



NAR Labs 國家實驗研究院

台灣半導體研究中心

Taiwan Semiconductor Research Institute

晶粒等級圖案定義對準系統 技術資料

儀器編號：CF-L20
廠牌：EVG
型號：6200NT

總表

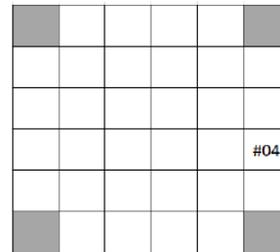
ATP Item		Exposure Mode	Wafer		Coating Resist Thickness	Mask	Exposure Dose	2.38% THAM Develop Time	Alignment Criteria	Resolution
			Type	Counts						
2.7	Resolution test_0.8 um	Vacuum & Hard Contact	200 mm AZ MiR 701	3 PCs	1 um	9 inchx 9 inch	55 mJ/cm ²	65 s		0.8 um
2.11	Resolution test_5 um	Proximity (4 um)	200 mm AZ 9260	3 PCs	10 um	9 inchx 9 inch	450 mJ/cm ²	390s		5 um
2.5	Top side alignment	Proximity (20 um)	200 mm AZ MiR 701	3 PCs	1 um	9 inchx 9 inch	55 mJ/cm ²	1st dev: 65 s 2nd dev: 10 s	1 um	
2.6	Back side alignment	Proximity (20 um)	200 mm AZ MiR 701	3 PCs	1 um	9 inchx 9 inch	55 mJ/cm ²	1st dev: 65 s 2nd dev: 10 s	2 um	

解析度-contact mode

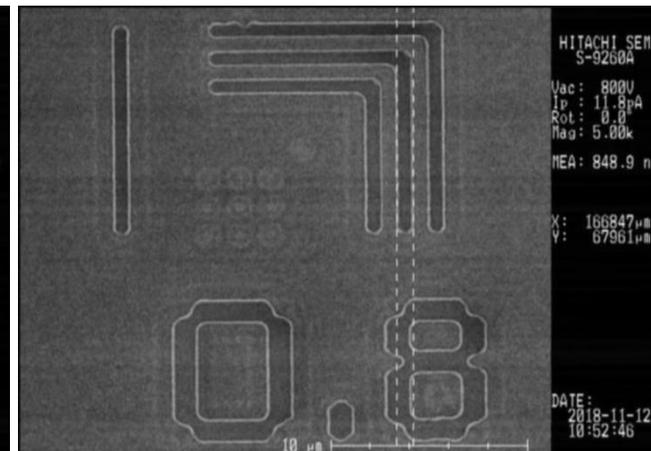
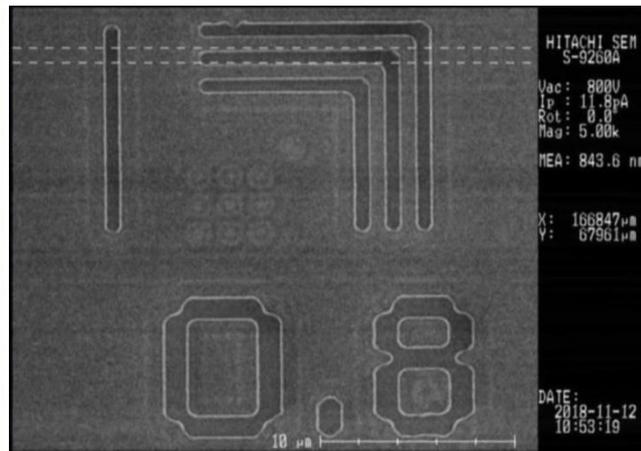
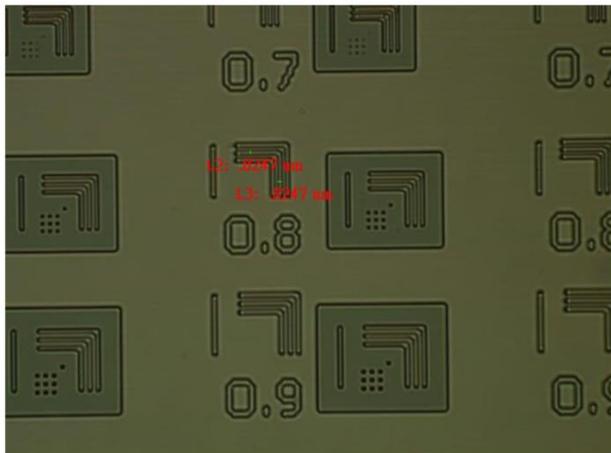
ATP Item	Exposure Mode	Wafer		Coating Resist Thickness	Mask	Exposure Dose	2.38% THAM Develop Time	Alignment Criteria	Resolution
		Type	Counts						
2.7	Resolution test_0.8 um	Vacuum & Hard Contact	200 mm AZ MiR 701	3 PCs	1 um	9 inchx 9 inch	55 mJ/cm ²	65 s	0.8 um

