

T1402527 Request for manufacturing circuits for KAGRA

Date: 28/08/2014

JGWDoc No.: D1402796

• How to apply: Please obtain a document number from JGWDoc with selection of the "Document Type" as "D" like D140XXXX using "Reserve Number" at top menu in each page of JGWDoc. Write down the number you got at "JGWDoc No. " above, fill necessary information blow, and upload this request to JGWDoc with schematic/PCB drawings. Then please tell AEL chief that you have uploaded this request with the document number. Within a week, AEL chief will contact to you to discuss the manufacturing plan of the circuits. If you make the same (or similar with small modifications) circuits you made before, please upload this request as a new version of the same document number. If you have any questions please contact AEL chief.

How to upload to JGWDoc <http://gwwiki.icrr.u-tokyo.ac.jp/JGWwiki/JGWDoc/HowTo/UpLoad>

• Subgroup name : VIS

• Applicant name : Fabián Peña Arellano

• Name of the circuit: PCB holders and flexible circuit for OSEMs

• Explanation of function of this circuit:

The PCB holders support the LEDs and the photodiodes in the OSEM.

The flexible circuit provides electric contact between the individual components (LEDs, photodiodes and coils) and the micro-D connector.

• Schematic attached PCB design attached The last design exists

When you upload this request, please upload a schematic at least, and PCB drawings if you can. If you upload no PCB drawing, AEL can design PCB but it takes more time. We do not accept a conceptual design without schematic. The default CAD used in AEL group is Altium. If you need to use Altium, we can register you as a network user, so please ask AEL chief.

