Post CNY Reality Check, Taiwan, Korea, Japan 24th Feb – 7th Mar

Asia Tech

Navigating The Noise

Peter Vogel
Global Tech Product Specialist

+1 929 446 3516 (w)
+1 646 703 3211 (m)

peter@newstreetresearch.com

Taiwan: 24th - 27th March

Company	Sector
TSMC (2330 TT) : $860bn	Foundry: Leading Edge
Hon Hai (2317 TT) : $77bn	EMS: Smartphones / Server / EV
MediaTek (2454 TT) : $76bn	SP AP / WiFI / ASIC's
Accton (2345 TT) : $13bn	Comm Networking: Switch / NIC
Asia Vital (3017 TT) : $7bn	Thermal Components / Chassis
Lotes (3533 TT) : $6bn	CPU Socket / Connectors
Jentech (3653 TT) : $6bn	Heat Sink for GPU / CPU
Inventec (2356 TT) : $5bn	NB / Server ODM
ASPEED (5274 TT) : $4bn	Fabless IC: Server Management
Gigabyte (2376 TT) : $5bn	Server OEM for Tier 2 CSP/Enterprise
Acer (2353 TT) : $4bn	NB OEM
Nan Ya PCB (8046 TT) : $3bn	IC Substrate
Sinbon (3023 TT) : $2bn	Connectors
All Ring (6187 TT) : $1bn	CoWoS Equipment
Chenbro (8210 TT) : $1bn	Server Chassis
WinWay (6515 TT) : $1bn	IC Test Socket
Elan (2458 TT) : $1bn	NB Touchscreen & IC's
Grand Process (3131 TT) : $1bn	CoWoS Equipment

Korea: 28th March

Company	Sector
Samsung (005930 KS) : $232bn	DRAM / NAND / SP / TV
Sk Hynix (000660 KS) : $107bn	DRAM / NAND
Wonik Ips (240810 KS) : $1bn	SPE: Deposition & Etch

Japan 3rd to 7th March

Company	Sector
Tokyo Electron (8035 JT) : $77bn	Deposition / Etch
Hoya (7741 JP) : $44bn	EUV Masks
Advantest (6857 JT) : $47bn	ATE
Renesas (6723 JP) : $31bn	Analog IC's
Ajinomoto (2802 JP) : $21bn	ABF Film for IC Substrates
NIDEC (6594 JP) : $21bn	Precision Motors
Kyocera (6971 JP) : $17bn	MLCC's & Ceramic Components
Ebara (6361 JP) : $8bn	Ebara (6361 JP)
SCREEN (7735 JP) : $7bn	SPE: Cleaning
Minebea Mitsumi (6479 JP) : $7bn	Ball Bearings / Electronic Components
Fuji Electric C (6504 JP) : $7bn	Power electronics & electronic devices
Shinko Electric (6967 JP) : $5,239mn	IC Substrates
Mitsubishi Gas C (4182 JP) : $4bn	Specialty chemicals & advanced materials
NHK Spring Co (5991 JP) : $3bn	Auto & Semi Components
SUMCO C (3436 JP) : $3bn	Silicon wafers
Ibiden (4062 JP) : $3bn	IC Substrates
Socionext (6526 JP) : $2bn	ASIC Design
Hirata Corp (6258 JP) : $339mn	Auto & Semi Production Equipment

Sales

Heather Broffman
heather@newstreetresearch.com

Ethan Lacy
ethan.lacy@newstreetresearch.com

Daniel Gilroy
daniel.gilroy@newstreetresearch.com

Michael Chambers
michael@newstreetresearch.com

Dimitri Livchits
dimitri@newstreetresearch.com

Mark Franks
mark@newstreetresearch.com

Anthony Ferri
anthony.ferri@newstreetresearch.com

Table of contents

Themes: Pages 2 – 5

Taiwanese Companies: Pages 6 – 58

South Korean Companies: Pages 59 - 72

Japanese Companies: Pages 73 - 116

Themes / Tidbits / Quick Notes

NVDA dominates supply chain; does this freeze CSP out of key technology; is the cost prohibitive for others as they are not raking in the same $$'s

Blackwell B200 small vols 4Q 24 / B300 higher vols 2H 25; customers await customizable CPU/GPU solutions | B300 design changes vs. GB200 | smaller GB200?

Hopper how much does this decline in '25

Data Center & Power capacity impact to Tier 2 CSP

ASIC visibility for CSP ramps | GOOG TPU | AMZN Inferentia | MSFT Maia, Cobolt | META MTIA

Server BMC content changes with Ruben; discussion that redundant components may be eliminated

AI PC 30%-40% penetration '25? Seems HIGH | CPU, NPU, Thermal, larger substrates | 2x analog IC content | Government tenders | CoWoS adoption in NB's |

AI SP 30% penetration | drives memory content, thermal

HBM Samsung's ability to catch up | Demand from CSP AI ASIC's | customized solutions

CoWoS does capacity come online quick enough and is there enough for Non NVDA | will TSM build CoWoS capacity in Arizona

Co packaged optics certain TSM & NVDA suppliers see this in '26, but most think its '28

iPhone 17 form factor changes: Camera, new casing materials, vapor chamber or heat pipe

AI how are companies using AI internally for their own businesses: R&D or manufacturing.

Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Themes / Tidbits / Quick Notes, cont.

Localization how much production can and will be moved to the US; narrative vs. reality

China Manufacturing WUS & Shengyi continue to sell PCB's into NVDA et al for AI applications; when does $ or supply matter more than geopolitics

AMD trends for Mi300x & Mi400; are they building traction in edge AI or inference

Inventory DIO's 20 days above | Elevated: Thermal, OSAT, RF, AI | Lean(er): Smartphones, PCB, PC, Auto

Pull forward of demand certain supplier saw 1Q 25 demand pulled into 4Q '24; is this isolated event or more widespread

IC Test Socket Elastomer vs. Pogo Pins important for ISC Co (095340 KS) and Winway (6515 TT)

Over configuring power & thermal has been mentioned with not a lot of 'why'

Thermal components vs. full solutions; Hon Hai, Delta, Vertiv vs. Auras, Asia Vital, Cooler master | demand outstrips supply for certain components | manufacturing bottlenecks are also a headwind

DeepSeek chatter and sentiment

Panel Level Packaging target applications (mainstream vs. advanced?) timing of adoption | new equipment requirements | standards on panel size | '27 story for certain suppliers

Glass core packaging timing of adoption | new equipment requirements | standards on panel size

Server CPU socket if Jentech (3653 TT) qualifies at INTC, impact for Lotes (3533 TT)

Exposure by Theme

AI & Data center Aspeed | Inventec | Winway | Hon Hai | Jentech | Grand Process | Chenbro | TSMC | MinebeaMitsumi | Renesas | Asia Vital | Hynix | Samsung | NHK Spring | Nidec |

AI ASIC MediaTek | Socionext | TSMC | WinWay | All Ring | Jentech | Grand Process

Switch Accton | Nan Ya PCB | Aspeed | WinWay | Shinko | Inventec (small) | Socionext

Server Aspeed | Inventec | Hon Hai | Jentech | Grand Process | Chenbro | SUMCO | Gigabyte | Nan Ya PCB | Lotes | Acer | Asia Vital | Hynix | Samsung | Ibiden | Shinko | Nidec | Rohm

CoWoS All Ring Tech | Grand Process | TSMC | Ebara | MediaTek

HBM TSMC | Inventec | Winway | Grand Process | Hynix | Samsung | Tokyo Electron | Renesas

Co packaged Optics Winway | Ibiden | Shinko | All Ring Tech | Grand Process |

SPE Wonik | Grand Process | All Ring Tech | Tokyo Electron | Ebara | SCREEN | Hirata

Foundry TSMC

Exposure by Theme, cont.

Advanced Packaging Nan Ya PCB | TSMC | All Ring | Jentech | Grand Process | Mitsui Chemicals | Ebara | Hirata | Shinko | Kyocera | Ibiden

DRAM Samsung | Hynix | Lotes | SUMCO | Renesas | Wonik | Tokyo Electron | Ulvac | Shinko | Advantest

NAND Samsung | Hynix | Lotes | Shinko | Advantest | Wonik | Tokyo Electron | Ulvac | Advantest

Thermal Hon Hai | Gigabyte | Asia Vital | Inventec | Winway | All Ring | Jentech | Mitsui Chemicals | Shinko

PCB Nan Ya PCB | Sinbon | Mitsui Chemicals | Mitsubishi Gas Chemical

IC Substrate Nan Ya PCB | Ajinomoto | Ibiden | Nan Ya PCB

Smartphone TSMC | Hon Hai | MediaTek | WinWay | Samsung | Hynix | Advantest | MinebeaMitsumi | Shinko | SUMCO | Rohm | Mitsubishi Gas Chem

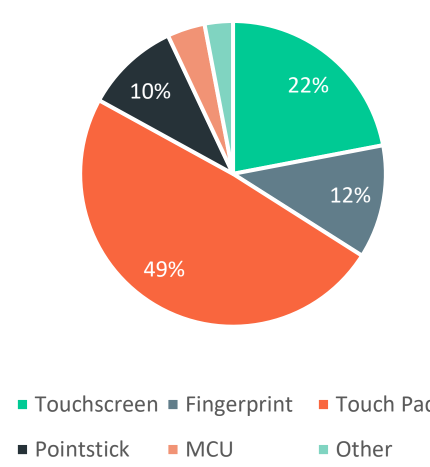
PC Elan | Hon Hai | Inventec | Asia Vital | Gigabyte | Acer | Nan Ya PCB | Lotes | Jentech | Renesas

Auto Hirata | Nan Ya PCB | TSMC | Realtek | Winway | Hon Hai | Jentech | Lotes | Asia Vital | Sinbon | Samsung | Ibiden | Mitsui Chemicals | Socionext | NHK Spring | Kyocera | Nidec | Rohm | MinebeaMitsumi | SUMCO | Renesas

SiC Hon Hai | Ibiden | Hirata | NHK Spring | Rohm | Renesas

Elan (2458 TT, 148 TWD) EV 1.3 US$bn Yield 4.8% ADVT 11 $mn
Fabless IC: Touch | Touchpad | Touchscreen | Fingerprint Sensor

Sales Mix



Company Overview

Stats
- NB Touch: 45-50% share
- 60% Consumer / 40% Commercial

Touchpad
- 45% GM's
- Content growth from Palm Rejection | Haptic | Area

Touchscreen
- Growing due to AI PC
- 60% or > GM's
- 10% content growth / year subject to macro conditions
- Content growth from Pen Track Prediction / Palm Rejection / Power saving / Gesture Recognition

Fingerprint Sensor
- 35-40% GM's depending if IC or Module
- #2 share in NB

Other
- MCU: 47-48% GM's

Competitors
- Touchpad: SYNA | Egalax | Alps | Goodix
- Touchscreen: Wacom, using proprietary protocol

Customers

ALL PC Brand & ODM EX AAPL

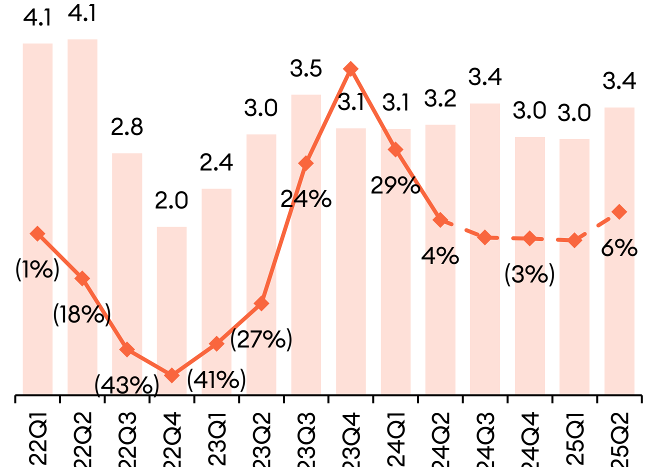
Supply Chain
- UMC (main), TSM, Hynix (Key)

Key Topics / Questions

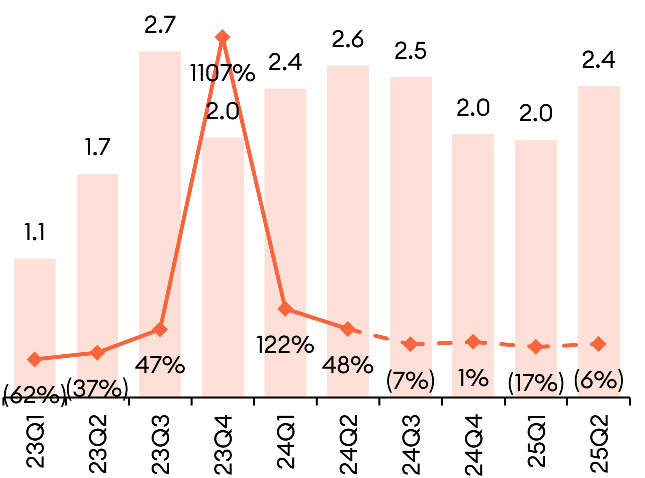
- Key to Elan is NB Unit growth & content growth
- Revenue growth should turn positive and accelerate in 2H 22
- NB replacement cycle expected in '25
- AI Impact: Touch IC itself is not impacted, UNLESS customers shift to higher mix IC's/Devices
- Economic Model: return to '21 peak EPS (ASP or Mix driven)
- Content growth for major product categories
- Inventory below median, any re-stocking activity
- Estimates have been crept down in '24 as PC growth disappointed; stable since 2H 24
- Margins: higher Touchscreen & content growth should help. Supply Chain costs easing?

Elan (2458 TT)

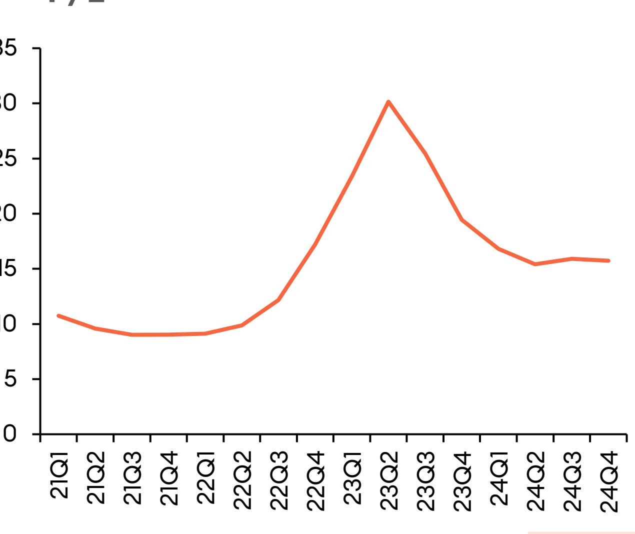
Revenue (TWD$bn)



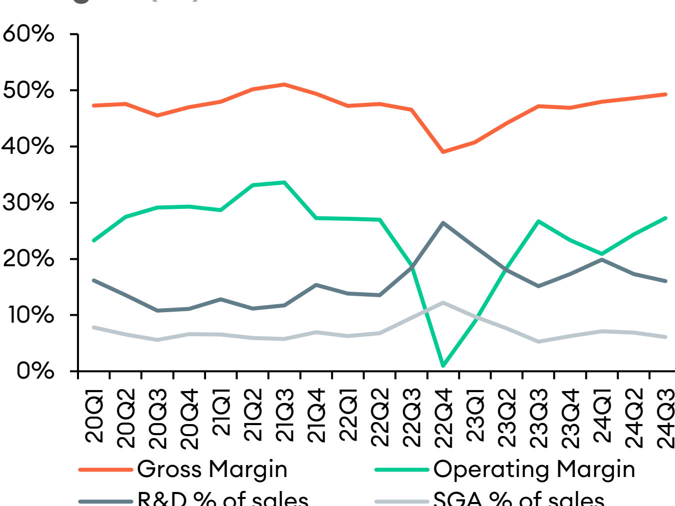
EPS (TWD)



P/E

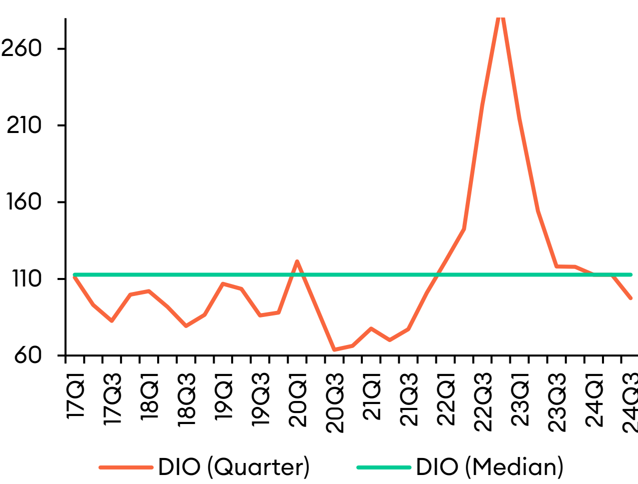


Margins (%)



