Fig. 1

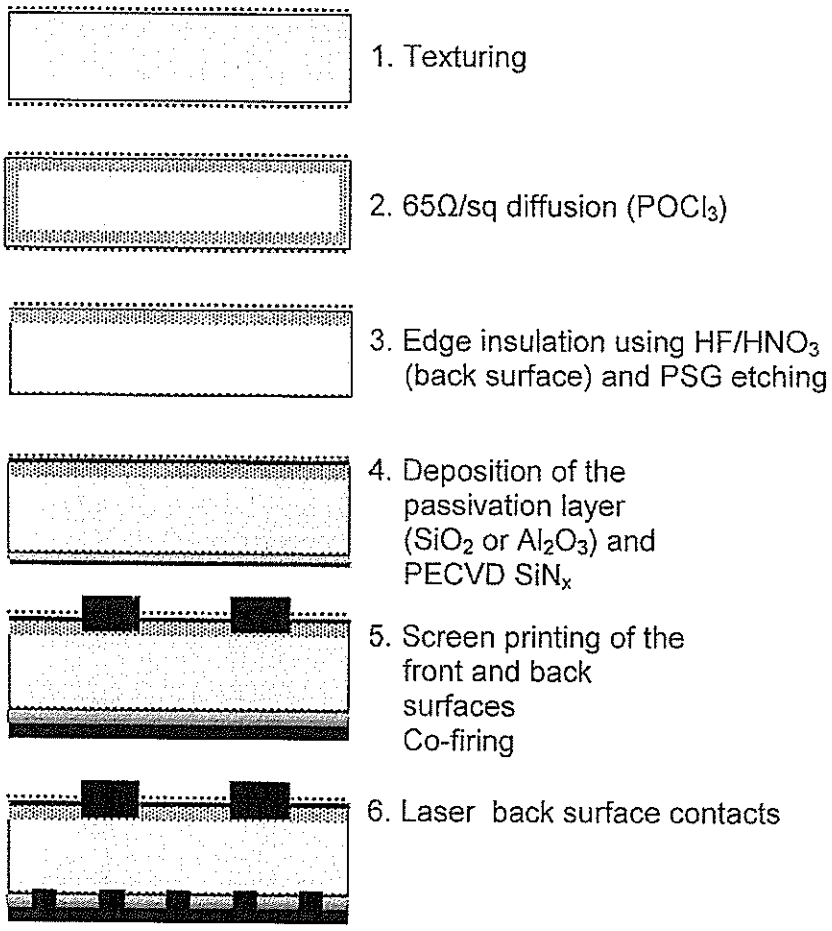

1. Texturing
2. 65Ω/sq diffusion ($POCl_3$)
3. Edge insulation using HF/HNO_3 (back surface) and PSG etching
4. Deposition of the passivation layer (SiO_2 or Al_2O_3) and PECVD SiN_x
5. Screen printing of the front and back surfaces Co-firing
6. Laser back surface contacts

