

DATA SHEET

Optolock POF transceiver module for Ethernet (OLKDX-EEXXBX)

COMOSS ELECTRONIC CO., LTD.

4F, No.11, CHUNG-HSIN ST., SHULIN 238, TAIWAN, R.O.C.

TEL: 886-2-2688-2498

FAX: 886-2-2689-9160

Http:// www.comoss.com

E-mail: Sales@comoss.com.tw

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REV. NO.: Draft

2007-05-02

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■ 1. Description

COMOSS OLKDX is a plugless digital-to-optical transceiver module that is fully compatible for IEEE 802.3u Fast Ethernet data communication standard. OLKDX with smaller housing provides a novel termination solution for bare plastic optical fiber (POF). OLKDX owns cheaper, quicker and easier feature in POF network solutions. OLKDX allows a bare POF cable that is cut into any expected length by COMOSS knife tools. The transmitter of OLKDX is combined with RCLED (Resonant Cavity Light Emitting Diode) and integrated CMOS IC that meets LVDS (Low Voltage Differential Signal) and CML (Current Mode Logic). The receiver of OLKDX is combined with PIN photo diode, integrated TIA (Transimpedance Amplifier) and LA (Limiting Amplifier) IC that also meets LVDS and CML. Therefore, OLKDX is able to use in Fast Ethernet Hub ports directly. Its applications involve in PCs, consumer electronic devices, digital home network and embedded car network.

■ 2. Features

- (1) Cheaper, quicker and easier termination solution
- (2) Data rate: meet IEEE 802.3u Std.
- (3) Peak wavelength: 660 ± 10 nm
- (4) Spectral width: 25 nm
- (5) Operating temperature: $-40\sim 70$ °C
- (6) Transmission Length:
100 meters at 100Mbps @NA=0.3 POF
- (7) Integrated optical lens
- (8) Built in LVDS and CML compatible IC for TX and RX
- (9) Built in Wake-on-LAN specification
- (10) Low power consumption
- (11) Reinforced Polymer package



■ 3. Absolute Maximum Rating

Parameter	Symbol	Min.	Max.	Unit	Test Condition
Storage Temperature	T _{stg}	-40	100	°C	
Operating Temperature	T _{op}	-20	70	°C	
Recommended Soldering Temperature	T _{sld}		260(1)	°C	2.2mm below seating plane
Supply Voltage	V _{CC}	-0.5	4.5	V	

