



Evaluation tools for encoder IC

1-1. SME-08A/B Evaluation circuit boards

1-2. SME-08A/B Evaluation scales

SME-08A Rotary scale

SME-08B Rotary scale

SME-08A/SME-08B Linear scale

2-1. SMD-01B, SMD-04B Evaluation circuit boards

2-2. SMD-01B, SMD-04B Evaluation scales

SMD-01B Linear scale

SMD-04B Linear scale

SMD-01B/SMD-04B Rotary scale

3-1. SM3414B Evaluation circuit boards

3-2. SM3414B Evaluation scales

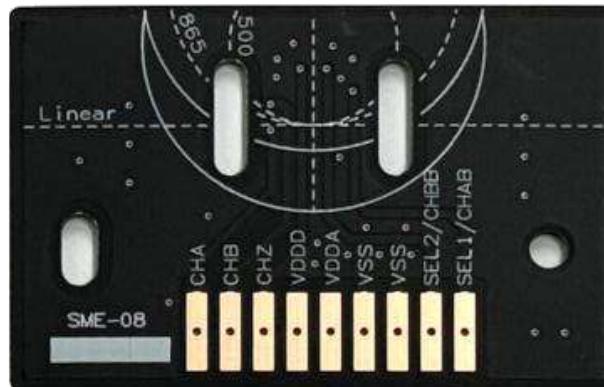
SM3414B Linear scale

1-1. SME-08A/B Evaluation circuit boards

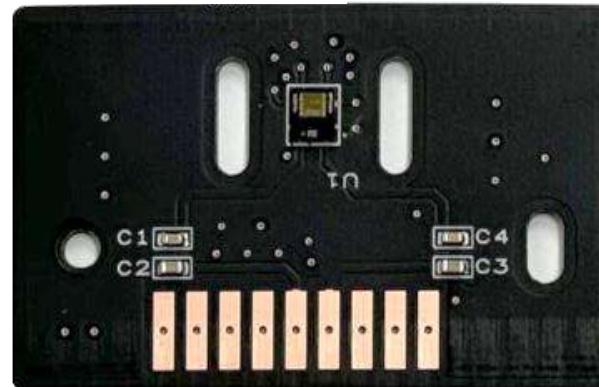
- Signal monitoring wires should be connected to the terminal pattern at the board end.

Evaluation board

Top View



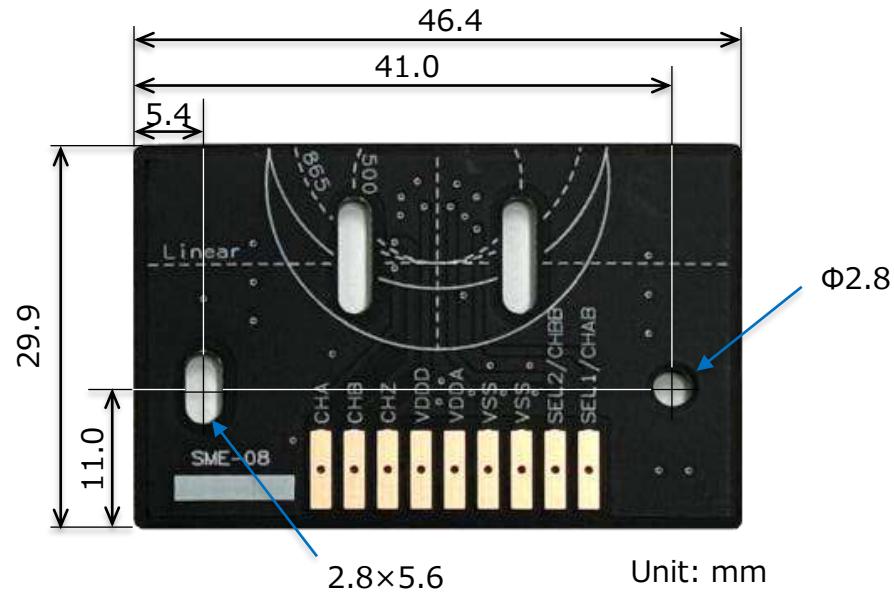
Bottom View



- Guidelines for aligning the NPC evaluation scale are provided on top surface of the evaluation board.
 - The dotted line is a guide to the center of scale pattern.
 - The solid line is a guide for the outline of the rotary scale.
 - The upper circle is a guide for use at 865PPR and the lower circle is a guide for use at 500PPR.

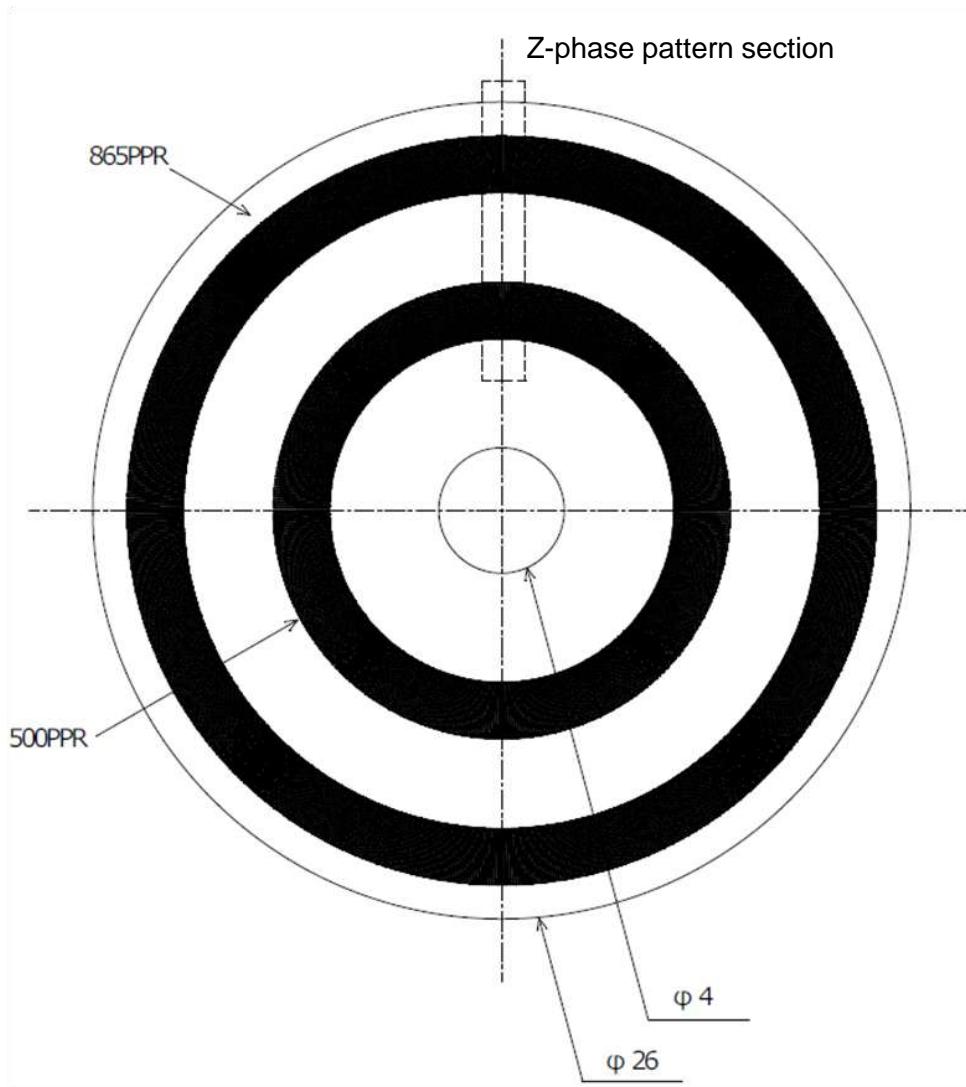
1-1. SME-08A/B Evaluation circuit boards

