

100G QSFP28 ZR4 Transceiver

ET7402-ZR4



The ET7402-ZR4 QSFP28 transceiver modules are designed for 100 Gigabit Ethernet over single mode fiber. They are compliant with the QSFP28 MSA and 100GBASE-ZR4. Digital diagnostics functions are available via the I2C interface, as specified by the QSFP28 MSA. The ET7402-ZR4 is compliant with RoHS.

Product Features

- Compliant with IEEE Standard 802.3ba, 100G Ethernet ZR4
- Compliant with QSFP28 MSA
- 4 cooled 25Gb/s channels; LAN, WDM, EML, TOSA
- 4-channel SOA photo detector
- Single +3.3 V power supply
- Class 1 laser safety certified
- Commercial operating temperature: 0°C to +70°C
- Up to 80 km on SMF with FEC
- Duplex LC connector
- RoHS 6/6 compliant

Applications

- 100GBASE-ZR4 Ethernet links
- Data center

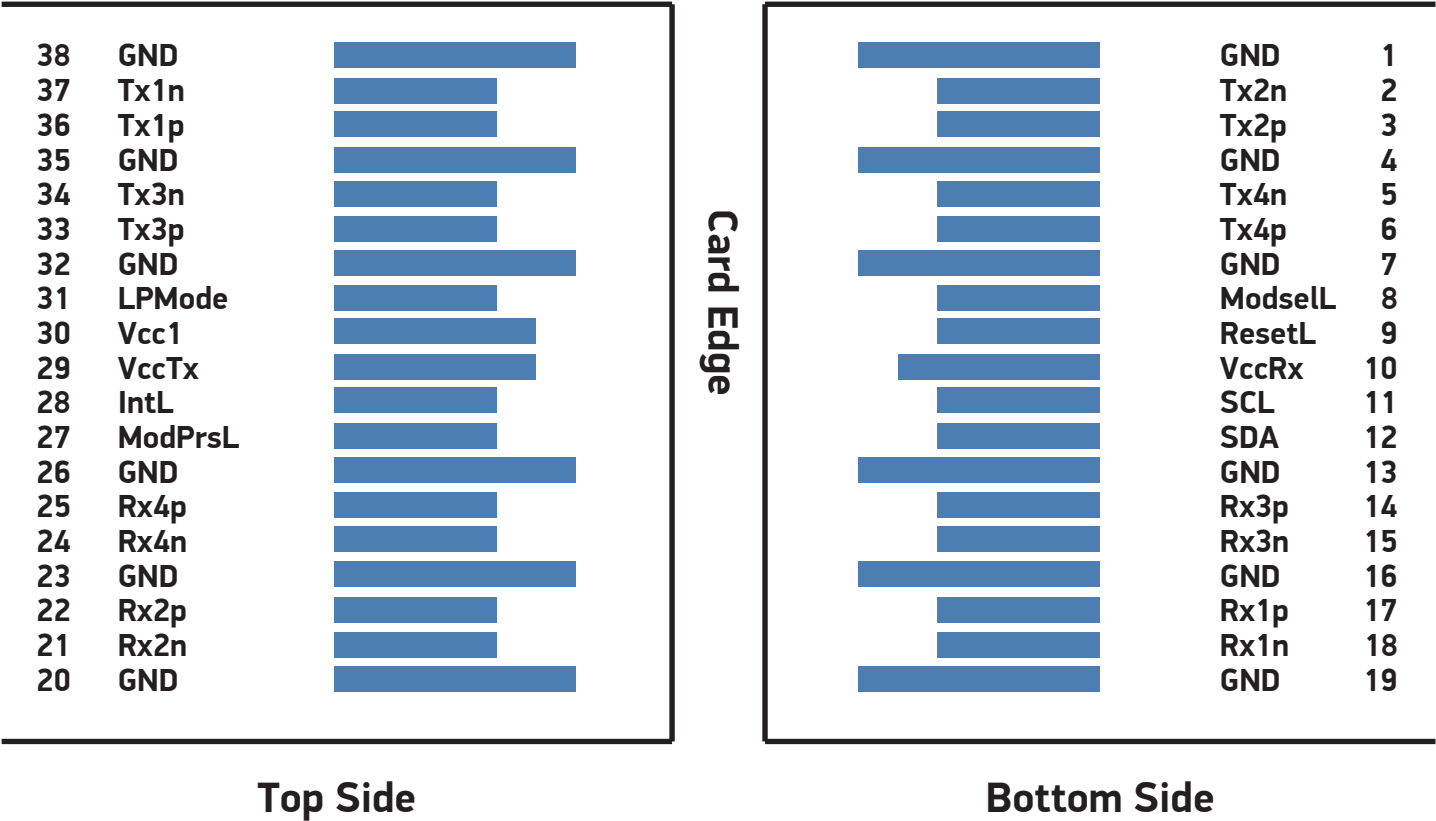
Ordering Information

Part Number	Transmitter	Output Power	Receiver	Sensitivity	Reach	Temp.	DDM	RoHS
ET7402-ZR4	LWDM EML	+2.0~ +6.5dBm	SOA PIN	< -26.9dBm	80 km	0~+70°C	Available	Compliant

Transceiver Electrical Pad Layout

Pin	Name	Function/Description	Notes
1	GND	Transmitter Ground (Common with Receiver Ground)	1
2	Tx2-	Transmitter Inverted Data Input	
3	Tx2+	Transmitter Non-Inverted Data output	
4	GND	Transmitter Ground (Common with Receiver Ground)	1
5	Tx4-	Transmitter Inverted Data Input	
6	Tx4+	Transmitter Non-Inverted Data output	
7	GND	Transmitter Ground (Common with Receiver Ground)	1
8	ModSelL	Module Select	2
9	ResetL	Module Reset	2
10	VccRx	3.3 V Power Supply Receiver	
11	SCL	2-Wire serial Interface Clock	2
12	SDA	2-Wire serial Interface Data	2
13	GND	Transmitter Ground (Common with Receiver Ground)	1
14	Rx3+	Receiver Non-Inverted Data Output	
15	Rx3-	Receiver Inverted Data Output	
16	GND	Transmitter Ground (Common with Receiver Ground)	1
17	Rx1+	Receiver Non-Inverted Data Output	
18	Rx1-	Receiver Inverted Data Output	
19	GND	Transmitter Ground (Common with Receiver Ground)	1
20	GND	Transmitter Ground (Common with Receiver Ground)	1
21	Rx2-	Receiver Inverted Data Output	
