			-130	dB/Hz	
Optical Return Loss Tolerance	TOL			20	dB	
Transmitter Reflectance	RT			-12	dB	
Transmitter Eye mask definition {X1,X2,X3, Y1,Y2,Y3}		{0.25,0.4,0.45,0.25,0.28,0.4}				
Optical Receiver Characteristics						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit.**	**Notes**
Damage Threshold, each Lane	THd	5.5			dBm	
Total Average Receive Power				10.5	dBm	
Average Receive Power, each Lane		-10.6		4.5	dBm	

Receive Power (OMA), each Lane				4.5	dBm	
Receiver Sensitivity (OMA),	SEN			-10.6	dBm	
each Lane						
Stressed Receiver Sensitivity (OMA), each Lane				-6.8	dBm	
Receiver Reflectance	RR			-26	dB	
Difference in Receive Power between any Two Lanes (OMA)	Prx,diff			5.5	dB	
LOS Assert	LOSA	-24			dBm	
LOS Deassert	LOSD			-11.6	dBm	
LOS Hysteresis	LOSH		1.5		dB	
Receiver Electrical 3 dB upper Cutoff Frequency, each Lane	Fc			31	GHz	
Difference in Receive Power between any Two Lanes (OMA)	Prx,diff			5.5	dB	

Pin	Symbol	Name/Description	Notes
1	GND	Ground	
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data output	
4	GND	Ground	
5	Tx4n	Transmitter Inverted Data Input	

5. PIN DIAGRAM

6. PIN DESCRIPTIONS

6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Ground	
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	Vcc Rx	+ 3.3V Power Supply Receiver	
11	SCL	2-Wire Serial Interface Clock	
12	SDA	2-Wire Serial Interface Data	
13	GND	Ground	
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Ground	

17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Ground	
20	GND	Ground	
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground	
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	VccTx	+3.3 V Power Supply transmitter	
30	Vcc1	+3.3 V Power Supply	
31	LPMode	Low Power Mode .	
32	GND	Ground	
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Output	
38	GND	Ground	

7. Mechanical Design Diagram

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