3D Packaging & Integration North America TC Chapter

Meeting Summary and Minutes

SEMI Standards NA Winter Meetings 2025
Thursday, February 27, 13:00 – 14:30 Pacific
SEMI Global Headquarters, Milpitas, California, and via Official Virtual TC Chapter Meeting (OVTCCM)

TC Chapter Announcements

Next TC Chapter Meeting

SEMI Standards NA Summer Meetings 2025
Thursday, June 5, 13:00 – 14:30 Pacific
SEMI Global Headquarters, Milpitas, California

Table 1 Meeting Attendees

Co-Chairs: Bill Kerr (Evergreen Enhancement), Chris Moore (Consultant)
SEMI Staff: Laura Nguyen

Company	*Last*	*First*	*Company*	*Last*	*First*
Evergreen Enhancement	*Kerr*	*William*	*Nordson T&I*	*Martell*	*Steve*
Fritz Tech Consultant	*Fritz*	*Denny*	WD Advanced	Ciraldo	John
TFG	*Fosnight*	*Bill*			
NIST	*Allen*	*Richard*	*SEMI*	*Nguyen*	*Laura*

Table 2 Leadership Changes

None

Table 3 Committee Structure Changes

None

Table 4 Ballot Results

Document #	*Document Title*	*Committee Action*
7307	Reapproval of SEMI 3D22-1219, Guide on Measurements of Openings and Vias in Glass	**Passed**, as balloted.

#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 Activities Approved by the GCS between meetings of the TC Chapter

#	*Type*	*SC/TF/WG*	*Details*
7331	SNARF	3DP&I Inspection & Metrology TF	New Standard: Guide for Peel Testing of RDLs and Other Traces Used within HDI, WLP, and PLPs Structures *–**Approved by GCS on 01/31/2025***

Table 6 Authorized Activities

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

#	*Type*	*SC/TF/WG*	*Details*
7337	SNARF	3DP&I Bonded Wafer Stacks	Reapproval of SEMI 3D9-0914 (Reapproved 0420), Guide for Describing Materials Properties for a 300 mm 3DS-IC Wafer Stack
7338	SNARF	3DP&I Bonded Wafer Stacks	Reapproval of SEMI 3D10-0814 (Reapproved 0420), Guide to Describing Materials Properties for Intermediate Wafers for Use in a 300 mm 3DS-IC Wafer Stack
7339	SNARF	3DP&I Inspection and Metrology TF	Reapproval of SEMI 3D11-1214 (Reapproved 0420), Terminology for Through Glass Via and Blind Via in Glass Geometrical Metrology

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

Table 7 Authorized Ballots

Listing of documents authorized by the Originating TC Chapter for Letter Ballot.

#	*When*	*TF*	*Details*
7337	Cycle 3, or 4-2025	3DP&I Bonded Wafer Stacks	Reapproval of SEMI 3D9-0914 (Reapproved 0420), Guide for Describing Materials Properties for a 300 mm 3DS-IC Wafer Stack
7338	Cycle 3, or 4-2025	3DP&I Bonded Wafer Stacks	Reapproval of SEMI 3D10-0814 (Reapproved 0420), Guide to Describing Materials Properties for Intermediate Wafers for Use in a 300 mm 3DS-IC Wafer Stack
7339	Cycle 3, or 4-2025	3DP&I Inspection and Metrology TF	Reapproval of SEMI 3D11-1214 (Reapproved 0420), Terminology for Through Glass Via and Blind Via in Glass Geometrical Metrology

Table 8 SNARF(s) Granted a One-Year Extension

None

Table 9 SNARF(s) Abolished

None

Table 10 Standard(s) to receive Inactive Status

None

Table 11 New Action Items

None

Table 12 Previous Meeting Action Items

None

1 Welcome, Reminders, and Introductions

William Kerr (Evergreen Enhancement) called the meeting to order at 13:05 Pacific. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: SEMI Standards Required Elements

2 Review of Previous Meeting Minutes

The TC Chapter reviewed the minutes of the previous meeting.

Motion:	Approve the minutes as written.
By / 2nd:	By: Steve Martell / Nordson SONOSCAN Second: John Ciraldo / WD Advanced Materials
Discussion:	None.
Vote:	3-0 in favor. Motion passed.