22	Rx2+	Receiver Non-Inverted Data Output	
23	GND	Transmitter Ground (Common with Receiver Ground)	1
24	Rx4-	Receiver Inverted Data Output	1
25	Rx4+	Receiver Non-Inverted Data Output	
26	GND	Transmitter Ground (Common with Receiver Ground)	1
27	ModPrsl	Module Present	
28	IntL	Interrupt	2
29	VccTx	3.3 V power supply transmitter	
30	Vcc1	3.3 V power supply	
31	LPMode	Low Power Mode	2
32	GND	Transmitter Ground (Common with Receiver Ground)	1
33	Tx3+	Transmitter Non-Inverted Data Input	
34	Tx3-	Transmitter Inverted Data Output	
35	GND	Transmitter Ground (Common with Receiver Ground)	1
36	Tx1+	Transmitter Non-Inverted Data Input	
37	Tx1-	Transmitter Inverted Data Output	
38	GND	Transmitter Ground (Common with Receiver Ground)	1
*Note 1: The module signal grounds are isolated from the module case.			
*Note 2: This is an open collector/drain output that on the host board requires a 4.7KΩ to 10KΩ pull-up resistor to VccHost.			

Host PCB QSFP28 pad assignment top view



Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	T_s	-40	85	°C
Relative Humidity	RH	5	95	%
Supply Voltage	V_{cc}	-0.5	4.0	V

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	T_c	0	25	70	°C
Supply Voltage	V_{cc}	3.135	3.3	3.465	V
Data Rate per Channel	-	-	25.78125	28.05	Gb/s

Transceiver Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Module Supply Current	I_{cc}	-	-	1800	mA	-
Power Dissipation	P_D	-	-	6000	mW	-

Transmitter Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Single-ended Input Voltage Tolerance	-	-0.3	-	4.0	V	-
Input Differential Impedance	Z_{IN}	-	100	-	Ω	-
Differential Data Input Swing	$V_{IN,P-P}$	190	-	700	mV _{P-P}	-
AC Common Mode Input Voltage Tolerance	-	15	-	-	mV	-
Differential Input Voltage Swing Threshold	-	-	50	-	mV _{pp}	-

Receiver Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Single-ended Output Voltage	-	-0.3	-	4.0	V	-
Output Differential Impedance	Z_O	90	100	110	Ω	-
Differential Data Output Swing	$V_{OUT,P-P}$	300	-	850	mV _{P-P}	-
AC Common Mode Output Voltage	-	-	-	7.5	mV	-