Measure position:

Wafer	Measurement		
#	CD X	CD Y	OK
4	0.8247	0.8247	OK



#04



解析度-proximity mode

ATP Item		Exposure Mode	Wafer		Coating Resist Thickness	Mask	Exposure Dose	2.38% THAM Develop Time	Alignment Criteria	Resolution
			Type	Counts						
2.11	Resolution test_ 5 um	Proximity (4 um)	200 mm AZ 9260	3 PCs	10 um	9 inchx 9 inch	450 mJ/cm ²	390s		5 um

Wafer	Measurement Position X Direction					
#	Front	Back	Left	Right	Center	OK
1	5.042	5.042	5.042	5.042	5.042	OK
2	4.622	5.042	5.042	5.042	5.042	OK
3	5.042	5.042	4.622	5.042	5.462	OK

Wafer	Measurement Position Y Direction					
#	Front	Back	Left	Right	Center	OK
1	5.042	5.042	5.042	5.042	5.042	OK
2	5.042	5.042	5.042	5.042	5.042	OK
3	5.042	5.042	5.042	5.042	5.462	OK

Measure position:

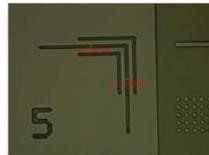
			#01		
#01			#01		#01
			#01		

#01

Front



Back



Left



Right

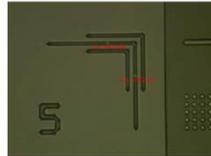


Center

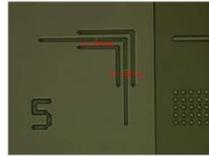


#02

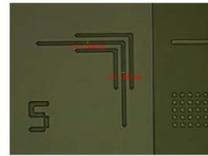
Front



Back



Left



Right

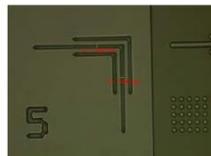


Center



#03

Front



Back



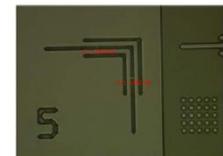
Left



Right



Center



* Inspection tool: Optical microscope

對準度-Top side

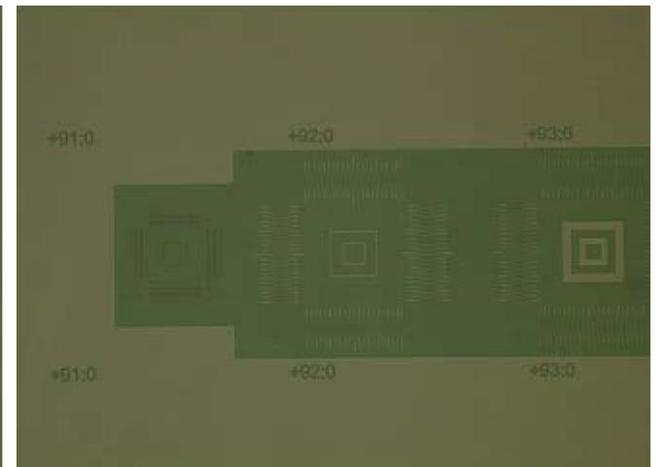
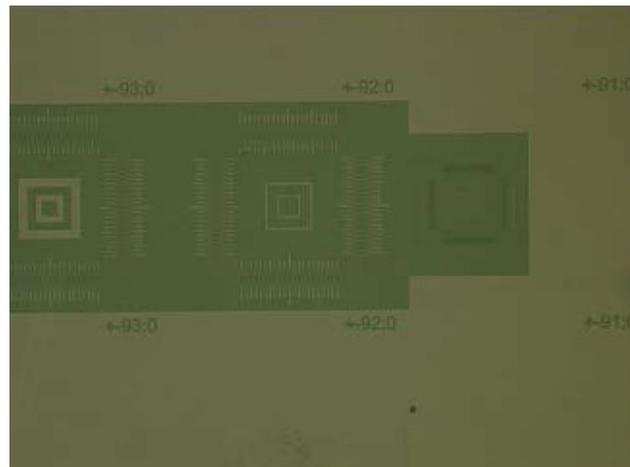
ATP Item	Exposure Mode	Wafer		Coating Resist Thickness	Mask	Exposure Dose	2.38% THAM Develop Time	Alignment Criteria	Resolution
		Type	Counts						
2.5	Top side alignment	Proximity (20 um)	200 mm AZ MiR 701	3 PCs	1 um	9 inchx 9 inch	55 mJ/cm ²	1st dev: 65 s 2nd dev: 10 s	1 um

