

## Specification

### 4 Channels Optical Extender

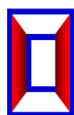
( 4T & 4R )

### Single-Mode and Multi-Mode

### Single LC Receptacle

## Product Summary

Model Type	Voltage	Max Data Rate	Temperature	Distance
SP 1401 - T	+3.3V	TX : 3.5Gbps / Channel	+0℃~+55℃	1km (Single-Mode G.652 Fiber)
SP 1401 - R		RX : 3.5Gbps / Channel		500m (Multi-Mode OM3 Fiber)



## Descriptions

The Optical Extender Module is designed to transmit and receive data signal with its' control signal. The module is capable of sending over 10.5Gbps of data through one single mode fiber. The module integrates proprietary optical sub- assembly (OSA) and circuitries of which includes four 3.5Gbps channels with reaching distance of over 1000 meters.

## Features

- Support Four High Speed TMDS Signals Transmission
- Single LC Receptacle Optical Interface
- Single-Mode and Multi-Mode Fiber Application
- Forward Channels (TMDS 0 / 1 / 2) Maximum Data Rate : Up to 3.5 Gbps +3.3V Power Supply
- Metal Based Enclosure for Better Heat Dissipation
- Support Hot Pluggable : Easy to Installation , Upgrade and Replacement

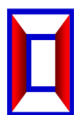
## General Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature	T <sub>c</sub>	+0	--	+55	°C
Storage Temperature	T <sub>s</sub>	-20	--	85	°C

## Electrical Characteristics

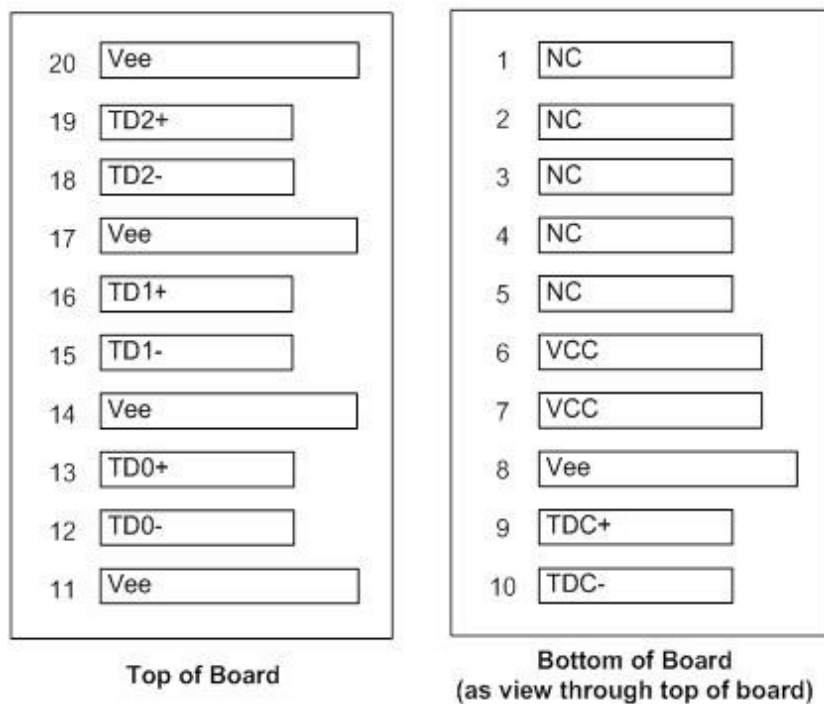
( V<sub>CC</sub>=+3.3V ; T<sub>c</sub>= +0°C~+55°C unless specified)

Parameter	Symbol	Min	Typ	Max	Units
Supply Voltage	V <sub>cc</sub>	+3.15V	+3.3V	+3.45	V
Supply Current	I <sub>cc</sub>	--	--	TBD	A
TMDS Signal Line Speed (TD2 / TD1 / TD0 / TC Channels)	DH	--	3.5	--	Gbps
TMDS Differential Data Input Swing	V <sub>in-pp</sub>	600	--	1200	mV
TMDS Differential Data Output Swing	V <sub>out-pp</sub>	600	--	1200	mV