Attachment: [2024Fall] 3DP&I NA TC Chapter Meeting Minutes

3 Liaison Reports

3.1 *3D Packaging & Integration Japan TC Chapter*

Laura Nguyen (SEMI HQ) reported for the Japan TC Chapter. Of note:

Meeting Information

- Last meeting: Monday, February 3, 2025, OVTCCM/ SEMI Japan, Tokyo, Japan (Hybrid)
- Next meeting: Monday, May 19, 2025, OVTCCM/ SEMI Japan, Tokyo, Japan (Hybrid)

Leadership

- Co-chairs
  - Kazunori Kato/ AiT
    - GCS voting member
  - Masahiro Tsuriya/ iNEMI
    - GCS voting member
  - Haruo Shimamoto/ AIST

Org Chart *{Refer to the attachment}*

Ballot Results:

- 7300: Line-Item Revision to SEMI G96-1014 (Reapproved 1019), Test Method for Measurement of Chip (Die) Strength by mean of Cantilever Bending
  - Passed, as balloted

Activities Approved via GCS between Meetings

- 7300: Line-Item Revision to SEMI G96-1014 (Reapproved 1019), Test Method for Measurement of Chip (Die) Strength by mean of Cantilever Bending
  - Approved by GCS on 11/19/2024

Task Force Highlights

3DS IC Bonded Layer Inspection Metrology TF

- Co-leaders: Haruo Shimamoto/ AIST, Shigeru Ohno/ Hitachi Power Solutions
- SNARF was approved by the TC Chapter on October 28, 2024.
- Developing Doc.#7299, New Standard: Guide for 3DS IC Bonded Layer Inspection Metrology
  - For detecting defects on the interfaces between layers of 3D stacked IC.
  - Specify the reference sample for separating the existence of voids and/or structures between wafers and/or dies more than two layers.
  - Guideline for each layer identification marks and size.

Wafer Bond Strength Measurement by Double-cantilever Beam Task Force

- Co-leaders: Fumihiro Inoue/ Yokohama National University, Marie Sano/ Yokohama National University
- Looking for another TF co-leader from another company/ organization.

- Newly formed in January 2024
  - The wafer bonding process is maturing and being utilized for a wide variety of semiconductor processes. Bonding is typically assessed through "adherence energy (also known as bond strength)," with the energy evaluated using the double cantilever beam (DCB) test. While this test is widely used in the semiconductor field, there is currently no standardized method for measurement. As a result, measured values exhibit significant variation even within a wafer. Furthermore, these values are not comparable.
  - The objective of the TF is to minimize this variation and establish an industrial standard for bond strength measurement as well as the values for process qualification.
  - TF intends to standardize Measurement Sample, Measurement Environment, Measurement System (+ equation) and Measurement Method.
  - TF meetings have been held with 20+ participants from various countries.
  - Drafting SNARF has been delayed because TF co-leaders are busy.

Five Years Review TF

- Completed all documents that required 5-year review in 2024.
  - SEMI 3D19-0619 – Reapproved.
  - SEMI G96-1014 (Reapproved 1019) – Line Item Revision Ballot has passed TC Chapter review.
- Reviewed all the documents that requires 5-year review in 2025 and will decide whether they will be reapproved or revised to be compliant with Style Manual (refer to the next slide).

Documents under Five-Year Review in 2025

	Document #	**Document Title**
1	SEMI G92-0315 (Reapproved 1220)	Specification for Tape Frame Cassette for 450 mm Wafer
2	SEMI G82-1115 (Reapproved 1220)	Specification for 300 mm Load Port for Frame Cassettes in Backend Process
3	SEMI G95-1120	Specification for Mechanical Features of 450 mm Load Port for Tape Frame Cassettes in the Backend Process
4	SEMI G52-1120	Test Method for Measurement of Ionic Contamination on Semiconductor Leadframes
5	SEMI G87-1108 (Reapproved 1020)	Specification for Plastic Tape Frame for 300 mm Wafer
6	SEMI G77-0699 (Reapproved 1020)	Specification for Frame Cassette for 300 mm Wafers
7	SEMI G74-0699 (Reapproved 1020)	Specification for Tape Frame for 300 mm Wafers
8	SEMI G11-0519	Practice for RAM Follower Gel Time and Spiral Flow of Thermal Setting Molding Compounds
9	SEMI G73-0519	Test Method for Pull Strength for Wire Bonding

3D Packaging & Integration Steering Group WG

- Made a panel introducing 3D Packaging and Integration Technical Committee activities which was displayed at “SEMI IS MORE PATH” during SEMICON Japan 2024 *(refer to attachment).*
- The package technical workshop will be held at Mitsutoyo on April 14, 2025. This event will be sponsored by iNEMI and JIEP with support from 3D Packaging & Integration Steering Group.