Relative Performance (last 2 years)

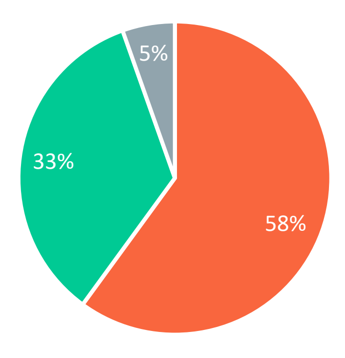
DIO (days)

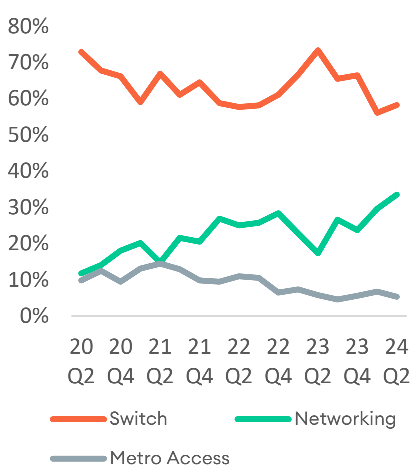


Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Accton (2345 TT, 542 TWD) EV 8.9 US$bn Yield 1.8% ADVT 53 US$m
Description EMS / ODM / JDM for switch, wireless gateway, accelerators

Sales Mix





Company Overview

Description
- White box switch vendor/ customized solutions for Data Center

Applications
- EMS: Switch / Wireless
- ODM: Switch / Wireless
- JDM Switch / Wireless / Accelerator / AI Engine / Smart Appliance / Fabric Switch
- Open Networking Solution: Whitebox / OCP / Communitiy SONiC / 3rd Party software

Customers
- AMZN | HPE | JNPR
- META: 50 engineers working/testing hope for good news in '25
- NA 70% of sales | BAT 2-3%

Competition
- CSCO
- ANET: MSFT is top customer, also META
- NVDA (Mellanox)
- CLS: EMS for GOOG | CSCO | DELL
- Delta: switch yes, CSP no

Key Topics / Questions

- Growth accelerated in 2Q 24 and forecast strong through '26; what are the key drivers
- Inventory has been growing much faster vs. revenue, suggesting a ramp
- Building internal cooling & transceiver team. Helped design TSM's internal cooling
- Evolution of CSP's with internal ASIC's and what that means for networking side and Accton
- Discuss how W/B switch biz is evolving; more involvement in power supply, cooling, other?
- Does switching provide a solution for non-NVDA to compete with larger GPU clusters that require more networking?
- NVDA Spectrum-X

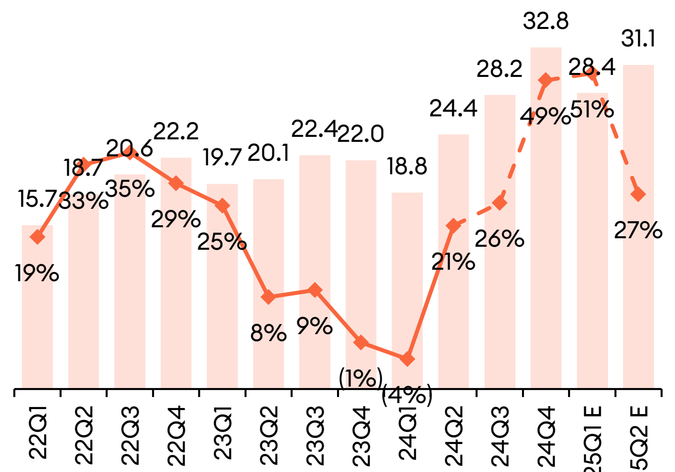
Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Accton (2345 TT) Cont.

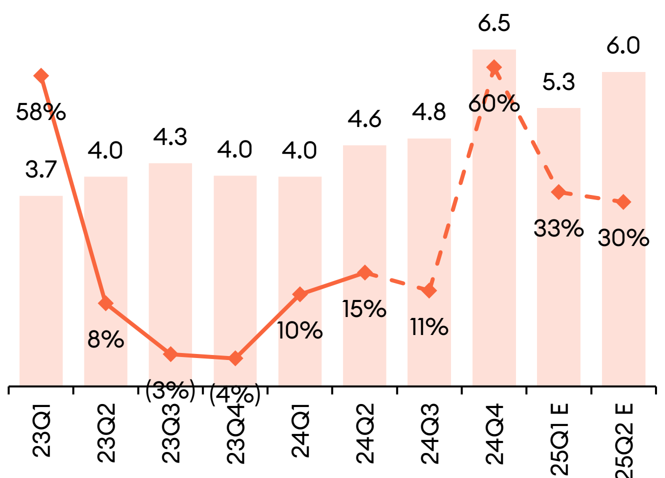
- **CoWoS: AMZN is not a priority** for TSM: NVDA, TSLA, AAPL get higher allocation.
- **Liquid Cooling:** what is their role here longer term; will they make solutions, or just 'helping' TSM or others.
- **Co packaged optics:** roadmap discussion; what are the key bottlenecks; price, heat
- **DriveNets: Israeli based s/w for cloud networking;** AT&T is customer. Are you just the hardware supplier or do you benefit from access to their software capabilities
- **800 gig ramp:** will be slower than most think expensive, lack of CoWoS capacity
- **Networking segment is up 4x:** what is driving this.
- **ANET has grown revenue 25% CAGR last 11 years vs. 17% for Accton;** in '15, Accton revenue was 90% of ANET and today its down to 45%.
- **Manufacturing:** CSP stays in Taiwan | ODM moves to Vietnam

Accton (2345 TT)

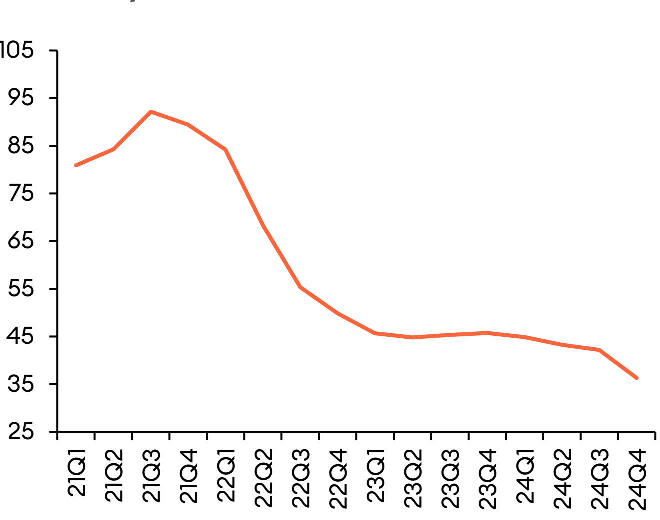
Revenue (TWD$bn)

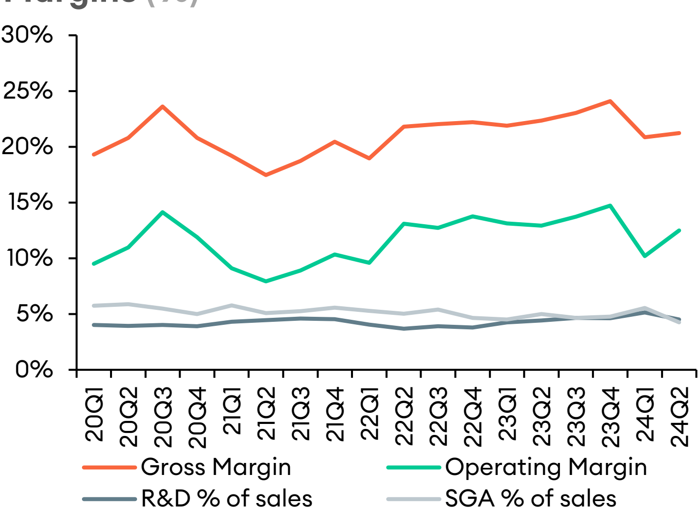


EPS (TWD)

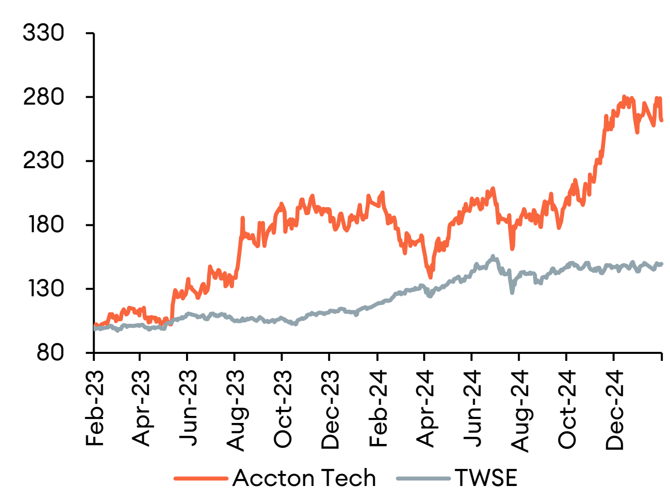


P/E

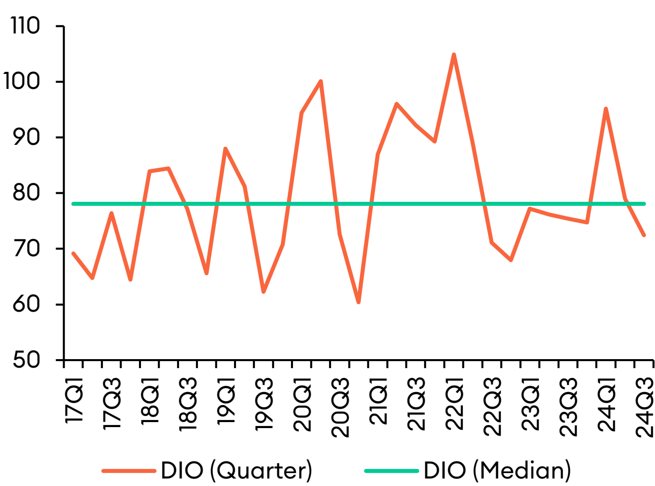




Relative Performance (last 2 years)

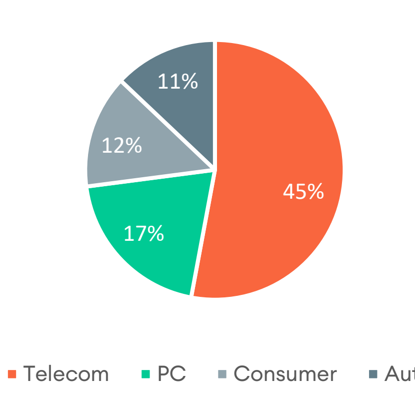


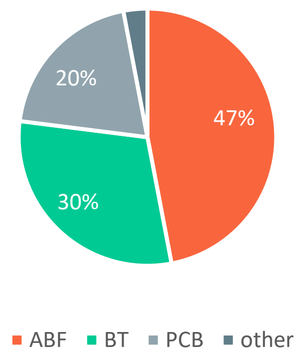
DIO (days)



Nan Ya PCB (8046 TT, 137 TWD) EV 2.5 US$bn Yield 4.0% ADVT 10 US$m
IC Substrates & PCB's

Sales Mix





Company Overview

ABF Substrate
- 20-30% GM's
- Application Mix: Telecom 40-45% | PC 20-30% | CE 13% | Auto MSD % | AI & HPC 15-20%
- Telecom Mix: Switch 40% | consumer router 30-40% | BTE 10-15%
- Capacity: 90% Taiwan | 10% China
- Customers, 2 major: AMD 35% of segment | AVGO 30-35% of segment

BT Substrate
- B/E to slightly higher GM'sds
- Customers: MU | Nanya Tech | AAPL | NXPI | MediaTek
- Applications: focused on SiP for AAPL

PCB
- INTC for Server Card

Customers
- AMD & AVGO are the main ABF customers
- AAPL is the main BT customer

Competitors
- Ibiden (4062 JP) main / sole supplier on Hopper/Blackwell
- Shinko (6967 JP
- Unimicron (3037 TT)
- AT&S (ATS AV)
- Zhen Ding (4958 TT)
- SEMCO (009150 KS) mostly INTC PC CPU
- Kinsus (3189 TT) 8% XLNX / 7% AMD / 5-6% NVDA

Key Topics / Questions

- Growth: after 2 down years ('23 and '24) do you expect 20% growth in '25 and '26 and if so, what drives this.
- Area growth for ABF
- Switch exposure overall (100 | 400 | 800) and growth outlook
- AI PC: larger area for ABF, 45x45 up to 55x55 with NPU tile. Not seeing pricing pressure here. SEMCO also competes for AMD biz
- Pricing trends in ABF overall, particularly high end or mid range to low end
- ABF ability to mix up to higher layer count products
- 1.6 TB switch timing: 90x100 or larger area
- Panel Level Packaging
- Glass Core: working with AMD, R&D

Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

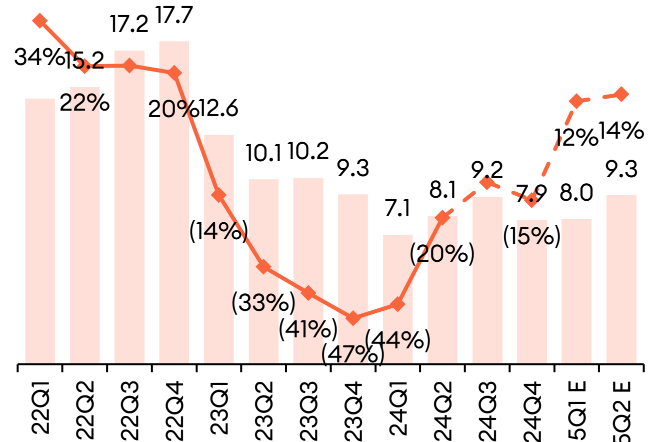
Nan Ya PCB **(8046 TT)** Cont.

Key Topics / Questions

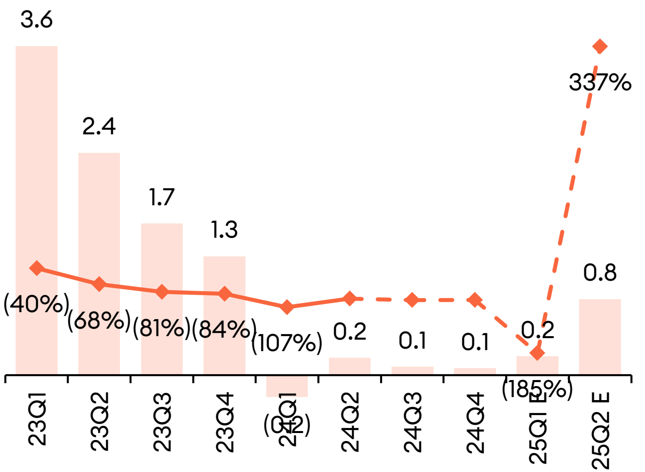
- **Glass Substrate / Core:** working with AMD, R&D stage. Eventually you need this as ABF not stiff enough above 110x110
- **ABF: new customers:** Trying to diversify customer base; Alchip-AMZN / MRVL-regular size ABF, they are not on AWS 5 nm ASIC / NXPI-Auto related / China ASIC makers (HiSilicon, small contribution, BABA); they work with GUC also and hope to get MSFT
- ASIC opportunity; directly or via Alchip / GUC and opportunity to work with AVGO or MRVL
- AMD: do they have too many suppliers given they are struggling in AI vs. NVDA?

