

# **AGC input on SEMI P48 revision**

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# SEMI P48 revision

AGC agrees with the current SEMI-P48 revision except for cross line depth.  
 AGC proposal is 50-200nm, instead of current depth specification (100-200nm).

Figure and table from SEMI P48 revision draft

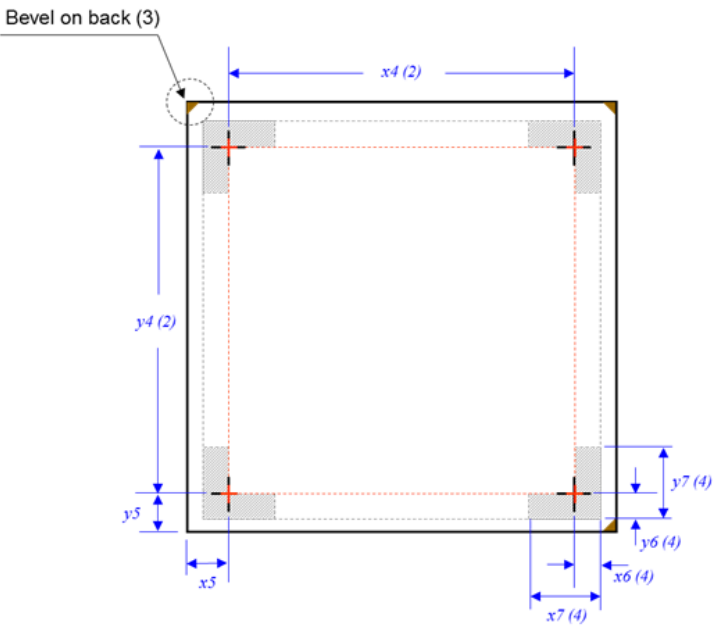


Figure 3 Fiducial Mark layout

Fiducial marks are placed on the frontside of mask blanks, one cross at each beveled corner and a partial cross at the un-beveled corner.

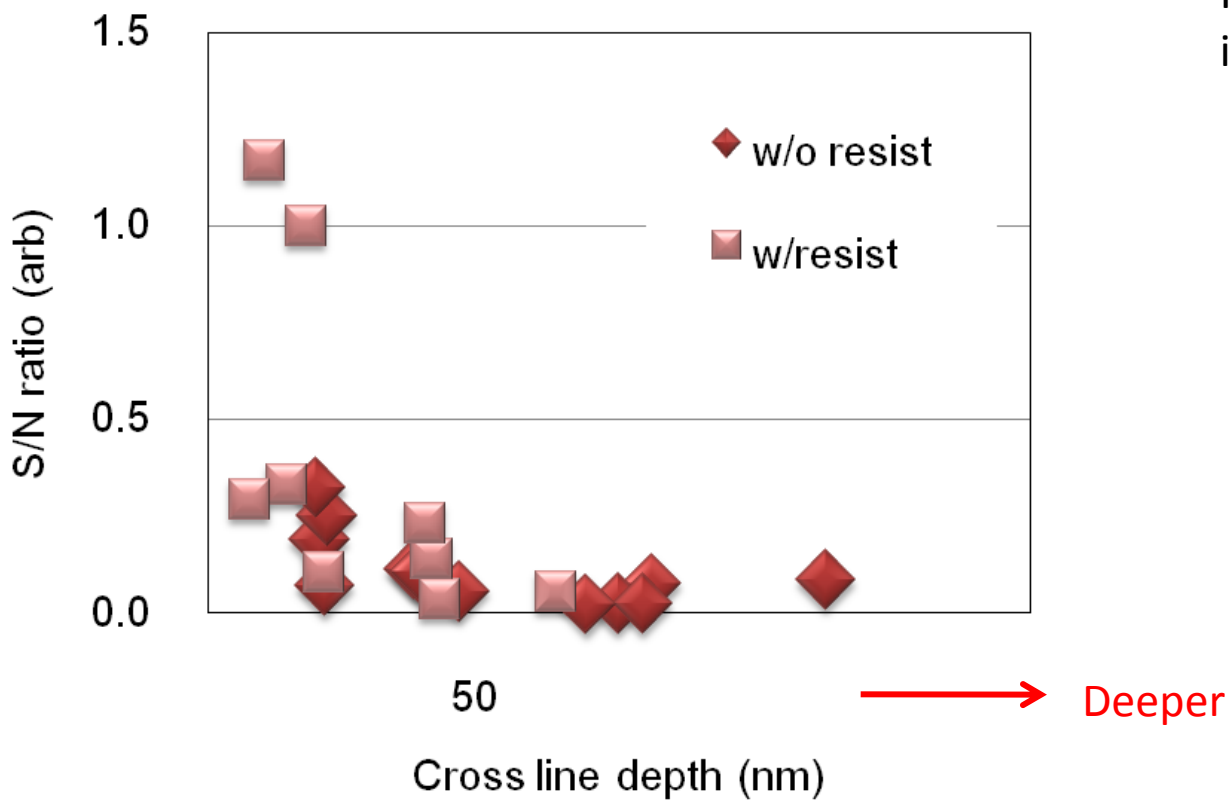
Table 1 Fiducial Mark Specification

Symbol Used	Figure	Value (mm unless specified)	Tolerance (mm unless specified)	Reference Measured From	Feature Measured To
x2, y2	1, 2	0.550	±0.050	One line end of crosses	The other line end of the crosses
x3, y3	1, 2	0.015 (TBD)	±0.001	Boundary of the central region of crosses as indicated in red	Boundary of central region of the crosses on the opposing side
x4, y4	3	136.000	±0.010	Centers of crosses	Centers of adjacent crosses
x5, y5	3	8.000	±0.050	Centers of crosses	The two closest blank edges
x6, y6	3	≤2.700		Centers of crosses	Outer lines of exclusion zones
x7, y7	3	≤5.700		Outer lines of exclusion zones	Inner / opposing lines of the zones
FMPS Orthogonality		≤0.015/136.000 (≤ 110 μrad)		Any one side of FMPS	Any adjacent side of FMPS
FMPS Parallelism		≤0.200/136.000 (≤ 14.7 mrad)		Any one side of FMPS	The closest edge of EUV blank
Cross line depth		100 ~ 200 nm (TBD)	TBD	Top of cross lines	Bottom of the cross lines
Cross line sidewall angle		TBD	TBD	Reference to the plane of mask blanks	
Reflectivity differential		>13% (TBD)		Delta between reflectivity from top and bottom of crosses	

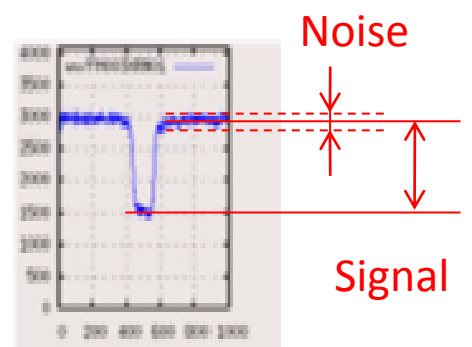
50-200nm

# Min. cross line depth ~ EB-writer

Good signal could be obtained in the EB-writer (Nuflare, EBM8000) when cross line depth is  $>\sim 40\text{nm}$ .



FM detection signal in eb-writer



$$S/N \text{ ratio} = \text{Noise} / \text{Signal}$$

\* Courtesy to Nuflare

# Min. cross line depth ~ 193nm inspector

FM with >~40nm depth could be also detected by 193nm inspector.



\* Courtesy to KLA-Tencor