

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

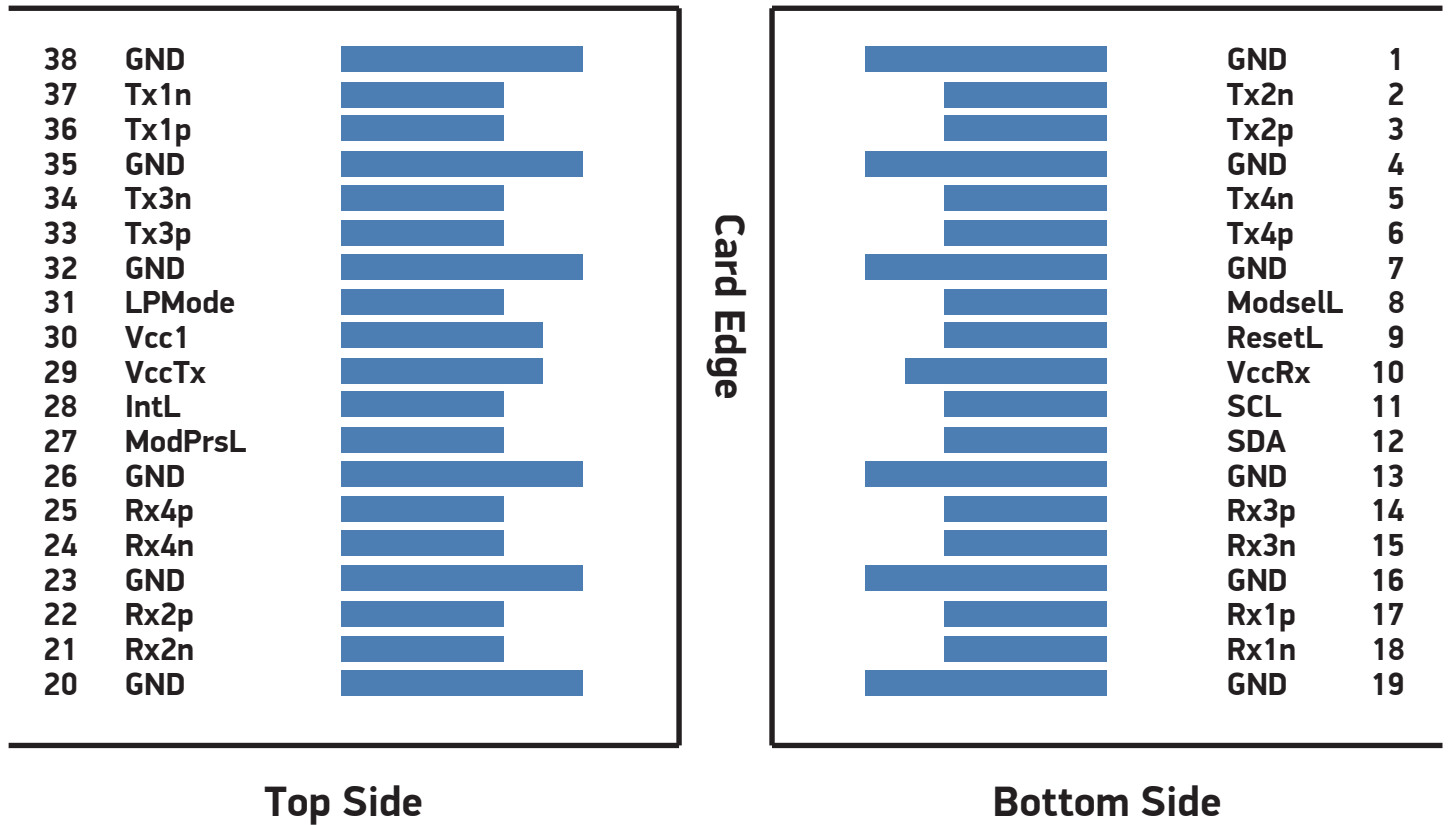
Ordering Information

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	Po	+2.0	-	+6.5	dBm	1
Total Launch Optical Power	Po	-	-	+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	-
Pout @TX-Disable Asserted	Poff	-	-	-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.