Fig. 2

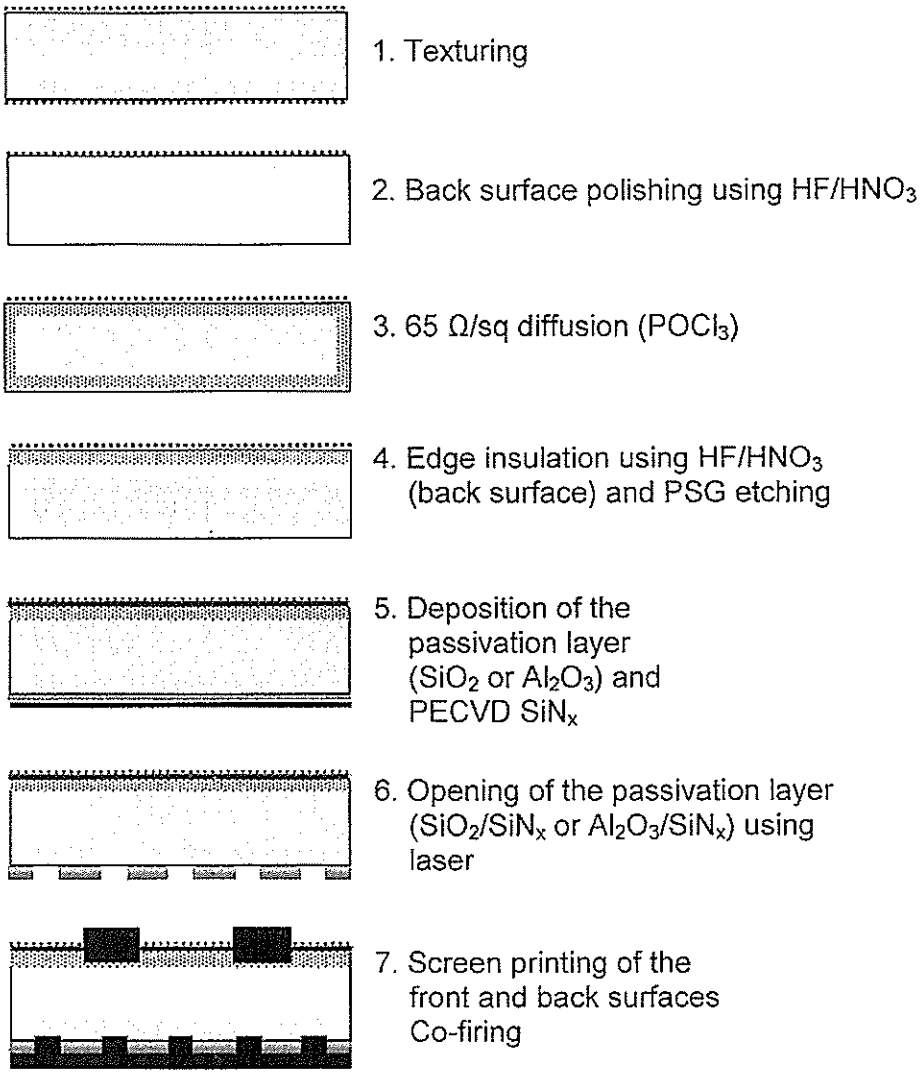
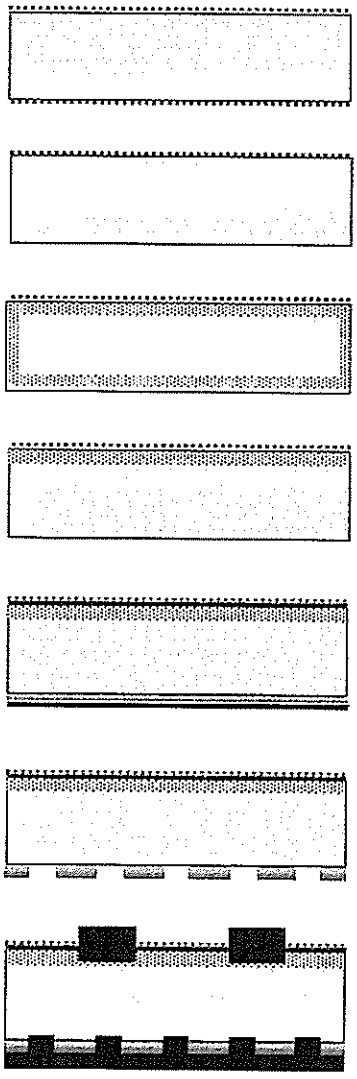
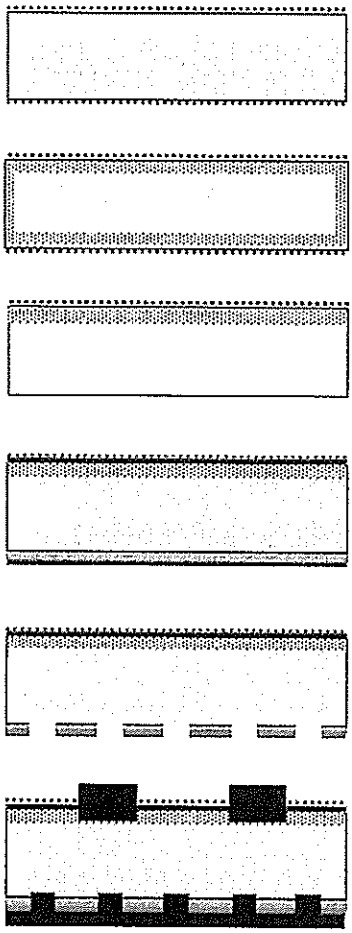

