BERNSTEIN
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Japan and EU Semiconductors

Japan Semi: Big Thinking on Small Caps (3): Shibaura Mechatronics – Bonding the future



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This report is part of a series of reports on Japan semi small cap companies, which we don't cover but occupy unique positions in the supply chain and potentially benefit from the technology shifts. Investors may find them interesting as the small caps generally trade at lower multiples than large caps, but the growth profile is not necessarily inferior. The focus of the report today is Shibaura Mechatronics (6590.JP, not covered). Also see Japan Semi: Big Thinking on Small Caps (1): Tokyo Seimitsu and Japan Semi: Big Thinking on Small Caps (2): Micronics - Pure play for DRAM expansion.

Shibaura Mechatronics is uniquely positioned as one of the few companies that offers both frontend and backend equipment. As of FY26, 59% of revenue was from front-end (Fine Mechatronics), and 36% from backend (Mechatronics Systems), which is mostly flip-chip bonding. Within front-end, they provide niche products for raw and patterned wafer as well as photomask manufacturing. We find the backend business most attractive with multiple growth drivers such as CoWoS / CoPoS and hybrid bonding, while front end growth may reaccelerate as raw wafer capacity investment picks up.

Sole supplier status in CoWoS may be retained in CoPoS (panel level packaging). Currently, we believe Shibaura is the sole supplier for flip chip Chip-on-Wafer (CoW) process within TSMC's CoWoS package with their TFC-6500 series (including the latest 6500-W with higher throughput). Until recently, the main customer has been TSMC but Shibaura recently obtained a sizable order from OSATs in Q1. We expect CoWoS capacity to continue growing through 2028, before TSMC migrates to panel level packaging (CoPoS), where the same bonder (6500-W) from Shibaura can be used. We believe it's quite plausible for Shibaura to retain the current sole supplier relationship and continue to enjoy the backend tailwind.

Hybrid bonding may become the next growth driver. We think Shibaura could potentially prove to be worthy competition to the current incumbent Besi, as Shibaura's tool TFC-6800 closely matches in specification with Besi's Gen 1.5 hybrid bonder, and has been evaluated at TSMC for quite some time. We forecast logic hybrid bonding TAM will grow ~8.9x over the next 3 years to reach $887mn in 2028, driven by TSMC SoIC capacity growing 8x. If Shibaura takes 20% market share in 2028, it could provide upside of ~ ¥27bn, which amounts to 87% of FY26 backend revenue, or 25% of Bloomberg consensus of FY27 corporate sales of ¥109bn.

Front end tools are more stable and diversified. The company has multiple drivers of revenue within front end — phosphoric acid etching for leading edge processes at TSMC, Samsung and Chinese foundries, single wafer cleaning tools for raw wafer making and photomask cleaning equipment. The diversified and idiosyncratic drivers should deliver a stable source of revenue.

Valuation: The company trades at 15.0x NTM P/E, which is still at +1SD of historical range, but is at a significant discount versus larger cap Japan SPE peers.

See the Disclosure Appendix of this report for required disclosures, analyst certifications and other important information. Alternatively, visit our Global Research Disclosure Website.

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BERNSTEIN TICKER TABLE

			9 Sep 2026		TTM	Reported EPS				Reported P/E (x)	
			Closing	Price	Rel.						
Ticker	Rating	Cur	Price	Target	Perf.	Cur	2025A	2026E	2027E	2025A	2026E	2027E
BESI.NA (Besi)	O	EUR	188.95	320.00	52.1%	EUR	1.66	4.28	6.60	113.8	44.1	28.6
6146.JP (DISCO)	O	JPY	53,580	99,000	6.1%	JPY	1,245.79	1,830.28	2,336.94	43.0	29.3	22.9
6857.JP (Advantest)	O	JPY	33,920	45,800	127.1%	JPY	513.30	948.96	1,088.87	66.1	35.7	31.2
EDME			1,587.18									
JPL			2,635.44									

O - Outperform, M - Market-Perform, U - Underperform, NR - Not Rated, CS - Coverage Suspended

Source: Bloomberg, Bernstein estimates and analysis.

INVESTMENT IMPLICATIONS

We rate Besi (TP=€320.00), Disco (TP=¥99,000) and Advantest (TP=¥45,800) Outperform.

DETAILS

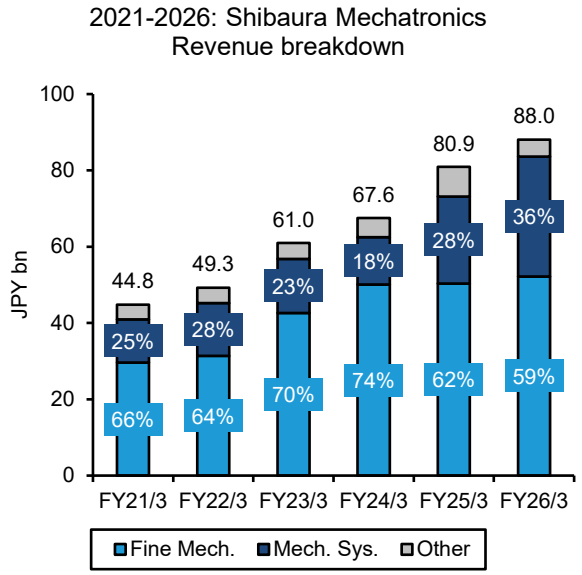
OVERVIEW

Shibaura Mechatronics (6590.JP, not covered) is a semiconductor equipment maker with exposure to both advanced packaging and front-end wafer manufacturing. The company operates through two major semiconductor equipment businesses: Mechatronics Systems, which is primarily backend packaging equipment centered on wafer and die bonding, and Fine Mechatronics, which supplies front-end process tools including phosphoric acid etchers, single-wafer cleaning systems, and photomask cleaning equipment.