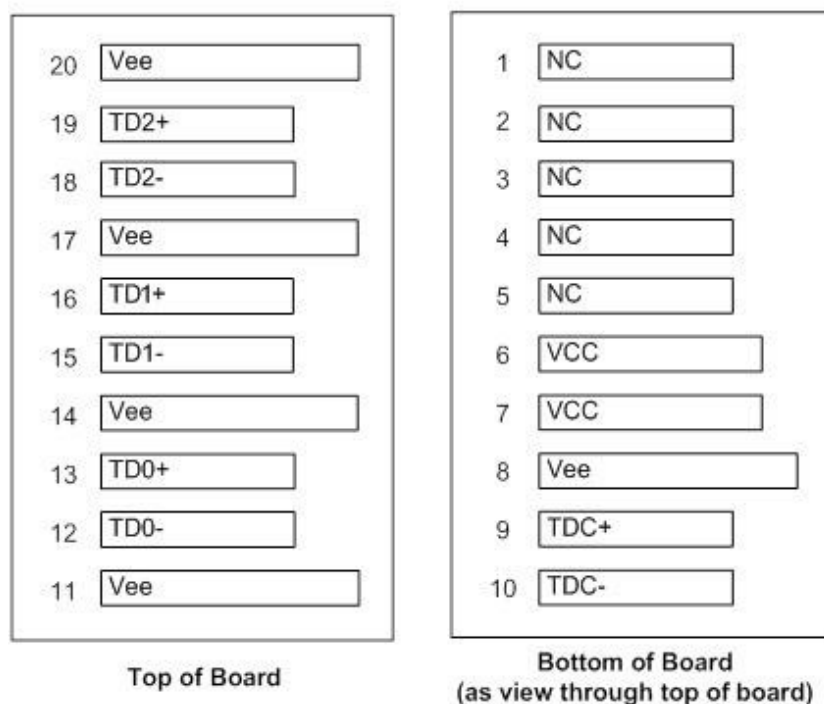


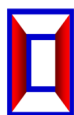
## Pin Definition and Descriptions

SP1401-T (4 Transmitters)

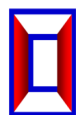


SP1401-R (4 Receivers)

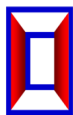




SP1401-T ( 4Transmitters )			
Pin No.	Pin Name	Description	I/O / Level
1	NC	No Connect (Internal Use)	--
2	NC	No Connect (Internal Use)	--
3	NC	No Connect (Internal Use)	--
4	NC	No Connect (Internal Use)	--
5	NC	No Connect (Internal Use)	--
6	VCC	+3.3V Power Input	Input
7	VCC	+3.3V Power Input	Input
8	Vee	Signal Ground	Input
9	TDC+	TMDS Non-Inverted Clock Input	Input /TMDS
10	TDC-	TMDS Inverted Inverted Clock Input	Input /TMDS
11	Vee	Signal Ground	Input
12	TD0-	TMDS Inverted Data0 Input	Input /TMDS
13	TD0+	TMDS Non-Inverted Data0 Input	Input /TMDS
14	Vee	Signal Ground	Input
15	TD1-	TMDS Inverted Data1 Input	Input /TMDS
16	TD1+	TMDS Non-Inverted Data1 Input	Input /TMDS
17	Vee	Signal Ground	Input
18	TD2-	TMDS Inverted Data2 Input	Input /TMDS
19	TD2+	TMDS Non-Inverted Data2 Input	Input /TMDS
20	Vee	Signal Ground	Input