Note: (1) Soldering time ≤ 5s 3 times

■ 4. Optical and Electrical Characteristics of Transmitter

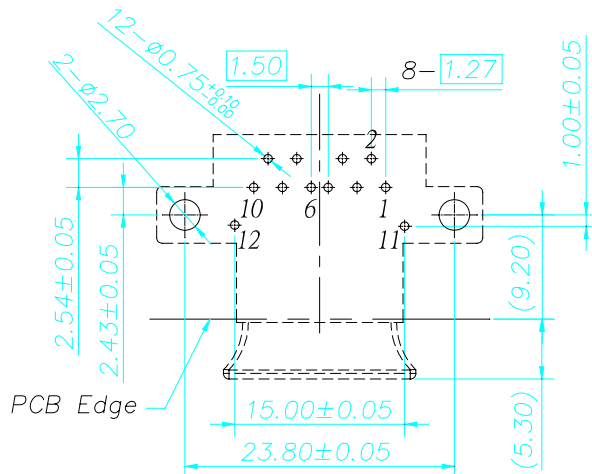
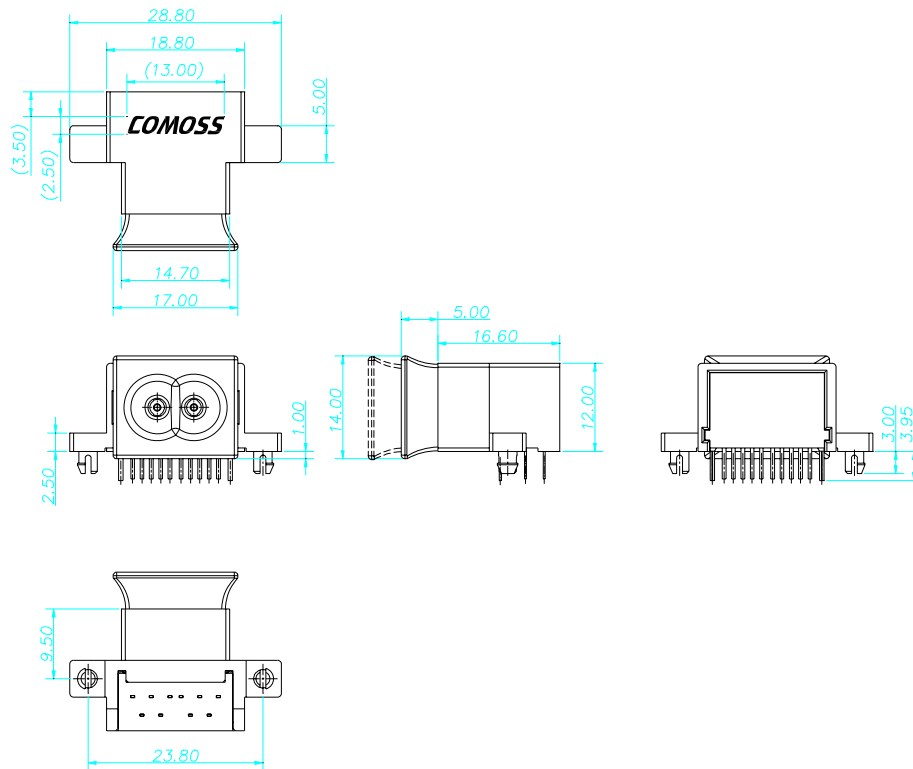
Parameter	Symbol	Min.	Typ.	Max.	Unit
Peak Wavelength	λ	640	660	670	nm
Spectral Width	$\Delta\lambda$		23	30	nm
Mean Optical Power between -20~70 °C	P_0	-8.5		-2.0	dBm
Optical Rise Time (20%~80%) 250Mbps	t_r		1.5	2.0	ns
Optical Fall Time (80%~20%)	t_f		2.0	3.0	ns
Extinction Ratio	R_E	10.0			dB
Systematic Jitter 100Mbps				855	ps
Random Jitter 100Mbps				855	ps
Supply Voltage	V_{CC}	3.0	3.3	3.6	V
Supply Current	I_{CC}			55	mA
Baud Rate for 8B/10B			100		Mbps
Common Mode Input Voltage		GND+0.8		$V_{CC}-0.8$	V
Swing Input Voltage		100		1200	mV
Waking Input Voltage				100	mV
Delay time of Optical Power OFF		0.02		20	us
Delay time of Optical Power ON				5	us

■ 5. Optical and Electrical Characteristics of Receiver

Parameter	Symbol	Min.	Typ.	Max.	Unit
Receivable Optical Power Sensitivity		-24	-26	-28	dBm
Rise and Fall Time				2.0	ns
Supply Voltage	V _{CC}	3.0	3.3	3.6	V
Supply Current	I _{CC}			45	mA
Offset Common Mode Voltage			1.2		V
Differential Output Voltage		500		600	mV
Differential Output Impedance			100		ohm
SD (Signal Detect) ON Output Voltage		2.4			V
SD (Signal Detect) OFF Output Voltage		0		0.4	V
SD Assert / Deassert Time		0.5	5	100	us