While Shibaura has historically participated in both front-end and backend semiconductor capex cycles, we believe the investment case is increasingly driven by its backend packaging franchise. In particular, the company occupies a uniquely strong position in TSMC's (2330.TT, covered by Mark Li) advanced packaging ecosystem through its Chip-on-Wafer (CoW) bonding platform, which today is one of the most capacity-constrained steps within the CoWoS supply chain.

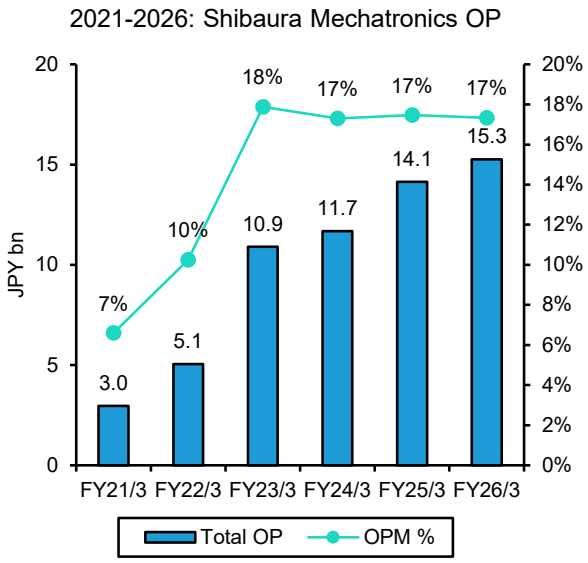
Out of ¥88bn revenue in FY26/3, the frontend contribution was 59% vs. backend with 36% (Exhibit 1). Although this may not seem like much, the latter grew at 59% CAGR since FY24/3, vs. only 2% CAGR of the former. As scale grew, OP margin expanded significantly from 7% in FY21 to 17% in FY26, with OP growing 5x (Exhibit 2).

EXHIBIT 1: **Shibaura Mechatronics: Historical sales breakdown**



Source: Company disclosures, Bloomberg, Bernstein analysis.

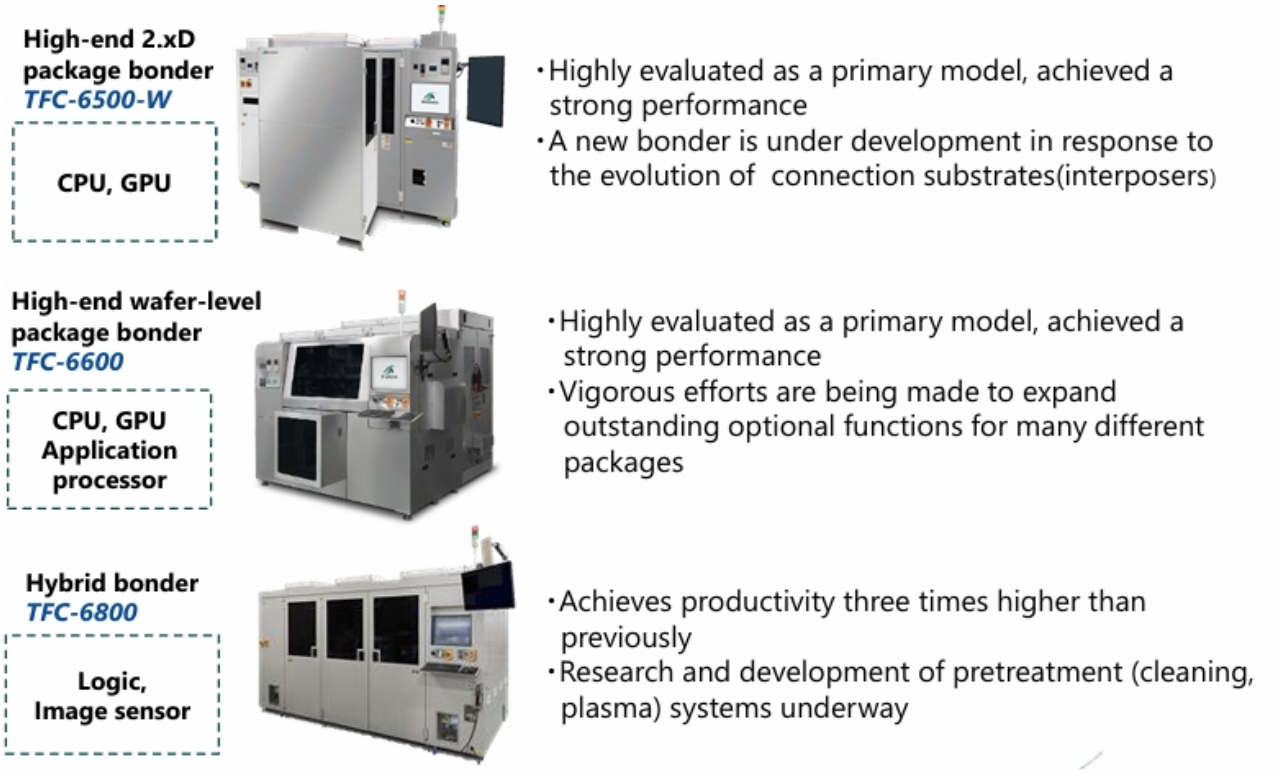
EXHIBIT 2: **Shibaura Mechatronics: Historical OP**



Source: Company disclosures, Bloomberg, Bernstein analysis.