Transmitter Optical Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Launch Optical Power per Lane	P _o	+2.0	-	+6.5	dBm	1
Total Launch Optical Power	P _o	-	-	+12.5	dBm	1
Center Wavelength Range	L1	1294.53	1295.56	1296.59	nm	-
	L2	1299.02	1300.05	1301.09	nm	-
	L3	1303.54	1304.58	1305.63	nm	-
	L4	1308.09	1309.14	1310.19	nm	-
Extinction Ratio	EX	8.0	-	-	dB	2
Spectral Width (-20dB)	$\Delta\lambda$	-	-	1	nm	-
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Optical Return Loss Tolerance	ORLT	-	-	20	dB	-
P _{out} @TX-Disable Asserted	P _{off}	-	-	-30	dBm	1
Eye Mask {X1, X2, X3, Y1, Y2, Y3}			{0.25, 0.4, 0.45, 0.25, 0.28, 0.4}			

*Note 1: The optical power is launched into SMF.

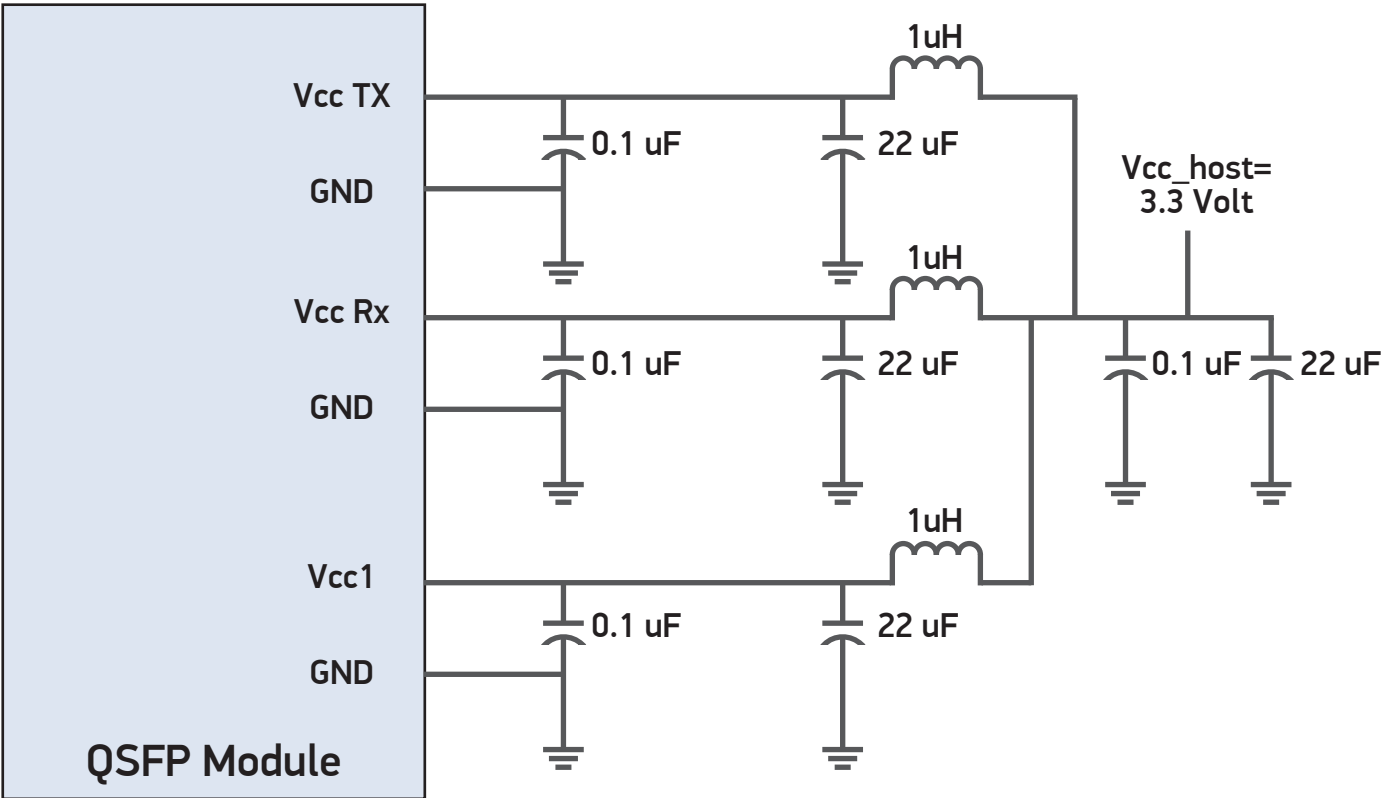
*Note 2: Measured with a PRBS 2³¹-1 test pattern @25.78125 Gbps.