■ 6. Physical Dimension and PCB layout

Unit: mm



Recommended PCB Layout

OLKDX-EERLBC

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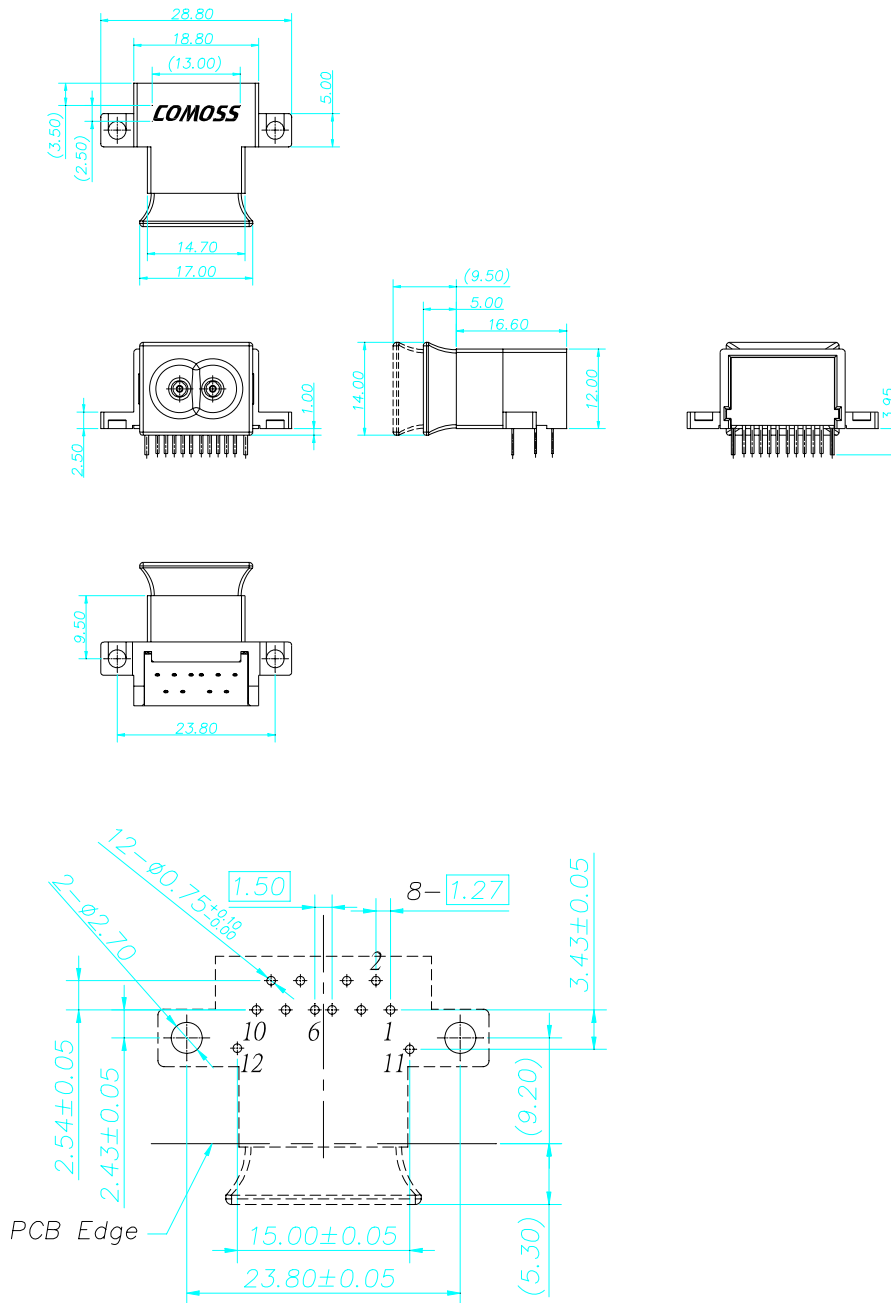
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Physical Dimension and PCB layout