Among the backend equipment, the most important products are the TFC-6500 series — along with the recent addition of TFC-6500-W, the high-throughput variant, as well as the TFC-6600 series (Exhibit 3). These are mass-reflow (MR) flip chip bonders with heavy adoption at TSMC, the former being the mainstay equipment for the chip-on-wafer (CoW) process within the CoWoS package, and the latter being used more for the WMCM (wafer-level multichip module) as well as potentially for some auxiliary use for CoW process. Also, hybrid bonder is being developed for mass production in 2028. In aggregate, flip chip bonders accounted for ¥26.6bn in FY26.

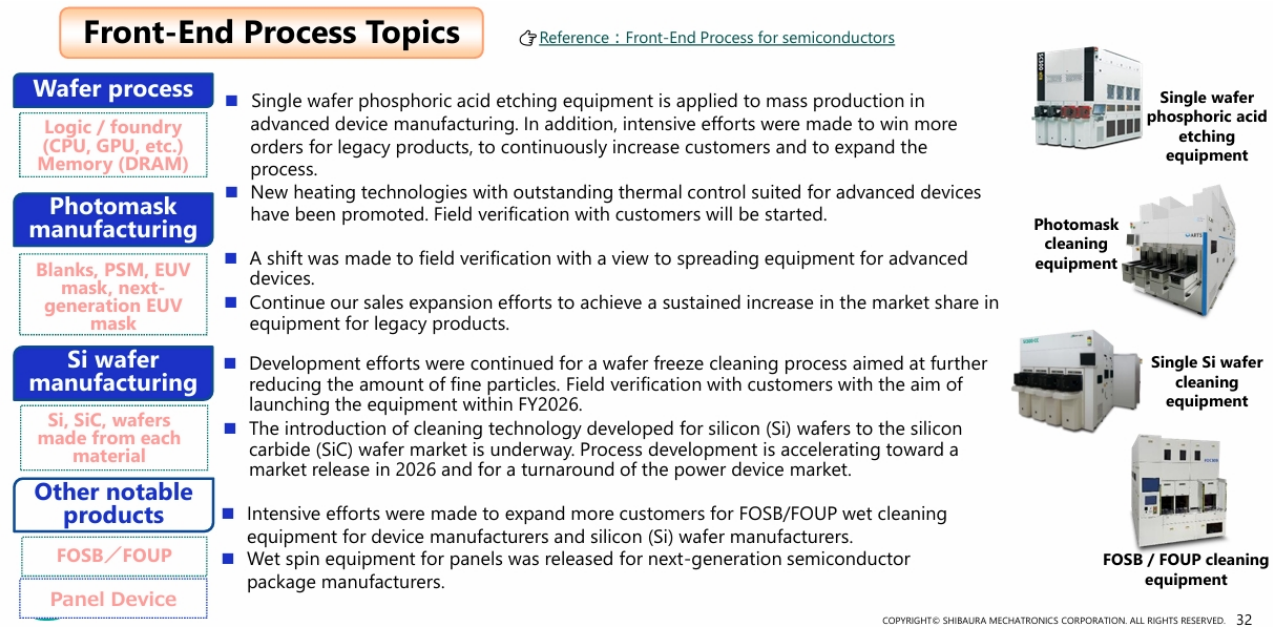
EXHIBIT 3: **Shibaura's bonders are the main growth drivers.**



Source: Shibaura Mechatronics

Alongside backend equipment, Shibaura has solid offerings as well as a stable revenue stream in frontend equipment. As of FY26, the biggest contribution was from phosphoric acid etching with ¥14.9bn, followed by single-wafer cleaning equipment for silicon wafer manufacturing (¥9.2bn), and photomask cleaning equipment for photomask manufacturing (¥3.5bn). These 3 equipments as well as flip chip bonders consist what Shibaura calls "Global Niche Top (GNT)" products, which are in line with their strategy to hold a near-monopolistic position in niche markets.

EXHIBIT 4: **Shibaura's front-end product offerings are somewhat niche, each with unique drivers.**



Source: Company disclosures

FUTURE GROWTH DRIVERS

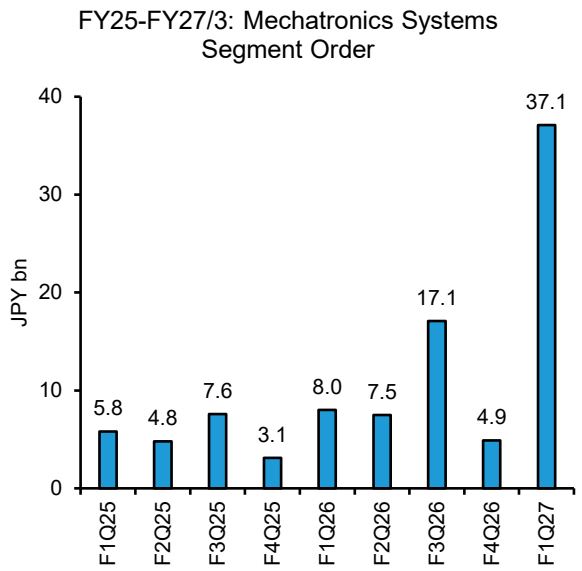
Going forward, we identify three major growth drivers for the company: 1. Continued CoWoS expansion and migration toward CoPoS, 2. Potential entry into the hybrid bonding market, and 3. Longer-term recovery of selected front-end wafer manufacturing tools.

