Silicon Wafer Japan TC Chapter

Meeting Summary and Minutes

Japan Standards Spring Meetings 2024

Friday, August 29, 2024 2:00 PM – 4:00 PM JST

SEMI Japan, Tokyo/ Official Virtual TC Chapter Meeting (Hybrid)

TC Chapter Announcements

Next TC Chapter Meeting

Thursday, December 12, 2024 9:00 AM – 12:00 PM JST

Tokyo Big Sight, Tokyo, Japan/ Official Virtual TC Chapter Meeting (Hybrid)

Table 1 Meeting Attendees

Italics indicate virtual participants

Co-Chairs: Tetsuya Nakai (SUMCO)
SEMI Staff: Akiko Yoshida (SEMI Japan)

Company	*Last*	*First*	*Company*	*Last*	*First*
ASML	*Daware*	*Ajinkya*	SELF	Yoshise	Masanori
CEA LETI	*Fournel*	*Farnk*	*Shin-Etsu Handotai Co., Ltd.*	*Tsunoda*	*Hitoshi*
Kobe Steel	*Morimoto*	*Tsutomu*	SUMCO	Nakai	Tetsuya
KOKUSAI ELECTRIC	*Matsuda*	*Mitsuhiro*	SUMIKA CHEMICAL ANALYSIS SERVICE, LTD.	Omata	Mikako
Kohzu Precision	Kuwabara	Satoshi	*Tokyo Electron*	*Mashiro*	*Supika*
Nanosurf	*Titze*	*Benjamin*			
SELF	Kawai	Naoyuki	SEMI Japan	Yoshida	Akiko

Table 2 Leadership Changes

WG/TF/SC/TC Name	*Previous Leader*	*New Leader*
Solid Metal Schottky Epi Wafer Resistivity WG (under the Japan Test Method TF)	--	Naoyuki Kawai (Self)

Table 3 TC Chapter Structure Changes

Previous WG/TF/SC Name	*New WG/TF/SC Name or Status Change*
--	Solid Metal Schottky Epi Wafer Resistivity WG (under the Japan Test Method TF)

Table 4 Ballot Results

Document #	*Document Title*	*Committee Action*
None		

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

#2 **Failed** ballots and line items were returned to the originating task forces for re-work and re-balloting or abandoning.

Table 5 Ratification Ballot Results

Document #	*Document Title*	*ISC A&R Action*	*A&R Forms*
None			

Note 1: **Passed** Ratification ballots will be submitted to SEMI publication for final processing.

Note 2: **Failed** Ratification ballots were returned to the originating task forces for re-work and re-balloting or abandoning.

Table 6 Activities Approved by the GCS between meetings of the TC Chapter

#	*Type*	*SC/TF/WG*	*Details*
7192	Ballot Authorization for Cycle 7	Int'l Advanced Wafer Geometry TF	Revision of SEMI M73-1013E (Reapproved 1019), Test Method for Extracting Relevant Characteristics from Measured Wafer Edge Profiles ***– Approved by GCS on 08/22/2024***

Table 7 Authorized Activities

Listing of all revised or new SNARF(s) approved by the Originating TC Chapter.

#	*Type*	*SC/TF/WG*	*Details*
7291	SNARF	Int'l Epitaxial Wafers TF	Revision to SEMI M62-0317, Specification for Silicon Epitaxial Wafers

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

Table 8 Authorized Ballots

#	*When*	*TF*	*Details*
7291	Cycle 8	Int'l Epitaxial Wafers TF	Revision to SEMI M62-0317, Specification for Silicon Epitaxial Wafers

Table 9 SNARF(s) Granted a One-Year Extension

#	*TF*	*Title*	*Expiration Date*
None			

Table 10 SNARF(s) Abolished

#	*TF*	*Title*
None		

Table 11 Standard(s) to receive Inactive Status

Standard Designation	*Title*
None	

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Table 12 New Action Items

Item #	*Assigned to*	*Details*
SW20240829-01	SEMI Staff	To have a training session of Connect@SEMI for TF leaders.
SW20240829-02	Hitoshi Tsunoda (Shin-Etsu Handotai)	To submit SEMI M62 Revision Ballot (Doc.#7291) for Cycle 8.
SW20240829-03	Tetsuya Nakai (SUMCO)	To confirm the EU AWG TF leader whether the draft of SEMI M73 Revision ballot (Doc.#7192) was distributed to all the TF members for their inputs at least one week before submission to SEMI staff.

