

EU Silicon Wafer Committee Meeting Summary and Minutes

SEMICON Europa 2013
October 10, 2013
Dresden, Germany

Next Committee Meeting
SEMICON Europa 2014
Grenoble, France

Table 1 Meeting Attendees

Co-Chairs: Friedrich Passek (Siltronic), Peter Wagner (Self)

SEMI Staff: James Amano

| <i>Company</i> | <i>Last</i> | <i>First</i> | <i>Company</i> | <i>Last</i> | <i>First</i> |
|---------------------|-------------|--------------|------------------------|-------------|--------------|
| SUMCO | Nakai | Tetsuya | Tokyo Electron | Mashiro | Supika |
| Renesas (via phone) | Shiramizu | Yoshimi | Consultant (via phone) | Yoshise | Masanori |
| G450C | Lee | Kay | Siltronic | Riedel | Frank |
| Intel | Goldstein | Mike | | | |

Table 2 Leadership Changes

| <i>Group</i> | <i>Previous Leader</i> | <i>New Leader</i> |
|--|------------------------|--------------------------|
| Advanced Surface Inspection Task Force | No previous EU leader | Frank Riedel (Siltronic) |

Table 3 Ballot Results

Passed ballots and line items will be submitted to the ISC Audit & Review Subcommittee for procedural review.

Failed ballots and line items were returned to the originating task forces for re-work and re-balloting.

| <i>Document #</i> | <i>Document Title</i> | <i>Committee Action</i> |
|-------------------|---|---------------------------|
| 5503 | Line Item Revision to SEMI M52-0912, Guide for Specifying Scanning Surface Inspection Systems for Silicon Wafers for the 130 nm to 11 nm Technology Generations | |
| Line Item 1 | Add SEMI M80 in section 3.1 SEMI Standards and Safety Guidelines and Table 1, line 1.7 in the References column. | Passed as balloted |
| Line Item 2 | Modify Line 1.13 in Table 1 | Passed as balloted |

Table 4 Authorized Ballots

| <i>#</i> | <i>When</i> | <i>SC/TF/WG</i> | <i>Details</i> |
|----------|--------------|--|---|
| 5500 | Cycle 7-2013 | International Polished Wafers Task Force | New Standard: Specification for Polished Single Crystal Silicon Wafers for GaN-on-Silicon Applications |
| 5605 | Cycle 7-2013 | International 450 mm Wafer Task Force | Line Item Revision to SEMI M1-0413, Specification for Polished Single Crystal Silicon Wafers (Re: Wafers for 16nm technology generation SFQR) |
| 5653 | Cycle 7-2013 | International Polished Wafers Task Force | Line Item Revision of SEMI M1-1013, Specifications for Polished Single Crystal Silicon Wafers, to correct errors from previous ballot |

Table 5 Authorized Activities

| # | Type | SC/TF/WG | Details |
|------|-------|--|--|
| 5653 | SNARF | International Polished Wafers Task Force | Line Item Revision of SEMI M1-1013, Specifications for Polished Single Crystal Silicon Wafers, to correct errors from previous ballot |
| 5654 | SNARF | International Advanced Wafer Geometry Task Force | Line Item Revision of M49-0613, Guide for Specifying Geometry Measurements Systems for Silicon Wafers for the 130 nm to 16 nm Technology Generations |
| 5655 | SNARF | International Polished Wafers Task Force | Line Item Revision of SEMI M1-1013, Specifications for Polished Single Crystal Silicon Wafers, to update 450 mm wafers edge exclusion |

Note: SNARFs and TFOFs are available for review on the SEMI Web site at: <http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF>

Table 6 New Action Items

None

Table 7 Previous Meeting Action Items

None

1 Welcome, Reminders, and Introductions

Peter Wagner called the meeting to order at 14:30. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: RequiredElements.ppt

2 Review of Previous Meeting Minutes

The committee reviewed the minutes of the previous meeting.

Motion: To approve the minutes from the previous EU Silicon Wafer TC meeting (October 20,2010) as written.

By / 2nd: Mike Goldstein (Intel)/Frank Riedel (Siltronic)

Discussion: None

Vote: 6-0

Attachment: EU Silicon Wafer TC Meeting Minutes 20121011 v1.pdf

3 Liaison Reports

3.1 Japan Silicon Wafer Committee

Tetsya Nakai (SUMCO) reported. Highlights:

- New SNARFs/TFOFs
 - New TFOF for Fiducial Mark Interoperability Task Force

- New SNARF for Line Item Revision of SEMI M80-0812, Mechanical Specification for Front-Opening Shipping Box Used to Transport and Ship 450 mm Wafer
 - International 450 mm Shipping Box Task Force
- 450 mm Standards Seminar in Conjunction with SEMICON Japan 2013
 - Topics
 - G450C Updates
 - Explanation for 450mm Silicon Wafer Standards (M1, M62, M74 and M76)
 - Overall Concepts of 450mm SEMI Standards
 - G88, G92 and G95 on 450mm Packaging Process
 - Explanations for 450 FOUP (E158), 450MAC(E159) and 450 FOSB (M80)
 - Explanation for 450mm Lord Port (E154, E162 and E83)
 - E166 and 450mm Process Module Physical Interface Standard Activity
 - For more details, please visit at <http://www.semiconjapan.org/en/node/2111>