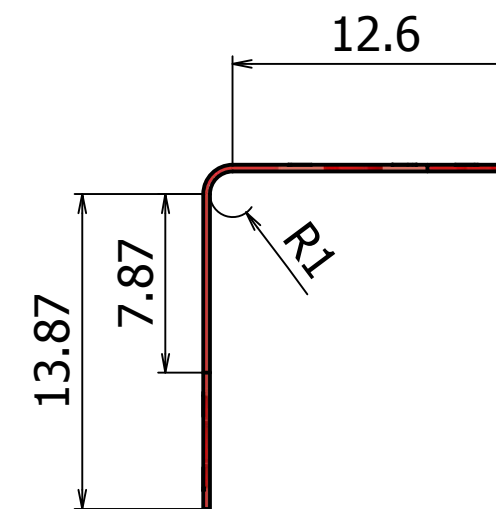
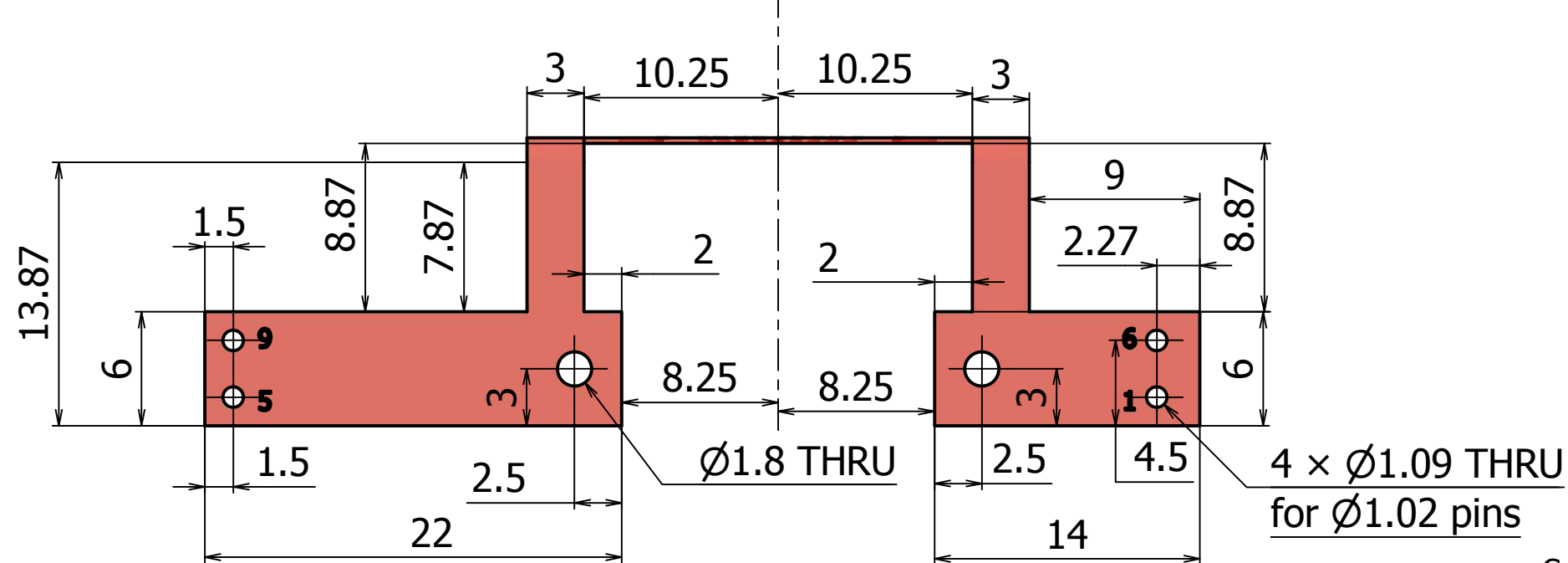
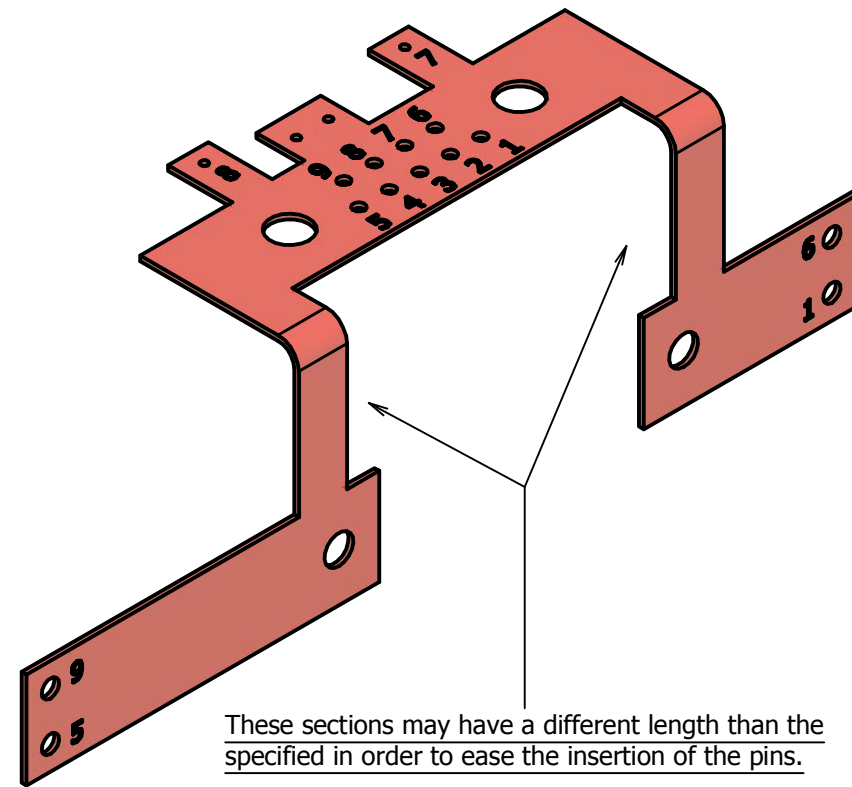