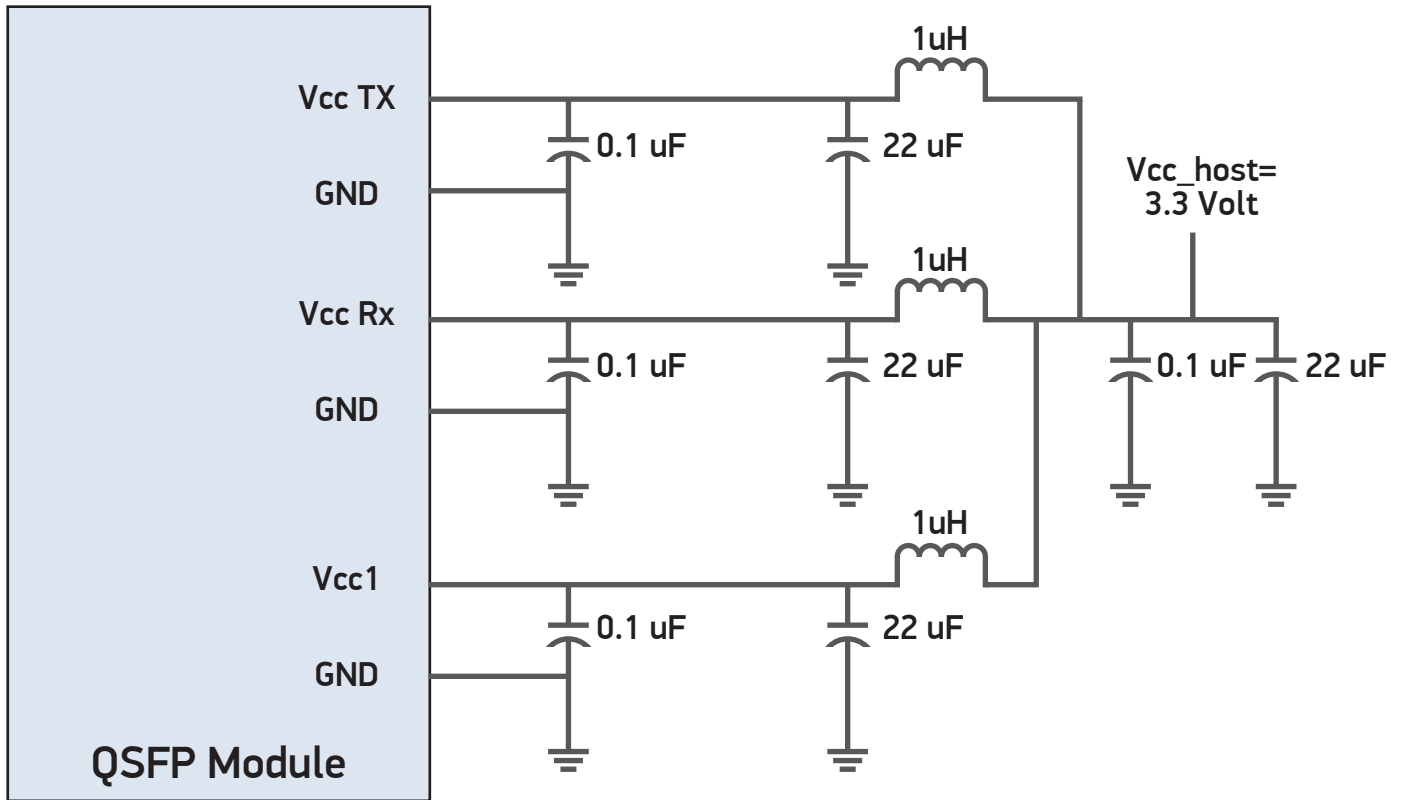
*Note 2: Measured with a PRBS 2³¹-1 test pattern @25.78125 Gbps.