1. Texturing
2. Back surface polishing using HF/HNO_3
3. 65 Ω/sq diffusion ($POCl_3$)
4. Edge insulation using HF/HNO_3 (back surface) and PSG etching
5. Deposition of the passivation layer (SiO_2 or Al_2O_3) and PECVD SiN_x
6. Opening of the passivation layer (SiO_2/SiN_x or Al_2O_3/SiN_x) using laser
7. Screen printing of the front and back surfaces Co-firing

Fig. 3



1. Texturing
2. Back surface polishing using HF/HNO_3
3. 65Ω/sq diffusion ($POCl_3$)
4. Edge insulation using HF/HNO_3 (back surface) and PSG etching
5. Deposition of the passivation layer (SiO_2 or Al_2O_3) and PECVD SiN_x
6. Opening of the passivation layer (SiO_2/SiN_x or Al_2O_3/SiN_x) using SolarEtch® AQS
7. Screen printing of the front and back surfaces Co-firing

Fig. 4



1. Texturing

2. 65Ω/sq diffusion ($POCl_3$)

3. Back surface polishing and edge insulation (in one process step using etching paste) and PSG etching

4. Deposition of the passivation layer (SiO_2 or Al_2O_3) and PECVD SiN_x

5. Opening of the passivation layer (SiO_2/SiN_x or Al_2O_3/SiN_x) using SolarEtch® AQS

6. Screen printing of the front and back surfaces Co-firing

Fig. 5

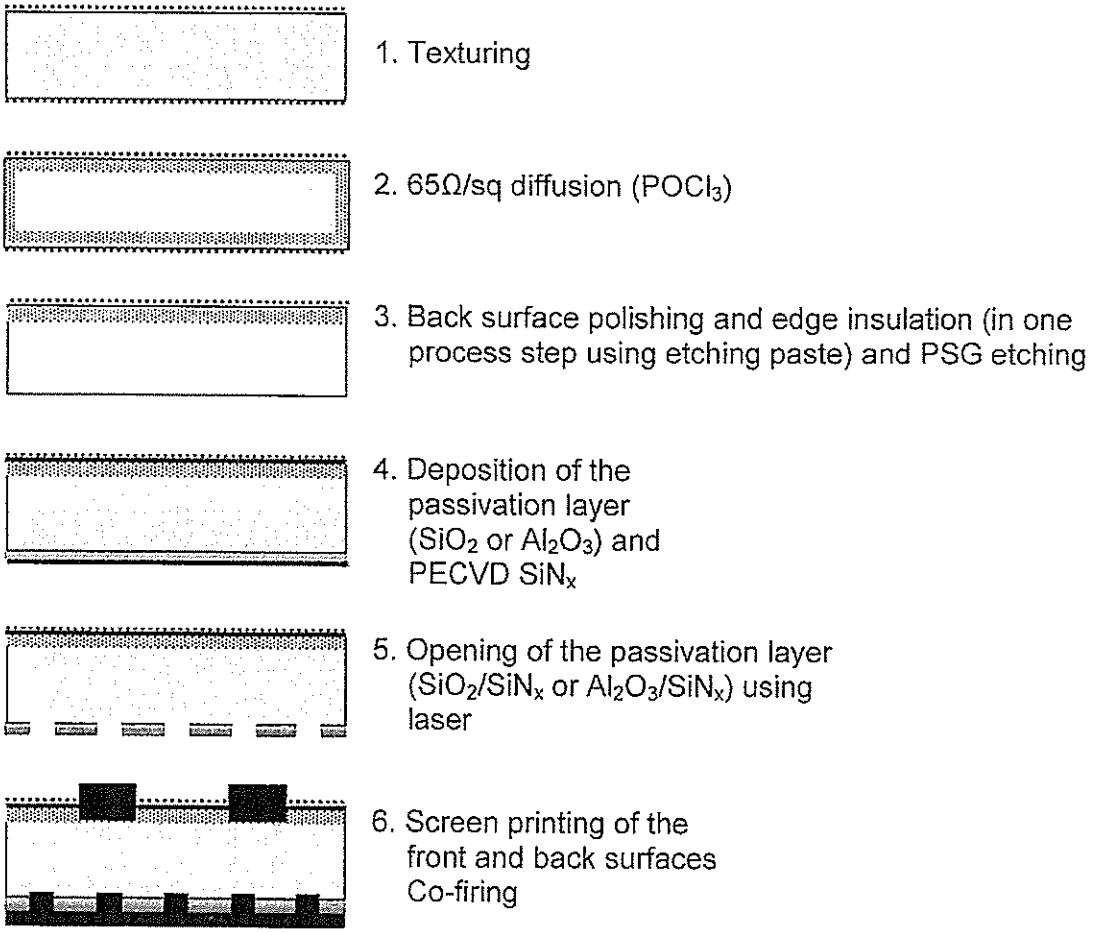

1. Texturing
2. 65Ω/sq diffusion ($POCl_3$)
3. Back surface polishing and edge insulation (in one process step using etching paste) and PSG etching
4. Deposition of the passivation layer (SiO_2 or Al_2O_3) and PECVD SiN_x
5. Opening of the passivation layer (SiO_2/SiN_x or Al_2O_3/SiN_x) using laser
6. Screen printing of the front and back surfaces Co-firing