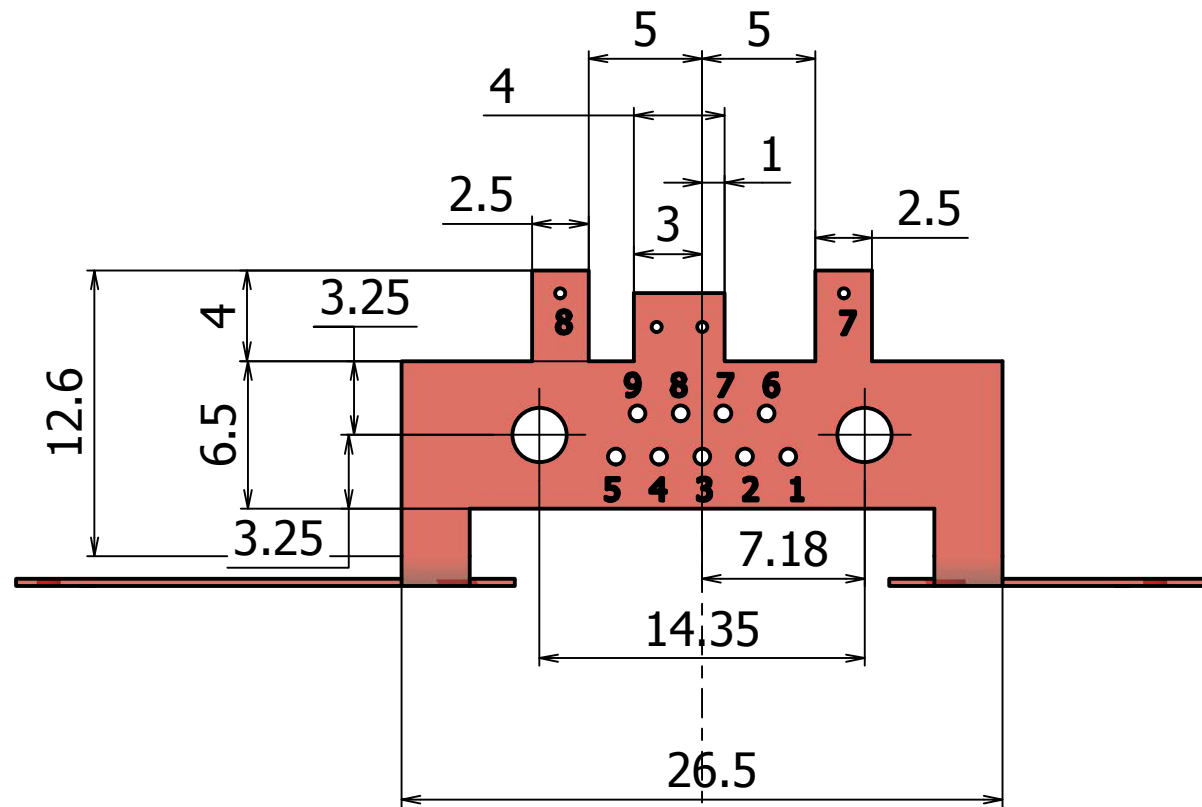
• Shape when delivered. : board only, in a 19inch chassis (1U, 2U, 3U, 4U), other box