Nan Ya PCB (8046 TT)

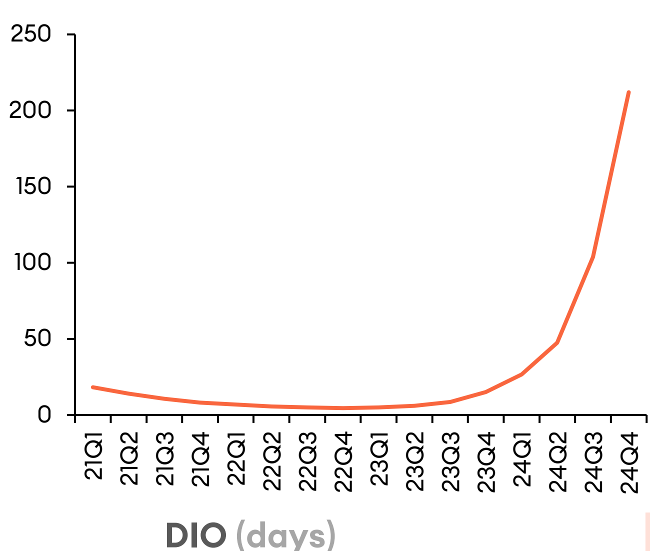
Revenue (TWD$bn)



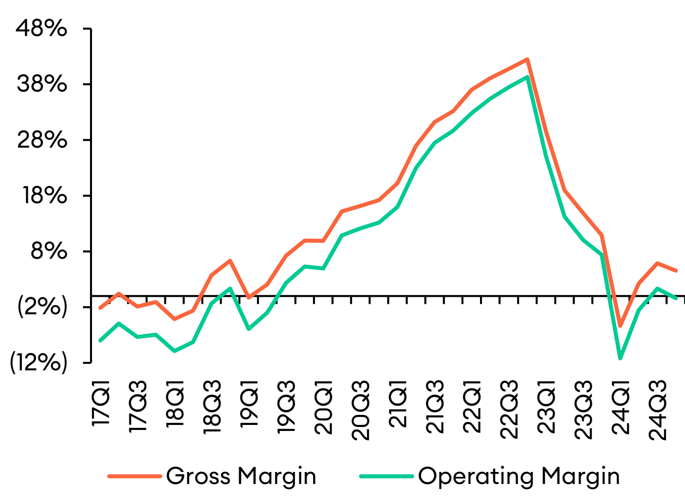
EPS (TWD)



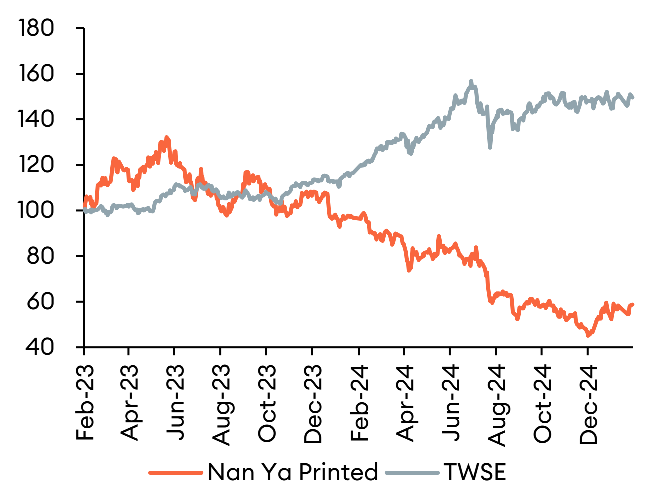
P/E



Margins (%)



Relative Performance (last 2 years)

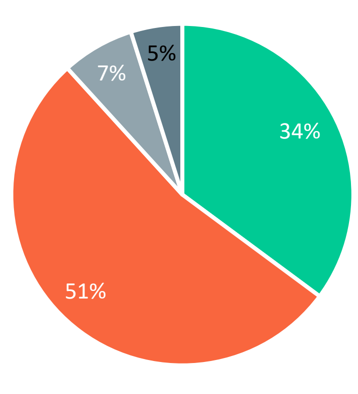


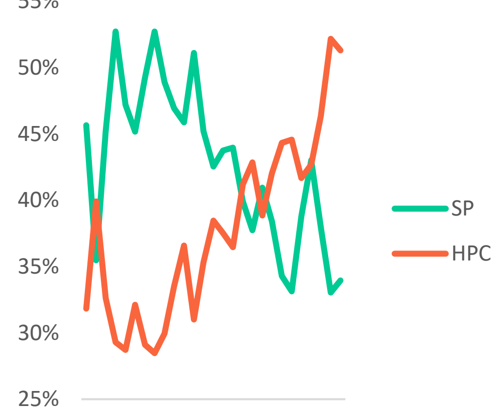
DIO (days)

75
70
65
60
55
50
45
17Q1
17Q3
18Q1
18Q3
19Q1
19Q3
20Q1
20Q3
21Q1
21Q3
22Q1
22Q3
23Q1
23Q3
24Q1
24Q3
DIO (Quarter)
DIO (Median)

TSMC (2330 TT, 1135 TWD) EV 858 US$bn Yield 1.4% ADVT 1.2 US$bn
Largest Foundry Globally

Sales Mix





Company Overview

Description
- Largest foundry globally and most advanced process node

AI
- $12 B in '24 growing to $80 B by '29
- 45% CAGR
- GPU vs. ASIC content growth

Fabs
- Taiwan: 90% of capacity | 12-inch (x4) | 8 inch (x4) | 6 inch (x1) | .13 to 3 nm
- China: Nanjing 12-inch (x1) 12-16 nm | Shanghai 8 inch (x1) 0.35 – 90nm
- Japan: 12-inch (x1) 28-22 nm
- Arizona, US | 12-inch (x2) 4 nm and 3 nm 1st in production '25 and 2nd in '27
- Dresden, Germany 12-inch (x1) 28-16 nm for auto; production in '27
- Advanced Packaging: 7 sites in Taiwan and new site in Arizona with AMKR for CoWoS and InFo

Node
- 5 nm: 34 % | 3 nm 26% | 7 nm 14% | 16 nm 7% | 28 nm 6%

Competitors
- Intel (INTC US) | Samsung (005930 KS) | UMC (2303 TT) | SMIC (688981 CH)

Capex
- $38-42 B in '25 | 70% advanced node | 10-20% specialty | 10-20% advanced packaging, testing, mask, other

Customers
- GPU: NVDA, AMD
- ASIC: GOOG | AWS | META | Ascend | Gaudi | Groq | RDU
- AP: AAPL | MediaTek | QCOM

Key Topics / Questions

- Margin headwinds from N2 ramp and N5 to N3 conversion
- Mid 20s growth in 25; mainly AI + mild recovery in other applications
- AI: Mid Teens of '24: GPU | ASIC | HBM controller; Accelerators 2x in '25 and growing 45% CAGR
- SP replacement cycle driven by AI; what types of chips do they see. Content is still growing as TSM + 20% in '24
- Is there still business in China that will be moved to Taiwan or other due to geopolitical?
- 90% of production is in Taiwan: this is a risk; however, it's the most productive fabs; what is the strategy to diversify manufacturing w/out sacrificing ROI
- Supply chain: majority still in Asia; even with US fabs, wafers still shipped back for packaging, etc. discuss pros/cons.

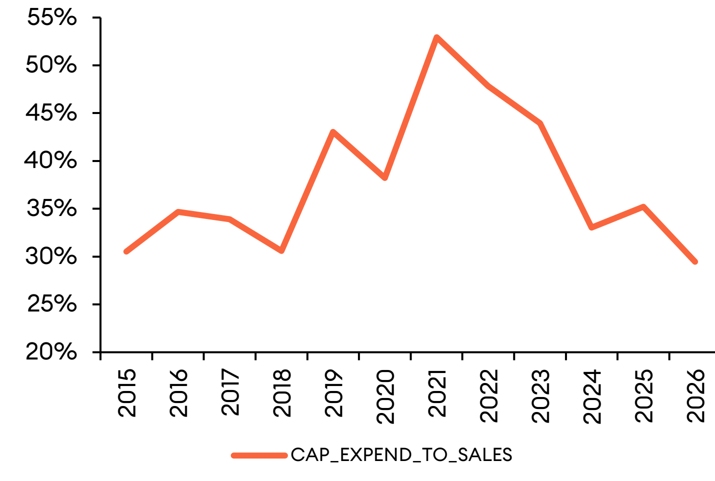
NewStreet Research

Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

TSMC (2330 TT) Cont.

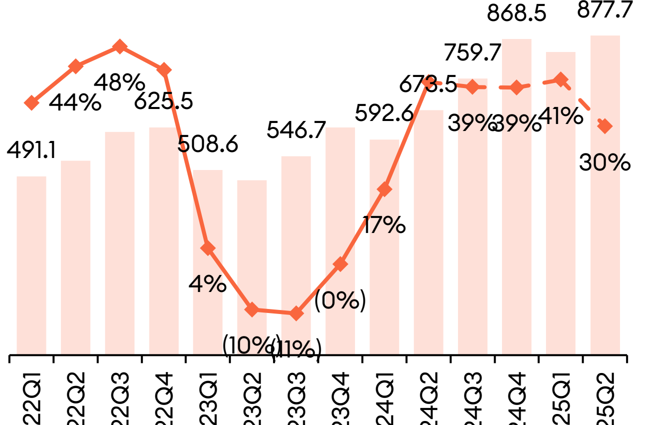
Key Topics / Questions

- **CAPEX to Sales is lowest in 10 years:** given cycles and lead times should we expect rising capital intensity going forward, which will drive growth at the end of the decade
- **Panel Level Packaging:** discuss this and glass substrate. 515x510 mm panels, 3x area of 12-inch wafer. If glass is the substrate what are the key technology bottlenecks to overcome; rigidity/breakage during drilling, need for different equipment and /or higher level clean room.
- **CoWoS:** what can be done at TSM vs. OSAT. Discuss how much of this is customized for each customer vs. how much of the process can be standardized for any customer.
- **Co packaged optics:** when should we expect this to be MP and for which applications?
- **Wafer pricing:** in the past, TSM charged same price for most customers, excluding volume discounts. Where can you charge more for leading edge?
- **Quantum Computing:** view on this technology and timeframe for adoption and impact to semi-industry. GOOG Willow 'Dec 24.

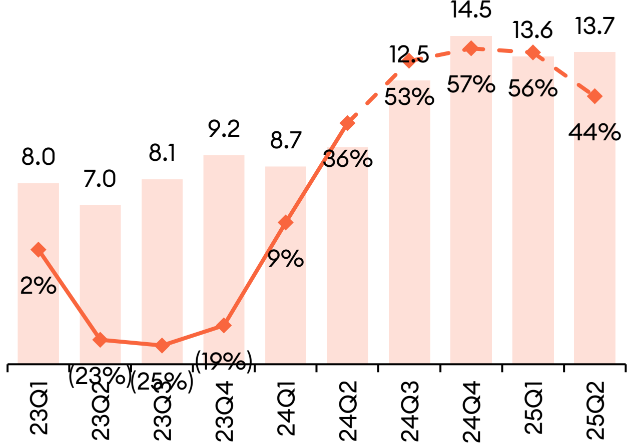


TSMC (2330 TT)

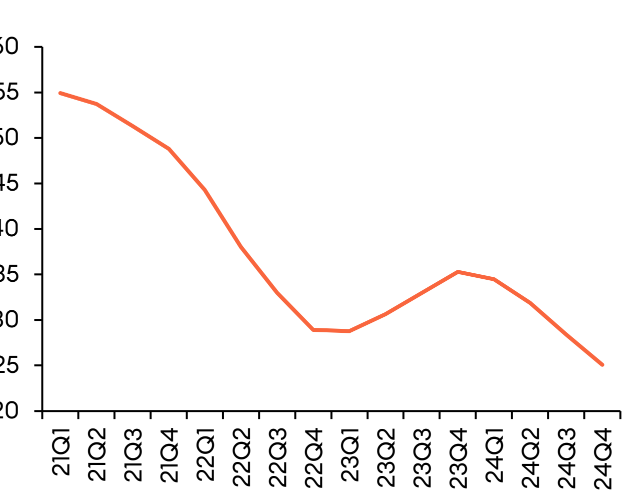
Revenue (TWD$bn)



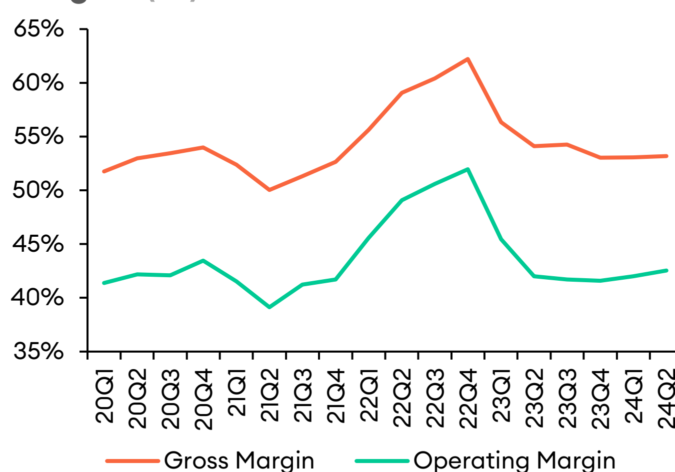
EPS (TWD)



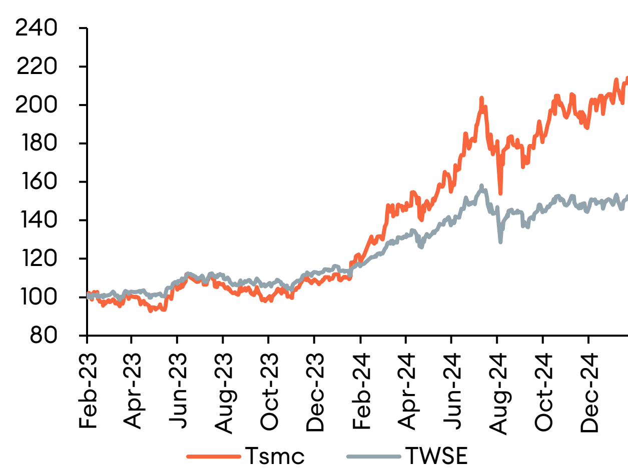
P/E



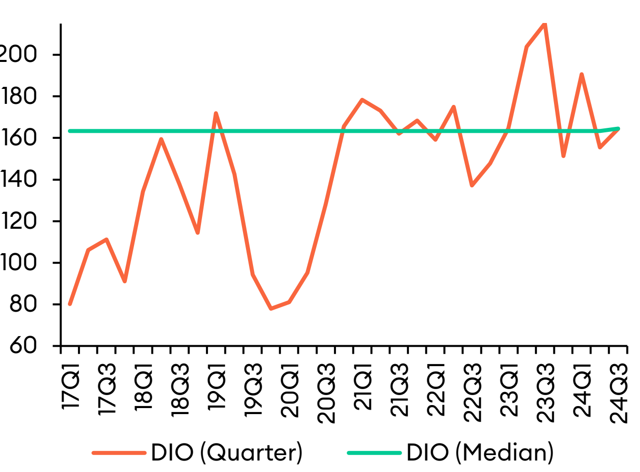
Margins (%)



Relative Performance (last 2 years)



DIO (days)



Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Realtek (2379 TT, 542 TWD) EV 6.9 US$bn Yield 2.9% ADVT 40US$m
Fabless IC: Connectivity including WI-FI, Ethernet, BT, Audio Codecs

Company Overview

Strategy
- Fast follower on tech to make things cheaper & more efficient
- PC related ~ 70% / Non-PC ~ 30%
- Minimal smartphone exposure

PC Peripheral
- Audio Codec | Digital media processors
- Card reader controllers
- Camera module controllers
- Clock generators

Multimedia ~ 11% of sales
- LCD Monitor controllers | LCD TV controllers | SoC

Communications
- ~ 30-35% WIFI, 10% BT, 10% Ethernet, 12% Switch
- Network interface controllers (10/100M and Gigabit Ethernet)
- PHY controllers | Network switch controllers
- Gateway controllers | WIFI | ADSL | GPON

Competitors
- Connectivity: AVGO | MediaTek | QCOM
- Audio: CRUS / TXN
- Networking: INTC | MRVL

Customers
- Not broken out: ODM / Distribution / OEM
- LCD: LG Elec | TCL | Skyworth | Haier

Key Topics / Questions

- AI: useful to discuss what Realtek is doing internally for IC design / node migration
- Timeframe for your AI investments to lead to more high-end IC's and thus favorable margins.
- Revenue growth expected to accelerate in 2H 25
- China telecom tenders are a driver
- AI will drive demand & content growth for which of your products?
- Wi-Fi cycle 6 & 6e to 7
- AI: discuss your own investment to accelerate your move to advanced nodes. On device AI using higher TOPS requires leading edge chips
- Inventory is @ Median: which products are lean/high & is there restocking appetite by customers
- GMs remain above historical levels, albeit down from pandemic peak; what is your target range, and which products are above/below corporate.

Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

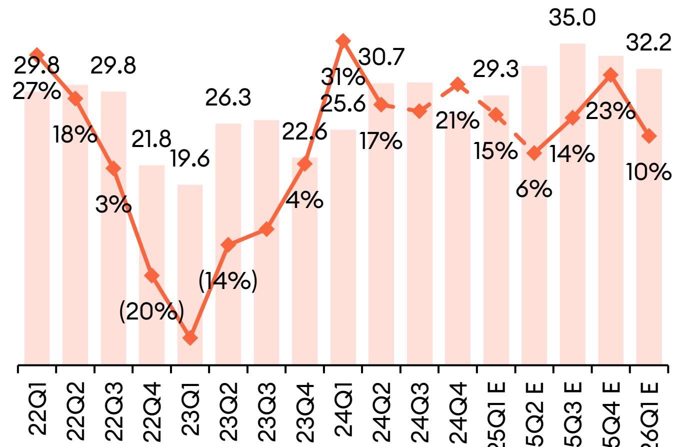
Realtek (2379 TT) Cont.