[Evaluation board: External dimensions]



1-2. SME-08A/B Evaluation scale

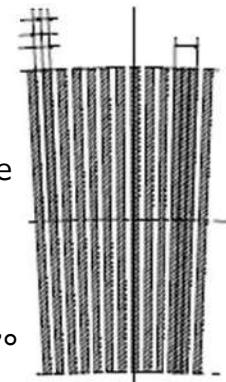
[SME-08A: Metal rotary scale]



[Detail view of Z-phase pattern section]

865PPR

Pattern period
 $360/865=0.416185^\circ$
Non reflective pattern angle
 $period/2=0.2080925^\circ$
Reflective pattern angle
 $period/2=0.2080925^\circ$
Z-phase pattern angle
 $0.2080925^\circ \times 3=0.624277^\circ$



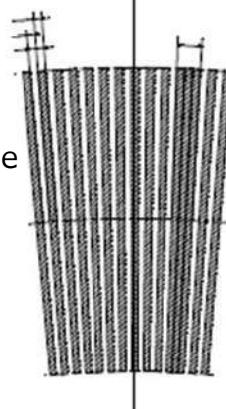
Outer diameter: $\phi 23.827$
($865 \times 0.08/\pi + 1.8$)

Center diameter: $\phi 22.027$
($865 \times 0.08/\pi$)

Inner diameter: $\phi 20.227$
($865 \times 0.08/\pi - 1.8$)

500PPR

Pattern period
 $360/500=0.72^\circ$
Non reflective pattern angle
 $period/2=0.36^\circ$
Reflective pattern angle
 $period/2=0.36^\circ$
Z-phase pattern angle
 $0.36^\circ \times 3=1.08^\circ$



Outer diameter: $\phi 14.532$
($500 \times 0.08/\pi + 1.8$)

Center diameter: $\phi 12.732$
($500 \times 0.08/\pi$)

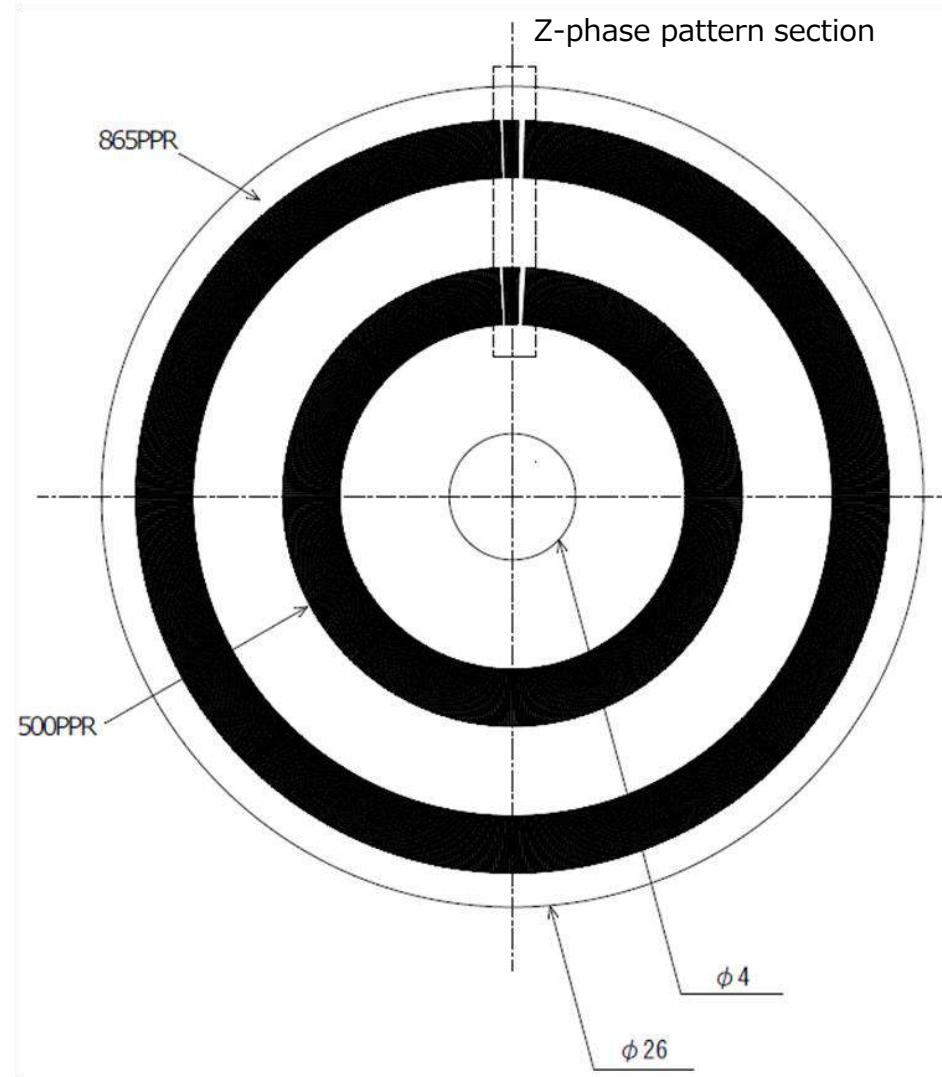
Inner diameter: $\phi 10.932$
($500 \times 0.08/\pi - 1.8$)