Sole supplier status in CoWoS may be retained in CoPoS (panel level packaging).

Currently, we believe Shibaura is the sole supplier for the flip chip CoW process in TSMC's CoWoS package with the TFC-6500 series which migrated to TFC-6500-W with higher throughput. So far, the main customer has been TSMC but Shibaura obtained a sizeable order from a certain OSAT customer in Q1 (Exhibit 5). Overall, whether from TSMC or from OSATs, we forecast CoWoS capacity to continue growing through 2028 (Exhibit 6). After CoWoS, TSMC is expected to migrate to panel level packaging (CoPoS), where the same bonder (TFC-6500-W) from Shibaura could still be used, and we believe it's possible for Shibaura to retain the sole supplier relationship and continue to enjoy the backend tailwind.



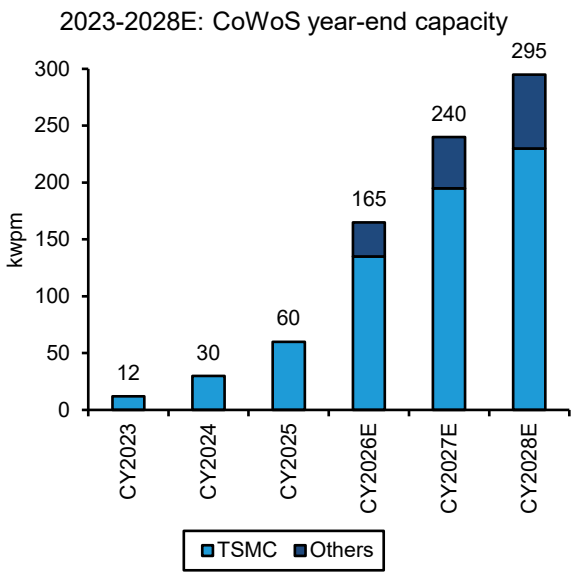
EXHIBIT 5: **Shibaura has seen significant increase in backend order intake.**



Source: Company disclosures, Bernstein analysis.

Add shaded box to show

EXHIBIT 6: **CoWoS capacity is expected to ramp strongly into 2028.**

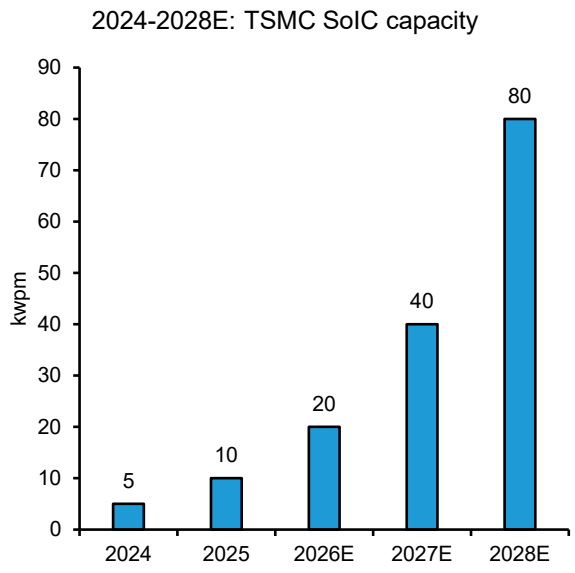


Source: Trendforce, Bernstein estimates and analysis.

Hybrid bonding may become the next growth driver

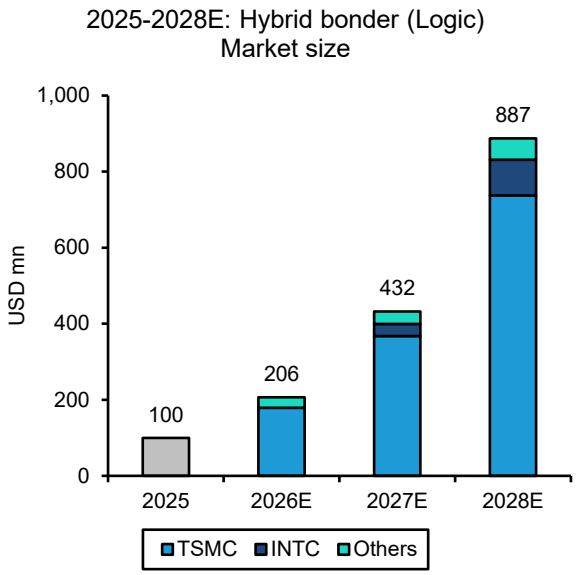
We believe TSMC's hybrid bonding will enable SoIC capacity to grow 8x over the course of the next 3 years, reaching 80kwpm in 2028 (Exhibit 7), and we forecast the logic hybrid bonding TAM to reach $887bn in 2028 (Exhibit 8). Within logic hybrid bonding, we believe Shibaura may prove to be a worthy competitor to Besi. Shibaura has communicated that their hybrid bonders are undergoing evaluation by TSMC, and we believe TFC-6800 matches the specifications for Besi's current Gen 1.5 (Exhibit 9). Within our hybrid bonding model, we assume 80% overall market share for Besi in 2028, as it's possible that Shibaura passes qualification by then and gains share. If Shibaura gets 20% share in 2028, this could amount to ~¥27bn, which is 87% of its backend revenue in FY 26/3, or 25% of Bloomberg consensus corporate revenue for FY27/3.