Key Topics / Questions

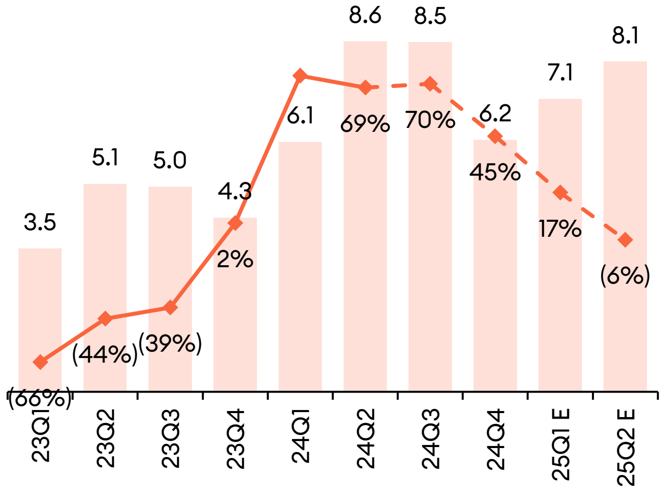
- **AI investments:** Realtek is investing in AI: Internally for training, IC Design, Node Migration
  - EDA tools to design chips with more efficient routes
  - NPU: will develop internally; currently using 3rd party
  - A/V: can use NPU to improve image & sound quality / upscale lower resolution
  - TV SOC will use NPU.
  - Auto infotainment; better driver audio into back seats. Difficult to do this in short distance given 'positive feedback'; they had to train the model (1 top for basic recognition
  - 10 TOPS Applications under development
  - Investing in leading edge because ultimately you can't do higher TOPS computational power on legacy nodes.
  - Connectivity: more bits means need for more/better controllers; use AI to recognize the packets and which are higher priority (Gaming vs. Email)
- **China competition**: WI-FI competition: Espressif, Beken
  - Understand the segments of the market; volumes at low | mid | high
- **Auto opportunity**: Connectivity, ethernet, audio codecs, etc. where is the intersection of Realtek vs. what the analog guys like Rohm and Renesas are doing with MCU

Realtek (2379 TT)

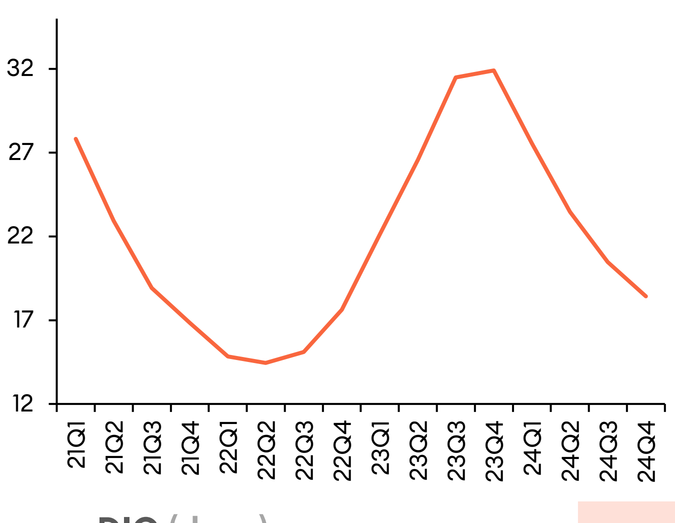
Revenue (TWD$bn)



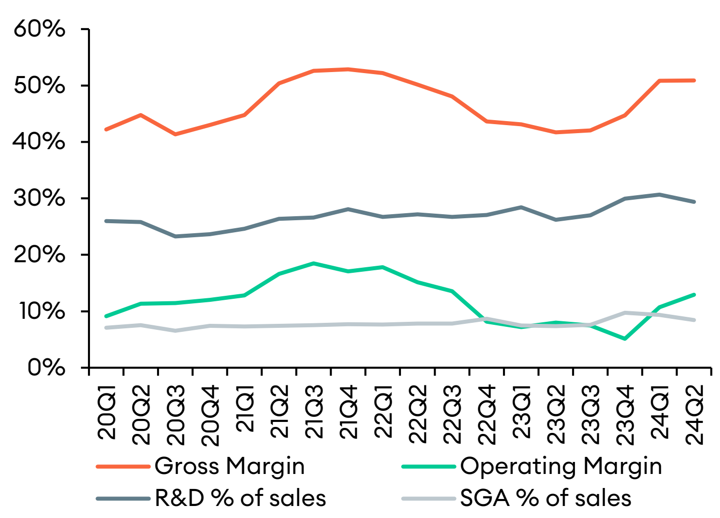
EPS (TWD)



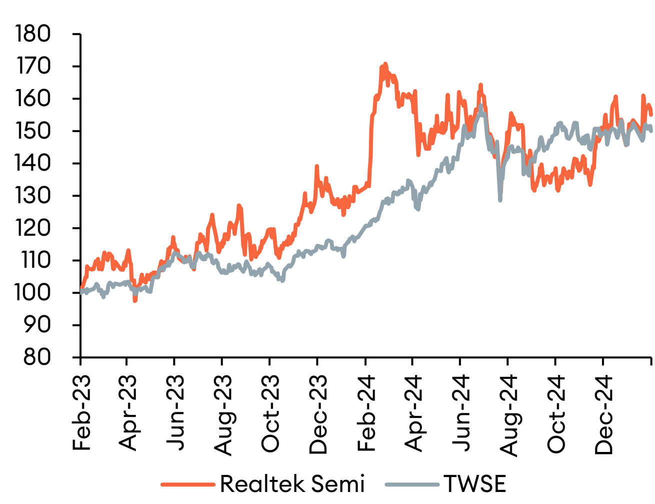
P/E



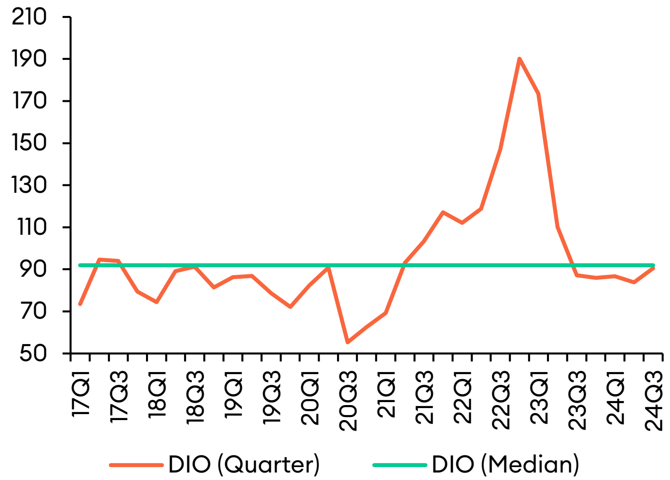
Margins (%)



Relative Performance (last 2 years)



DIO (days)



Aspeed (5274 TT, 3558 TWD) EV 4 US$bn Yield 0.6% ADVT 70 US$m

Fabless IC: Server Baseboard Management Chip (BMC)

Company Overview

Strategy

- BMC 87% of sales w/ 65-70% share / Non –BMC 13%
- 55% Hyperscale / 45% Enterprise

Products

- AST 2500 / 2600 / 2700 (12 nm)
  - 2600 70-75% of '25 ($15 ASP)
  - 2700 $25 ASP
- I/O expander AST 1700
- Platform Firmware Resilience (PFR) AST 1060, 70
- Bridge IC (BIC) AST 1030/25
- Root of Trust (ROT) security chip

Customers

- META / MSFT / AMZN / BAT / ANET
- GOOG: will be sole source for Server | TPU uses in house solution
- DELL: supplies for AI but not general server (Nuvoton)
- SMCI orders were softening
- AMZN: Gravitron CPU yes but ASIC does not use Aspeed

Competitors

- Nuvoton
- HiSilicon
- GOOG in house /
- HPE in house

Key Topics / Questions

- BMC content growth; where is it increasing / decreasing (Rubin may eliminate redundant components from BW)
- '25 Growth
  - 3 of 4 CSP up
  - China limited visibility due to strong pull in 2Q 24+
  - ODM's forecasts more conservative vs. CSP?
- Inventory: most CSP @ 3 weeks, 1 is > 10 weeks
- Post 2700 chip (will not be called 2800 🤔) samples 1H 26
- Bluefield 3 (BF3) attach rate vs. Smart NIC
- Any change to expected NVDA ramps: NVL 36 4Q 24 / NVL 72 2Q 25 or 3Q 25 / GB 200 A 1H 25 for smaller models & Tier 2 or 3 CSP
- Mini BMC:
  - new add on card will adopt; flush this opportunity out
  - GOOG ramp has been slow
  - 3rd customer (AMZN or MSFT) expected to ramp, but timing uncertain

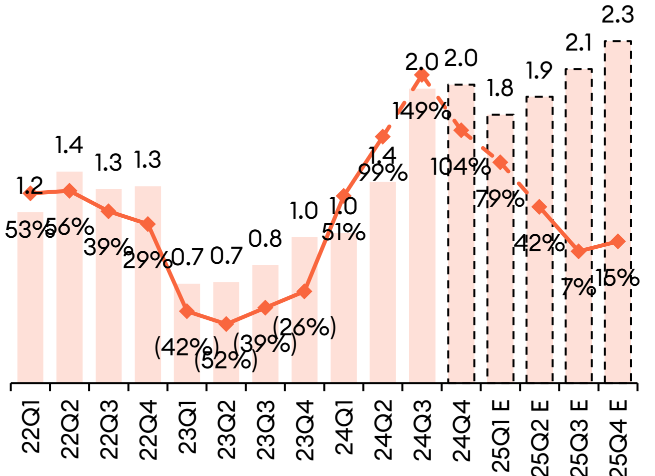
Aspeed (5274 TT) Cont.

Key Topics / Questions

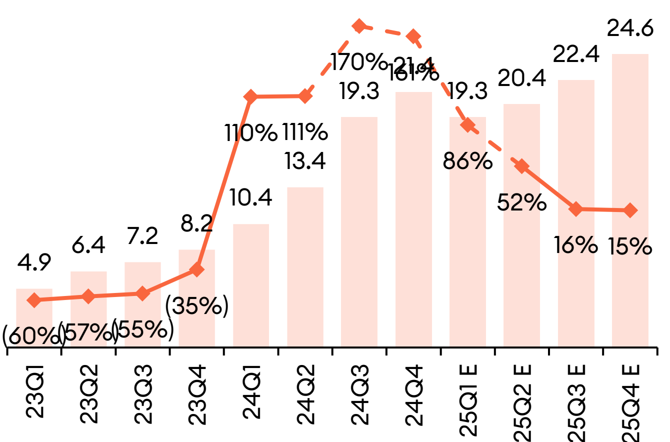
- Order patterns given you saw some pull into 2H 24 which may come at expense of 1H 25
- Blackwell: 87 BMC's | 72 compute tray (18 tray * 4 BMC per tray) | 9 switch | 4 Power Rack | ACM card x1 per tray | HMC
- Rubin: BMC content / MP timing
- Platform Firmware Resilience (PFR) opportunity; AST 1060, small units in '24 and few hundred 000's in '25, 35% share (65% inhouse with FPGA)
- New component for conventional server? working on something new but can't disclose; 3 years out, server related.
- NVDA discussion on new features & Functionality post Rubin

Aspeed (5274 TT)

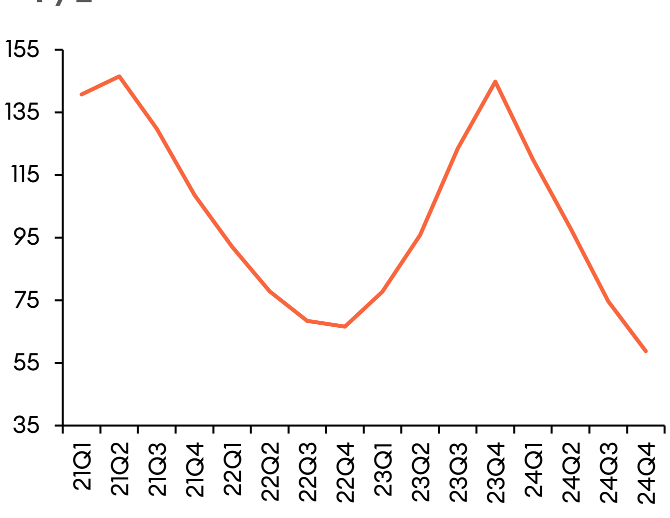
Revenue (TWD$bn)



EPS (TWD)

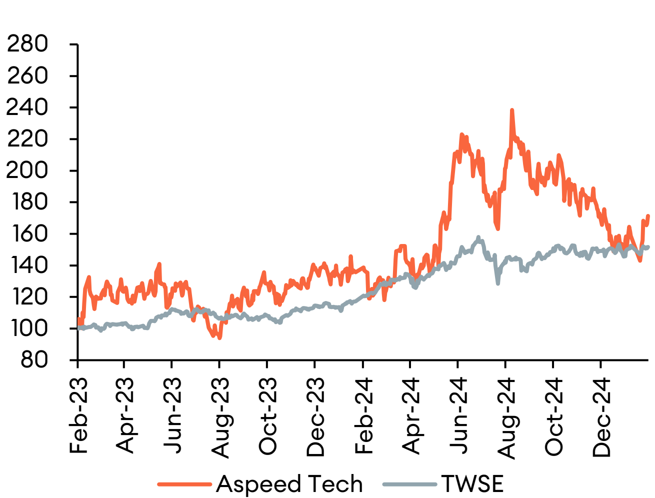


P/E

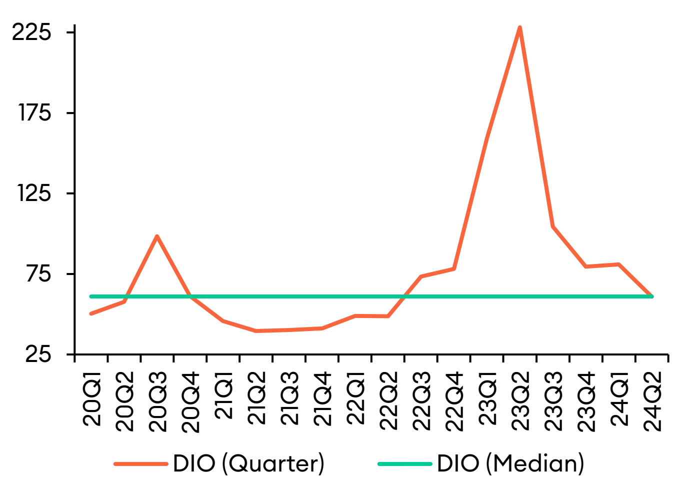


Margins (%)

Relative Performance (last 2 years)

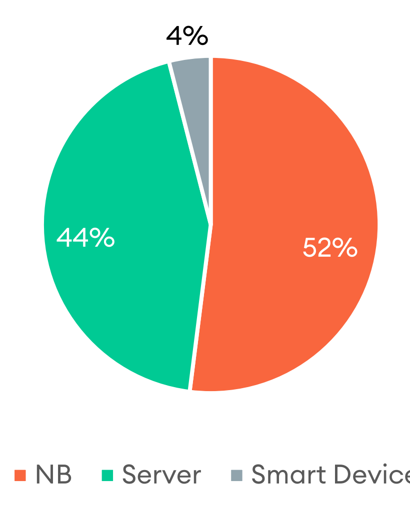


DIO (days)



Inventec (2356, 49 TWD) EV 6.4 US$bn Yield 3.0% ADVT 45 US$m
Server MOBO & ODM, NB ODM

Sales Mix



Company Overview

Server
- # 1 Motherboard (MOBO) vendor globally + racks & systems
- US: mainly MOBO/ China: full systems/racks
- DC Customer: AMZN / MSFT / GOOG
- Brand Customer: HP / DELL / Lenovo
- Other enterprise: YHOO / TWTR
- China: 10% of server / Intl biz for BAT

Server Capacity
- Mexico: 35% of production: direct ship for AMZN & GOOG
- Taiwan: 25% of production
- China: 25% of server production, migrating to Thailand

NB
- 60% HP / 25% Asustek gaming / small DELL
- 90% commercial / 10% consumer
- Capacity: ~18 mm units/year in Chongqing

Smart Device
- Xiaomi SP (premium) / Sonos / GOOG SP, Fitbit, Speakers
- AAPL Homepod / cable & accessories
- Production base: Nanjing China / Malaysia / Vietnam

Competition
- Server: Quanta / Wistron / Hon Hai / Mitac / WiWynn
- MOBO: Foxconn, Wistron, Quanta, Mitac
- NB: Compal / Pegatron / Inventec / Quanta / Hon Hai

Key Topics / Questions

- Server Bottlenecks: GPU / NVLink / HBM & continued technical challenges with PCBA and PMIC (MPWR / TXN / IFX)
- H100 & H20 +20% q/q in 4Q 24 /peak season
- Server + 60% in '25 (Miranda) / growth in '26 (Rubin)
- Thermal: Inventec will not vertically integrate / insource components from Asia Vital & Vertiv /responsible for final test & quality assurance.
- AMD continued server share gains vs. INTC
- Thailand server capacity completes year end '24 / will slowly migrate China production to Thailand
- NB: early pull in 1H 24, weaker 4Q 24, strong '25 on corporate refresh + AI tender projects
- EV: small traction with ECU in '25 but not yet qualified. Most business will be ADAS or central compute board
- Switch ODM: small, not ramping due to AVGO chip shortage