Unit: mm



Recommended PCB Layout

OLKDX-EERMBC

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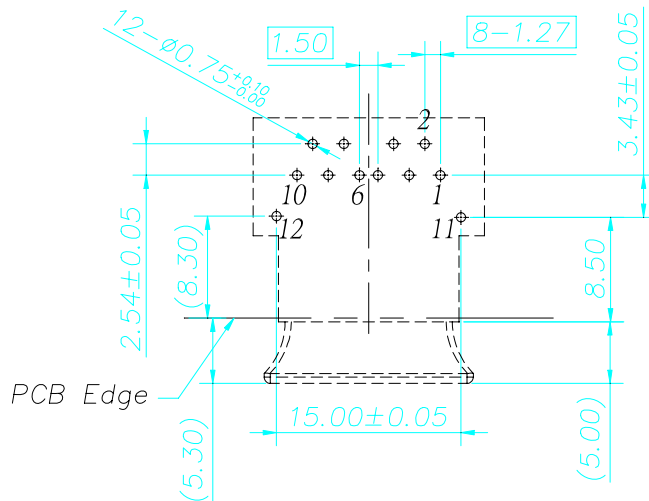
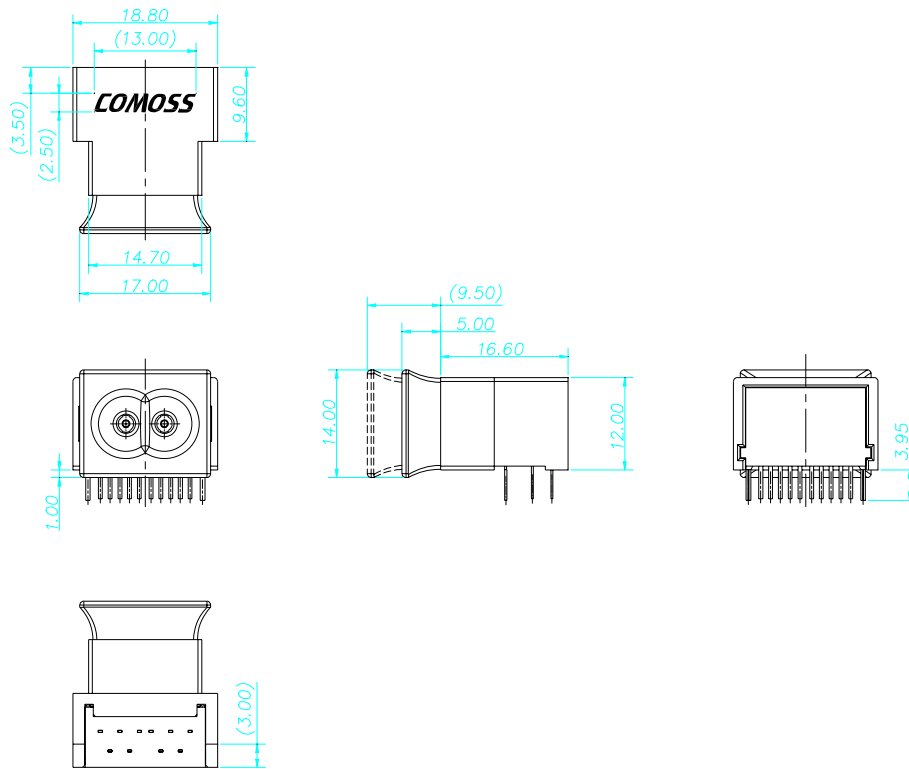
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Physical Dimension and PCB layout