Table 13 Previous Meeting Action Items

Item #	*Assigned to*	*Details*
SW20240426-01	Ryuji Takeda (GlobalWafers Japan)	To communicate with Kevin Nguyen (SEMI NA Staff) to put SEMI MF391-0310 on 5-year review process. →Closed

1 Welcome, Reminders, and Introductions

Tetsuya Nakai (SUMCO), called the meeting to order at 2:00 PM JST. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: 01_Meeting Reminders

2 Review of Previous Meeting Minutes

The TC Chapter reviewed the minutes of the previous meeting.

Motion: Approve the minutes as written.
By / 2nd: Naoyuki Kawai (Self)/ Masanori Yoshise (Self)
Discussion: None.
Vote: Result: 10-Y 0-N. **Motion Passed.**

Attachment: 02_SW JA TC Minutes_20240426_R1

3 Liaison Report

3.1 *Japan Regional Standards Committee (JRSC)*

Tetsuya Nakai (SUMCO) reported for the JRSC that there had been no updates as the next JRSC meeting would be held on August 30 (one day after the Silicon Wafer Japan TC Chapter meeting).

3.2 *Global Coordinating Subcommittee (GCS)*

Tetsuya Nakai (SUMCO) reported for the GCS that Doc.#7192, Revision of SEMI M73-1013E (Reapproved 1019), Test Method for Extracting Relevant Characteristics from Measured Wafer Edge Profiles was authorized by the GCS on August 22 to be submitted for Cycle 7 for review at SEMICON Europa meeting on November 14, 2024.

Manori Yoshise (Self) commented that he had not yet seen the draft Doc.#7192 although he is a member of Int’l Advanced Wafer Geometry (AWG) TF. Supika Mashiro (Tokyo Electron) pointed out that when the Draft Document

is to be submitted for a Ballot, it shall be distributed to all the TF members for their inputs at least one week before submission to Standards staff per SEMI Standards Procedure Manual.

Tetsuya Nakai (SUMCO) said that he would check with EU AWG TF leader whether the internal TF review had been conducted and if it had not been conducted, he would ask the TF leader to distribute the draft document to the TF members prior to submission for Cycle 7.

3.3 *Silicon Wafer Europe TC Chapter*

Tetsuya Nakai (SUMCO) reported that there had been no updates from the previous meeting.

3.4 *Silicon Wafer North America TC Chapter*

Tetsuya Nakai (SUMCO) reported for the Silicon Wafer North America TC Chapter. Of note:

- The voting result of Doc.#7024, Line-Item Revision to SEMI M1-0918, Specification for Polished Single Crystal Silicon Wafers (Re: 300mm wafer diameter tolerance reduction from ± 200um to ±100um) was reviewed at SEMICON West and it passed as balloted.
- SNARF 7192, Revision of SEMI M73-1013, Test Method for Extracting Relevant Characteristics from Measured Wafer Edge Profiles was revised to include Siltronic and SUMCO's method.
- Under the Int'l Automated Advance Surface Inspection TF, the AFM Working Group has started AFM and Haze measurement RRT.
- Doc.#7265, Reapproval of SEMI MF391-0310E, Test Method for Minority Carrier Diffusion Length in Extrinsic Semiconductors by Measurement of Steady-State Surface Photovoltage from the Int'l Test Method TF was authorized to be issued for Cycle 6 and to be reviewed at SEMICON Japan.

Attachment: 03_NA Si Wafer TC Chapter Liaison Report August 2024

4 SEMI Staff Report

Akiko Yoshida (SEMI Japan) gave the SEMI Staff Report. Of note:

- SEMICON West 2024 will be held in Phoenix, Arizona in October. From the following year, the venue of SEMICON West will alternate between Phoenix and San Francisco every October thereafter.
- Accordingly, the timing of NA Standards Meetings next year will be different than in the past. Each TF should fully consider which voting cycle to be used for its ballots.
- TFs have until 02/20/24 to implement use of Connect@SEMI (https://connect.semi.org) for TF management and document development depository. Once TFs have implemented use of Connect@SEMI, they shall use it to: maintain the TF member roster up to date, share the working drafts in PDF, and distribute the Draft Document at least one week before ballot submission to SEMI. Training materials for TF leaders and members (users) are available on the SEMI website.