• Necessary quantity : 100 of each (Actual quantity of board and electric parts will be determined by AEL.)

• Delivery date you hope : Please, talk with Takahashi-san

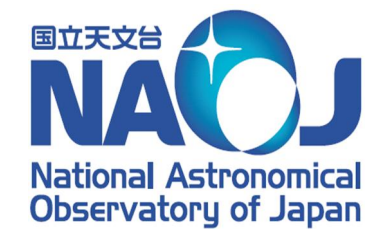
It will be determined by discussion between AEL and your group.

Typical term from our past experience (from submission to deliver): 5 months for a new design, 3 months for existing designs.

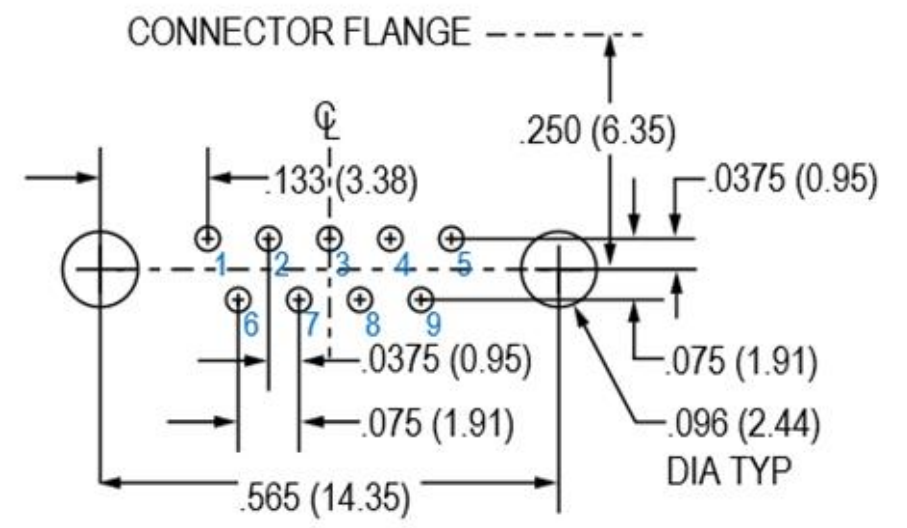


Component: Flexible circuit OSEM Fabián E. Peña Arellano