Scale Base Material: Metal
Scale Thickness: 0.07mm

1-2. SME-08A/B Evaluation scale

NPC

[SME-08B: Metal rotary scale]



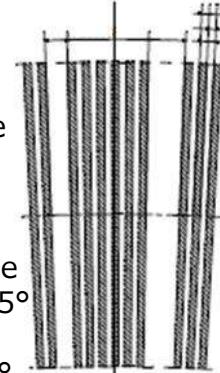
[Detail view of Z-phase pattern section]

865PPR

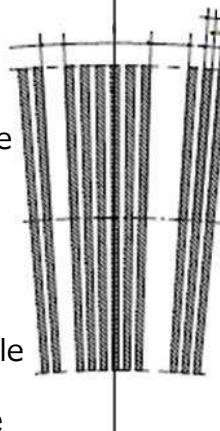
Pattern period
 $360/865=0.416185^\circ$
Non reflective pattern angle
 $period/2=0.2080925^\circ$
Reflective pattern angle
 $period/2=0.2080925^\circ$
Z-phase pattern(right) angle
 $0.2080925^\circ \times 5=1.0404625^\circ$
Z-phase pattern(left) angle
 $0.2080925^\circ \times 3=0.624277^\circ$
Z-phase pattern spacing angle
 $0.2080925^\circ \times 11=2.289018^\circ$

500PPR

Pattern period
 $360/500=0.72^\circ$
Non reflective pattern angle
 $period/2=0.36^\circ$
Reflective pattern angle
 $period/2=0.36^\circ$
Z-phase pattern angle
 $0.36^\circ \times 3=1.08^\circ$
Z-phase pattern(right) angle
 $0.36^\circ \times 5=1.8^\circ$
Z-phase pattern(left) angle
 $0.36^\circ \times 3=1.08^\circ$
Z-phase pattern spacing angle
 $0.36^\circ \times 11=3.96^\circ$



Outer diameter: $\phi 23.827$
($865 \times 0.08/\pi + 1.8$)



Outer diameter: $\phi 14.532$
($500 \times 0.08/\pi + 1.8$)

Center diameter: $\phi 12.732$
($500 \times 0.08/\pi$)

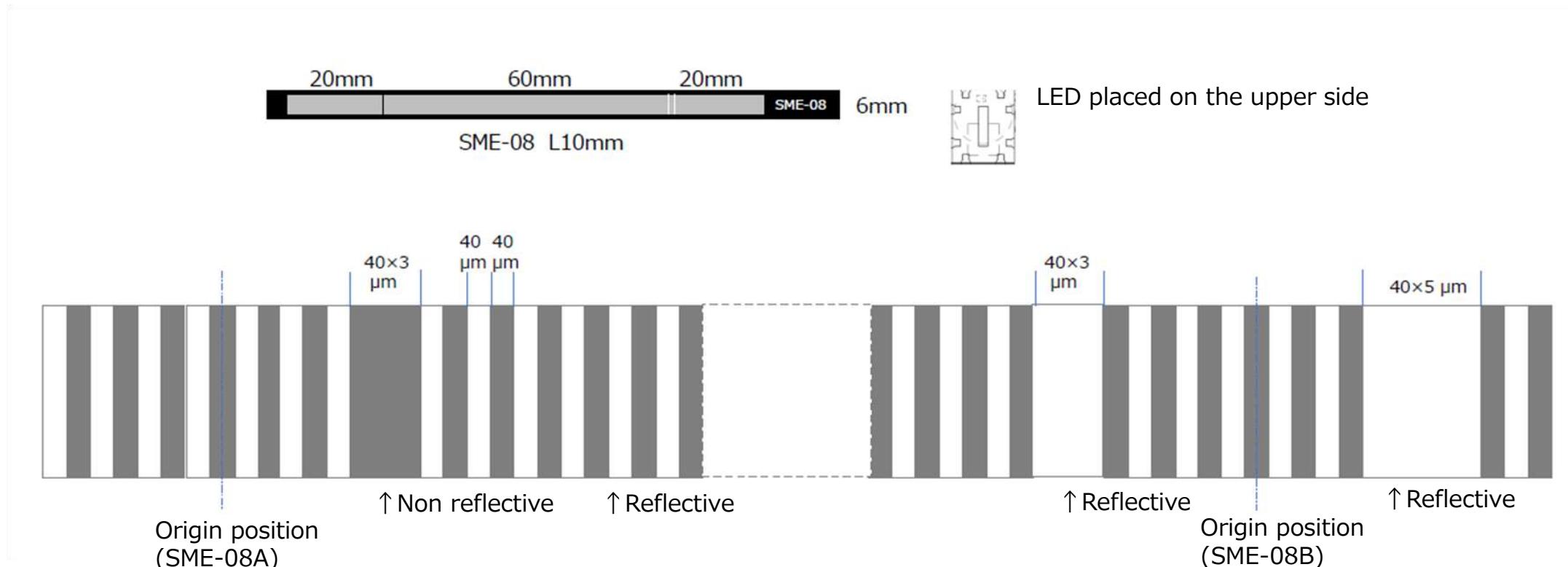
Inner diameter: $\phi 10.932$
($500 \times 0.08/\pi - 1.8$)

Scale Base Material: Metal
Scale Thickness: 0.07mm

1-2. SME-08A/B Evaluation scale

NPC

[SME-08A, SME-08B: PET linear scale]



Scale Base Material: PET
Scale Thickness: 0.2mm

2-1. SMD-01B, SMD-04B Evaluation circuit boards

- Connect the monitor board and the evaluation board via FFC.
- The signal is output from the designated PIN on the monitor board.



