Discussion Forum

• Topics for discussion
  – Carrier white paper
  – EUV mask blank fiducial marks – mask layout
  – Backside passivation
  – P37 flatness definition
  – Substrate thickness
EUV Mask Layout (based upon ASML, Canon, & Nikon information)

Not reserved

Reserved

Suggested
- Data Matrix ID
- Fiducial marks
  (1-2-4 or 2-3-5)

Alternatives:
- DM placed at #5
- DM placed where a barcode may be removed
Possible Final EUV Mask

Mask ID Mark

Fiducial Mark (3)

Substrate ID Mark

Conductive extension from backside

Conductive extension from frontside

Pattern Area

Mask ID Mark

Conductive extension from backside

Passivation

Conductor
Flatness specification is being actively evaluated

Specification is 50nm P-V for blank, but:

a) Distortion from fixturing during flatness measurement can change figure 50-100nm
b) Typical Mo/Si ML film stress will curve plate ~ 500nm

Issue under consideration:

a) Distortions from fixturing and film stress are concentrated in low-order Legendre modes (low spatial frequencies)
b) Electrostatic chucking forces in stepper can flatten low-order Legendre deformations

Current Sematech approach

Evaluate relaxing the flatness specification in favor of a chucking requirement:

a) VNL supplying flatness measurements and specimens to University of Wisconsin
b) Wisconsin testing chucking fixtures and modeling deformation using finite-element approach.
c) New requirement would include thickness at low Legendre orders, front-surface flatness at high Legendre orders.

Courtesy of C. Walton, LLNL.
Decisions needed

- Fiducial marks
  - Implement?
  - How many? More than three?
  - Locations
  - Positional tolerance
- Backside
  - Passivation? If so, specifications?
  - Metal based upon film stress?
- P37 Flatness specification
- Mask substrate thickness
  - Technical challenges
  - Economic impact
  - Decision deadline
Captured comments / action requests