 Quantity: 100 Date: 27/06/2014
 Tolerance: $\pm 0.1\text{mm}$ and $\pm 5^\circ$

- | | | |
|----------|--------------------|---------|
| 9: LED K | 7: Coil terminal 1 | 6: PD A |
| 5: LED A | 8: Coil terminal 2 | 1: PD K |

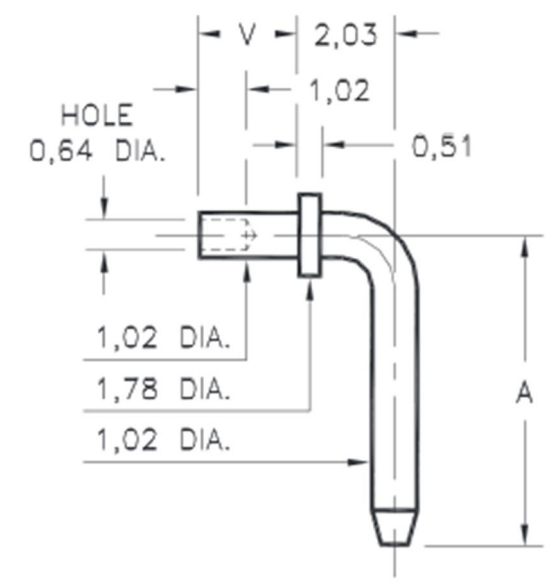


Connector footprint specifications:
 Type: Micro-D
 Manufacturer: Glenair
 Part number: GMR7590-9P-1BPN
 RS part number: 610-6514
 Units: inches (mm)



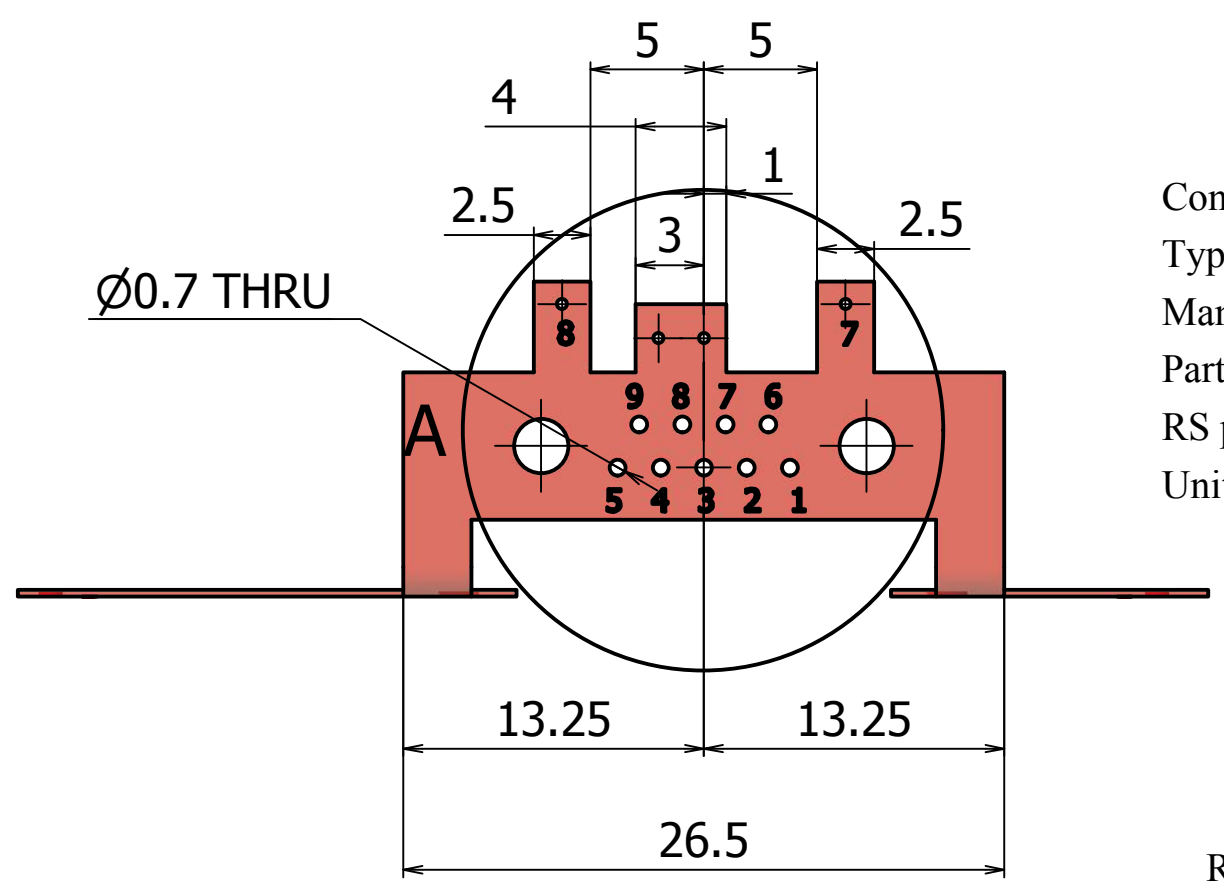
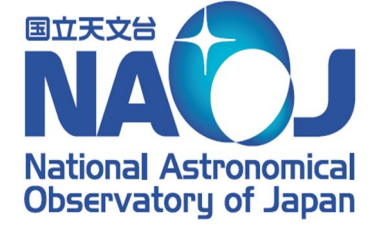
9 PIN

