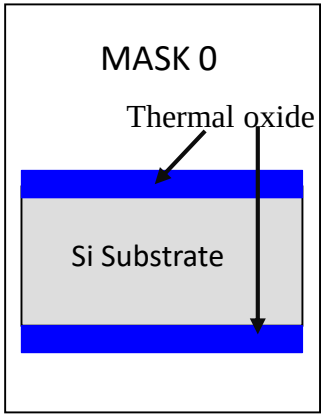
Mistake 1 - Oversimplification

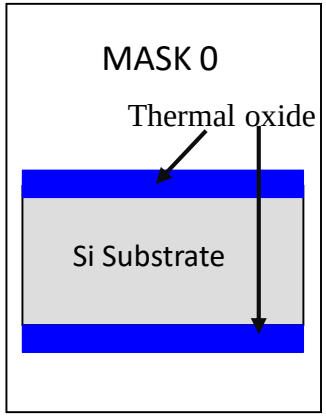
Cross-Section



Wafer Cleanliness
Clean

Step No.	Equipment	Location	Cleanliness	Process	Requirements
0.3	Diff. Furnace-D2 Dry/Wet Oxidation	P201000	Clean	Sacrificial Oxide Growth	200A

Cross-Section

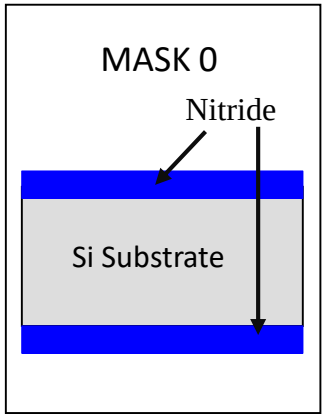


Wafer Cleanliness	Step No.	Equipment	Location	Cleanliness	Process	Requirements
Clean	0.1	A3: Sulfuric Cleaning	P201000	Clean	Initial Clean	H2SO4 + H2O2, 10mins, 120C
Clean	0.2	A2: HF:H2O (1:50)	P201000	Clean	HF dip	1 min
Clean	0.3	Spin Dryer-A	P201000	Clean	Dry the wafer automatically	
Clean	0.4	Diff. Furnace-D2 Dry/Wet Oxidation	P201000	Clean	Sacrificial Oxide Growth	200A

Mistake 2 – Improper process steps

Nitride deposition

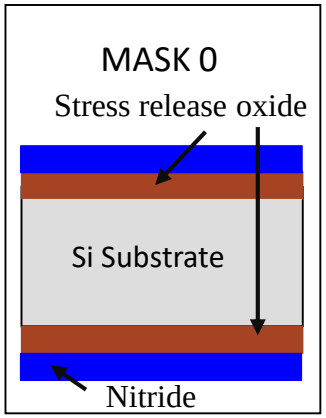
Cross-Section



Wafer Cleanliness
Clean
Clean
Clean
Clean

Step No.	Equipment	Location	Cleanliness	Process	Requirements
0.1	A3: Sulfuric Cleaning	P201000	Clean	Initial Clean	H2SO4 + H2O2, 10mins, 120C
0.2	A2: HF:H2O (1:50)	P201000	Clean	HF dip	1 min
0.3	Spin Dryer-A	P201000	Clean	Dry the wafer automatically	
0.3	LPCVD-B2 Nitride/Low-Stress Nitride	P201000	Clean	Nitride deposition	800A