Attachment: 04_Staff Report July 2024 v4_ay

5 Ballot Review

None.

6 Subcommittee and Task Force Reports

6.1 *International Advanced Wafer Geometry Task Force*

Masanori Yoshise (Self) reported for the International Advanced Wafer Geometry Task Force. Of note:

- SNARF for Doc.#7192, Revision of SEMI M73-1013, Test Method for Extracting Relevant Characteristics from Measured Wafer Edge Profiles was revised to incorporate the additional method proposed by SUMCO.
- The TF is developing Doc.#6983A, Revision of SEMI M49-0918, With Title Change To: Guide for Specifying Geometry Measurement Systems for Silicon Wafers for the 130 nm to 3 nm Technology Generations. There was a long discussion whether to include reference wafer values and therefore performance requirements for 11 to 3 nm TGs the same as for 16m. The two versions of draft document will be prepared and further discussed at the next TF meeting.

Attachment: 05_AWG NA SEMICON West 2024 minutes draft my

6.2 *International/ Japan Test Method Task Force*

Mikako Omata (SUMIKA CHEMICAL ANALYSIS SERVICE, LTD.) reported for the International/ Japan Test Method Task Force. Of note:

- The TF is drafting Doc.#6687, Revision to M51, but the ballot document development plan has been rescheduled.
- The TF is drafting Doc.#6702, Revision to M60, and the ballot is expected to be submitted next Spring.
- M85 revision work has been started. The TF will review the first draft in September.
- SANRF#5772, Revision to MF391-0310, Test Methods for Minority Carrier Diffusion Length in Extrinsic Semiconductors by Measurement of Steady-state Surface Photovoltage was withdrawn at the previous TC Chapter meeting. Instead, reapproval ballot of MF391 was authorized to be submitted for Cycle 6 at SEMICON West.
- The TF is considering whether M88 should be revised.
- The TF is drafting Doc.#6570B, New Standard: Guide for Measuring Bulk Micro Defect Density and Denuded Zone Width in Annealed Silicon Wafers by a Laser-Scatter Tomography Technique.
- The Solid Metal Schottky Epi Wafer Resistivity Working Group was formed under the Japan Test Method TF to make a Japan Society of Newer Metal (JSNM) Standard document to SEMI Standard. The said JSNM standard provides the test method for resistivity by reverse bias voltage dependence of the capacitance of a Schottky junction diode (C-V method), prepared on epitaxial layers, uniformly doped in depth- direction, grown on mirror-polished silicon substrates. Naoyuki Kawa (Self) became a WG leader.

Attachment: 06_Japan Test Method TF meeting August 21 2024_R01_ohtsuki

6.3 *International Advanced Automated Surface Inspection Task Force*

No report provided.

6.4 *International Polished Wafers Task Force*

No report provided.

6.5 *International Epitaxial Wafers Task Force*

Please refer to 8. New Business.

6.6 *International Annealed Wafers Task Force*

No report provided.

6.7 *International SOI Wafers Task Force*

Tetsuya Nakai (SUMCO) reported for the International SOI Task Force. Of note:

- The TF is drafting Doc.#6583, New Standard: Specification for SOI Wafers for RF Device Applications. One year extension of the document development project period was approved.
- SNARF for Reapproval of SEMI M71-0120, Specification for Silicon-on-Insulator (SOI) Wafers for CMOS LSI was approved, and issuance of Doc.#7266 for cycle 6 was authorized for review at SEMICON Japan.

6.8 *International Terminology Task Force*

Tetsuya Nakai (SUMCO) reported that there had been no updates.

7 Old Business

7.1 *Project Period Review*

None.

7.2 *5 Year Review Check*

- SEMI M85-0120, Guide for the Measurement of Trace Metal Contamination on Silicon Wafer Surface by Inductively Coupled Plasma Mass Spectrometry

  It was confirmed that the Test Method TF is drafting the document.

- SEMI M88-0119, Practice for Sample Preparation Methods for Measuring Minority Carrier Diffusion Length in Silicon Wafers by Surface Photovoltage Methods

  It was confirmed that SEMI M88 is under review by the Test Method Task. The TF will judge whether it will be revised or reapproved by the end of September.