Right angle pin specifications
 Manufacturer: Mill-Max
 Part number: 3301-2-14-21-00-00-08-0
 Mouser Electronics part number: 575-330120
 A = 6.53 mm
 V = 2.08 mm (for 1.57 mm board thickness)

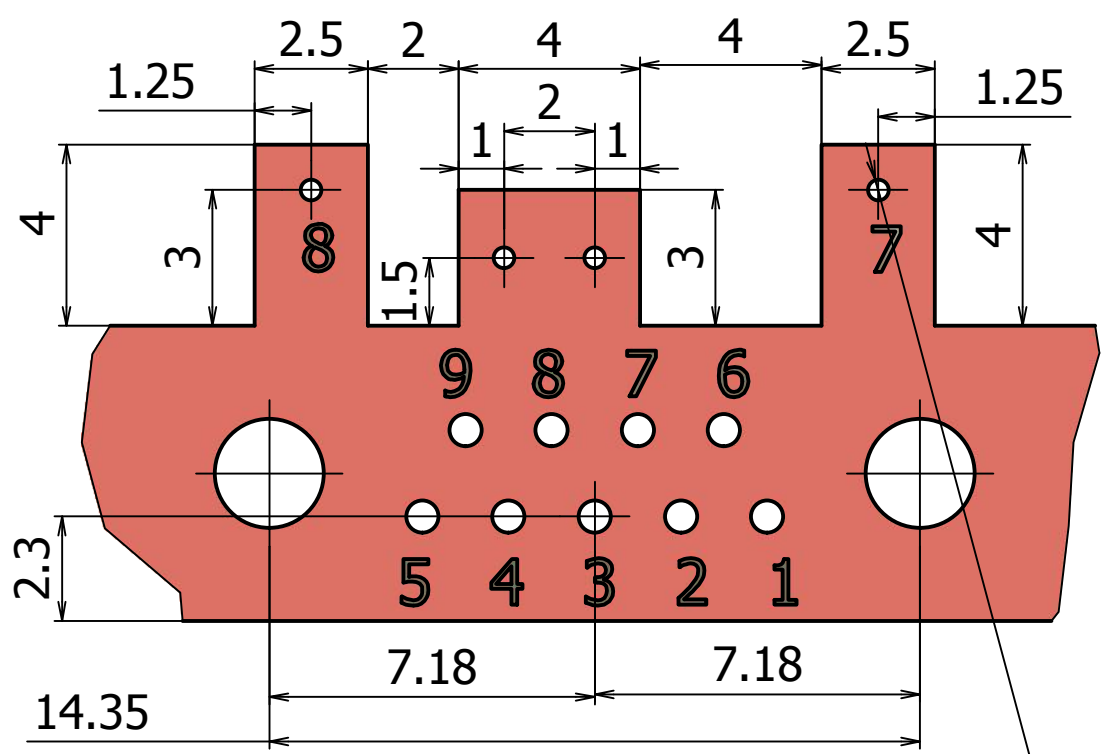


Component: Flexible circuit OSEM
 Quantity: 100
 Tolerance: ±0.1mm and ±5°

Fabián E. Peña Arellano
 Date: 27/06/2014



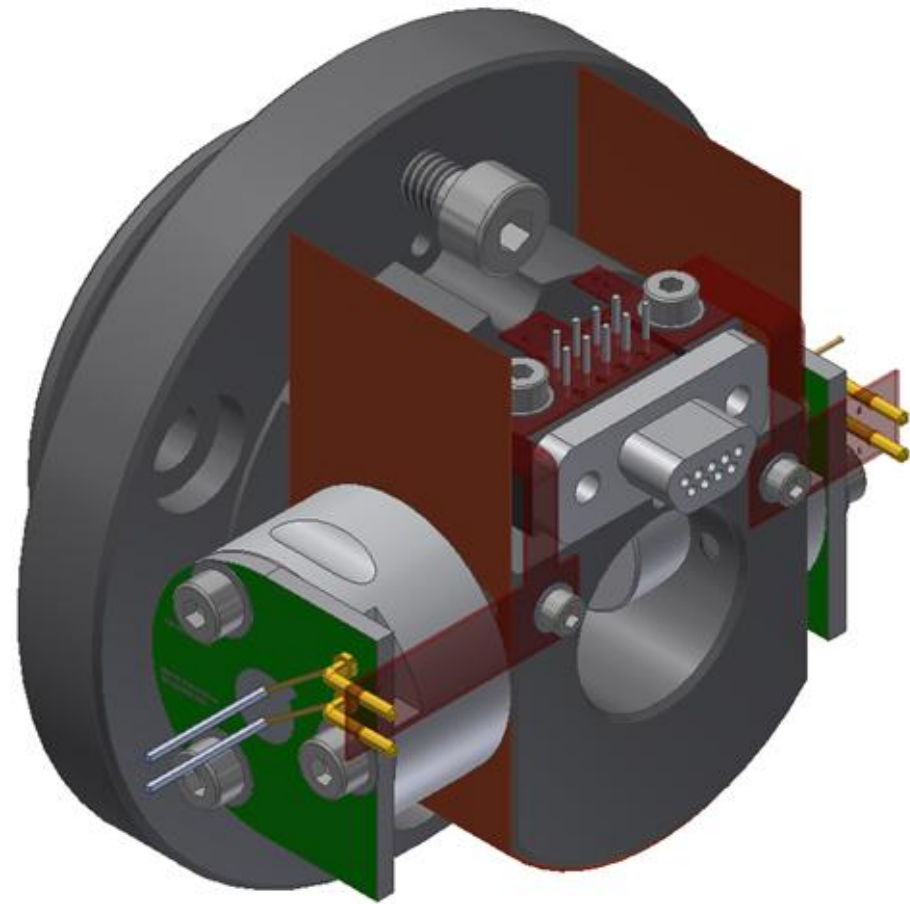
A (6 : 1)



4 × Ø0.46 THRU for 0.36mm thick wire

Notes:

1. Please choose the size of the holes according to the dimensions of the corresponding pins.
2. Holes with the same number must be electrically connected to each other.
3. The sections of the flexible circuit that fold may have a longer length in order to ease the insertion of the pins.
4. A figure of the whole assembly is shown for guidance.