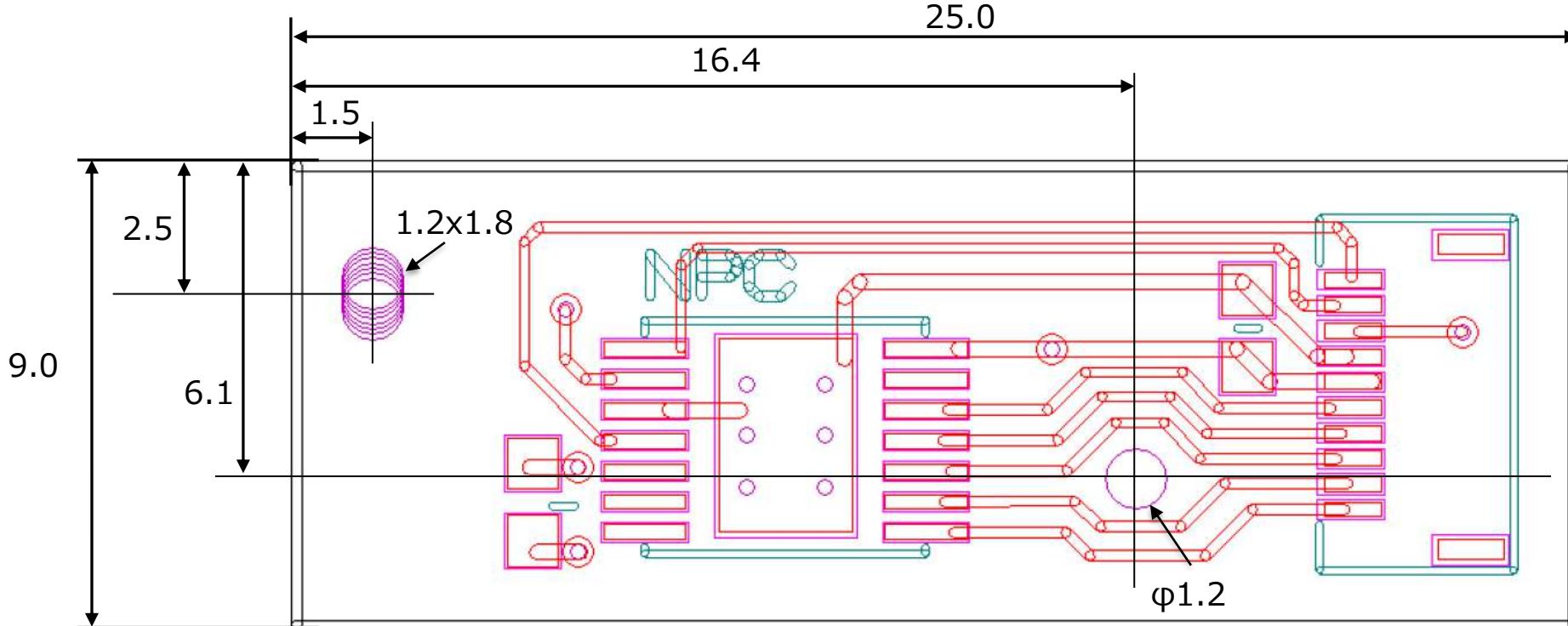
- ◆ The SMD-01B and SMD-04B evaluation boards are identical.
- ◆ Monitor board is different between SMD-01B and SMD-04B.

2-1. SMD-01B, SMD-04B Evaluation circuit boards

NPC

[Evaluation board: External dimensions]

Top view
[Unit: mm]