Unit: mm



Recommended PCB Layout

OLKDX-EERWBC

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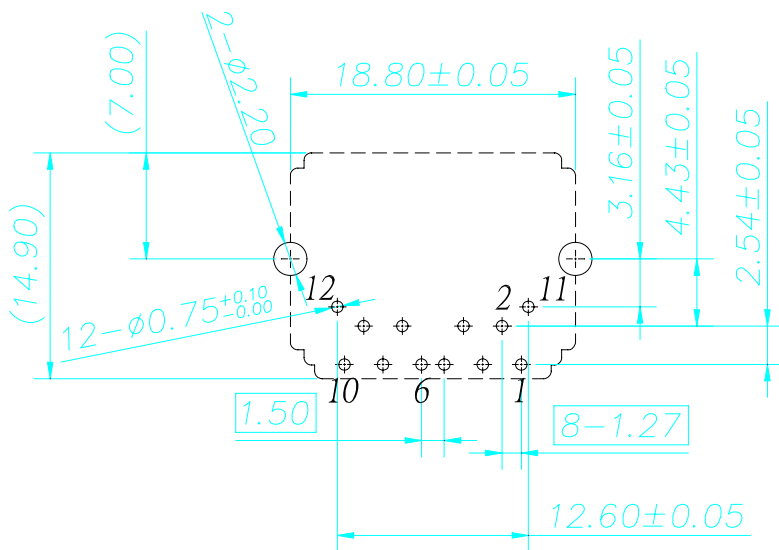
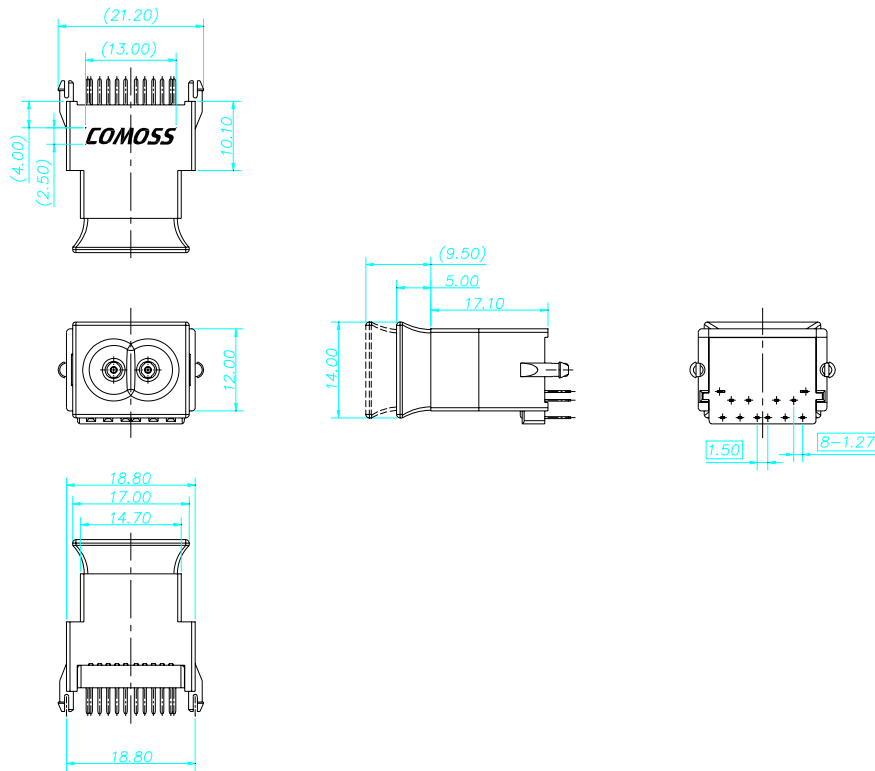
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Physical Dimension and PCB layout

Unit: mm



OLKDX-EEVLBC

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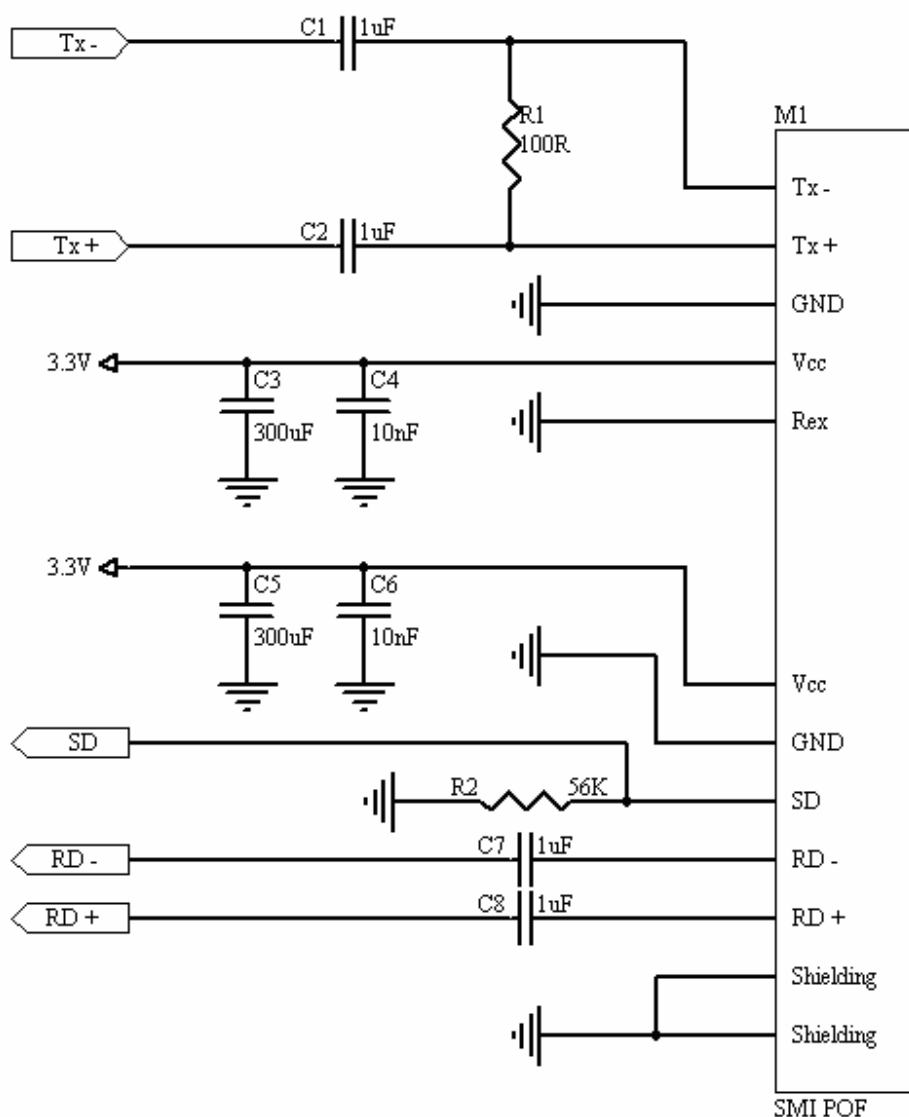
■ 7. Pin Function