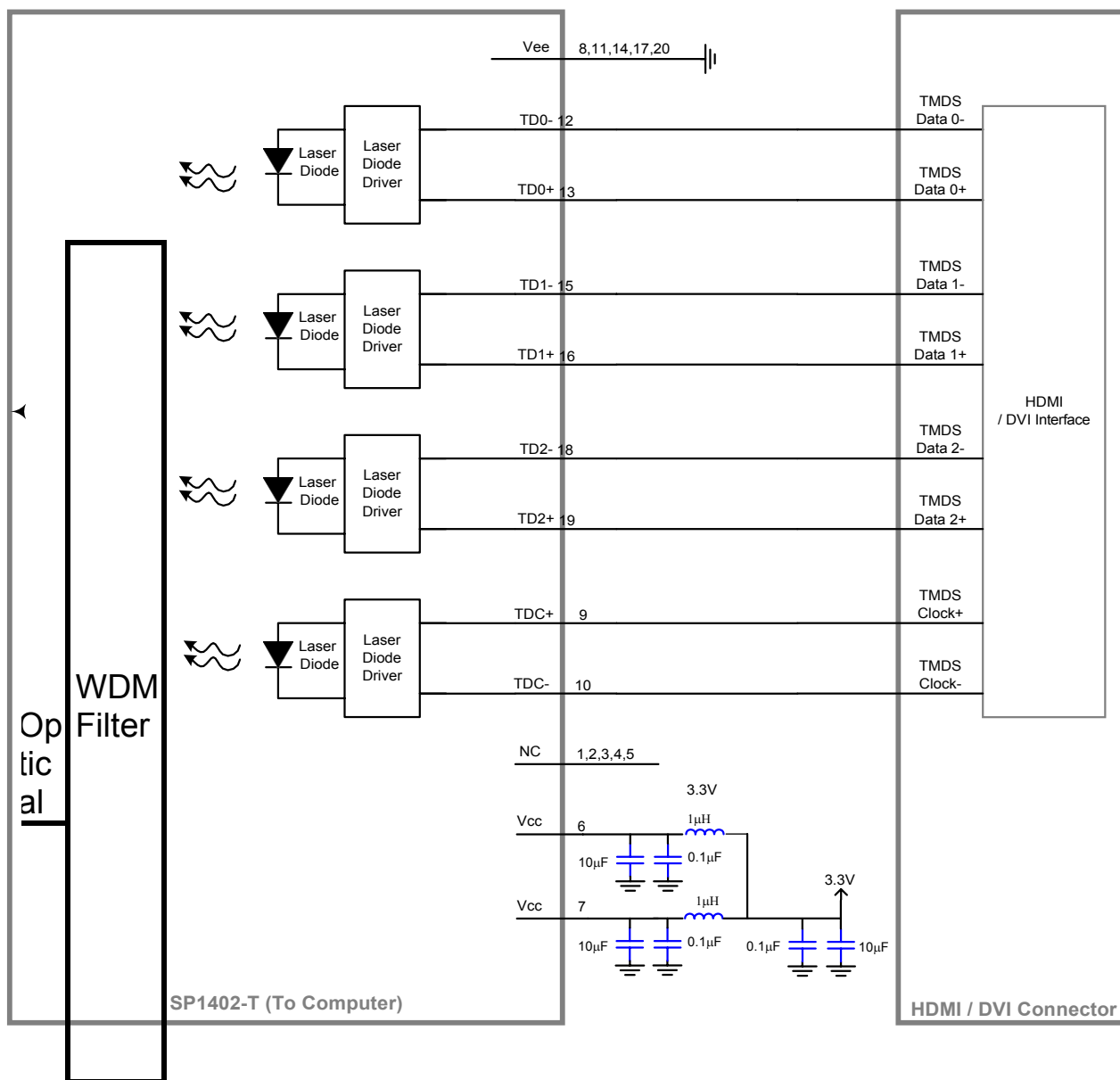


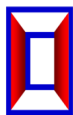
SP1401-R ( 4 Receivers )			
Pin No.	Pin Name	Description	I/O / Level
1	NC	No Connect (Internal Use)	--
2	NC	No Connect (Internal Use)	--
3	NC	No Connect (Internal Use)	--
4	NC	No Connect (Internal Use)	--
5	NC	No Connect (Internal Use)	--
6	VCC	+3.3V Power Input	Input
7	VCC	+3.3V Power Input	Input
8	Vee	Signal Ground	Input
9	TDC+	TMDS Non-Inverted Clock Output	Output / TMDS
10	TDC-	TMDS Inverted Inverted Clock Output	Output / TMDS
11	Vee	Signal Ground	Input
12	TD0-	TMDS Inverted Data0 Output	Output / TMDS
13	TD0+	TMDS Non-Inverted Data0 Output	Output / TMDS
14	Vee	Signal Ground	Input
15	TD1-	TMDS Inverted Data1 Output	Output / TMDS
16	TD1+	TMDS Non-Inverted Data1 output	Output / TMDS
17	Vee	Signal Ground	Input
18	TD2-	TMDS Inverted Data2 Output	Output / TMDS
19	TD2+	TMDS Non-Inverted Data2 Output	Output / TMDS
20	Vee	Signal Ground	Input