* PCB thickness 1.6mm

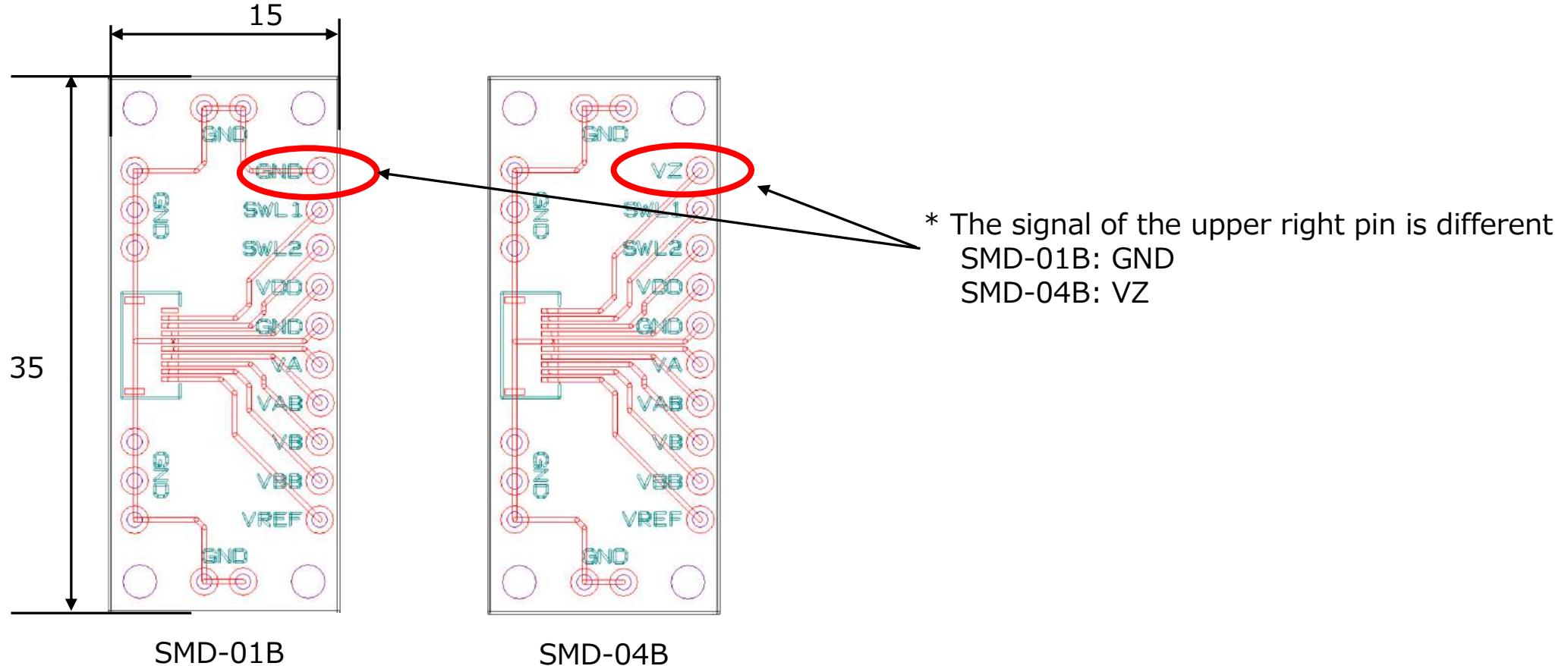
Figure shows part surface pattern only

2-1. SMD-01B, SMD-04B Evaluation circuit boards

NPC

[Monitor board top view: External dimensions]

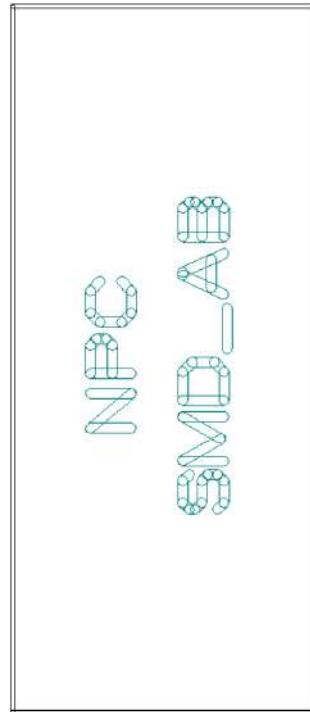
Top view
[Unit: mm]



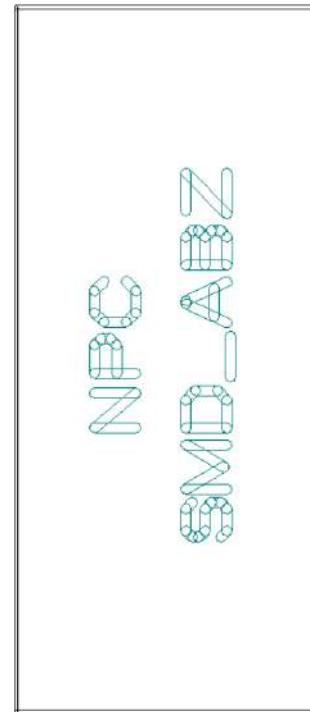
2-1. SMD-01B, SMD-04B Evaluation circuit boards

NPC

[Monitor board bottom view]



SMD-01B



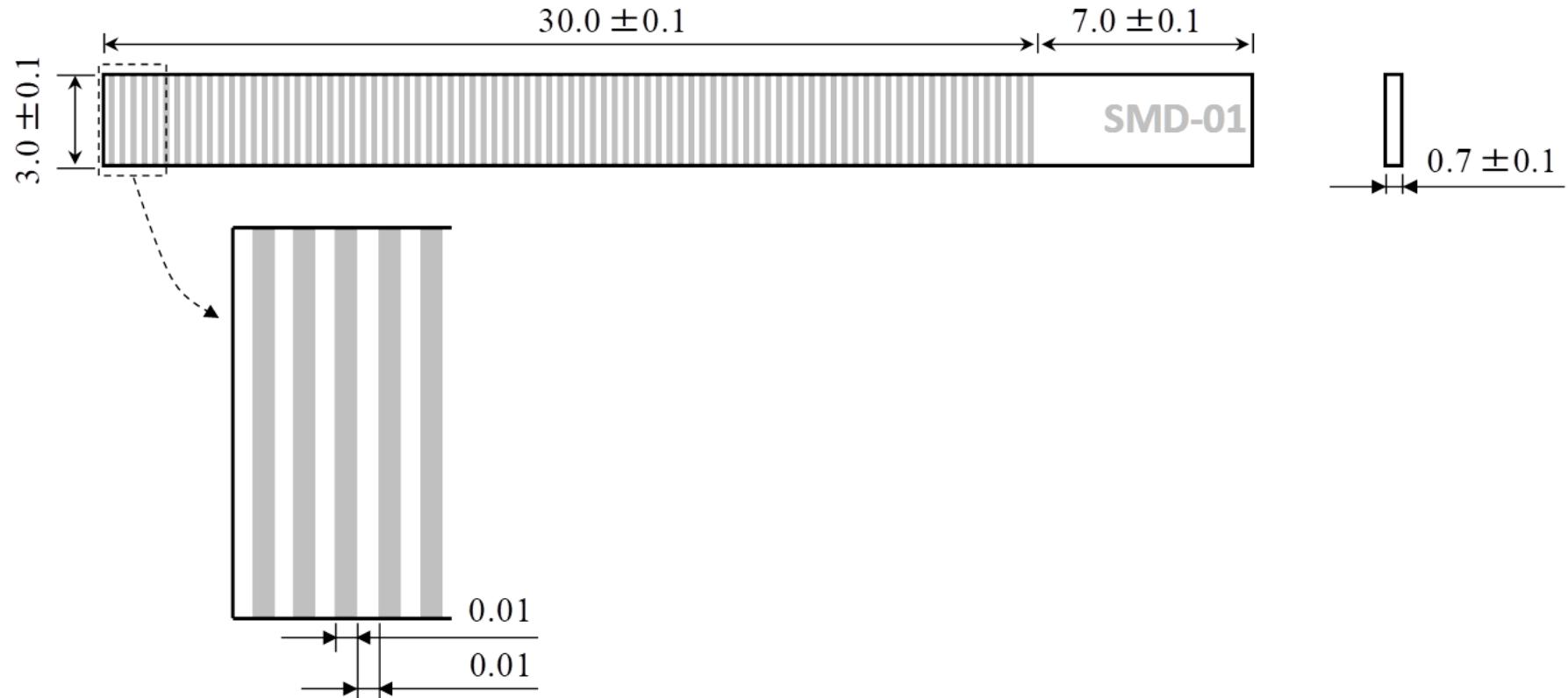
SMD-04B

2-3. SMD-01B, SMD-04B Evaluation scale

NPC

[SMD-01B: Glass linear scale]