SEMI IS MORE PATH@SEMICON Japan 2024

- For SEMI Standards, general introductions as well as panels to introduce four TCs were displayed. 3D Packaging & Integration/ Automation Technology / I&C / PI&C

Staff Contact: Akiko Yoshida at ayoshida@semi.org

Attachment: JA 3DP&I_Liaison Report_February 2025_R0_distr

3.2 *3D Packaging & Integration Taiwan TC Chapter (no update since Summer 2022)*

3.3 *SEMI Staff Report*

Laura Nguyen (SEMI) gave the SEMI Staff Report. Of note:

SEMI Global 2025 Calendar of Events

- SEMICON China (March 26-28; Shanghai)
- SEMICON SEA (May 20-22; Singapore)
- SEMICON India (Sept 1-3; New Delhi, India)
- SEMICON Taiwan (Sept 10-12; Taipei, Taiwan)
- SEMCON West (Oct 7-9; Phoenix, Arizona)
- SEMICON Europa (Nov 18-21; Munich, Germany)
- SEMICON Japan (December 17-19; Tokyo, Japan)

SEMICON West 2025-2030

- **2025—October 7-9 | Phoenix Convention Center | Phoenix, AZ**
- 2026—October 13-15 | Moscone Center | San Francisco, CA
- **2027—October 12-14 | Phoenix Convention Center | Phoenix, AZ**
- 2028—October 10-12 | Moscone Center | San Francisco, CA
- **2029—October 9-11 | Phoenix Convention Center | Phoenix, AZ**
- 2030—October 29-31 | Moscone Center | San Francisco, CA

Upcoming NA Meetings 2025

- NA Standards Summer Meetings: June 2-5, 2025, at SEMI HQ, Milpitas, California/USA
- SEMICON West: Oct 6-9, 2025, at Phoenix Convention Center, Phoenix, Arizona/USA

Critical Dates for SEMI Standards Ballots

- Cycle 2-2025: Ballot Submission Due: Jan 23/Voting Period: Feb 11 – Mar 13
- Cycle 3-2025: Ballot Submission Due: Mar 5/Voting Period: Mar 19 – Apr 18
- Cycle 4-2025: Ballot Submission Due: Mar 20/Voting Period: Apr 9 – May 9
- Cycle 5-2025: Ballot Submission Due: May 8/Voting Period: May 28 – June 27
- Cycle 6-2025: Ballot Submission Due: June 19/Voting Period: July 9 – Aug 8
- Cycle 7-2025: Ballot Submission Due: July 24/Voting Period: Aug 13 – Sep 12
- Cycle 8-2025: Ballot Submission Due: Sept 3/Voting Period: Sept 24 – Oct 24
- Cycle 9-2025: Ballot Submission Due: Oct 1/Voting Period: Oct 21 – Nov 20

https://www.semi.org/en/collaborate/standards/ballots

Standards Publications Report

Cycle	*New*	*Revised*	*Reapproved*	*Withdrawn*
November 2024	2	0	0	0
December 2024	0	11	6	0
January 2025	3	2	4	0

Total in portfolio – 1,098 (includes 356 Inactive Standards)

New Standards

Cycle	*Designation*	*Title*	*Committee*	*Region*
November 2024	SEMI E190	Specification for Equipment Data Publication (EDP)	Information & Control	NA
November 2024	SEMI E190.1	Specification for Common Data for Etch Components	Information & Control	NA
January 2025	SEMI E192	Guide for Equipment Adoption Criteria for GEM and GEM-related Standards	Information & Control	NA
January 2025	SEMI D87	Test Method for Response Time Evaluation of Displays with Variable Refresh Rate	FPD – Metrology	KO
January 2025	SEMI PV102	Guide for Tube PECVD Graphite Boat Materials for Solar Cell Production	Photovoltaic	CH

Connect@SEMI Communities for all SEMI Standards Task Forces *{update}*

- By Feb 2025, all Standards Task Forces shall use Connect@SEMI to host documents that are currently in development.
    - **The ISC Regulations SC recommends to postpone enforcement of implementation until next Regs/PM revision (which is currently aimed to become effective by NA Summer meeting in June)**
    - **Regs SC is working with SEMI to Update both Connect@SEMI and rules so that they are aligned each other**
- Each Standards Task Force will have its own Community Page on Connect@SEMI.
- All program members may log in at: https://connect.semi.org (username and password is same as program membership log-in)