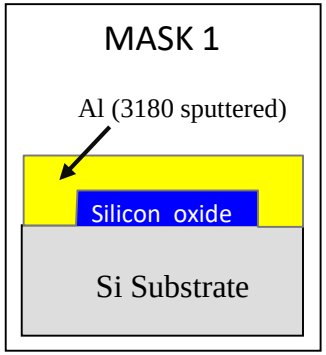
Cross-Section



Wafer Cleanliness
Clean
Clean
Clean
Clean
Clean

Step No.	Equipment	Location	Cleanliness	Process	Requirements
0.1	A3: Sulfuric Cleaning	P201000	Clean	Initial Clean	H2SO4 + H2O2, 10mins, 120C
0.2	A2: HF:H2O (1:50)	P201000	Clean	HF dip	1 min
0.3	Spin Dryer-A	P201000	Clean	Dry the wafer automatically	
0.4	Diff. Furnace-D2 Dry/Wet Oxidation	P201000	Clean	Sacrificial Oxide Growth	300A
0.5	LPCVD-B2 Nitride/Low-Stress Nitride	P201000	Clean	Nitride deposition	800A

Mistake 3 – Incompatible equipment



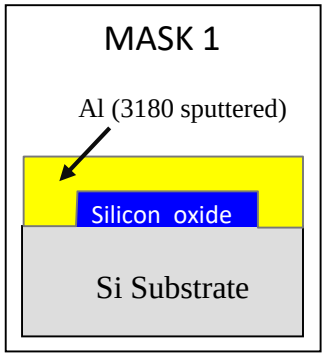
Wafer Cleanliness
Clean
Clean
Clean
Semi-Clean
Semi-Clean
Clean
Clean
Clean
Semi-Clean

Step No.	Equipment	Location	Cleanliness	Process	Requirements
1.1	B1: Sulfuric Cleaning	P201000	Clean	Standard Cleaning	10mins, 120C
1.2	Spin Dryer-B	P201000	Clean	Dry the wafer automatically	
1.3	SVG Coater Track	P200100	Clean/Semi-Clean	HMDS, PR Coating, Soft bake	AZ 504, 1.2μm, soft bake: 110C 1min
1.4	AB-M Aligner #2	P200100	Semi-Clean/Non-Standard	Define Oxide Pad	6s
1.5	SVG Developer Track	P200100	Clean/Semi-Clean	Develop and hard bake	FHD-5,1min; 120C, 1min
1.6	C3: BOE	P201000	Clean	Oxide etch	
1.7	E4: Resist Strip	P201000	Clean/Semi-Clean	Resist Stripping (wet)	10min, 120C
1.8	Spin Dryer-E	P201000	Clean/Semi-Clean	Spin Dry	
1.9	Varian 3180 Sputter	P201000	Semi-Clean	Aluminum Sputtering	4000A

How to modify?

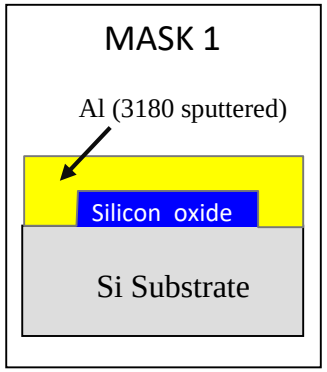
1. Use another aligner Karl Suss MA6#2 (Clean/Semi-Clean) to do exposure. The wafer status will be “Clean” before Al sputtering
2. Use Wetsation D to do oxide etch (Semi-Clean)