Receiver Optical Characteristics

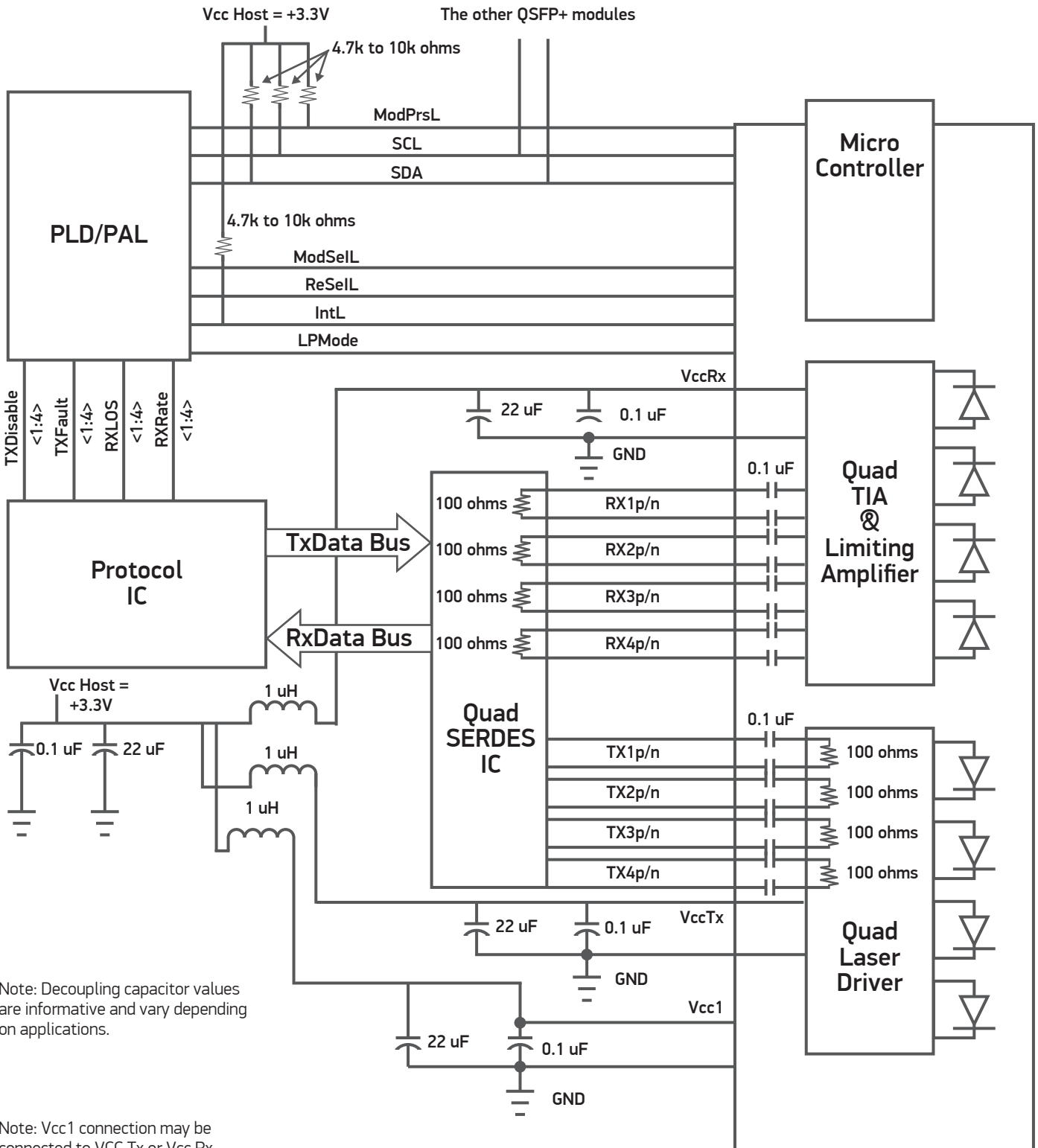
Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Center Wavelength	L1	1294.53	1295.56	1296.59	nm	
	L2	1299.02	1300.05	1301.09	nm	
	L3	1303.54	1304.58	1305.63	nm	
	L4	1308.09	1309.14	1310.19	nm	
Sensitivity per Channel (OMA)	S	-	-	-26.9	dBm	1
Overload (each channel)	P _{OL}	+2.0	-	-	dBm	1
Damage Threshold (each channel)	P _{damage}	+4.5	-	-	dBm	
Receiver Reflectance	Rf	-	-	-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