EXHIBIT 7: **We expect TSMC's capacity to grow rapidly to 80kwpm in 2028.**



Source: Company disclosures, Bernstein estimates and analysis.

EXHIBIT 8: **As a result, we expect logic hybrid bonder TAM to reach $887mn in 2028.**



Source: Company disclosures, TechInsights, Bernstein estimates and analysis.

EXHIBIT 9: **Shibaura seems to have a competitive hybrid bonder under development.**

Company	Product	Placement accuracy (nm)	UPH [1]
	TFC-6700	200	1,000
	TFC-6800	100	3,000
Besi	Gen. 1	150-200	1,500-2,000
Besi	Gen. 1.5	100	1,800-2,000
Besi	Gen. 2	50	2,300-3,000

1. UPH is per catalog specifications and may not reflect actual UPH in practice.
Source: Company disclosures, Bernstein estimates and analysis.

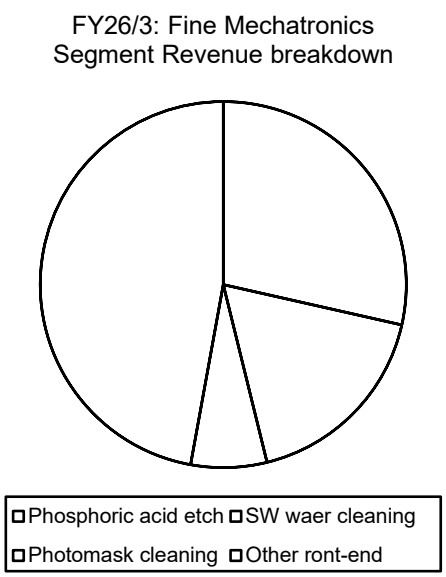
Front-end tools provide stable revenue stream

For the front-end, Fine Mechatronics segment has three key drivers of revenue — which Shibaura designates as the "GNT" products, which in aggregate account for 53% of segment revenue (Exhibit 10). The largest in size is phosphoric acid etching with ¥15bn revenue as of FY26 — used for leading edge logic processes at TSMC, Samsung as well as Chinese foundries.

Single wafer cleaning tools accounted for ¥9bn last FY and are used for raw wafer making and should be weak for the next two years but should resume growth again from 2028 as we anticipate another round of raw wafer capacity expansion. Photomask cleaning accounted for only ¥3.5bn last year, but we believe this equipment should be structurally growing as we forecast wafer mask TAM to grow at 18% CAGR over the next 3 years (Exhibit 11). We believe these idiosyncratic streams of revenue each with

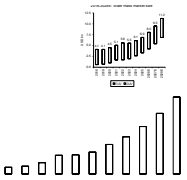
different drivers of investment could, as a whole, deliver a stable source of revenue for the front-end segment.

EXHIBIT 10: **Three GNT products accounted for 53% of total front-end.**



Source: Company disclosures, Bernstein analysis.

EXHIBIT 11: **We forecast wafer mask TAM to grow at 18% CAGR over the next 3 years.**

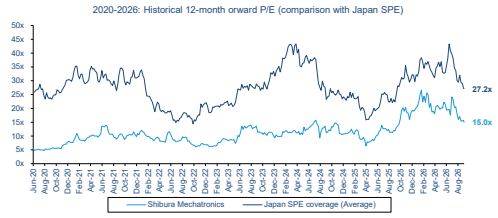


Source: Company disclosures, Bernstein estimates and analysis.

VALUATION

Shibaura Mechatronics currently trades at 15.0x NTM P/E, and the current P/E is slightly below +1SD of 7-year historical range, although it is still at a significant discount to larger peers (Exhibit 12, Exhibit 13).

EXHIBIT 12: **Shibaura Mechatronics is trading well below the average of Japanese large-cap SPE peers.**



Source: Bloomberg, Bernstein analysis.

EXHIBIT 13: **SPE comparable companies trading multiples**

	P/E			P/B		
	FY+1	FY+2	FY+3	FY+1	FY+2	FY+3
Japan Semiconductor coverage						
SPE						
Advantest	64.0x	34.5x	30.1x	30.2x	30.2x	15.8x
DISCO	44.1x	29.0x	23.0x	10.2x	8.2x	6.7x
Tokyo Electron	43.7x	32.4x	20.8x	12.1x	10.3x	8.6x
Lasertec	38.0x	27.5x	23.3x	11.9x	9.4x	7.7x
Screen	27.8x	23.6x	17.8x	5.3x	4.4x	3.7x
Kokusai	63.8x	41.0x	31.6x	8.9x	7.7x	6.7x
Average	**46.9x**	**31.3x**	**24.4x**	**13.1x**	**11.7x**	**8.2x**
Global Semiconductor						
WFE Peers						
ASML	39.5x	28.7x	22.3x	22.0x	15.9x	11.7x
Applied Materials	36.2x	25.1x	19.8x	14.3x	11.3x	9.1x
KLA	33.5x	26.7x	22.6x	19.9x	14.2x	10.5x
Lam Research	34.1x	27.5x	22.7x	23.1x	18.3x	12.0x
ASMI	36.1x	27.6x	22.8x	8.3x	6.7x	5.4x
WFE Average	**35.9x**	**27.1x**	**22.0x**	**17.5x**	**13.3x**	**9.8x**
Backend Peers						
Teradyne	42.9x	33.0x	25.6x	15.9x	12.9x	9.8x
BESI	43.2x	28.9x	21.9x	22.6x	17.1x	13.6x
ASMPT	40.1x	27.6x	21.4x	3.9x	3.4x	3.1x
TechnoProbe	54.2x	36.9x	29.3x	11.6x	8.9x	6.9x
FormFactor	37.0x	29.1x	25.9x	n.a.	n.a.	n.a.
Tokyo Seimitsu	21.4x	17.2x	15.2x	3.2x	2.9x	2.6x
MJC	21.1x	16.8x	13.3x	6.0x	4.7x	3.7x
Shibaura Mechatronics	**17.1x**	**13.0x**	**9.1x**	**3.8x**	**3.0x**	**2.3x**
Towa	19.4x	14.8x	12.2x	2.1x	1.9x	1.7x
JEM	13.2x	12.5x	11.3x	n.a.	n.a.	n.a.
Backend Peers Average	**31.0x**	**23.0x**	**18.5x**	**8.6x**	**6.8x**	**5.5x**