Top view
[Unit: mm]

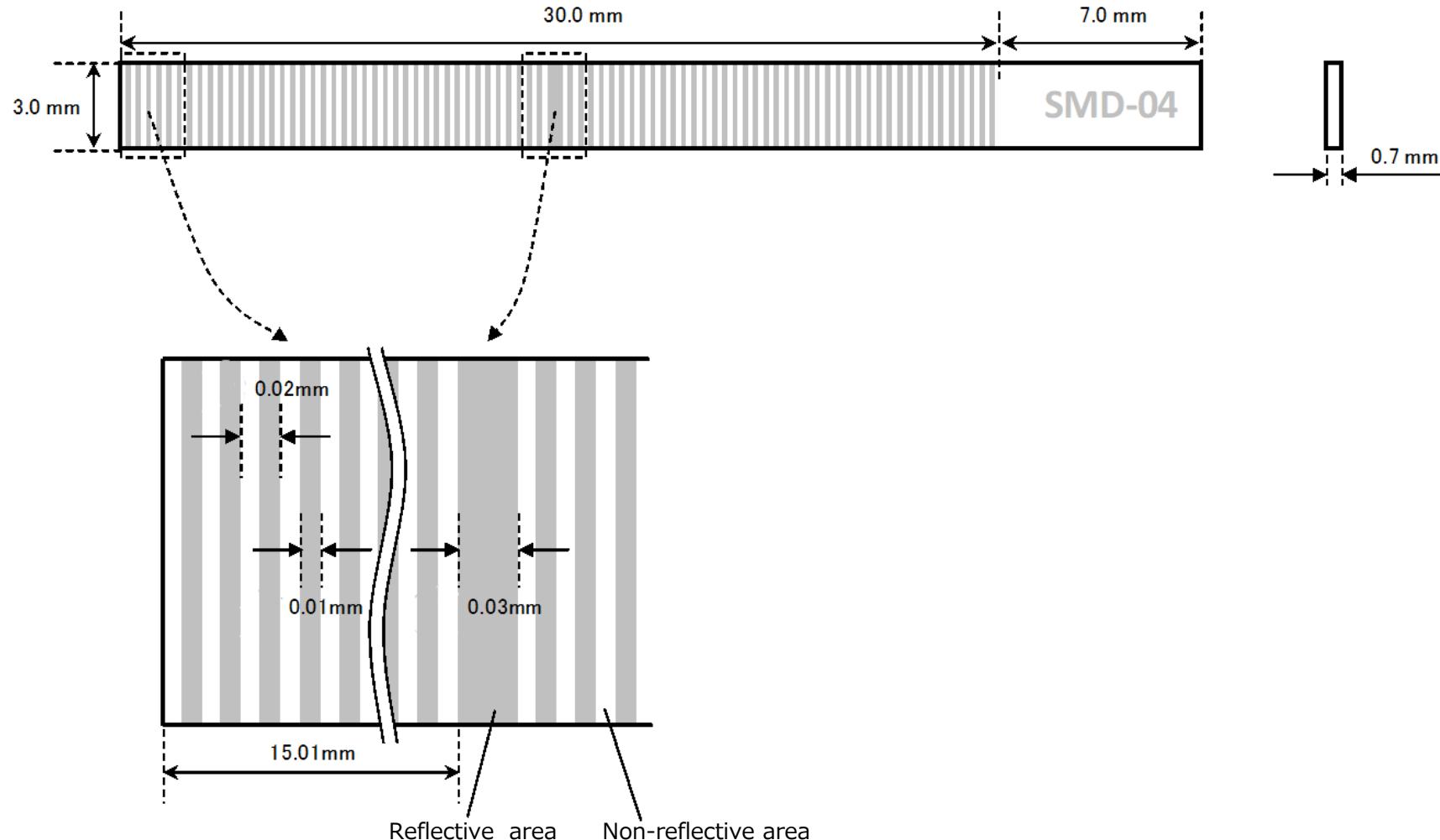


2-3. SMD-01B, SMD-04B Evaluation scale

NPC

[SMD-04B: Glass linear scale]

Top view
[Unit: mm]