Receiver Optical Characteristics

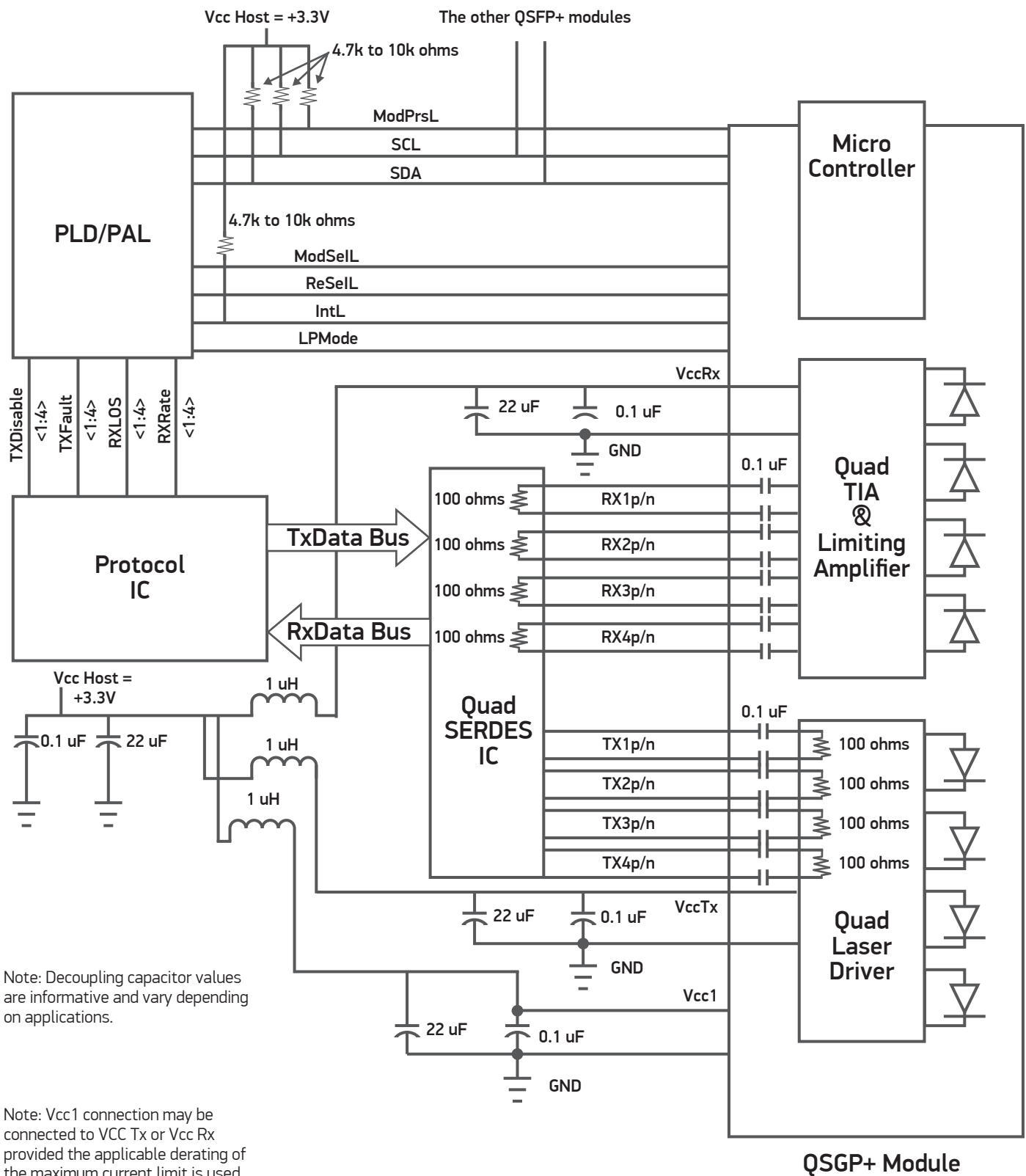
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	L2	1299.02	1300.05	1301.09	nm	
	L3	1303.54	1304.58	1305.63	nm	
	L4	1308.09	1309.14	1310.19	nm	
Sensitivity per Channel (OMA)	S	-	-	-26.9	dBm	1
Overload (each channel)	P _{OL}	+2.0	-	-	dBm	1
Damage Threshold (each channel)	P _{damage}	+4.5	-	-	dBm	
Receiver Reflectance	R _f	-	-	-26	dB	
LOS De-Assert	LOSD	-	-	-28.0	dBm	
LOS Assert	LOSA	-35.0	-	-	dBm	
LOS Hysteresis	-	0.5	-	5.0	dB	

*Note 1: Measured with PRBS 2³¹-1 test pattern, 25.78125Gb/s, BER 5.0E-5.