Fig. 6

A: Untreated surface B: Surface treated with etching paste

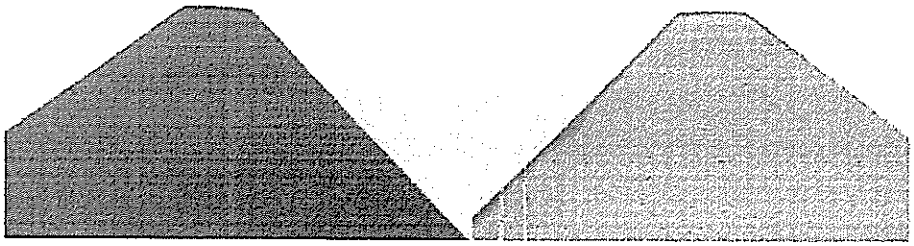


Fig. 7

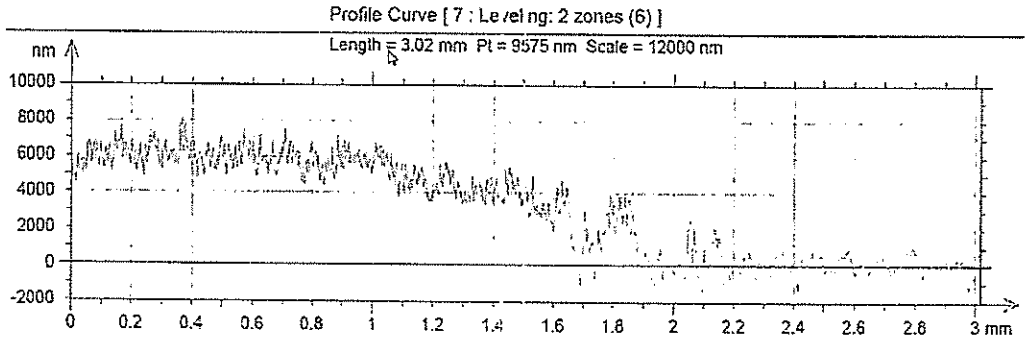

Profile Curve [7 : Le /el ng: 2 zones (6)]
Length = 3.02 mm Pt = 9575 nm Scale = 12000 nm
nm
10000
8000
6000
4000
2000
0
-2000
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3 mm