Mistake 3 - Incompatible equipment



Wafer Cleanliness
Clean
Clean
Clean
Clean
Clean
Clean
Clean
Clean
Semi-Clean

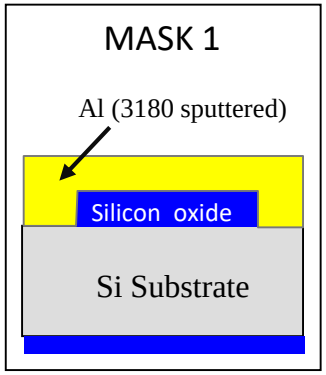
Step No.	Equipment	Location	Cleanliness	Process	Requirements
1.1	B1: Sulfuric Cleaning	P201000	Clean	Standard Cleaning	10mins, 120C
1.2	Spin Dryer-B	P201000	Clean	Dry the wafer automatically	
1.3	SVG Coater Track	P200100	Clean/Semi-Clean	HMDS, PR Coating, Soft bake	AZ 504, 1.2μm, soft bake: 110C 1min
1.4	Karl Suss MA6#2	P200100	Clean/Semi-Clean	Define Oxide Pad	6s
1.5	SVG Developer Track	P200100	Clean/Semi-Clean	Develop and hard bake	FHD-5,1min; 120C, 1min
1.6	C3: BOE	P201000	Clean	Oxide etch	
1.7	E4: Resist Strip	P201000	Clean/Semi-Clean	Resist Stripping (wet)	10min, 120C
1.8	Spin Dryer-E	P201000	Clean/Semi-Clean	Spin Dry	
1.9	Varian 3180 Sputter	P201000	Semi-Clean	Aluminum Sputtering	4000A



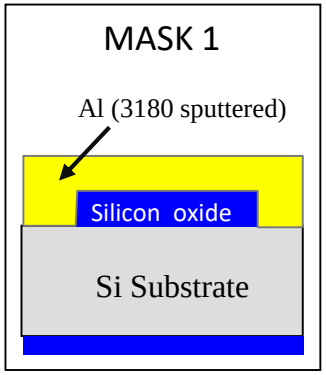
Wafer Cleanliness
Clean
Clean
Clean
Semi-Clean
Semi-Clean
Semi-Clean
Semi-Clean
Semi-Clean

Step No.	Equipment	Location	Cleanliness	Process	Requirements
1.1	B1: Sulfuric Cleaning	P201000	Clean	Standard Cleaning	10mins, 120C
1.2	Spin Dryer-B	P201000	Clean	Dry the wafer automatically	
1.3	SVG Coater Track	P200100	Clean/Semi-Clean	HMDS, PR Coating, Soft bake	AZ 504, 1.2μm, soft bake: 110C 1min
1.4	AB-M Aligner #2	P200100	Semi-Clean/Non-Standard	Define Oxide Pad	6s
1.5	SVG Developer Track	P200100	Clean/Semi-Clean	Develop and hard bake	FHD-5,1min; 120C, 1min
1.6	D: BOE	P201000	Semi-Clean	Oxide etch use separate container	
1.7	E4: Resist Strip	P201000	Clean/Semi-Clean	Resist Stripping (wet)	10min, 120C
1.8	Spin Dryer-E	P201000	Clean/Semi-Clean	Spin Dry	
1.9	Varian 3180 Sputter	P201000	Semi-Clean	Aluminum Sputtering	4000A

Mistake 4 – Double side coating

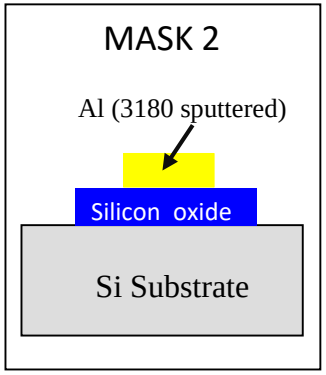


Wafer Cleanliness	Step No.	Equipment	Location	Cleanliness	Process	Requirements
Clean	1.1	B1: Sulfuric Cleaning	P201000	Clean	Standard Cleaning	10mins, 120C
Clean	1.2	Spin Dryer-B	P201000	Clean	Dry the wafer automatically	
Clean	1.3	SVG Coater Track	P200100	Clean/Semi-Clean	HMDS, PR Coating, Soft bake	AZ 504, 1.2μm, soft bake: 110C 1min
Clean	1.4	Karl Suss MA6#2	P200100	Clean/Semi-Clean	Define Oxide Pad	6s
Clean	1.5	SVG Developer Track	P200100	Clean/Semi-Clean	Develop and hard bake	FHD-5,1min; 120C, 1min
Clean	1.6	C3: BOE	P201000	Clean	Oxide etch	
Clean	1.7	E4: Resist Strip	P201000	Clean/Semi-Clean	Resist Stripping (wet)	10min, 120C
Clean	1.8	Spin Dryer-E	P201000	Clean/Semi-Clean	Spin Dry	
Semi-Clean	1.9	Varian 3180 Sputter	P201000	Semi-Clean	Aluminum Sputtering	4000A