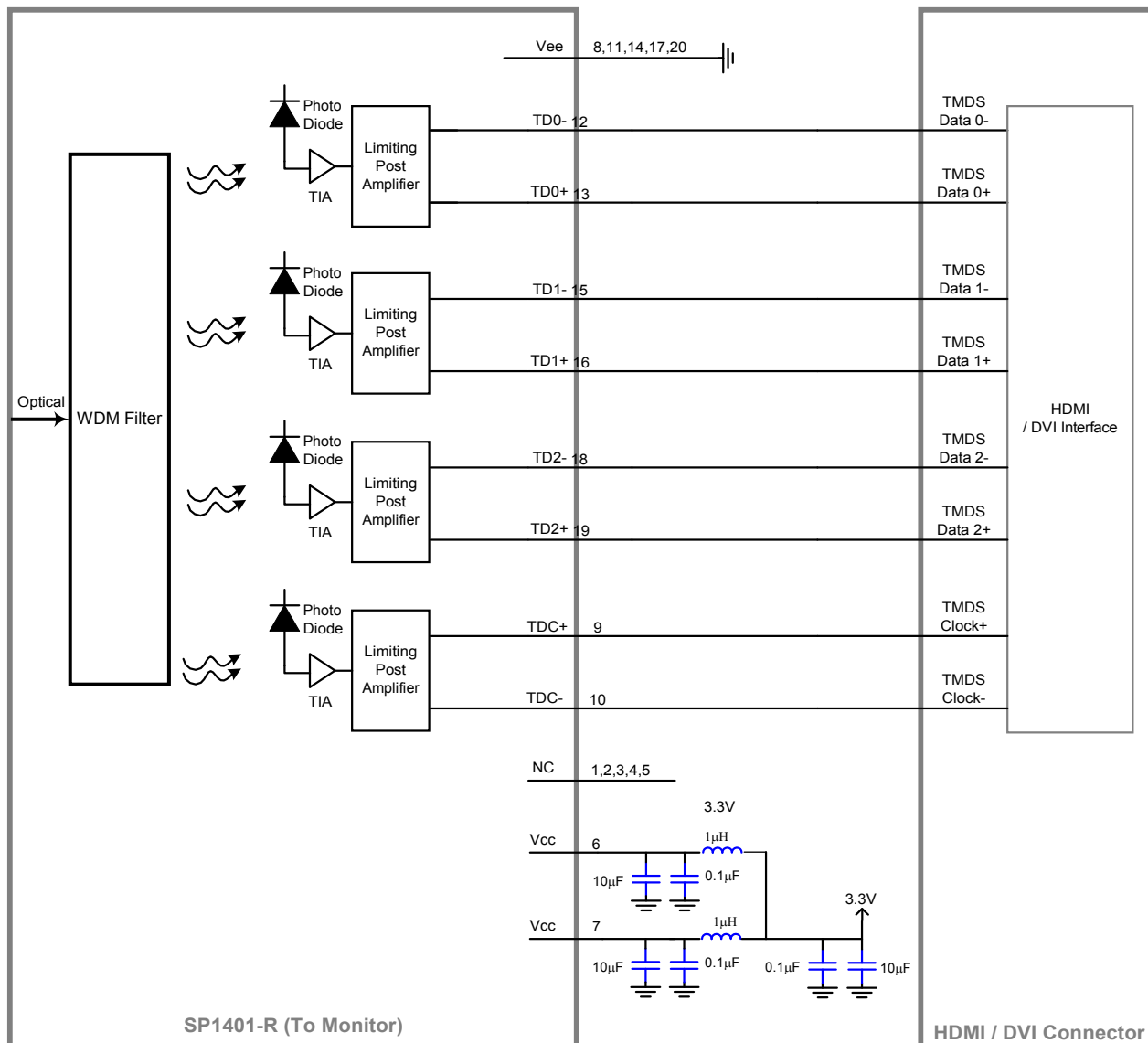
## Recommended Circuit Diagram

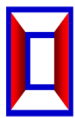
### SP1401-T





SP1401-R