Ø0.45 THRU
for the LED

2 × Ø1.15 THRU for
the right angle pins

This is an oval counterbore
for the pins of the LED. √0.79mm

R10.75

2.54

1.27

8

1.57

4.5

3

7.5

21.5

2

1.67

3.34

2.54

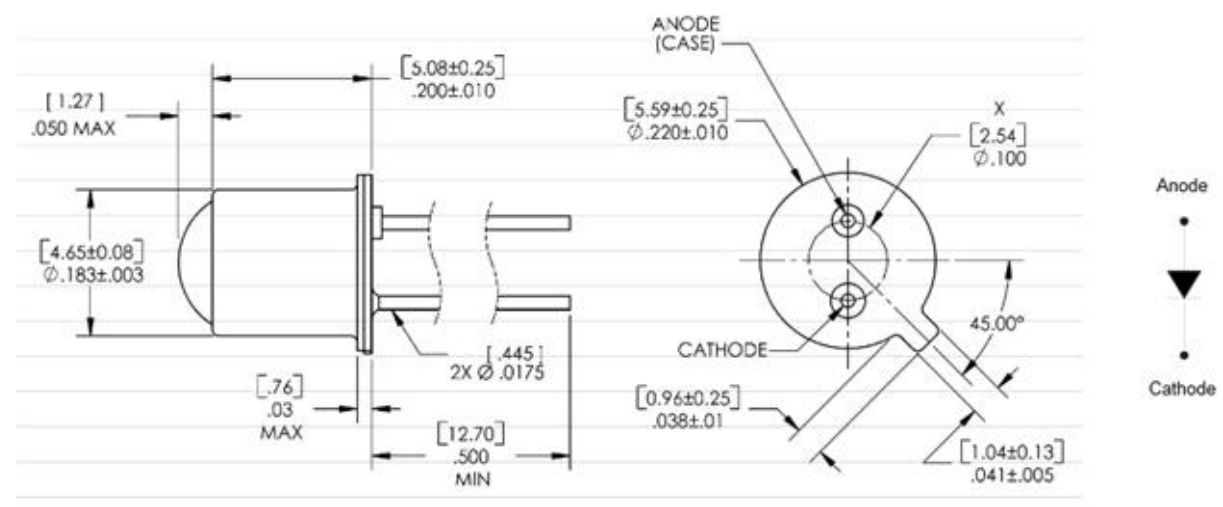
3 × Ø2.6 THRU
on a PCD of 16

8

Please write this legend on the board:
"This side is visible. The LED is mounted
on the opposite side."

Please write this legend on the board:
"This side is hidden. The LED
is mounted on this side."