Price as of 9 Sep, 2026
Source: Bloomberg, Bernstein analysis

COMPANY PROFILE

Company history

Shibaura Mechatronics was **founded in 1939** as Shibaura Kyomachi Seisakusho, initially producing military munitions. Key milestones include:

- **1980s:** Entered wet cleaning equipment in 1986 with systems for LCD panels, subsequently applying the technology to semiconductor wafer cleaning
- **1990s:** Merging with Tokuda Seisakusho in 1991, company added chemical dry etching and sputtering technologies. Also, in 1998, they merged with Toshiba Mechatronics who then produced die bonders and TAB mounted devices, adopting the current Shibaura Mechatronics name
- **2020s:** Semiconductor equipment became company's core business, led by single wafer silicon wafer cleaning equipment as well as phosphoric acid etching

Management

President and CEO: Keigo Imamura

- Imamura joined Toshiba in April 1985 and Shibaura Mechatronics in August 1996. He became General Manager of the Bonder Department in 2009 and subsequently held senior positions across production, procurement, Mechatronics Systems, and Fine Mechatronics. He became Executive General Manager of Fine Mechatronics in 2019 and was appointed President and CEO in June 2021.

Executive VP, Head of Fine Mechatronics: Yoshiaki Kurokawa

- Kurokawa joined Shibaura in 1988, and oversaw technology and management roles within Fine Mechatronics. He now leads the front-end division since 2021.

Executive VP, Head of Mechatronics Systems: Kazutoshi Horiuchi

- Horiuchi joined Shibaura in 1993, and oversaw sales and marketing divisions before being appointed to lead the back-end division since 2022.

Shareholders

Shibaura Mechatronics' top 10 shareholders (Exhibit 14) are well distributed among institutional investors, without major notable holdings from corporate shareholders and/or cross shareholdings like some of the other Japanese peers, and no major individual shareholders.

EXHIBIT 14: **Top 10 shareholders.**

#	Shareholder	(%)
1	Capital Group Co	8.22%
2	Morgan Stanley	6.74%
3	Shibaura Mechatronic	5.90%
4	Shin-Etsu Engineering	5.58%
5	State Street Corp	5.35%
6	Nomura Holdings Inc	4.33%
7	Sumitomo Mitsui Trust	4.14%
8	Vanguard Group Inc	3.67%
9	MSCO Customer Securities	3.08%
10	Norges Bank	2.91%
	% Individual:	**2.02%**

Source: Bloomberg, Bernstein analysis.

I. REQUIRED DISCLOSURES

References to "Bernstein" or the “Firm” in these disclosures relate to the following entities: Bernstein Institutional Services LLC (April 1, 2024 onwards), Sanford C. Bernstein & Co., LLC (pre April 1, 2024), Bernstein Autonomous LLP, BSG France S.A. (April 1, 2024 onwards), Sanford C. Bernstein (Hong Kong) Limited 盛博香港有限公司, Sanford C. Bernstein (Canada) Limited, Sanford C. Bernstein (India) Private Limited (SEBI registration no. INH000006378), Sanford C. Bernstein (Singapore) Private Limited, Sanford C. Bernstein Japan KK（サンフォード・C・バーンスタイン株式会社）and analysts employed by Société Générale Africa Technologies & Services to produce Bernstein research under a Global Services Agreement in place between Bernstein and Société Générale.

Bernstein is part of a joint venture between Société Générale (SG) and AllianceBernstein, L.P. (AB). Unless specifically noted otherwise, for purposes of these disclosures, references to Bernstein’s “affiliates” relate to both SG and AB and their respective affiliates.

VALUATION METHODOLOGY

BE Semiconductor Industries NV

For Besi, we set a €320 price target using a P/E multiple of 40x against our forward Q5-Q8 EPS estimate.

Disco Corp

We set a price target of ¥99,000 using a P/E multiple of 40x against our forward Q5-Q8 EPS estimate.

Advantest Corp

We set a price target of ¥45,800 using a P/E multiple of 40x against our forward Q5-Q8 EPS estimate.

RISKS

BE Semiconductor Industries NV

Downside risks to our price target for Besi include short-term — lower than expected or delayed adoption of hybrid bonding and a prolonged delay in the recovery of the mainstream assembly market — losing market share in hybrid bonding or lack of take-up of Besi’s TCB offering.

Disco Corp

There are a number of downside risks to our DISCO target price: (1) Overcapacity of AI-related production such as GPUs and HBM resulting in both multiple contraction and earning power (2) Changes in competitive environment (3) Unfavorable exchange rate fluctuation with downside risk to its revenue.