Fig. 8

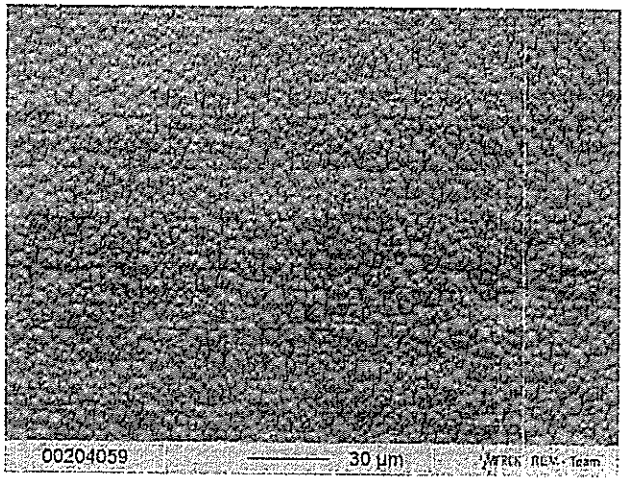


Fig. 9

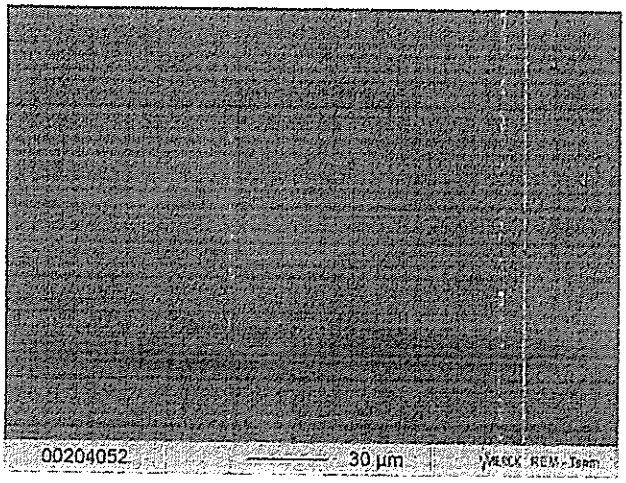


Fig. 10

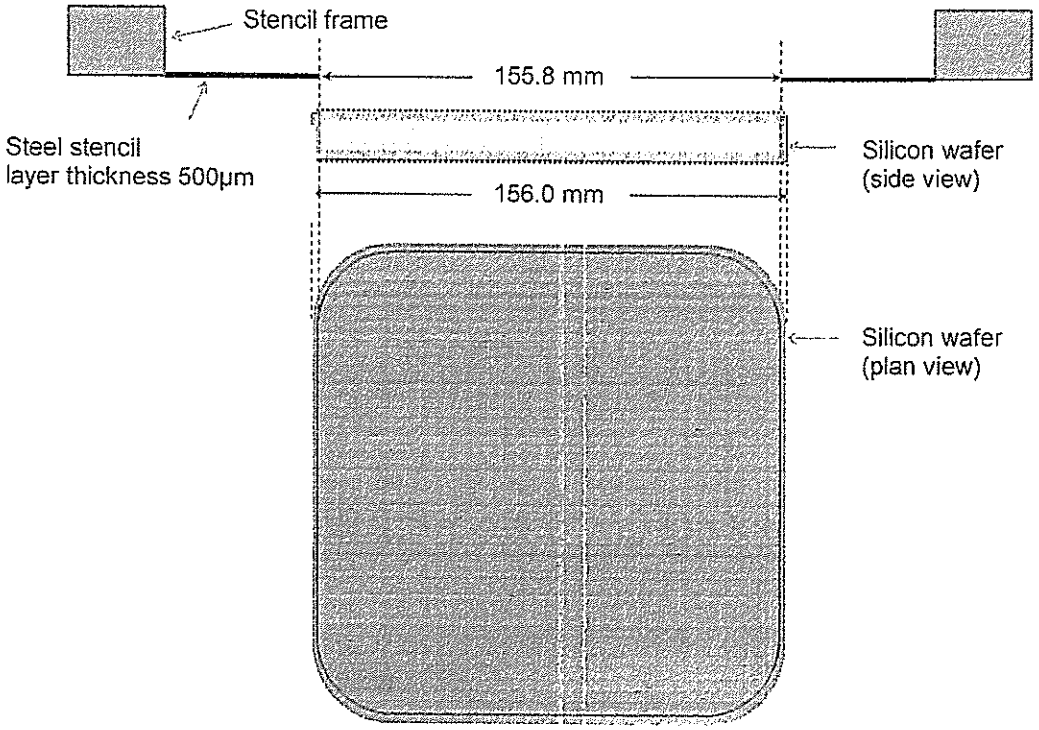

Stencil frame
155.8 mm
Steel stencil
layer thickness 500µm
Silicon wafer
(side view)
156.0 mm
Silicon wafer