8 New Business

8.1 *SNARF for Revision to SEMI M62-0317, Specification for Silicon Epitaxial Wafers*

8.2 Hitoshi Tsunoda (Shin-Etsu Handotai), co-leader of the International Epitaxial Wafers Task Force, proposed the SNARF for Revision to SEMI M62-0317, Specification for Silicon Epitaxial Wafers. The purpose of the revision is: 1) to remove 450 mm referrals from this document, 2) to change 300 mm wafer diameter tolerance to ±0.10 mm in accordance with SEMI M1, 3) to include reference to SEMI M73 Test Method for Extracting Relevant Characteristics from Measured Wafer Edge Profiles, and 4) to correct errors. Prior to the TC Chapter meeting, the SNARF was reviewed for a period of two weeks by Global Silicon Wafer TC members and received no comments.

Motion: Approve SNARF for Revision to SEMI M62-0317, Specification for Silicon Epitaxial Wafers

By / 2nd: Hitoshi Tsunoda (Shin-Etsu Handotai)/ Naoyuki Kawai (Self)

Discussion: None.

Vote: 10-Y 0-N. **Motion Passed.**

Then, Hitoshi Tsunoda presented the draft document of M62 Revision and the TC Chapter reviewed it.

Motion: Authorize the letter ballot submission for Revision to SEMI M62-0317, Specification for Silicon Epitaxial Wafers in Cycle 8.

By / 2nd: Hitoshi Tsunoda (Shin-Etsu Handotai)/ Naoyuki Kawai (Self)

Discussion: Supika Mashiro (Tokyo Electron) asked if we need to look at the draft before approving draft submission, and Testuya Nakai (SUMCO) responded Yes, it’s a Silicon Wafer Global TC local rule.

The TC Chapter looked at the draft document as of today and they agreed that on the condition that SEMI M73 reference to the edge profile be included in the table of M62, the motion is carried out.

Vote: 10-Y 0-N. **Motion Passed.**

Attachment: 07_SNARF July2024 M62 revision by Tsunoda & changed by Gupta

9 Action Item Review

9.1 *Open Action Item*

Item #	*Assigned to*	*Details*
SW20240426-01	Ryuji Takeda (GlobalWafers Japan)	To communicate with Kevin Nguyen (SEMI NA Staff) to put SEMI MF391-0310 on 5-year review process. →Closed

9.2 *New Action Item*

Item #	*Assigned to*	*Details*
SW20240829-01	SEMI Staff	To have a training session of Connect@SEMI for TF leaders.
SW20240829-02	Hitoshi Tsunoda (Shin-Etsu Handotai)	To submit SEMI M62 Revision Ballot (Doc.#7291) for Cycle 8 on the condition that SEMI M73 reference to the edge profile be included in the table of M62.
SW20240829-03	Tetsuya Nakai (SUMCO)	To confirm the EU AWG TF leader whether the draft of SEMI M73 Revision ballot (Doc.#7192) was distributed to all the TF members for their inputs at least one week before submission to SEMI staff.

10 Next Meeting and Adjournment

The next meeting is scheduled for Thursday, December 12, 2024 9:00 AM – 12:00 PM JST at Tokyo Big Sight, Tokyo, Japan and via Official Virtual TC Chapter Meeting in conjunction with SEMICON Japan 2024. See http://www.semi.org/standards-events for the current list of events.

Adjournment: 4:00 PM

Respectfully submitted by:

Akiko Yoshida

Sr. Coordinator

SEMI Japan

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Minutes tentatively approved by:

Tetsuya Nakai (SUMCO), Co-chair	October 10, 2024
Ryuji Takeda (Global Wafers Japan), Co-chair	N/A

Table 14 Index of Available Attachments[#1]

Title	*Title*
01_Meeting Reminders	05_AWG NA SEMICON West 2024 minutes draft my
02_SW JA TC Minutes_20240426_R1	06_Japan Test Method TF meeting August 21 2024_R01_ohtsuki
03_NA Si Wafer TC Chapter Liaison Report August 2024	07_SNARF July2024 M62 revision by Tsunoda & changed by Gupta
04_Staff Report July 2024 v4_ay	

#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. For additional information or to obtain individual attachments, please contact Akiko Yoshida at the contact information above.