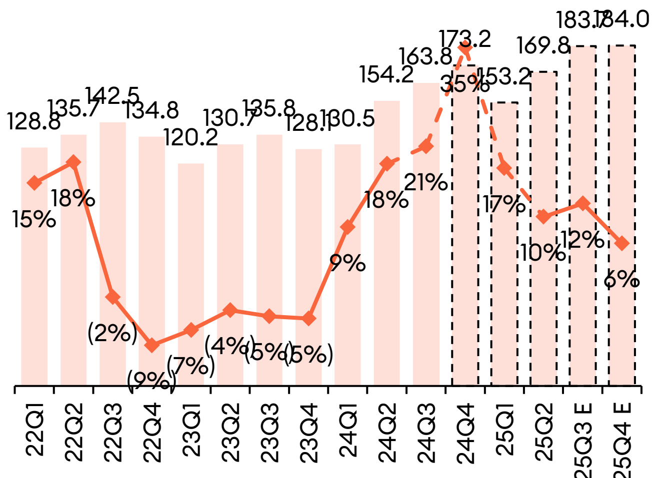
Inventec (2356 TT)

Key Topics / Questions

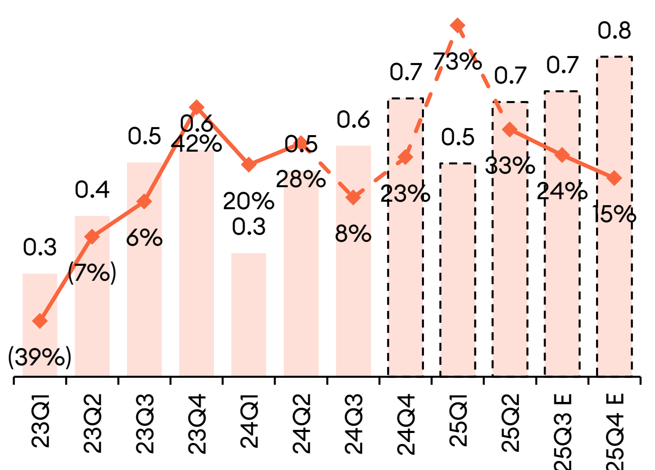
- AI (30% of '24 server revenue). Supply constraints persist. Mainly NVDA GPUs, NVLink switch & HBM
- Blackwell B200 small volume ramp 4Q 24 / B300 higher volume ramp 2H 25; customers await customizable CPU/GPU solutions
- '25 server revenue +60%: unit growth + better mix of higher ASP racks/ '26 will grow, limited visibility
- AMD: still gaining share in conventional server, Mi300x 4Q 24 strength continues in '25 / attractive for edge AI or inference
- Conventional server flat in '25 after outperforming industry with low teens growth in '24
- '25 NB units up high single digits, revenue up low double digits / commercial refresh + AI tender projects
- AMD or ASIC opportunities in Server
- NB + HSD '25, Inventec gains share for AI PC Tenders (spec)
- Server share gains; flush out the opportunity with MSFT (MOBO to ZT today, racks in future)
- Server profits per system as Inventec has more value add in Hopper vs. Blackwell, but will have more design in B300
- GOOG TPU volumes
- Thermal & Power: Inventec sources from AVC / Delta then does final test; discuss the different designs/spec vs. platforms/customers
- Thai facility update: 1Q '25 qualification

Inventec (2356 TT)

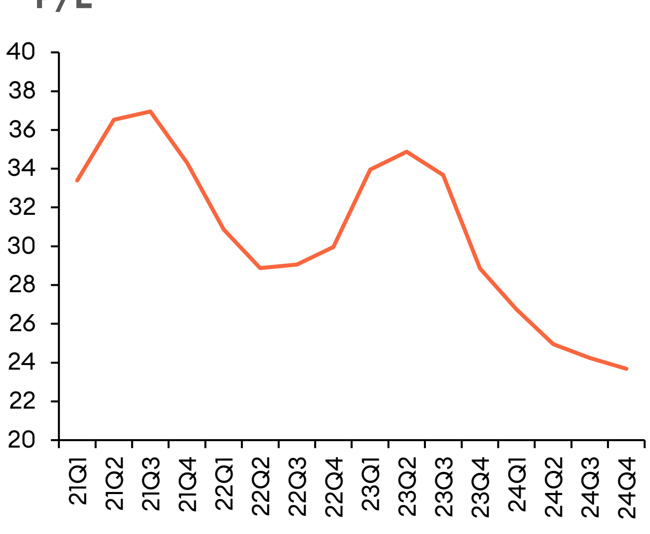
Revenue (TWD$bn)



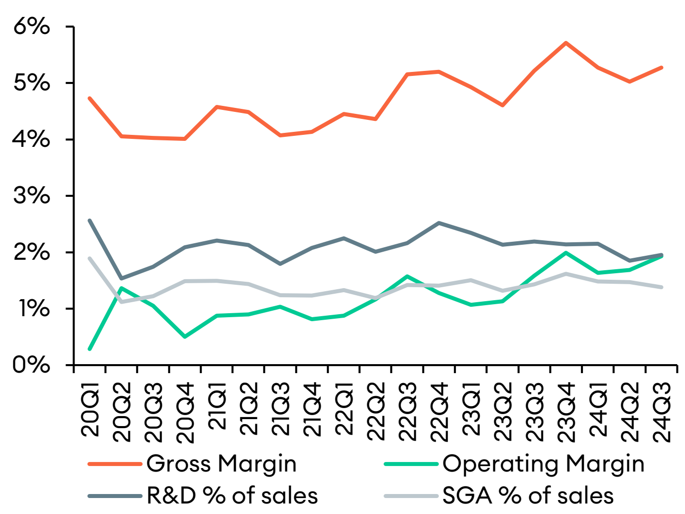
EPS (TWD)



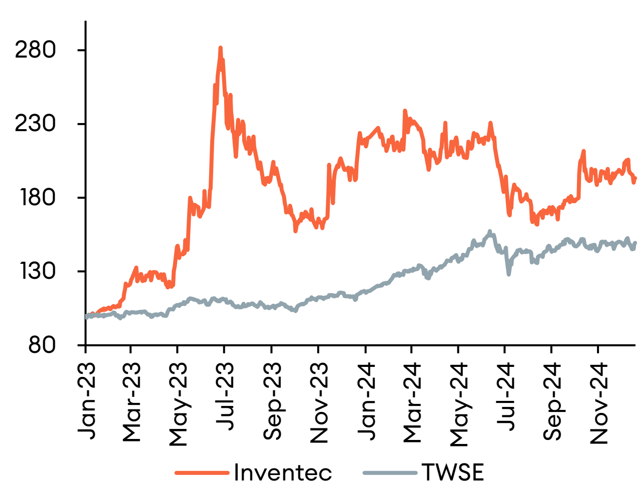
P/E



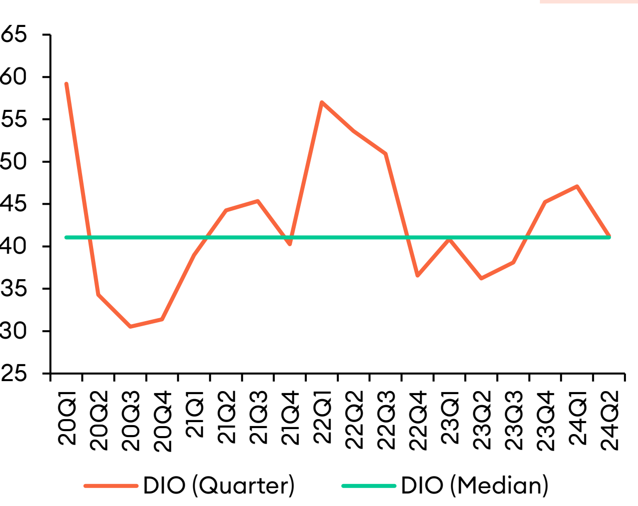
Margins (%)



Relative Performance (last 2 years)



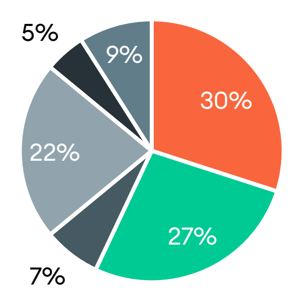
DIO (days)



Winway Tech (6515 TT, 1220 TWD) EV 1.3 US$bn Yield 0.9% ADVT 27 US$m

IC Test Sockets for AI | PC | Gaming | Networking | SP

Sales Mix



- Coaxial
- RF/Plastic
- Burn-In
- Contact Element
- Probe Card
- Other

Company Overview

Business Model

- Sole source R&D with IC Design | MP 2-3 suppliers per OSAT
- Rev ramp into IC launch, then declines during consumable phase
- Visibility into IC roadmaps given 6–12-month design cycle
- 1-1.5-month Manu. lead time
- NA 61% of Mix | Taiwan 24% | China 14%

MIX

- AI GPU 60% of 1H 24 | NVDA largest | AMD
- SP: 10-12% of 1H 24: MediaTek Dimensity
- Networking: AVGO Switching | MRVL | NVDA Auto SoC
- PC & Gaming: 12% of 1H 24

Products

- Coaxial Test Socket
- Burn-in Socket
- Vertical Probe Card
- Spring Probe
- Thermal control System

Competitors

- Smith's Group (SMIN LN) high compute mix (see next page)
- COHU | Yokowo | Leeno | ISC | Smith | Emplas | Yamaichi | NHK Spring

Customers

- NVDA: GB200 on GPU and CPU side
- AMD: Mi300; has ramped for them already; been stable since 2023;
- MediaTek: Dimensity 9400 SP AP
- QCOM & AAPL : working on smaller volume projects today

Key Topics / Questions

- Explain IC Test Sockets and the different types of products and applications they serve
- Elastomer vs. Pogo Pins
- SLT impact: Unit growth & ASP growth. SLT is growing faster vs. industry
- Margin drivers: peak GM~ 50%, peak OM ~ 30%
- 10 major players; will we see consolidation or is there structural reasons for fragmented suppliers
    - ISC claims share gains at NVDA
- Mix of OSAT, Design House, Foundry; is this indicative of R&D or pre chip vs. MP
- Synergies between test socket & burn in socket, or different pieces of the total solution
- ASIC demand: will your customer be the CSP or the ASIC design house supporting them
- Inventory on your books, explanation

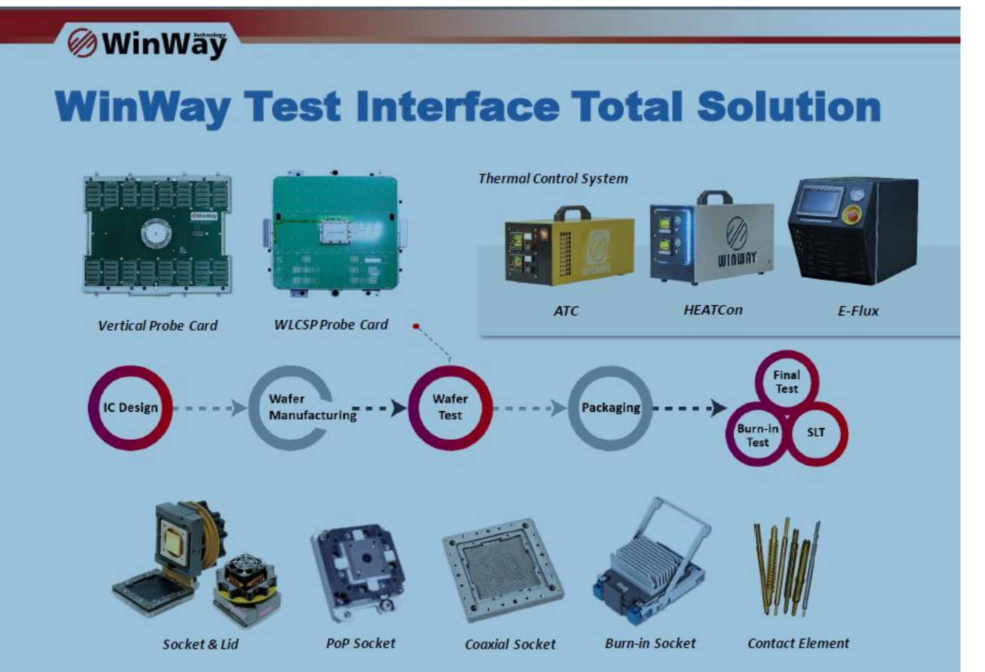
Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

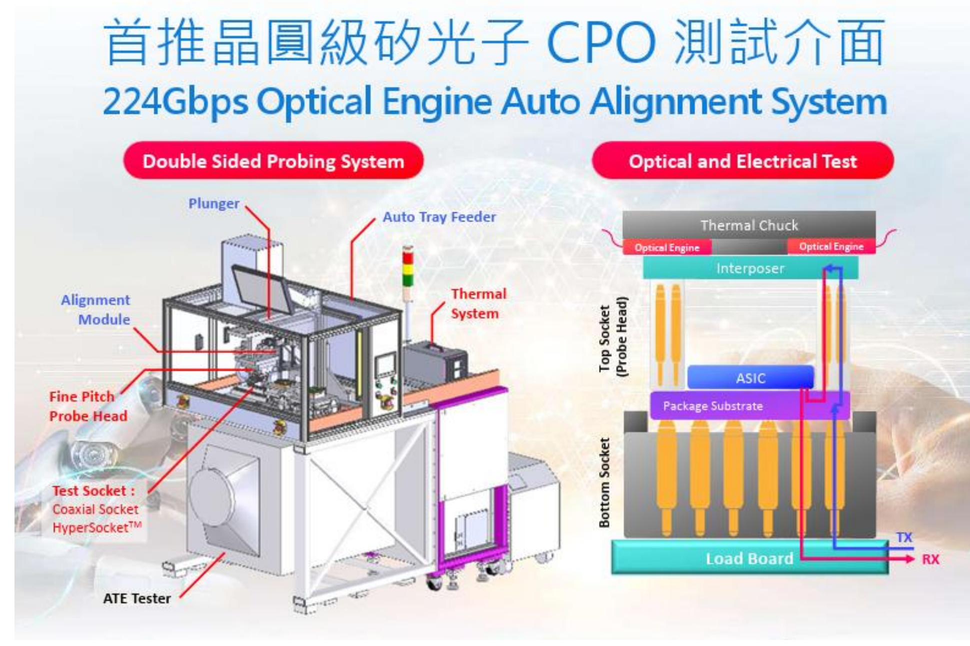
Winway Tech (6515 TT) Cont.

Key Topics / Questions

- **NVDA Growth:** GB200 2 sockets: GPU & CPU side | Demand > 2x for just the GPU (Units), GP200 vs. H100. Smaller size GB200 in the works; the pin to pin i/o may stay the same, different die, same package; includes HBM Blackwell Ultra (not sure yet if it will be the same product / packaging) Ruben: design not finalized yet. H100; still selling; stable demand. New CPU: variants of Grace.
- **Smiths Group is conglomerate, and IC Test is only 2% of group revenue** or $28 mm in '24 sales vs. $110 mm for Yaimichi Test segment or $182 mm. They have ~ 50% of NVDA & AMD. Divesting Smith's Interconnect (11% of sales), which is 50% Aero & Defence, 47% Industrial (Semi's including in here). Can they sustain this w/out strategic focus? XXXXXXX
- **Co Packaged Optics:** Discuss your integrated probe system for this. Where are we in R&D stage and when do you expect MP. What are the technical challenges you face developing solutions. Solutions for 800 and 1.6G. Both CPO with switch or XPU | optical engine auto align system
- **Manufacturing Capacity:** 35% in house manufacturing today and up to 7% for certain pins. Discuss the roadmap as Kaohsiung ramps and where this will help you with customers or applications to win higher R&D projects or higher allocation during MP. What % of your equipment is designed/built in house vs. purchased from merchant suppliers. Burn In capacity is in Suzhou; is that a problem for any of your NA customers? Is geo mix based on which factory or the origin of the customer?
- Hypersocket: for AI & HPC SLT, SP SFT, Auto radar, PMIC, WIFI
- Probe card only 5% of 4Q 23, down from 27% of 2Q 23; is this tied to the NVDA consumer GPU cycle and thus quite cyclical?
- As chips get hotter and more complex packaging, what changes occur for the testing solutions and who is best positioned?
- Capacity: 12k sets/month of Socket and 1.5 mm units/month spring probe
- Burn in oven & chillers; is this complex technology or relatively simple; ISC will say its customized for each solution
- NVDA Ruben: what changes for this generation? New mounting tech
- ISC: AMD CPU, small GPU allocation | NVDA GPU, Ruben under development | INTC CPU

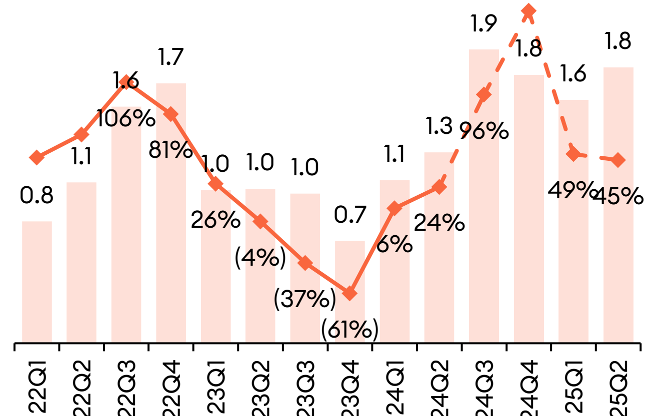
Winway Tech (6515 TT) Cont.