#	Left		Right		Run-out compensated results			
	X _L	Y _L	X _R	Y _R	X _{L'}	Y _{L'}	X _{R'}	Y _{R'}
1	0.30	-0.20	0.30	-0.30	0.30	-0.20	0.30	-0.30
2	0.00	0.10	-0.10	-0.20	-0.05	0.10	-0.05	-0.20
3	0.40	0.00	0.40	-0.20	0.40	0.00	0.40	-0.20
AVG					0.22	-0.03	0.22	-0.23
Min >= -1 um					-0.05	-0.20	-0.05	-0.30
Max <= 1 um					0.40	0.10	0.40	-0.20

Run-out compensated results:
 $X_{L'} = X_L - [(X_L - X_R)/2]$; $X_{R'} = X_L'$
 $Y_{L'} = Y_L$; $Y_{R'} = Y_R$
 $AVG = 1/\# \cdot \sum X, Y$
 MIN = minimum value X', Y'
 MAX = maximum value X', Y'

Measure position:

#1~3				#1~3



* Inspection tool: Optical microscope

對準度-Back side

ATP Item	Exposure Mode	Wafer		Coating Resist Thickness	Mask	Exposure Dose	2.38% THAM Develop Time	Alignment Criteria	Resolution	
		Type	Counts							
2.6	Back side alignment	Proximity (20 um)	200 mm AZ MiR 701	3 PCs	1 um	9 inchx 9 inch	55 mJ/cm ²	1st dev: 65 s 2nd dev: 10 s	2 um	

#	Left		Right		Run-out compensated results			
	X _L	Y _L	X _R	Y _R	X _{L'}	Y _{L'}	X _{R'}	Y _{R'}
1	0.78	0.07	1.47	-0.30	1.12	0.07	1.12	-0.30
2	0.88	-0.13	1.14	-0.38	1.01	-0.13	1.01	-0.38
3	0.87	0.08	1.01	-0.23	0.94	0.08	0.94	-0.23
AVG					1.02	0.01	1.02	-0.30
Min >= -2 um					0.94	-0.13	0.94	-0.38
Max <= 2 um					1.12	0.08	1.12	-0.23

Run-out compensated results:

$$X_{L'} = X_L - [(X_L - X_R)/2]; \quad X_{R'} = X_L'$$

$$Y_{L'} = Y_L; \quad Y_{R'} = Y_R$$

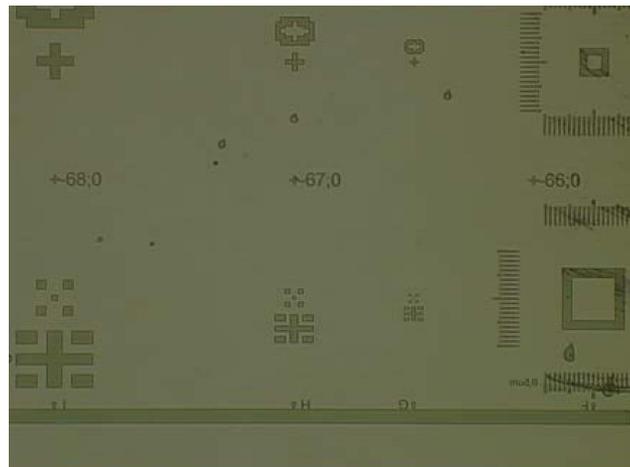
$$AVG = 1/\# \cdot \sum X, Y$$

MIN = minimum value X', Y'

MAX = maximum value X', Y'

Measure position:

#1~3					#1~3



* Inspection tool: EVG40NT

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END