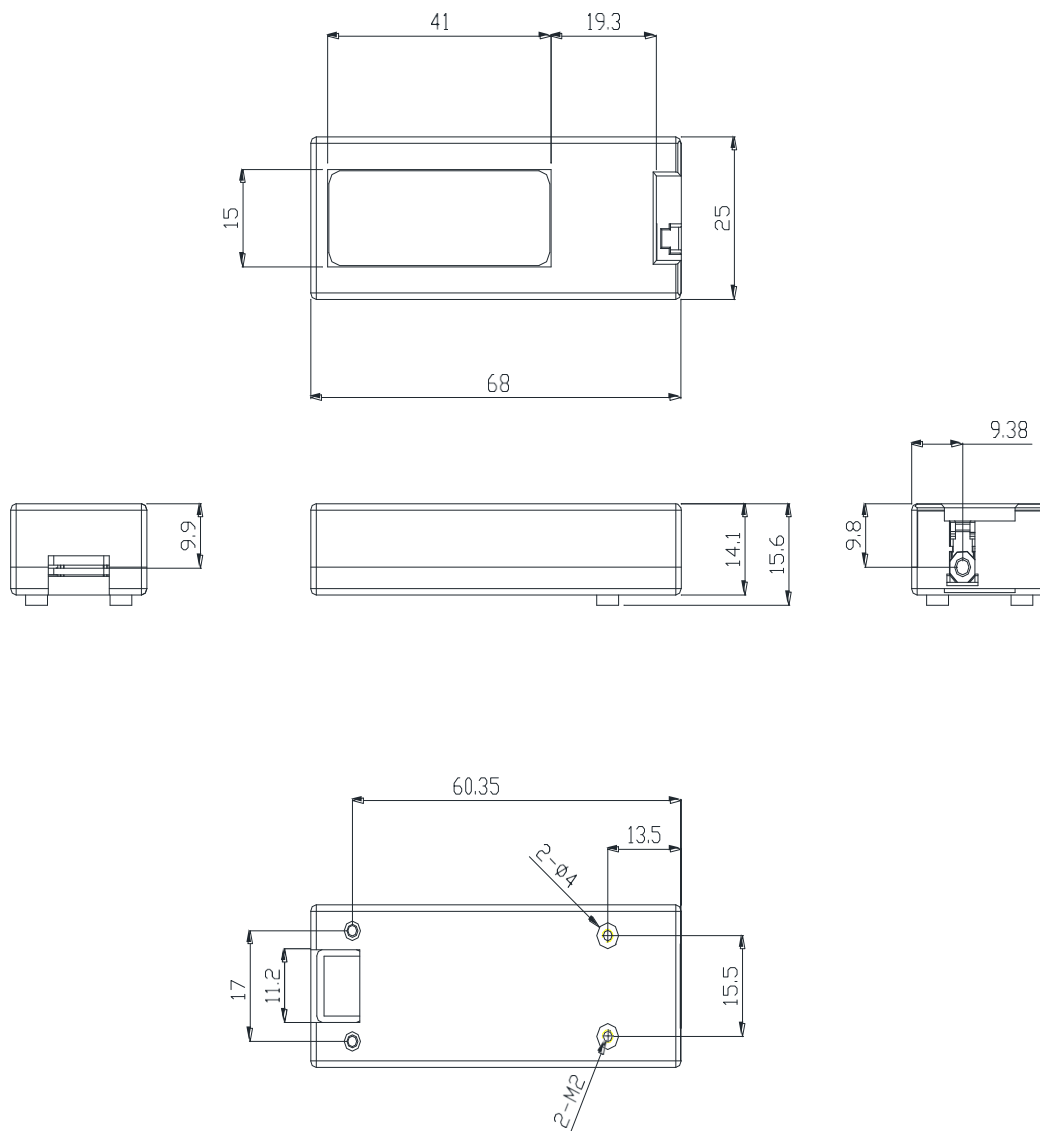




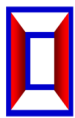
## Mechanical Outlines

( Units in mm )