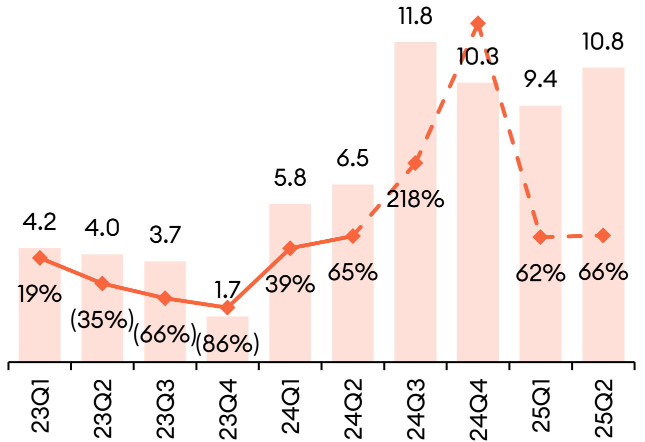


Winway Tech (6515 TT)

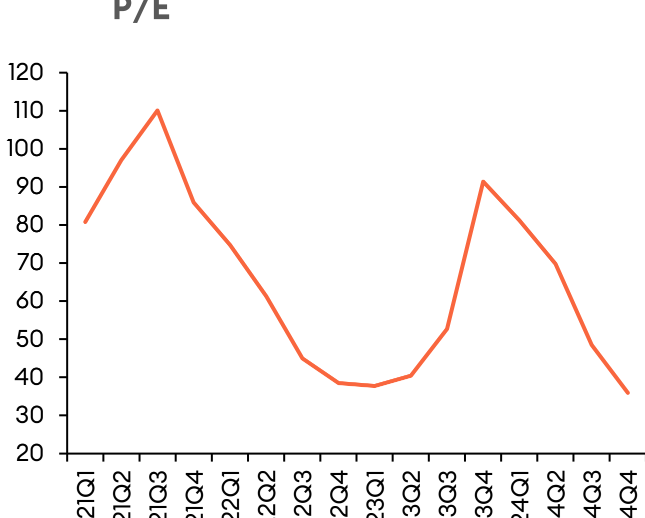
Revenue (TWD$bn)



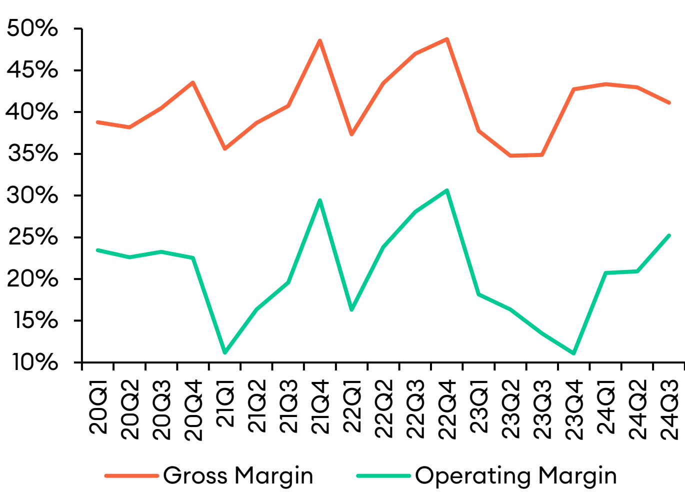
EPS (TWD)



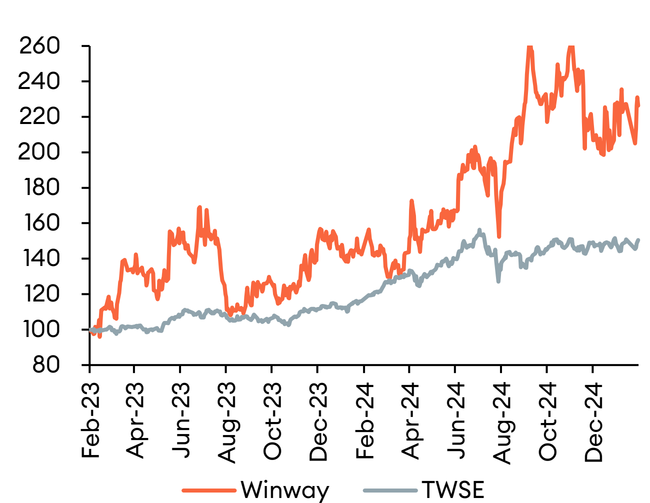
P/E



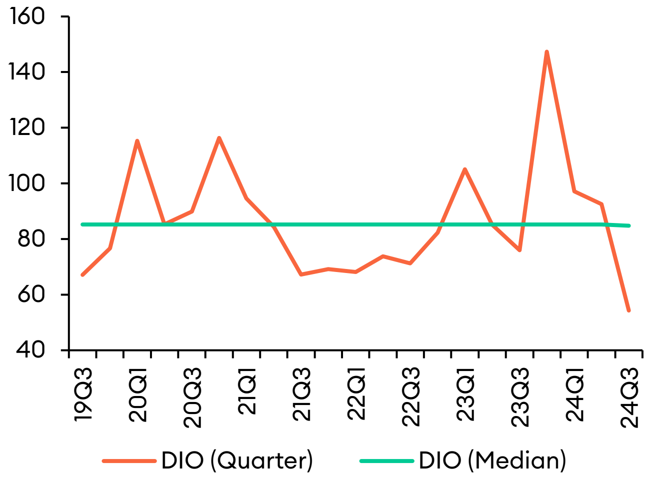
Margins (%)



Relative Performance (last 2 years)



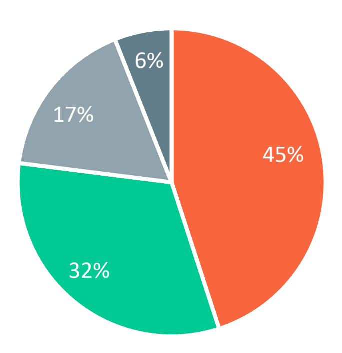
DIO (days)

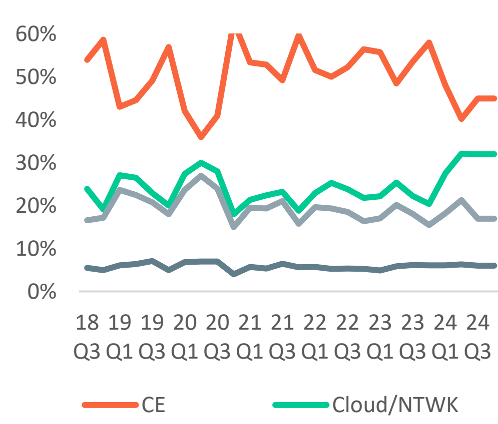


Hon Hai (2317 TT, 178 TWD) EV 75 US$bn Yield 3.0% ADVT 333 US$m

Description: Largest EMS / ODM Globally

Sales Mix





Company Overview

Mix

- Consumer Elec: iPhone assembly
- Cloud & Networking: 40% share of server TAM in '25
- Computing: iMac assembly
- Components & Other

Server

- AI = 40% of total server revenue
- China < 10% of total server / H20 demand quite good
- Timing for Power / Thermal solutions

Auto / EV

- Will do anything except 'brand'
- Outsourcing will follow PC curve; IE to 86% in a decade?
- 6 reference models launched

Customers

- AAPL 45-50%
- DELL / HP / MSFT / Sony

Competitors

- Quanta / Wistron / Inventec / Pegatron /Luxshare

Key Topics / Questions

- Economy is #1 concern & Geopolitics #2
- '26 visibility for server?
- When will CSP / other care about costs of AI
- When does Server & Networking overtake CE / Margin Implications
- AI: Discuss 'totally vertically integrated solution' vs. SMCI / ODM's, etc.
- EV: increasing interest in chassis drive management software (CDMS) Semi: SiC capacity / Hsinchu modules 3Q 24 Trial
- Glass Substrates: double sided redistribution layer (see SKC Korea)
- GB 200: small shipments in Dec '24; trajectory in '25
- Hopper trajectory; EOL?
- Discuss NVDA reference designs vs. other models and ability to drive higher profits at HH
- AI SP: discuss the timeframe to see more NPU, thermal, new casing materials, change to other mechanical parts?

Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

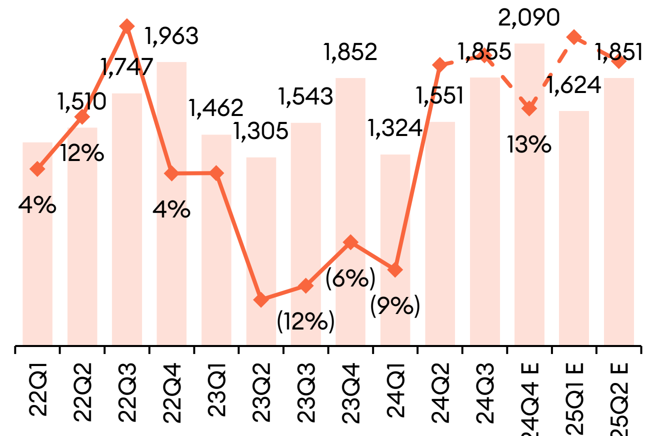
Hon Hai (2317 TT) Cont.

Key Topics / Questions

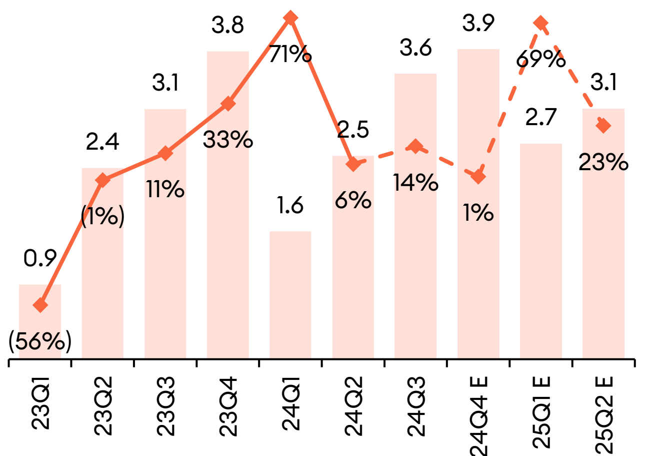
- **Auto: is there a need to own OEM?** To date has preferred EMS/ODM but Feb '25 indicated willingness to buy Nissan stake. Has their experience in Auto to date suggested they need to learn from inside out? Note, existing J/V's with ZF Group, Stellantis
- **EV: 6 reference models launch:** where are they seeing biggest interests and how does the biz model evolve over time:
- **AI: what is HH doing internally:** for either R&D or in production lines? Would like to hear pros/cons.
- SiC update
- **Ingrasys Tech: focused on Cloud Infr;** do they do something different vs. HH. Does all HH Cloud flow through Ingrasys?
- **AI: discussion on overprovision** of power and thermal or other
- **iPhone 17** and view on form factor changes, AI and replacement cycle
- **Margins amongst segments** review of GM & OM for CE | Cloud & Networking | Compute | Components & Other. Where is the leverage in the future
    - Auto economic model today and at scale

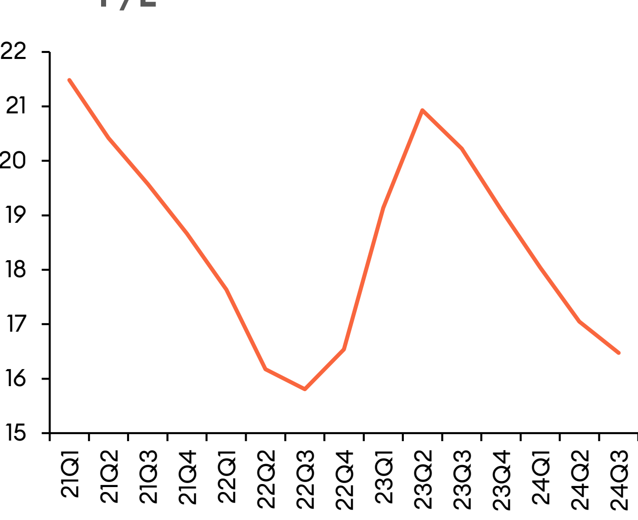
Hon Hai (2317 TT) Con't

Revenue (TWD$bn)

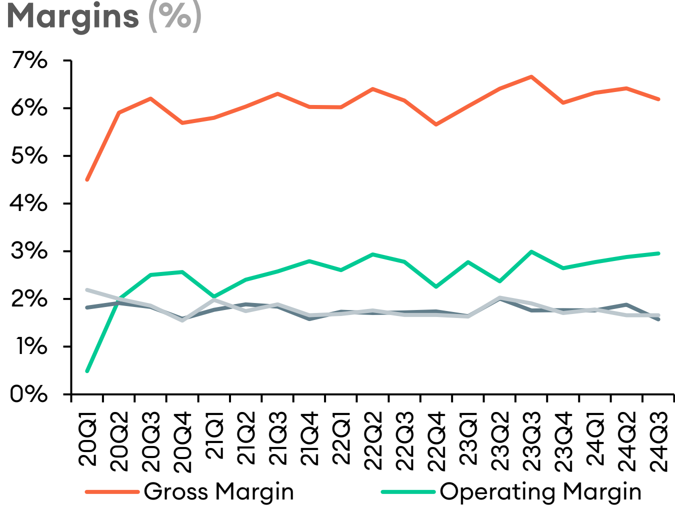


EPS (TWD)

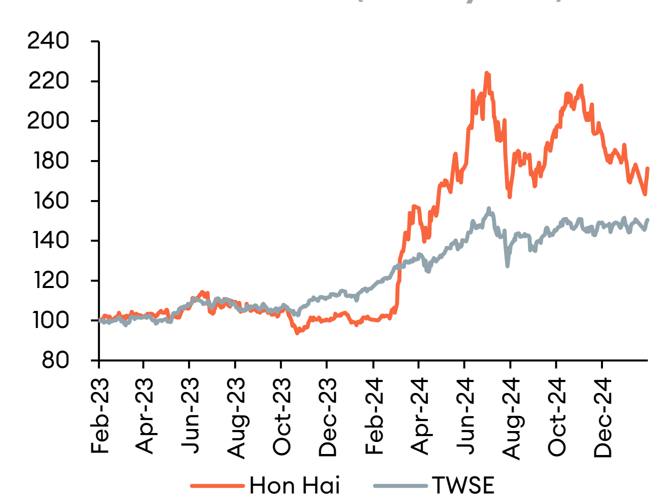




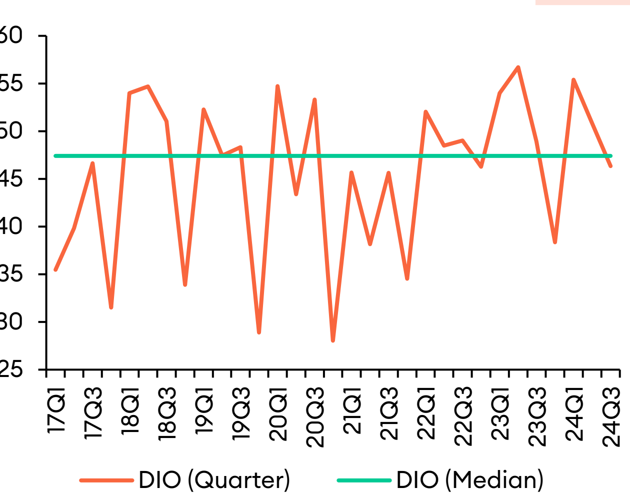
Margins (%)



Relative Performance (last 2 years)

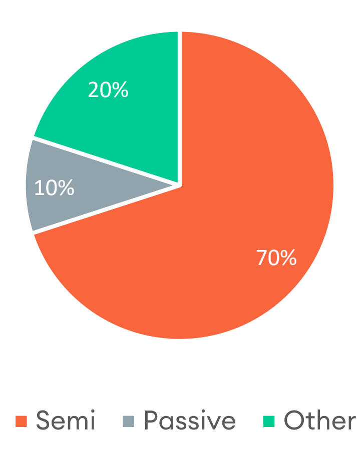


DIO (days)