Wafer Cleanliness	Step No.	Equipment	Location	Cleanliness	Process	Requirements
Clean	1.1	B1: Sulfuric Cleaning	P201000	Clean	Standard Cleaning	10mins, 120C
Clean	1.2	Spin Dryer-B	P201000	Clean	Dry the wafer automatically	
Clean	1.3	SVG Coater Track	P200100	Clean/Semi-Clean	HMDS, PR Coating, Soft bake	AZ 504, 1.2μm, soft bake: 110C 1min
Clean	1.4	Karl Suss MA6#2	P200100	Clean/Semi-Clean	Define Oxide Pad	6s
Clean	1.5	SVG Developer Track	P200100	Clean/Semi-Clean	Develop and hard bake	FHD-5,1min; 120C, 1min
Clean	1.6	CEE Coater	P200100	Clean/Semi-Clean	Backside coating	AZ 504, 1.2μm
Clean	1.7	Oven-C (120C)	P200100	Clean/Semi-Clean	Hard bake	120C, 30min
Clean	1.8	C3: BOE	P201000	Clean	Oxide etch	
Clean	1.9	E4: Resist Strip	P201000	Clean/Semi-Clean	Resist Stripping (wet)	10min, 120C
Clean	1.10	Spin Dryer-E	P201000	Clean/Semi-Clean	Spin Dry	
Semi-Clean	1.11	Varian 3180 Sputter	P201000	Semi-Clean	Aluminum Sputtering	4000A

Mistake 5 – Wrong PR Stripping



Wafer Cleanliness	Step No.	Equipment	Location	Cleanliness	Process	Requirements
Semi-Clean	2.1	Y1: MS2001 Resist Strip	P200100	Clean	Standard Cleaning	10mins, 120C
Semi-Clean	2.2	Spin Dryer-Y	P200100	Clean	Dry the wafer automatically	
Semi-Clean	2.3	SVG Coater Track	P200100	Clean/Semi-Clean	HMDS, PR Coating, Soft bake	AZ 504, 1.2μm, soft bake: 110C 1min
Semi-Clean	2.4	Karl Suss MA6#2	P200100	Clean/Semi-Clean	Define Oxide Pad	6s
Semi-Clean	2.5	Z1: FHD-5	P200100	Semi-Clean	Develop and hard bake	FHD-5,1min; 120C, 1min
Semi-Clean	2.6	Z2: Dump Rinser	P200100	Semi-Clean/Non-Standard	DI water dump rinse	4 cycles
Semi-Clean	2.7	Z: N2 Gun	P200100	Semi-Clean/Non-Standard	Dry the wafer using N2 gun	
Semi-Clean	2.8	Oven-C (120)	P200100	Clean/Semi-Clean	Hard bake	120C 30min
Semi-Clean	2.9	D1: Aluminum Etch	P201000	Semi-Clean	Aluminum etch	55C
Semi-Clean	2.10	D: Freckle Etch	P201000	Semi-Clean	Remove Si residue (Separate container)	1 min
Semi-Clean	2.11	E4: Resist Strip	P201000	Clean/Semi-Clean	Resist Stripping (wet)	10min, 120C
Semi-Clean	2.12	Spin Dryer-E	P201000	Clean/Semi-Clean	Spin dry	

- Once there is metal on your sample, it can not be put into E4: Resist Strip (Sulfuric Acid) for PR strip!!!
- Otherwise, the Bath will be contaminated.

After Metal Sputtering, there are two ways to do PR stripping:

1.MS2001

2.O2 Asher

3. Sulfuric Acid