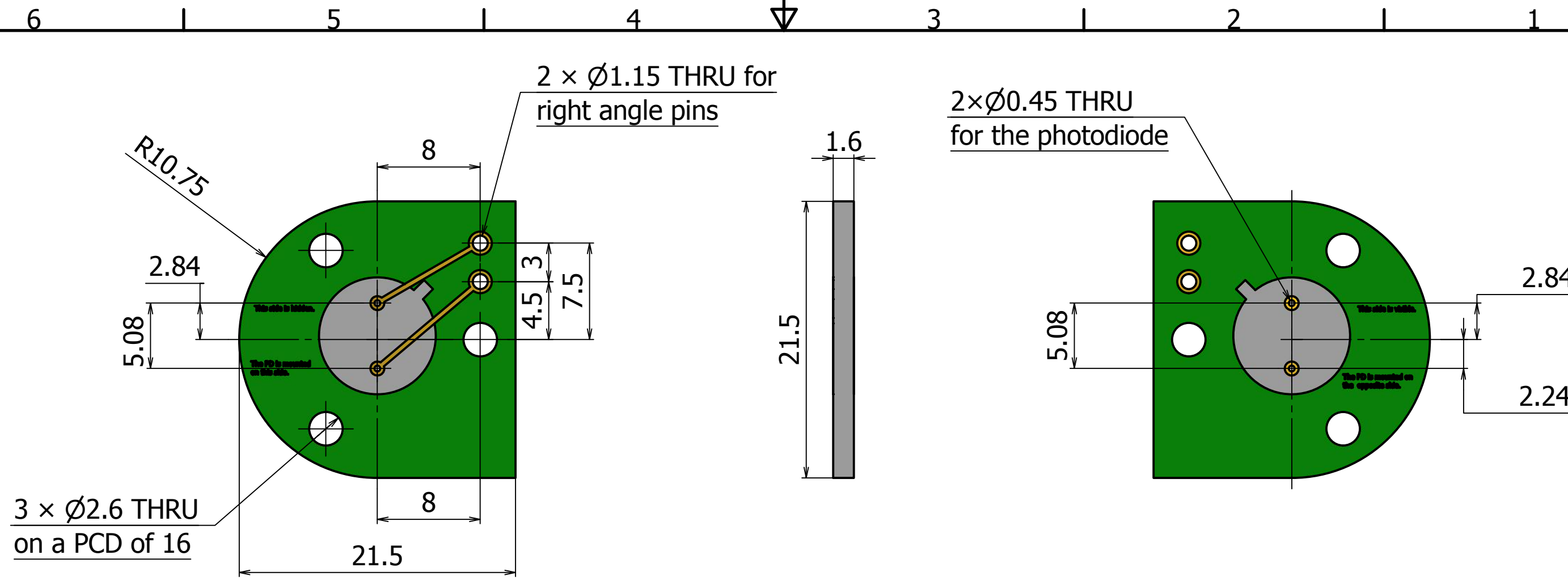
Optek LED OP232



Component: PCB for LED
Quantity: 100
Tolerance: ±0.1mm and ±5°

Fabián E. Peña Arellano
Date: 21/01/2014





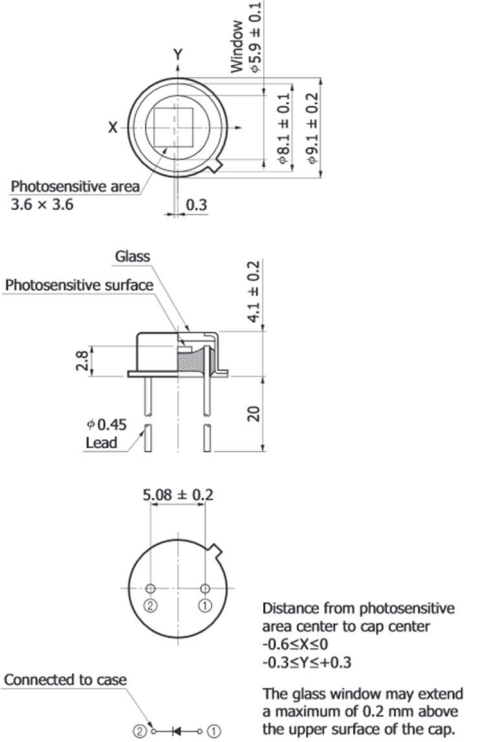
3 × Ø2.6 THRU
on a PCD of 16

2 × Ø1.15 THRU for
right angle pins

2 × Ø0.45 THRU
for the photodiode

Please write this legend on the board:
"This side is hidden. The PD
is mounted on this side."

Please write this legend on the board:
"This side is visible. The PD is mounted
on the opposite side."

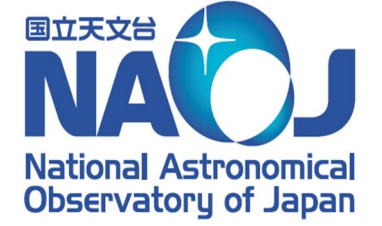


Notes:

1. Please choose the size of the pads and of the conductive paths according to known standars.
2. The tracks are only shown for reference, they don't have to be close to any of the surfaces of the boards.

Component: PCB for photodiode
Quantity: 100
Tolerance: ±0.1mm and ±5°

Fabián E. Peña Arellano
Date: 21/01/2014



Hamamatsu photodiode S1223-01
Dimensions in mm.

Notes

September 18, 2014

1. The diagrams are quantitative guidelines and the real PCBs still have to be designed.
2. The components must be compatible with ultra-high vacuum. According to the document Printed Circuit Boards for Ultra High Vacuum by Daniel Sigg the following materials should be used:
 - (a) Board: Rogers RO3003 which is a ceramic-filled PTFE composite.
 - (b) Solder: Kester 275 Fluxed-cored wire.
 - (c) DuPont Pyralux Flexible Circuit, which comprises:
 - i. Pyralux LF Copper-Clad Laminate, which is a Kapton (polyimide) film bonded to a copper foil with a C-staged modified acrylic adhesive.
 - ii. Pyralux LF Coverlaycomposite, which is constructed of Kapton polyimide film, coated on one side with a proprietary B-staged modified acrylic adhesive.
3. The list above contains hyperlinks.