All Ring Tech (6187 TT, 430 TWD) EV 1.2 US$bn Yield 0.3% ADVT 58 US$m
Automation Equipment for Semi Packaging & Passives / 80% customized

Sales Mix '23



Company Overview

Products
- Mounters | Under Fill | Loader / Unloader | Wafer Level CSP Die Sorter | Dispenser

Applications
- Semi 80%
- Passives 6%
- Other 13%

Semi
- Dispensers for Fan Out Packaging / Mounter for SiP
- Underfill for wafer / substrate
- CoWoS is driving growth / custom equipment for TSMC

Competitors
- ASYMTEK (private, Nordson Electronics)
- 2 Japanese mentioned in past, not sure the reality
  - Ohashi Technica (7628 JP) SIP mounters
  - Musashi

Customers
- TSM
- ASE
- AAPL

Key Topics / Questions

- Arizona factory to support TSMC
- CoWoS 70-90k in '25; better visibility? Growth in '26
- Should their growth be tied directly to CoWoS WSPM?
- What are the ASP's for CoWoS
- Discuss the # of process steps they address today/future/share
- AI drives demand through 2025
- Non-AI applications / advanced packaging for NB
- New materials: Metal Tin / better radiation vs. Thermal Grease
- Mix of shipments to foundry vs. OSAT
- Passive recovery in 2H 24E?
- AAPL SiP upgrades for iPhone 16?
- Tech Roadmap
  - Co Packaged Optics (CPO) exposure / outlook
  - Fan out Panel Level Packaging (FoPLP)

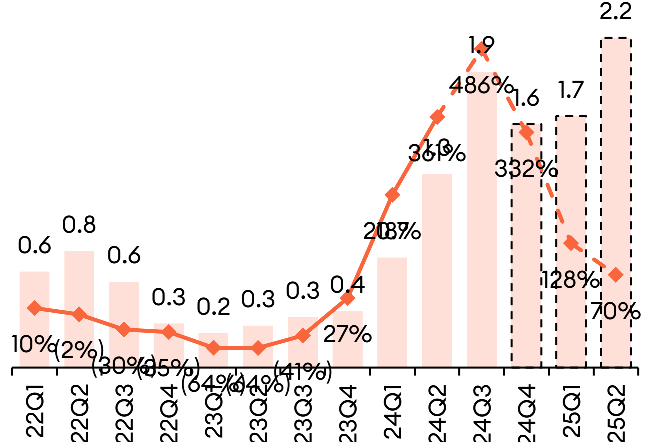
All Ring Tech (6187) Cont.

Key Topics / Questions

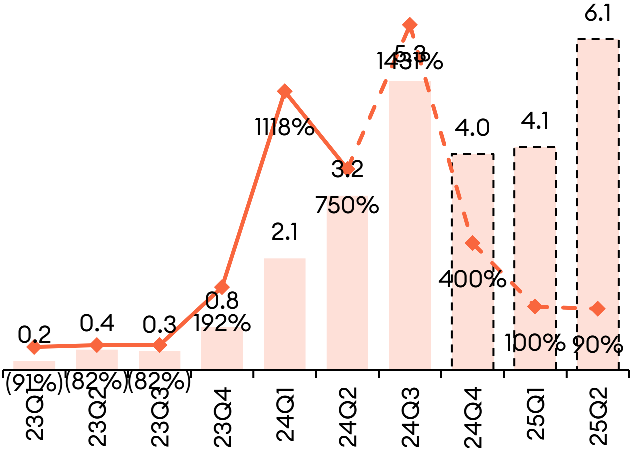
- Exposure to TSM's 3D Fabric for both Chip Stacking (FE 3D) and Advanced Packaging (BE 3D)
    - CoWoS Si Interposer, RDL Interposer, Local Silicon Interconnect + RDLL Interposer
- What is the difference between CoWoS exposure (Die Bonding / Underfill, etc.) and Heat Sink Production line
- Passive component Equipment update; Printing / Cutting / Dipping / Plating / Testing / Taping
- CoWoS R&D begin in '2016 with Revenue ramp in '24; what does this tell us about the timeframe for FoPLP or CPO
- They design the tools and outsource manufacturing to 3rd party: does this increase the risk of reverse engineering/copying?
- CoWoS: 100% share for their process steps which is 20-30% share for the whole line. They are wafer on substrate part and same process whether S R or L
- Process Steps: Pick and place; attach; AOI; Wafer / Die Bonding / Underfill / Underfill AOI / Creeping Remove / Cover Automation/Substrate Inspection
- What % of your business is being driven by NVDA or are you also seeing orders from AMD or the CSP's with ASIC's.
- ASE & AMKR ramping CoWoS; explain the difference in tools for those processes vs. TSM
- How long does it take to get CoWoS line up & qualified; Grand Process tells us it may be 8-10 months manu lead time + 6-9 months ship to revenue
- New Product Introduction (NPI) |
    - Co Packaged Optics (CPO) '26 story for TSM/NVDA; 2D & 3D AOI + Heat Sink Process (Special Lid using Metal Tin)
    - Film Tin Line; same equipment but other IC's & 3-5 different NON NVDA IC's
    - INFO + CoWoS for AAPL
    - FoPLP with TSM (Innolux), All Ring sells Underfill '27 story

All Ring Tech (6187 TT)

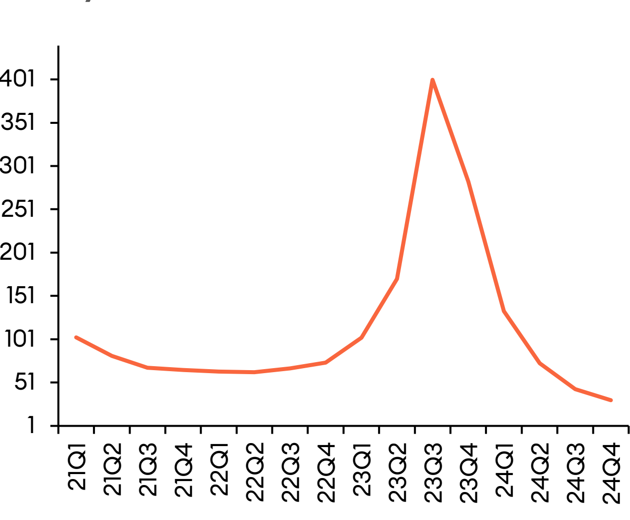
Revenue (TWD$bn)



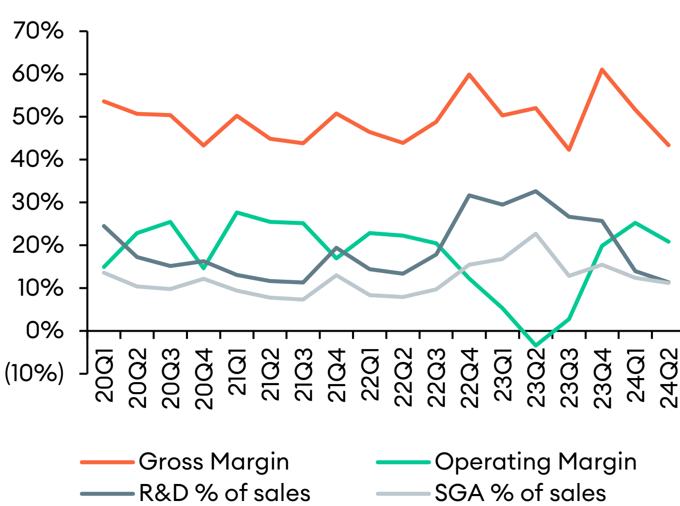
EPS (TWD)



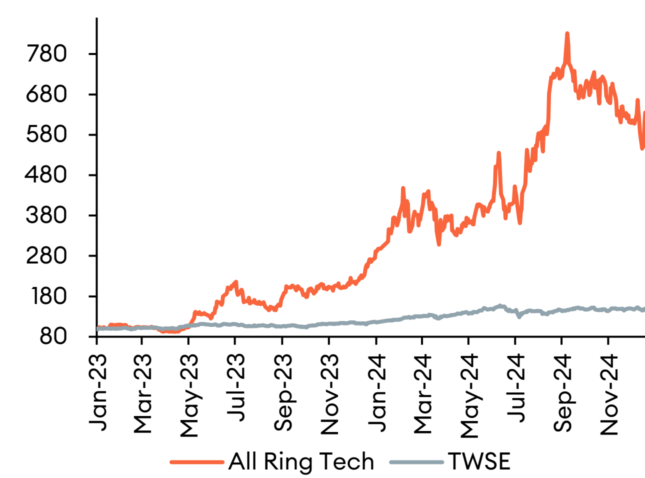
P/E



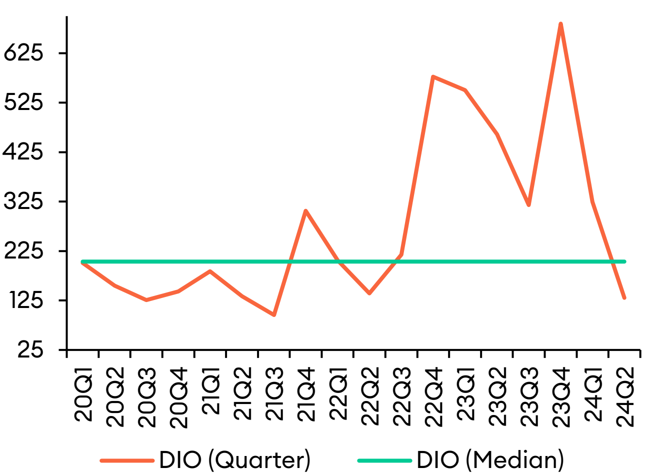
Margins (%)



Relative Performance (last 2 years)



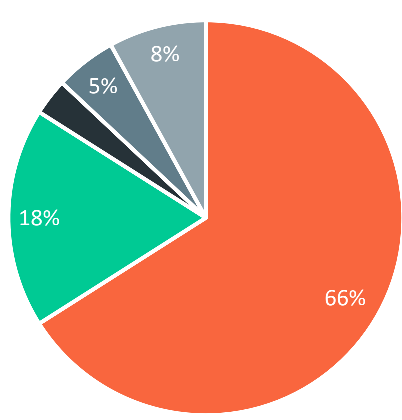
DIO (days)



Jentech Precision (3653 TT, 1515 TWD) EV 6.5 US$bn Yield 0.7% ADTV 42 US$m

Thermal solutions for Server & EV

Sales Mix



- Thermal Heat Spreader
- Lead Frame
- Communication Connector
- Electronic Components
- Other

Company Overview

Server Solutions

- Heat Spreader for NB / PC / AI Server / Game Console
- CPU Socket
- Vapor Chamber Head Spreader
- Thermal Modules

Auto Solutions

- Liquid Cooling Baseplate for EV & HEV
- Contravariant power module cooling baseplate & frame
- ECU cooling plate
- Ceramic substrate components
- Lithium battery cooling plate
- MCU heat spreaders
- PPA & EMC lead frames

Electronic Components

- EMI Shielding for NB / SP & High frequency Coax connectors
- 5G amplifiers / Image sensor / Tire pressure monitor

Competition

- Thermal: Element Six (Private), Shinko Elec (6967 JP), Advanced Thermal Solutions (Private)
- CPU Socket: Lotes (3533 TT), Amphenol (APH US), TE Connectivity (TE US), FIT (6088 HK)
- Power supply

Key Topics / Questions

- Integration synergies: spreaders / connectors / thermal modules vs. discreet components.
- Implications for chip level heat spreaders impeding dissipation for server level
- Is your LID spec influenced by the specific type of thermal grease or underfill ?
- ASP's / margin / design differences amongst AI/GPU/ASIC solutions.
- Beyond AI / GPU which other markets will adopt heat spreaders
- CPU socket market; value proposition vs. existing players. Where are they in the process (CPU design, approval, CSP or ODM interest, OEM interest) 2nd is to get the approval on the socket.
- Heat spreader: Application mix IT vs. EV and within IT NB/DT/Server/AI; differences amongst the components

Jentech Precision (3653) Cont.

- Blackwell ASP is $20; do we have view on what Ruben ASP will be or the difference in spec (area, materials) for the heat sink

- Co package optics

- Hopper trajectory in '25; how quickly is this declining as BW ramps
- Manufacturing: review the Taiwan & China plants; overall capacity, UTR, where expanding and / or what can be done in each facility
  - 20 mm units /month for all applications
- Socket: update on qualification process with INTC and ability to gain allocation. Synergies with the server loading mechanism (SLM)
  - When does higher heat on CPU drive structural change in the current socket materials
  - INTC: had been hard to penetrate socket; but as INTC got to 9k pins, developed IP with INTC, In 2 years, heat will negatively impact sockets ; it's not related to wattage; the socket is plastic, and as the chip gets larger, there is more risk on heat warping.
  - Socket: in qualification today with INTC and AMD; once approved, create supplier list; then the customers will procure;

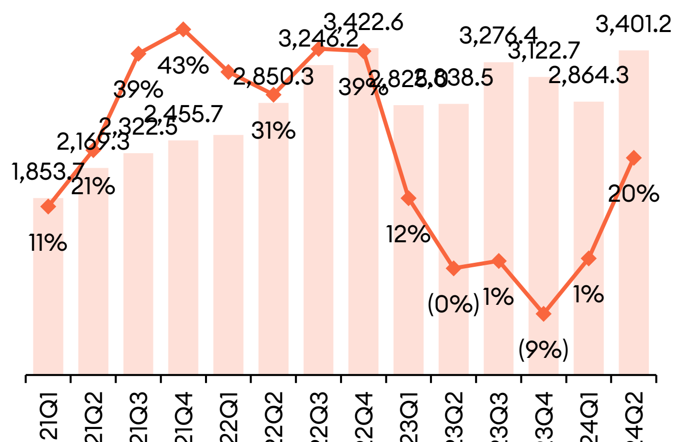
- Liquid Cooling for Server exposure: ramping GB200 for SMCI in '25 (Micro connective cooling with Jetcool (FLEX company)
- Discuss the differences in spec for different customers: materials (stainless steel, gold plating), # of processing steps

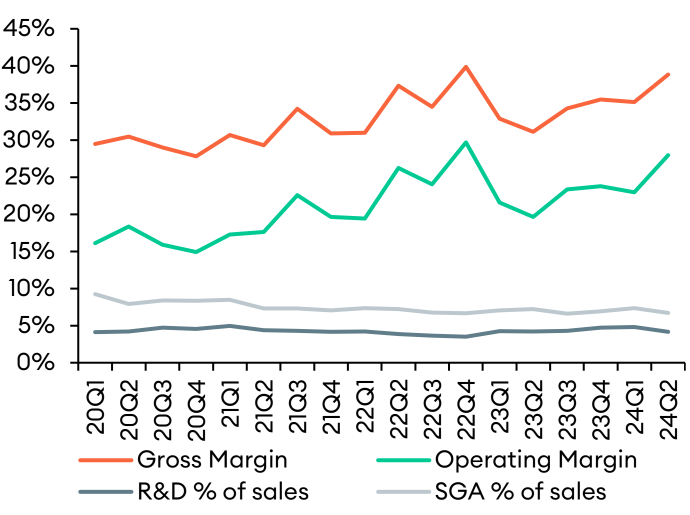
- What is the relationship (if any) between Jentech as Heat Sink supplier and the Packaging process, including All Ring who supplies underfill and AOI

- Implications for chip level heat spreaders impeding dissipation for server level
  - Heat spreader and thermal modules are separated by thermal paste
  - Jentech supplies to IC while Cold plate supplies to the ODM; there may be changes in the future on new products coming to the market.
  - Heat > 1500 watts, heat spreader will be the bottleneck, as cooper has limitations; next designs, put the vapor chamber inside the heat spreader, allows the heat to help or to put the copper inside the spreader....