Advantest Corp

There are a number of downside risks to our Advantest target price: (1) End demand of AI-related production such as GPUs and HBM resulting in both multiple and earning power fluctuations (2) Changes in competitive environment (3) Exchange rate fluctuation.

RATINGS DEFINITIONS, BENCHMARKS AND DISTRIBUTION

EQUITY RATINGS DEFINITIONS

Bernstein brand

The Bernstein brand rates stocks based on forecasts of relative performance for the next 12 months versus the S&P 500 for stocks listed on the U.S. and Canadian exchanges, versus the Bloomberg Europe Developed Markets Large and Mid Cap Price Return Index EUR (EDME) for stocks listed on the European exchanges and emerging markets exchanges outside of the Asia Pacific region, versus the Bloomberg Japan Large and Mid Cap Price Return Index USD (JPL) for stocks listed on the Japanese exchanges, and versus the Bloomberg Asia ex-Japan Large and Mid Cap Price Return Index (ASIAX) for stocks listed on the Asian

(ex-Japan) exchanges -unless otherwise specified.

The Bernstein brand has three categories of ratings:

- Outperform: Stock will outpace the market index by more than 15 pp
- Market-Perform: Stock will perform in line with the market index to within +/-15 pp
- Underperform: Stock will trail the performance of the market index by more than 15 pp

Coverage Suspended: Coverage of a company under the Bernstein research brand has been suspended. Ratings and price targets are suspended temporarily, are no longer current, and should therefore not be relied upon.

Not Rated: A rating assigned when the stock cannot be accurately valued, or the performance of the company accurately predicted, at the present time. The covering analyst may continue to publish research reports on the company to update investors on events and developments.

Not Covered (NC) denotes companies that are not under coverage.

Bernstein brand stock ratings are based on a 12-month time horizon.

Autonomous brand – common stocks

The Autonomous brand rates common stocks as indicated below. As our benchmarks we use the Bloomberg Europe 600 Financials Price Return Index (E600BK) and Bloomberg Europe Dev Mkt Financials Large and Mid Cap Price Ret Index EUR (EDMFI) index for developed European banks and Payments, the Bloomberg Europe 600 Insurance Price Return Index (E600IN) for European insurers, the S&P 500 and S&P Financials for US banks and Payments coverage, S5LIFE for US Insurance, the S&P Insurance Select Industry (SPSIINS) for US Non-Life Insurers coverage, the Bloomberg Emerging Markets Financials Large, Mid and Small Cap Price Return Index (EMLSF) for emerging market banks and insurers and Payments, and the Bloomberg Japan Financials Large & Mid Cap Price Return Index (JPFILM) for Japanese Financials. Ratings are stated relative to the sector (not the market).

The Autonomous brand has three categories of common stock ratings:

- Outperform (OP): Stock will outpace the relevant index by more than 10 pp
- Neutral (N): Stock will perform in line with the market index to within +/-10 pp
- Underperform (UP): Stock will trail the performance of the relevant index by more than 10 pp

Coverage Suspended: Coverage of a company under the Autonomous research brand has been suspended. Ratings and price targets are suspended temporarily, are no longer current, and should therefore not be relied upon.

Not Rated: A rating assigned when the stock cannot be accurately valued, or the performance of the company accurately predicted, at the present time. The covering analyst may continue to publish research reports on the company to update investors on events and developments.

Those denoted as 'Feature' (e.g., Feature Outperform FOP, Feature Under Outperform FUP) are our core ideas.

Not Covered (NC) denotes companies that are not under coverage.

Autonomous brand common stock ratings are based on a 12-month time horizon.

Autonomous brand – preferred stocks

The Autonomous brand has three categories of preferred stock ratings:

- Outperform (OP): The total return of the preferred instrument is expected to outperform preferred securities of other issuers operating in similar sectors or rating categories over the next six months.
- Neutral (N): The total return of the preferred instrument is expected to perform in line with preferred securities of other issuers operating in similar sectors or rating categories over the next six months.

- Underperform (UP): The total return of the preferred instrument is expected to underperform preferred securities of other issuers operating in similar sectors or rating categories over the next six months.

Autonomous preferred stock ratings are based on a 6-month time horizon.

AUTONOMOUS CREDIT RESEARCH

Where this report contains investment recommendations for credit instruments, as defined in article 3(1)(35) of the Market Abuse Regulation, the information below is presented to comply with its disclosure requirements.

The report may also include reference(s) to published opinions by other Autonomous or Bernstein analysts covering the equity securities of the issuer(s) referenced herein. Please note an investment recommendation for credit instruments published by the author(s) of this report may differ from the published view of the analyst covering equity securities for the issuer(s) contained in this report and vice versa.