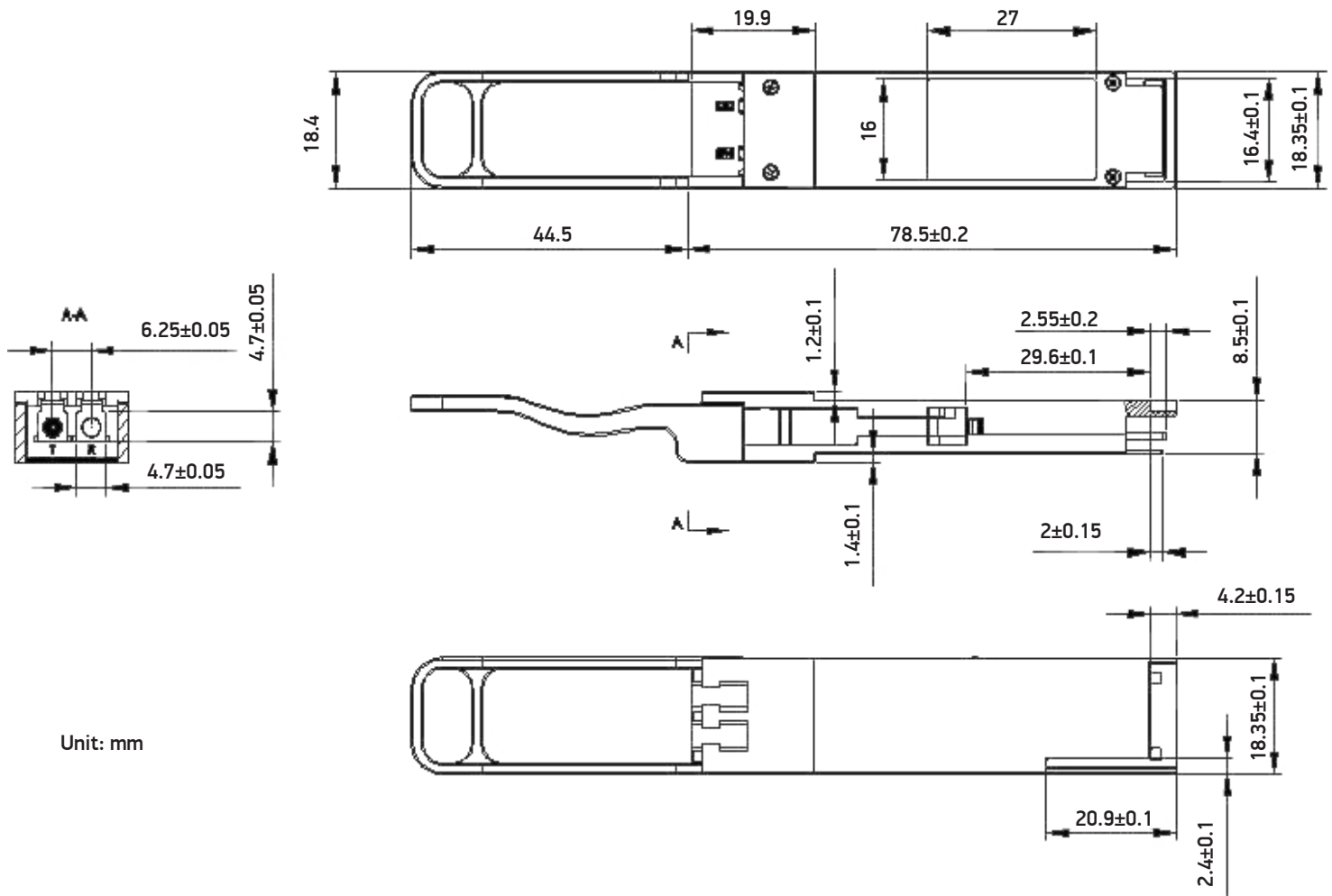
Recommended Host Board Power Supply Filter Network



Recommended Application Interface Block Diagram



Mechanical Specifications



Warranty

Please check www.edge-core.com for the warranty terms in your country.

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