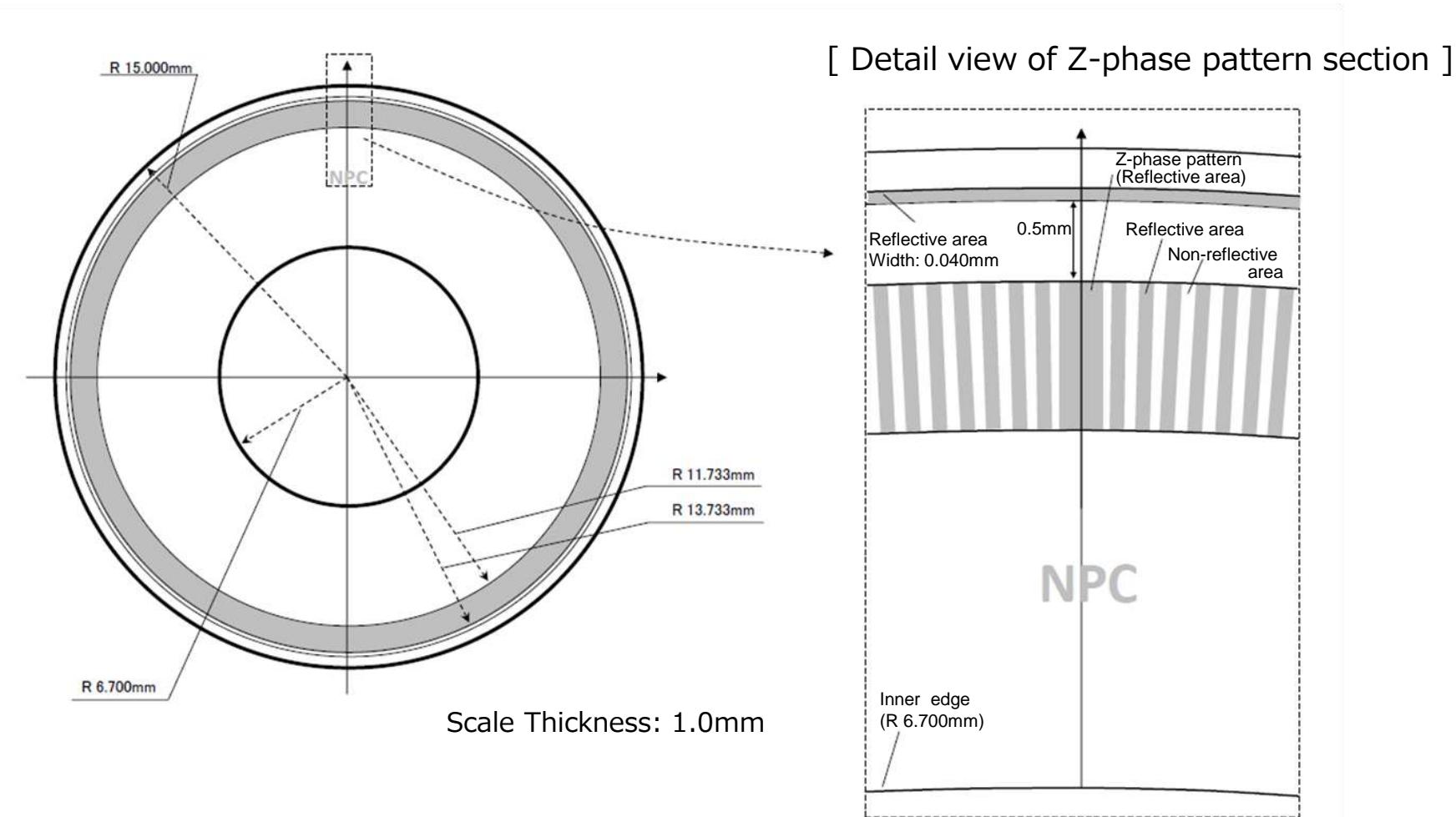


2-3. SMD-01B, SMD-04B Evaluation scale

NPC

[SMD-01B, SMD-04B: Glass rotary scale]

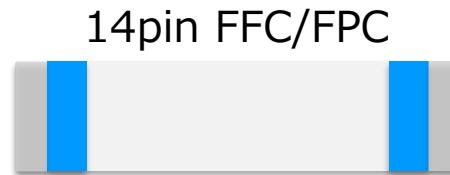
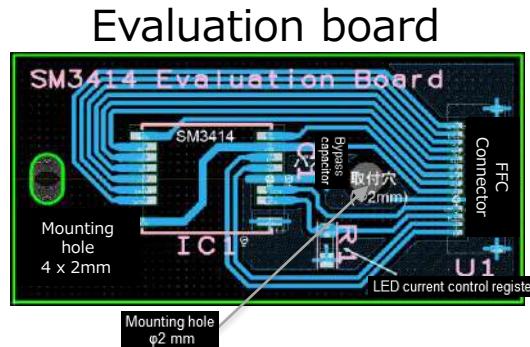
Top view
[Unit: mm]



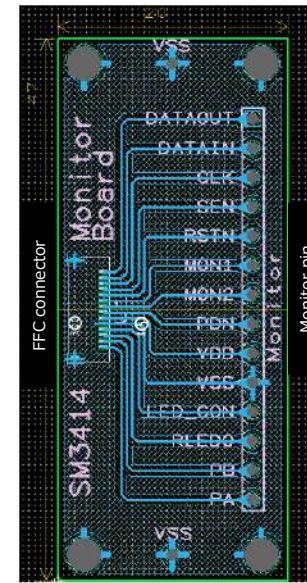
* The Z-phase signal generated by the Z-phase pattern is output only on the SMD-04B.
When used with SMD-01B, the amplitude of the incremental signal is slightly affected near the Z-phase pattern.