Five-Year Review

- SEMI 3D11-1214 (Reapproved 0420), Terminology for Through Glass Via and Blind Via in Glass Geometrical Metrology
- SEMI 3D10-0814 (Reapproved 0420), Guide to Describing Materials Properties for Intermediate Wafers for Use in a 300 mm 3DS-IC Wafer Stack
- SEMI 3D9-0914 (Reapproved 0420), Guide for Describing Materials Properties for a 300 mm 3DS-IC Wafer Stack
- SEMI 3D12-1020, Guide for Measuring Flatness and Shape of Low Stiffness Wafers

Staff Contact: Laura Nguyen, Lnguyen@semi.org

Attachment: Staff Report Feb 2025 v3_3DP&I

4 Ballot Review

NOTE 1: TC Chapter adjudication on ballots reviewed is detailed in the Audits & Review (A&R) Subcommittee Forms for procedural review. The A&R forms are available as attachments to these minutes. The attachment file name for each balloted document is provided under each ballot review section below.

4.1 Document # 7307, Reapproval of SEMI 3D21-1019, Guide for Describing Glass-Based Material for Use in 3DS-IC Process

- The ballot passed TC Chapter review as balloted. Refer to attachment for ballot adjudication.

Attachment: 7307_ProceduralReview

5 Subcommittee and Task Force Reports

5.1 *Panel Level Packaging (PLP) Panel Task Force*

The PLP Panel TF did not meet at this meeting set. The TF leaders continues to liaise with the PIC PLP activities to ensure both documents don't overlap and complement each other.

Plan to modify 3D20 to include 300x300 mm size for panels (SNARF to be presented at Summer meeting)

5.2 *3DP&I Inspection & Metrology and Bonded Wafer Stacks Task Force*

Task Force Leader Steve Martell (Nordson SONOSCAN) reported for both the 3DP&I Inspection & Metrology and 3DP&I Bonded Wafer Stacks Task Forces. Of note:

- The TF reviewed one ballot, 7307: SEMI 3D22. Refer to § 4 for results.
- The TF reviewed Standards coming up for Five-Year Review and decided to send SEMI 3D9-11 for Reapproval Ballot.
  - SEMI 3D12 Five-Year review will hold off till Summer meetings in June.
- Set up in Connect@SEMI for the new SNARF, *Guide for Peel Testing of RDLs and Other Traces Used within HDI, WLP, and PLPs Structures.*
- Not related to this TF but will plan to prepare a SNARF at Summer Meetings to include 300x300 mm panel sizes to SEMI 3D20 under the PLP Panel TF.
  - Panel sizes for 300x300 mm were brought up from WLP conference discussions last week and 300 mm wafers for film frame FOUPs out of the PIC chapter. Plan to work with the PIC chapter to include warp and weight considerations for 300x300 mm panels.

6 Old Business

6.1 *Upcoming Standards for Five-Year Review*

Motion:	Approve the Reapproval SNARFs for the below and authorize for Letter Ballot in Cycle 3, or 4-2025. • SEMI 3D11-1214 (Reapproved 0420), Terminology for Through Glass Via and Blind Via in Glass Geometrical Metrology • SEMI 3D10-0814 (Reapproved 0420), Guide to Describing Materials Properties for Intermediate Wafers for Use in a 300 mm 3DS-IC Wafer Stack • SEMI 3D9-0914 (Reapproved 0420), Guide for Describing Materials Properties for a 300 mm 3DS-IC Wafer Stack
By / 2nd:	By: Richard Allen / NIST - National Institute of Standards & Technology Second: Steve Martell / Nordson SONOSCAN
Discussion:	None.
Vote:	5-0 in favor. Motion passed.

7 New Business

None

8 Action Item Review

None

9 Next Meeting and Adjournment

9.1 The next meeting is tentatively scheduled for the week of June 2-5, in conjunction with SEMI Standards NA Summer Meetings 2025. Schedule details TBD. Please check www.semi.org/standards for updates.

Adjournment: 13:44.

Respectfully submitted by:

Laura Nguyen

Sr. Coordinator, International Standards

SEMI Global Headquarters

Phone: +1.408.943.7019

Email: lnguyen@semi.org

Minutes tentatively approved by:

Bill Kerr (Evergreen Enhancement), Co-chair	<Date approved>
Chris Moore (Consultant), Co-chair	<Date approved>

Minutes approved by: **3DP&I NA OVTCCM on June 5, 2025.**

Table 13 Index of Available Attachments[#1]

Title	*Title*
SEMI Standards Required Elements	Staff Report Feb 2025 v3_3DP&I.pdf
[2024Fall] 3DP&I NA TC Chapter Meeting Minutes	7307_ProceduralReview
JA 3DP&I_Liaison Report_February 2025_R0_distr	

#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 Laura Nguyen at the contact information above.