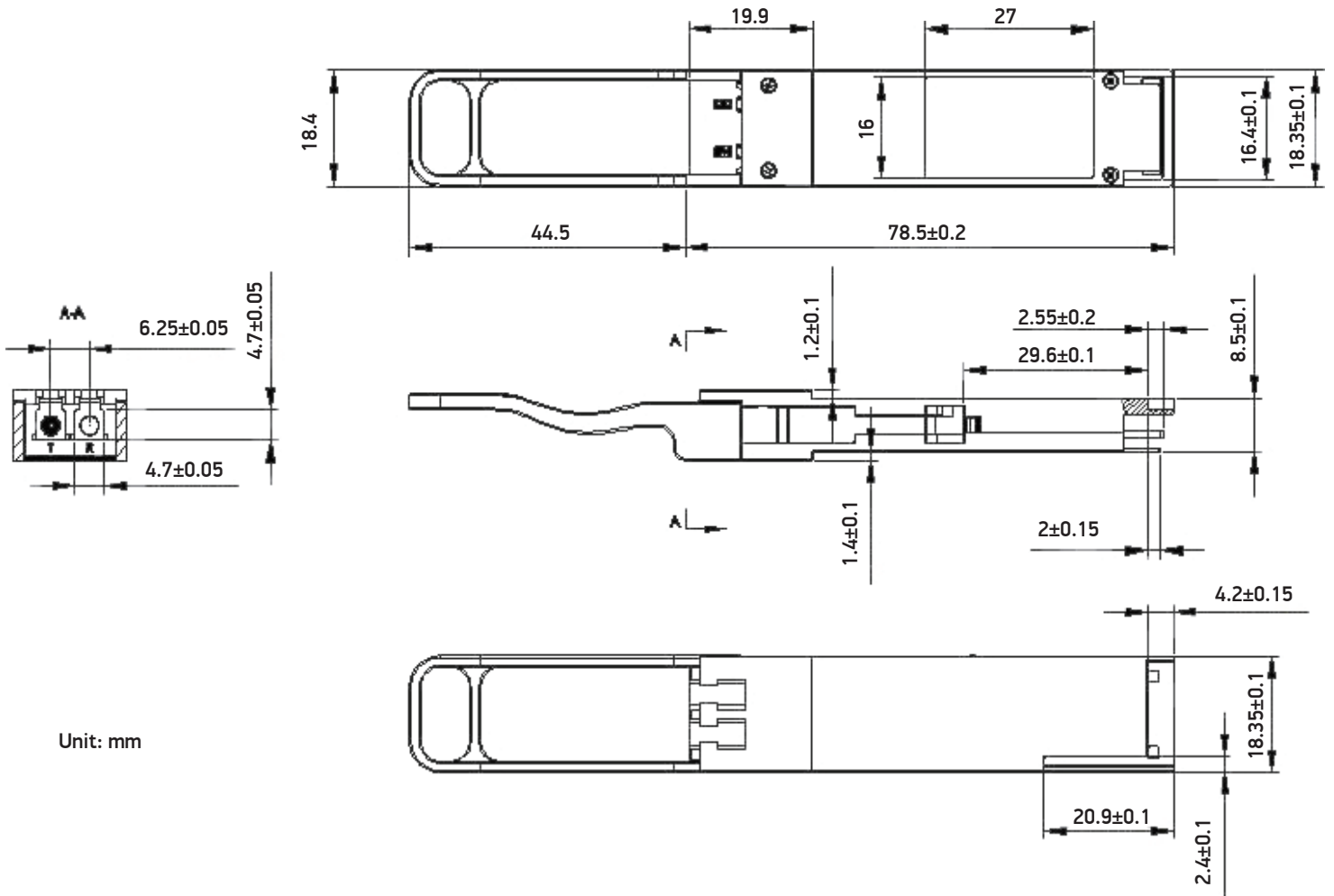


Note: Decoupling capacitor values are informative and vary depending on applications.

Note: Vcc1 connection may be connected to VCC Tx or Vcc Rx provided the applicable derating of the maximum current limit is used.

QSFP+ Module

Mechanical Specifications



Warranty

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

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