( Dimension : W= 25mm / L=68mm / H= 14mm )

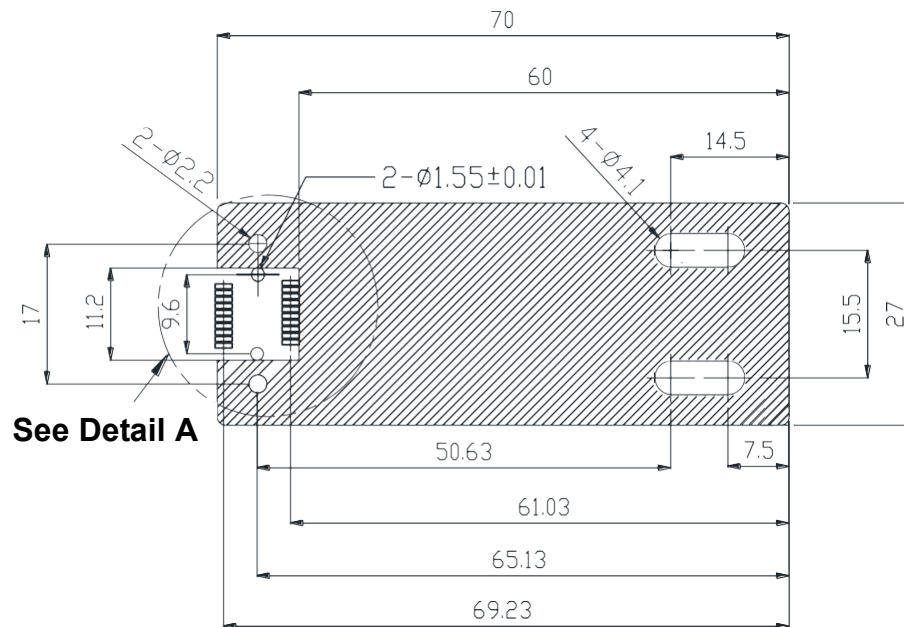




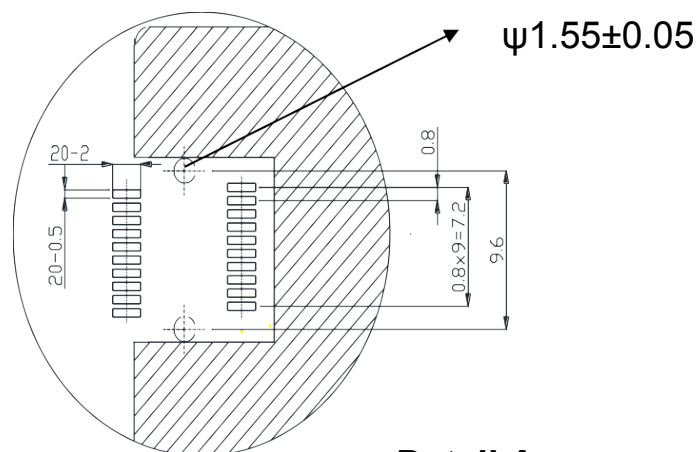
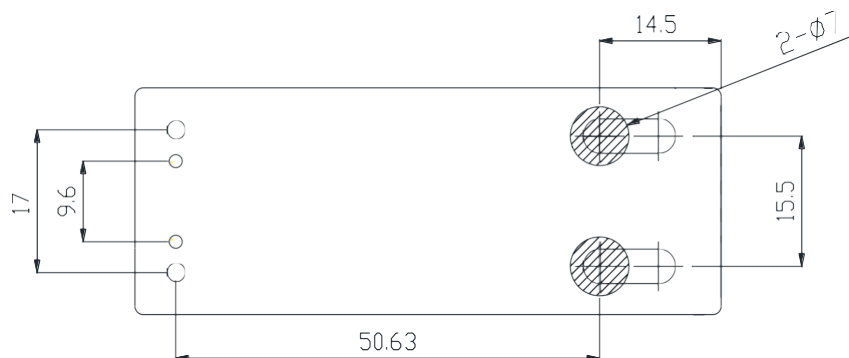


## Recommended Host Board Mechanical Layout

### PCB\_Top Layer



### PCB\_Bottom Layer



Detail A