CREDIT RATINGS DEFINITIONS

The Autonomous brand has three categories of credit ratings:

- Credit Outperform (C-OP): The total return of the Reference Credit Instrument is expected to outperform the credit spread of bonds of other issuers operating in similar sectors or rating categories over the next six months.
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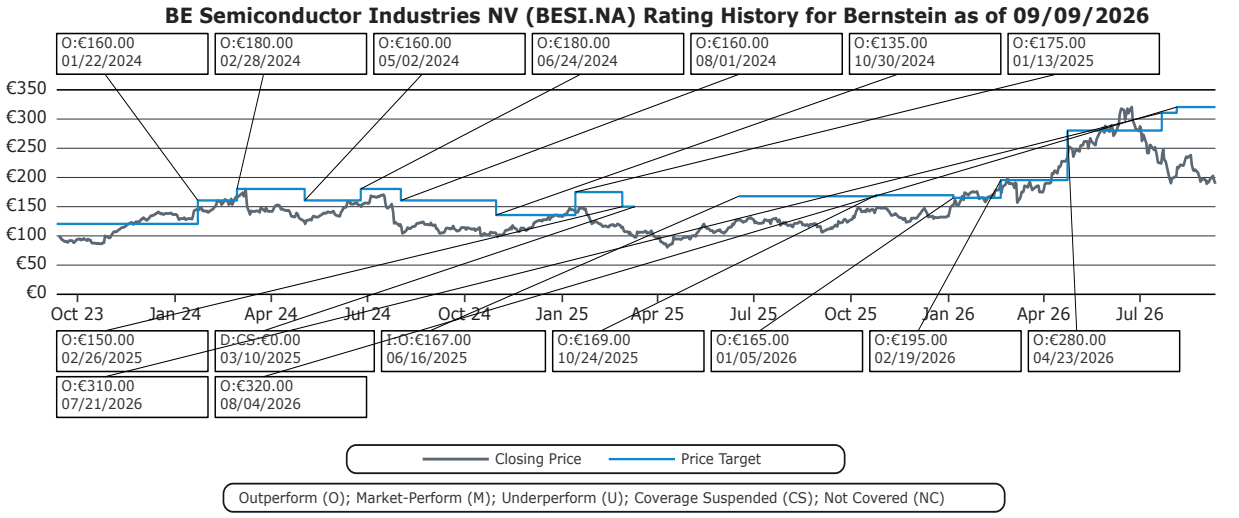
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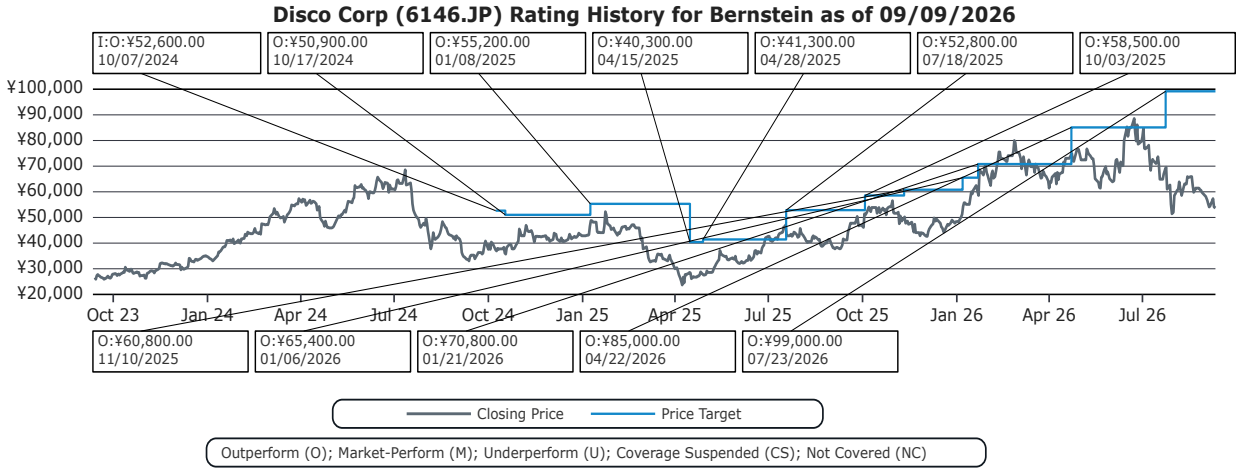
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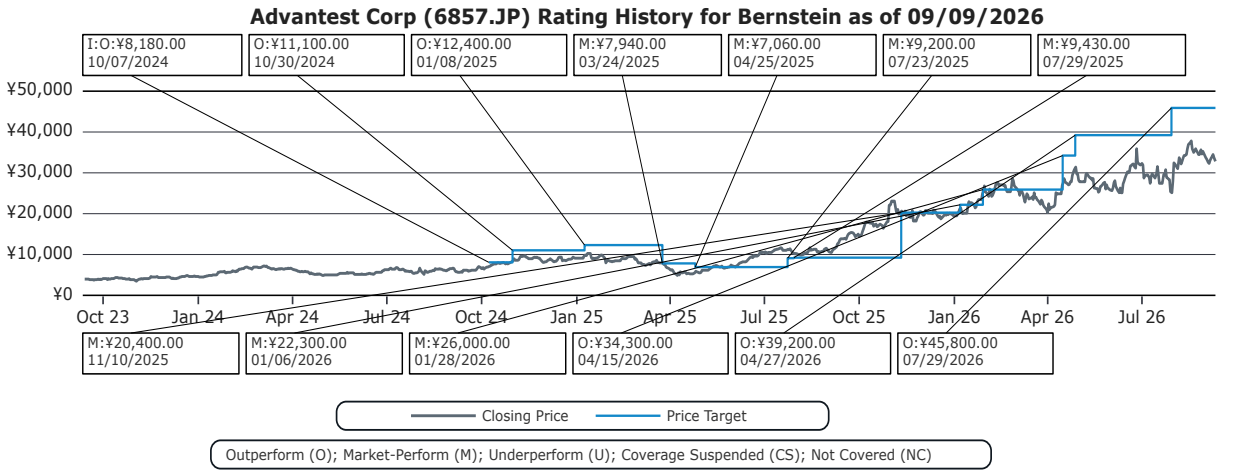
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