Attachment: JP_SiW_EU SW_R0.1.ppt

3.2 NA Silicon Wafer Committee

James Amano reported. Of note:

- Leadership changes:
 - International SOI TF - New leader Bich-Yen Nguyen (SOITEC)
 - International ASI TF - New Leader Kurt Haller (KLA-Tencor)
- New SNARFs
 - Int'l 450 mm Wafer TF
 - Doc. 5604, Revision to SEMI M1-0413, Specification for Polished Single Crystal Silicon Wafer
 - Addition of Notchless 450 mm Wafers
 - Doc. 5605, Line Item Revision to SEMI M1-0413, Specification for Polished Single Crystal Silicon Wafers
 - Wafers for 16nm technology generation SFQR
 - Int'l Test Methods TF
 - Doc. 5606, New Auxiliary Information: Interlaboratory Evaluation of Method 1 of SEMI MF673, Measuring Resistivity of Semiconductor Slices of Sheet Resistance of Semiconductor Films with a Noncontact Eddy-Current Gage.
 - Doc. 5607, Revision of SEMI MF673-0305 (Reapproved 0611), Measuring Resistivity of Semiconductor Slices of Sheet Resistance of Semiconductor Films with a Noncontact Eddy-Current Gage
 - Report on SEMICON West 2013 Workshop
 - Silicon Wafers – Future Standardization to Enable the Transition
 - Since 2008, SEMI has published fifteen 450 mm wafer standards, guided by customer requirements and supplier feedback. These specifications, covering wafers, carriers, and loadports, have enabled the industry to continue the development of equipment, materials, interfaces, and processes, but further standardization will be necessary for a successful transition to manufacturing on 450mm wafers. Speakers from Intel, Samsung, and TSMC and others will introduce some of these new concepts during this seminar.
 - Proposals discussed during this workshop will be considered for standardization by the SEMI Standards Advanced Wafer Geometry Task Force under the Silicon Wafer Committee.
 - Over 120 attendees

- Presentations from:
 - Mike Goldstein (Intel): Towards 450 mm Silicon Wafers
 - Kwangkook Lee (Samsung/G450C): New Edge Exclusion Proposal
 - Pinyen Lin (TSMC/G450C): Notchless Wafer
 - Gerd Pfeiffer (IBM): Wafer Geometry for Advanced Nodes
 - Hisashi Furuya (SUMCO): Challenges during 450 mm Silicon Processing
 - Allen Ware (F450C): 450 mm Facilities Planning

Attachment: NA Si Wafer Liaison Report 20130917.ppt

3.3 SEMI Staff Report

James Amano reported.

- An additional ballot cycle has been added to accommodate meeting held in January and February.
 - Cycle 8, 2013
 - Ballot Submission Date: Nov 15, 2013
 - Voting Period Starts: Nov 29, 2013
 - Voting Period Ends: Dec 31, 2013
- The Silicon Wafer TC has been effectively maintaining its catalog of standards via five-year reapproval ballots.

Attachment: SEMI Staff Report (Europa 2013) rev2.ppt

4 Ballot Review

4.1 Document 5503 – Line Item Revision to SEMI M52-0912, Guide for Specifying Scanning Surface Inspection Systems for Silicon Wafers for the 130 nm to 11 nm Technology Generations

- **Line Item 1:** Add SEMI M80 in section 3.1 SEMI Standards and Safety Guidelines and Table 1, line 1.7 in the References column.
 - No rejects or comments were received for Line Item 1
- **Line Item 2:** Modify Line 1.13 in Table 1
 - No rejects or comments were received for Line Item 2

Motion: To approve LI 1 as balloted and forward to the A&R SC for procedural review.

By / 2nd: Frank Riedel/Tetsya Nakai

Discussion: None

Vote: 6-0

Motion: To approve LI 2 as balloted and forward to the A&R SC for procedural review

By / 2nd: Frank Riedel/Tetsuya Nakai

Discussion: None

Vote: 6-0

5 Task Force Reports

5.1 Advanced Wafer Geometry Task Force

John Valley reported.

- The TF is developing an Auxiliary Information Document on Geometry Parameters of SEMI M1.