3-1. SM3414B Evaluation circuit boards

■ Basic configuration



Monitor board



Power supply, control signals
VDD, VSS, RSTN, PDN



LED brightness control signals
LED_CON, RLEDO



IC output signals
PA, PB, MON1, MON2

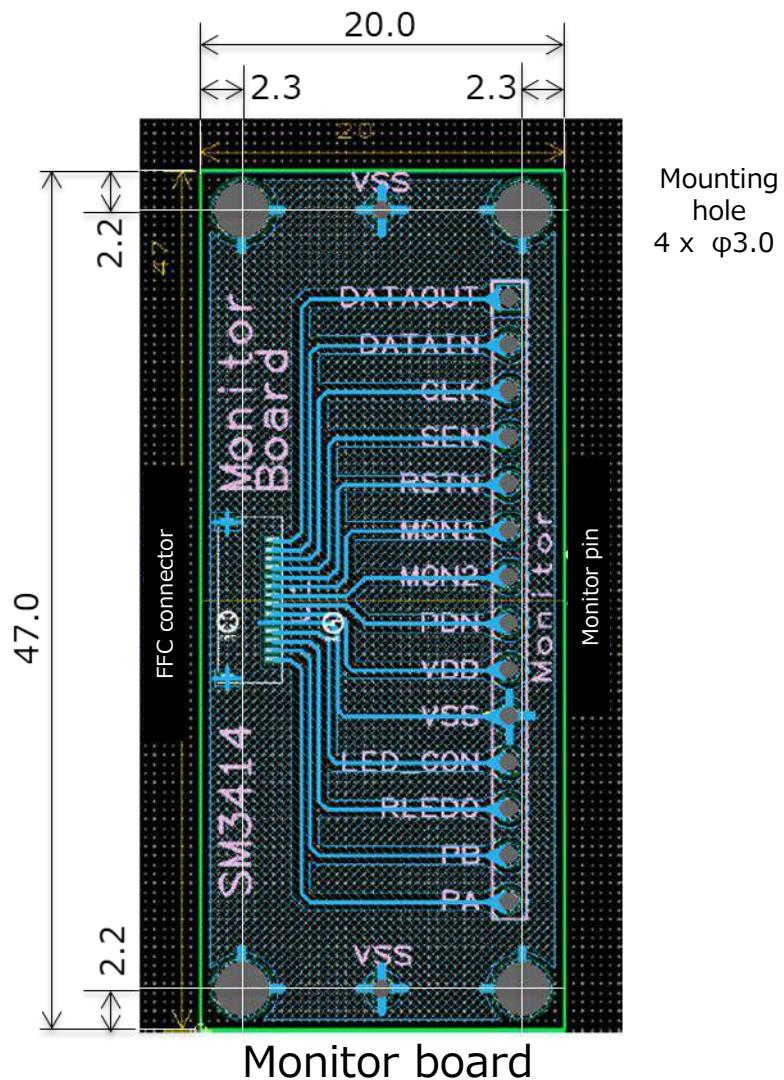
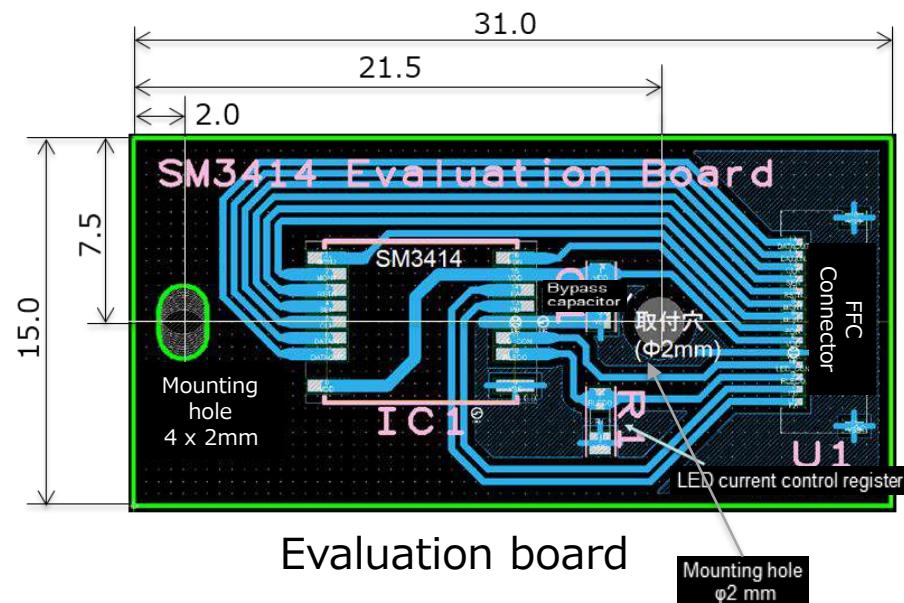


Serial communication signals
CLK, SEN, DATAOUT, DATAIN

- ◆ Use signals from the monitor pin positions on the monitor board.
- ◆ For details on each signal, refer to the datasheet and application note.
- ◆ Before using absolute output, initialization of registers via serial communication is required.
- ◆ Please initialize the registers by referring to the datasheet and the application note.
- ◆ LED_VDD is connected to VDD on the evaluation board.
- ◆ LED current adjustment register is already mounted; if you need to change the LED current, please change the register value.

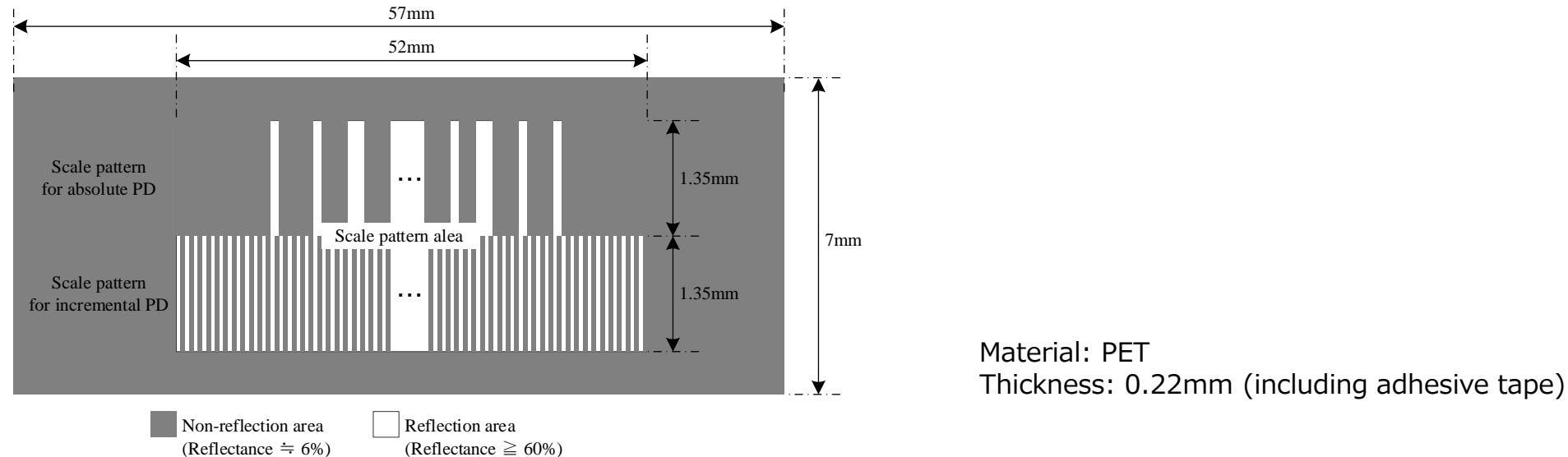
3-1. SM3414B Evaluation circuit boards

■ External dimensions (Unit: mm)



3-2. SM3414B Evaluation scale

■ Dimensions (Unit: mm)



- ◆ Note that if the encoder IC is moved beyond the valid range of the absolute pattern, the amplitude of the incremental signal will decrease.