Pin No.	Symbol	Function
1	RD+	Data Output +
2	RD-	Data Output -
3	SD	Output Signal Detect
4	GND	Ground
5	V _{CC}	Input Voltage
6	Rex	-3dB Power Down (Input)
7	V _{CC}	Input Voltage
8	GND	Ground
9	TD+	Data Input +
10	TD-	Data Input -
11	Case	Metal Shielding
12	Case	Metal Shielding

■ 8. Special Functions

1. The function of Rex is to allow the designer to adjust optical power of RCLED.
Two settings are as follows:
 - 1.1 Rex is tied to ground (set to low). This setting is default and recommended setting for normal operation.
 - 1.2 Rex is tied to 3.3V (set to high). The output power of RCLED is reduced by 3 dBm.
2. SD (Signal Detect) is a LVCMOS signal.

■ 9. Recommend Circuit



Notes:

1. The capacitors at power line should be placed as close to transceiver possible.
2. The PCB layout of differential pairs must comply with impedance matching and high-speed standard.

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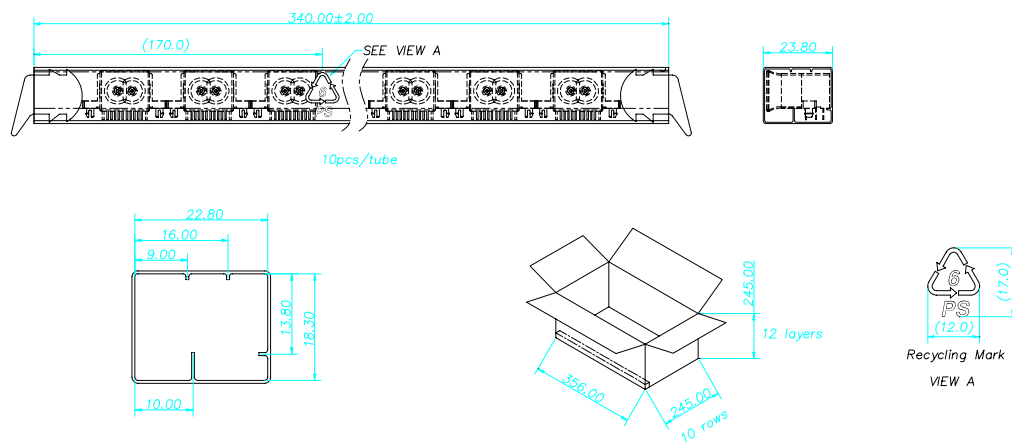
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11. Packaging Specification

Unit: mm



Package:

Item	Quantity	Total	Size (L*W*H)
Tube	10 pcs	10 pcs	340*23.8*19.3
Carton	120 tube/ carton	1200 pcs	356*245*245

If you want to get more detail packaging specification in every part, you can see the drawings of every part.