(plan view)

Fig. 11

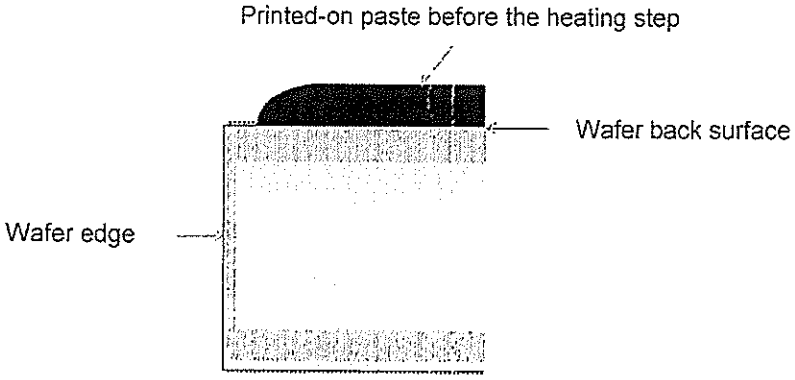
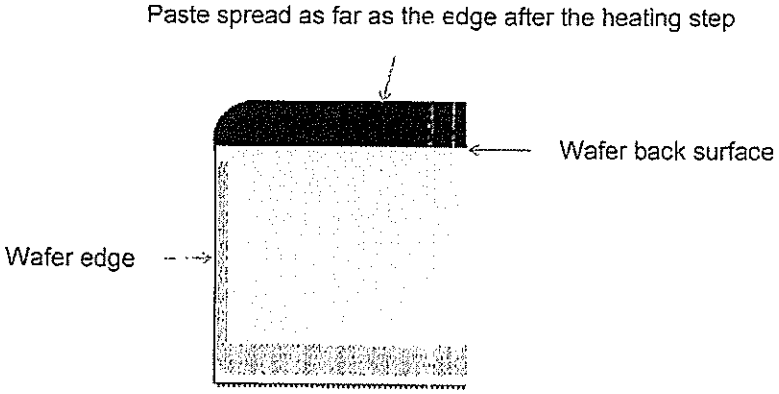

Printed-on paste before the heating step
Wafer back surface
Wafer edge

Fig. 12


Paste spread as far as the edge after the heating step
Wafer back surface
Wafer edge