- Peter Wagner presented the latest update of this work providing 2-dim illustrations of all geometry parameters
- Peter to distribute the presentation among the working group members asking for feedback
- Continue discussion at NA standards meetings end of October
- Presentation: Advanced Wafer Geometry Site Flatness vs Site NT
 - Gerd Pfeiffer (IBM) gave a presentation on joint work with KLA-Tencor comparing WaferSight 2 data applying standard site flatness metrics with data obtained applying new metrics like, e. g., Site NT to a set of 100 wafers from four different lots, i. e., suppliers.
 - He indicated that Site NT might provide additional information to IQC which cannot be obtained applying standard NT or site flatness metrics in particular when examining certain near edge features.
 - However, it did not become clear whether there is an impact of such features on IC manufacturing processes and thus a benefit of introducing new Site NT metrics to the industry.

Attachment: AWG TF Europe Report Dresden 20131008.ppt

5.2 Advanced Surface Inspection Task Force

Friedrich Passek nominated Frank Riedel to serve as the EU Leader

Motion: To approve Frank Riedel as the leader of the Advanced Surface Inspection Task Force

By / 2nd: Friedrich Passek/Mike Goldstein

Discussion: None

Vote: 6-0

5.3 Int'l Polished Wafer TF

Attachment: IPW TF Europe Report Dresden 20131008.ppt

5.4 Global Coordinating Subcommittee

Attachment: GCS_meeting minutes_08_Oct_2013_Dresden.doc

6 Old Business

None.

7 New Business

7.1 New SNARFs

- SNARF for Line Item Revision of M49-0613, Guide for Specifying Geometry Measurements Systems for Silicon Wafers for the 130 nm to 16 nm Technology Generations

Motion: To approve the SNARF for Line Item Revision of M49-0613, Guide for Specifying Geometry Measurements Systems for Silicon Wafers for the 130 nm to 16 nm Technology Generations

By / 2nd: Mike Goldstein/Tetsuya Nakai

Discussion: None

Vote: 6-0

- SNARF for Line Item Revision of SEMI M1-1013, Specifications for Polished Single Crystal Silicon Wafers, to update 450 mm wafers edge exclusion

Motion: To approve the SNARF for Line Item Revision of SEMI M1-1013, Specifications for Polished Single Crystal Silicon Wafers, to update 450 mm wafers edge exclusion

By / 2nd: Frank Riedel/Mike Goldstein

Discussion: None

Vote: 6-0

- SNARF for Line Item Revision of SEMI M1-1013, Specifications for Polished Single Crystal Silicon Wafers, to correct errors from previous ballot

Motion: To approve the SNARF for Line Item Revision of SEMI M1-1013, Specifications for Polished Single Crystal Silicon Wafers, to correct errors from previous ballot

By / 2nd: Frank Riedel/Mike Goldstein

Discussion: None

Vote: 6-0

7.2 Ballot Issuance Approvals

Motion: To approve document 5503, New Standard: Specification for Polished Single Crystal Silicon Wafers for GaN-on-Silicon Applications, for balloting in Cycle 7-2013, for review at SEMICON West

By / 2nd: Frank Riedel/Mike Goldstein

Discussion: None

Vote: 6-0

Motion: To approve document 5605, Line Item Revision to SEMI M1-0413, Specification for Polished Single Crystal Silicon Wafers (Re: Wafers for 16nm technology generation SFQR), for balloting in Cycle 7-2013, for review at SEMICON West

By / 2nd: Frank Riedel/Mike Goldstein

Discussion: None

Vote: 6-0

Motion: To approve document 5653, Line Item Revision of SEMI M1-1013, Specifications for Polished Single Crystal Silicon Wafers, to correct errors from previous ballot, for balloting in Cycle 7-2013, for review at SEMICON West

By / 2nd: Frank Riedel/Mike Goldstein

Discussion: None

Vote: 6-0

8 Action Item Review

8.1 *Open Action Items*

James Amano (SEMI) reviewed the open action items. These can be found in the Open Action Items table at the beginning of these minutes.

8.2 *New Action Items*

James Amano (SEMI) reviewed the new action items. These can be found in the New Action Items table at the beginning of these minutes.

9 Next Meeting and Adjournment

The next meeting of the EU Silicon Wafer committee is scheduled for October, 2014 in Grenoble, France, during SEMICON Europa.

Minutes submitted by:

James Amano
SEMI HQ

Table 8 Index of Available Attachments #1

| # | <i>Title</i> | # | <i>Title</i> |
|---|---|---|---|
| 1 | Required Elements June 2, 2010 | 5 | SEMI Staff Report (Europa 2013) rev2.ppt |
| 2 | EU Silicon Wafer TC Meeting Minutes 20121011 v1.pdf | 6 | GCS_meeting minutes_08_Oct_2013_Dresden.doc |
| 3 | JP_SiW_EU SW_R0.1.ppt | 7 | IPW TF Europe Report Dresden 20131008.ppt |
| 4 | NA Si Wafer Liaison Report 20130917.ppt | | |

#1 Due to file size and delivery issues, attachments must be downloaded separately. A .zip file containing all attachments for these minutes is available at www.semi.org.