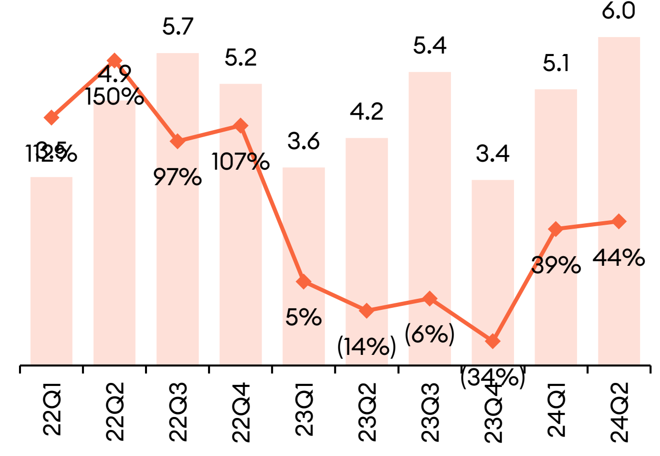
Jentech Precision (3653 TT)

Revenue (TWD$bn)

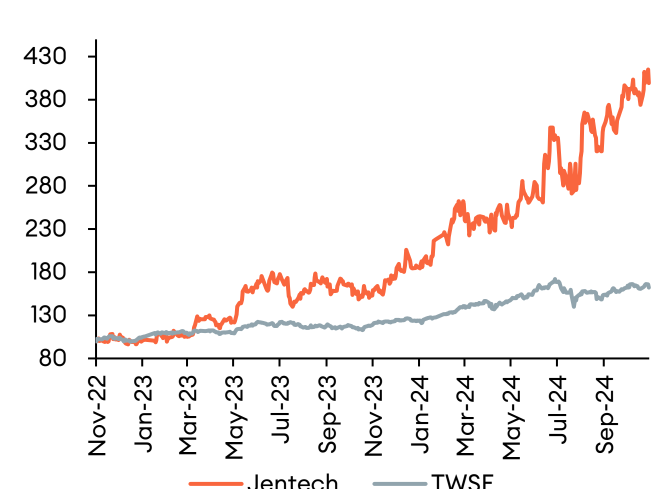




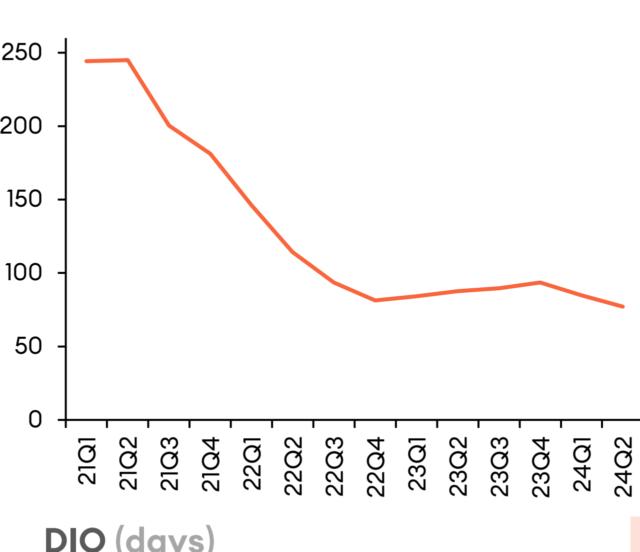
EPS (TWD)



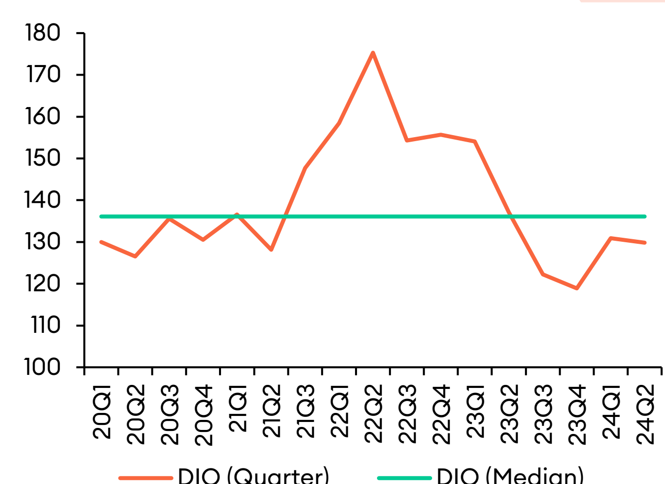
Relative Performance (last 2 years)



P/E



DIO (days)



NewStreet Research

Grand Process (3131 TT, 1650 TWD) EV 1.4 US$bn Yield 1.0% ADVT 53 US$m
Metal Etch & Wafer Cleaning Equipment

Company Overview

Description
- 30-year focus on advanced packaging | Wet process
- Began with LED in 1998 | TSM began in 2001 flip chip bumping
- Affiliates: Chemleader (etchants) | Tazmo & Apprecia Tech for coater developer
- CoWoS: 40% of '24 and 50% of '25 | mostly single wafer spin to remove undesired material

Products
- Singe Spin: Process of record (POR for InFO / CoWoS / SoIC / Fanout / Bumping
- Wet Bench System: POR for InFO / CoWoS / SoIC / Fanout / Bumping
- Combo System: glass carrier clean / laser de-bond & clean / PR Strip / UBM Etch
- 111 nanotwined-Cu Electrochemical Deposition for advanced packaging

Applications
- Advanced Packaging
- IC Front End of Line: EUV Mask Cleaner / Wafer Stress Release Etching / Wafer Cleaning Process
- Opto-electronics: GaAs Etcher /

Customers
- Taiwan 70-80% | TSM #1 | ASE #2 | MU #3 (sole source for HBM)
- China 25-30% | Tong Fu Micro | TF AMD in Malaysia

Competitors
- Scientech (3583 TT) 50% share of INFO & CoWoS @ TSM
- Grand Process 50% share at TSM and > 90% share at OSAT & HBM
- TEL | AMAT | LRCX can't target BEOL clean, different tools

Key Topics / Questions

- Grand Process consists of several merged entities; would like to understand how the firm came to be.
- R&D or MP for CPO and PLP
- Opto-electronics initiatives: GaAs Etcher
- Glass initiatives
- Back Grinding & Back Metallization (BGBM) for wafer thinning for IGBT / MOSFETS
- Metrology Solutions for defect inspection for FO-WLP or PLP
- Lead times on Equipment, including installation & qualification
- CoWoS capacity overall and Grand Process capacity

Grand Process (3131 TT)

- **CoWoS Process:** Back end, they do the connection; you need aluminum pad and polymer between the copper; plating reliability, performance. Clean wafers post PVD, before deposition, after that Photo Resist (PR) stripping, which gets down to copper pillar; finally remove another layer of etchant on UMB: Each step requires different tool. UBM etching for TSM is customized; and its different from ASE: different chemicals and recipie; 80% same, 20% diff.

- **Co packaged Optics:** the same CoWoS process but complicated; drives more biz/chemicals to them

- **Lead times on CoWoS equipment;** impact on actual capacity exiting the year
- CoWoS capacity 95k in '26, 150k in '28;

- Wet process tool is key: discuss the risk that AMAT / LRCX / TEL / SCREEN all target this business
  - TEL / AMAT / LRCX: focus on front end of line; all wafers flat; back end you face different back-back-back-back-end and you need more I/O points, more 3D
  - If TEL wish to penetrate back end biz, they need a new tool; wafer handling is different in FEOL vs. BEOL. Its lower ASP and margin for FEOL vs. BEOL; so hard for the big SPE to invest.
  - You face new defects that you have not seen before. Does not think they have interest in back end connection like CoWoS or INFO; but does think they have interest in Hybrid Bonding , which may replace SOC. SCREEN and LRCX are both putting more effort to look at SOIC>

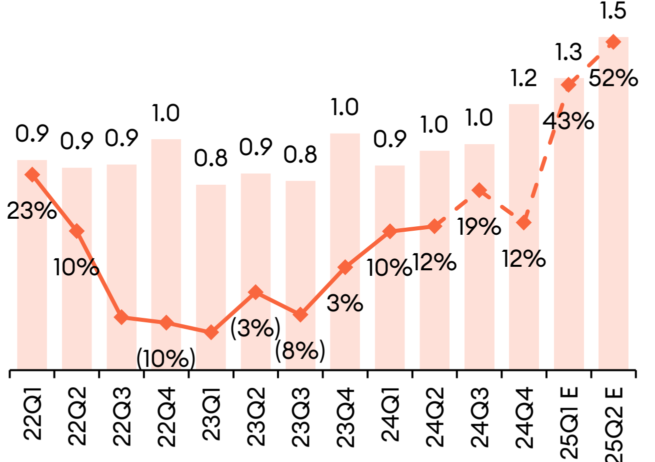
- Non TSM CoWoS opportunities; INTC / AMKR / ASE. If all wafers come from TSM and you need their back end packaging, then what is available for NON TSM to target?

- HBM for MU: what types of tools/solution do you provide them. Opportunities in the future with SEC or Hynix

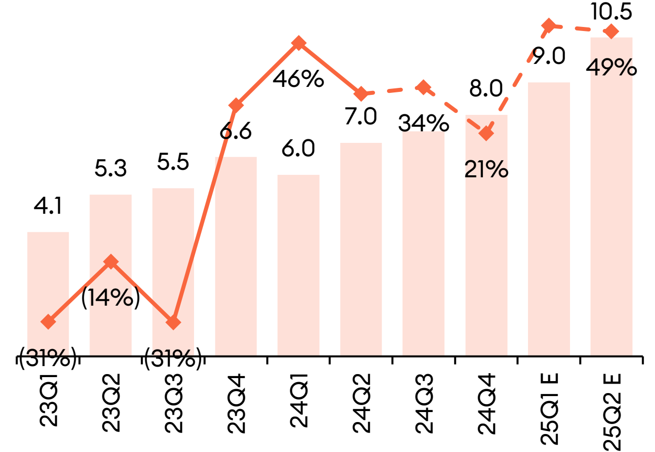
- Tong Fu & TF AMD; compare/contrast the opportunities with them vs. NVDA supply chain
- CSP ASIC's: is this a target market for you
- Capacity: Neet to expand capacity and labor force;
  - Phase 1: 100 units year | Phase 2: will be ready 3Q 25; from July '25, capacity doubles.
  - '25 demand is 150-200 units | '26 demand; not clear yet, but UP
  - CLC; chemistry factory; in Tainan; 2x size of Hsinchu site.
  - Qualification process for chemical is long; you need process qualification and also end product qualification; 1-2 years;
  - Chemicals change from each process requirement; advanced packaging is not mature, firm; so as front end design changes, impacts the packaging; having in house chemicals is important as process changes.

Grand Process (3131 TT)

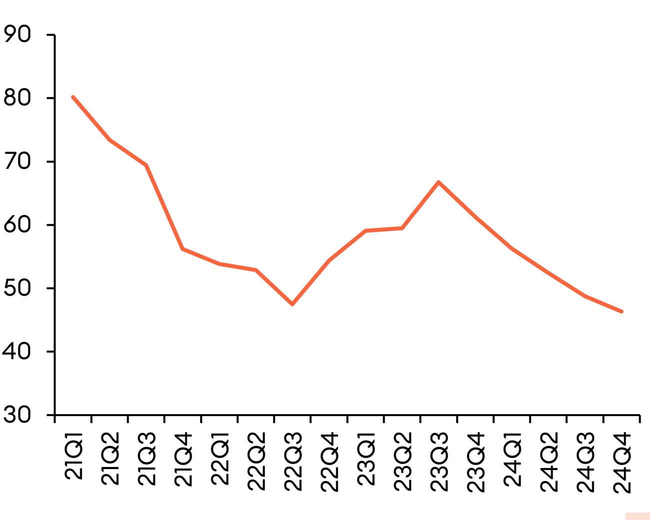
Revenue (TWD$bn) and YoY Growth (%)



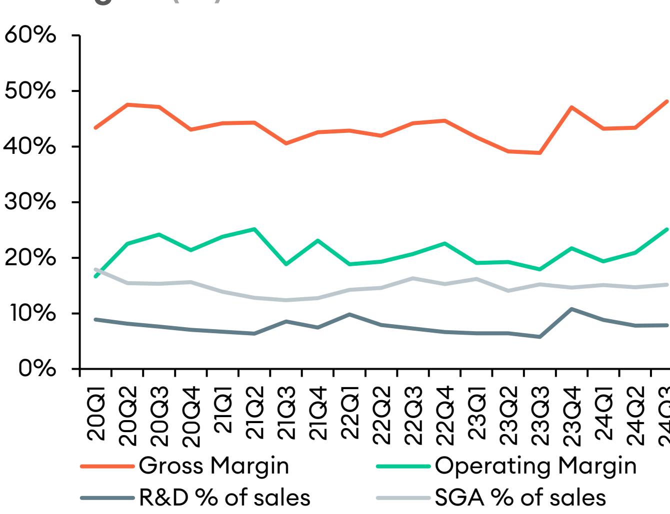
EPS (TWD) and YoY EPS growth (%)



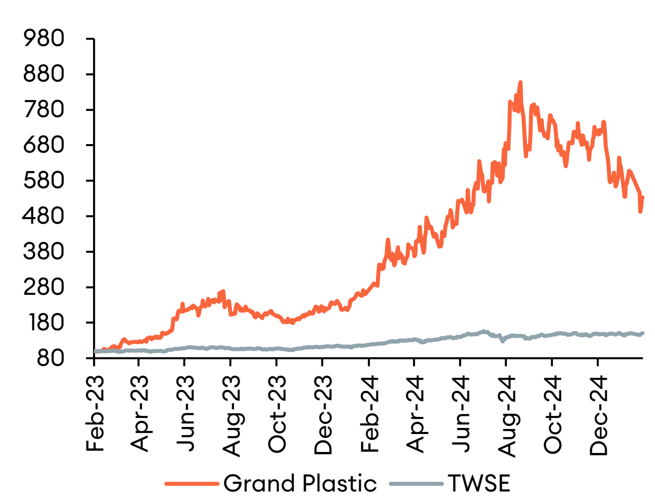
P/E



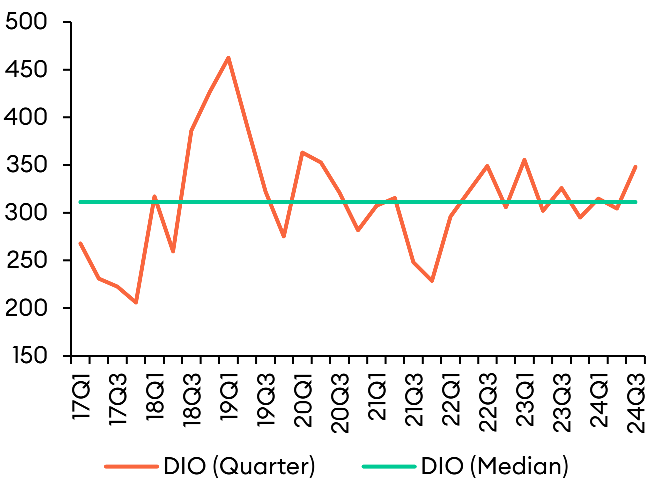
Margins (%)



Relative Performance (last 2 years)



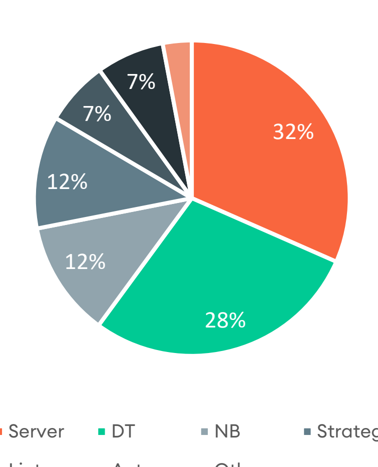
DIO (days)

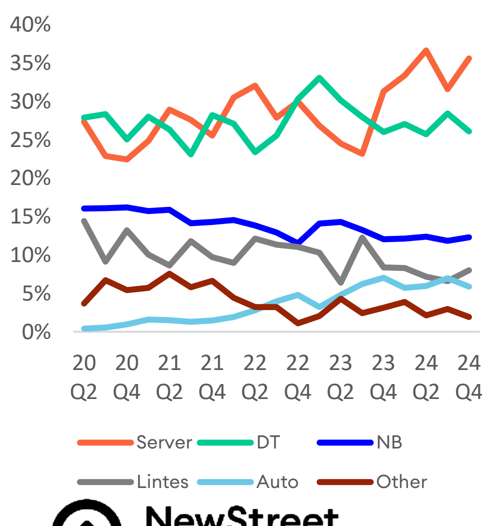


Lotes (3533 TT, 1785 TWD) EV 5.7 US$bn Yield 1.4% ADVT 55 US$m

CPU Sockets | Connectors

Sales Mix





Company Overview

Business Model & Products

- CPU Sockets | connectors | wiring harness
- Design in & qualification with OEM & ODM (
- Memory Connector: DDR 4 & 5 | Slot & Edge Card: PCIe, Gen Z, MCIO | Signal | power Solutions | I/O Series | Switch | Battery Holder | Board to Board Solution | FPC connector | Cable Assembly

Server

- CPU Socket | DDR | PCIe

NB

- NB: SODDR | M.2 | IO | PD Cable

DT

- DT: various connectors

Strategic customers

- AAPL: Connectors | mechanical parts

Auto & Industrial & Lintes

- Connectors | wiring harness
- Lintes: High end docking cable | AOC | AEC

Competitors

- Foxconn Interconnect (6088 HK) | TE Connectivity (TE US) | Amphenol (APH) | Deren (002055 CH) | Jentech (3653 TT)
- UQD: Parker Hannifin (PH US) | Colder Products (private) | CEJN | Staubli

Customers

- INTC > 20% | AMD | NVDA | AAPL

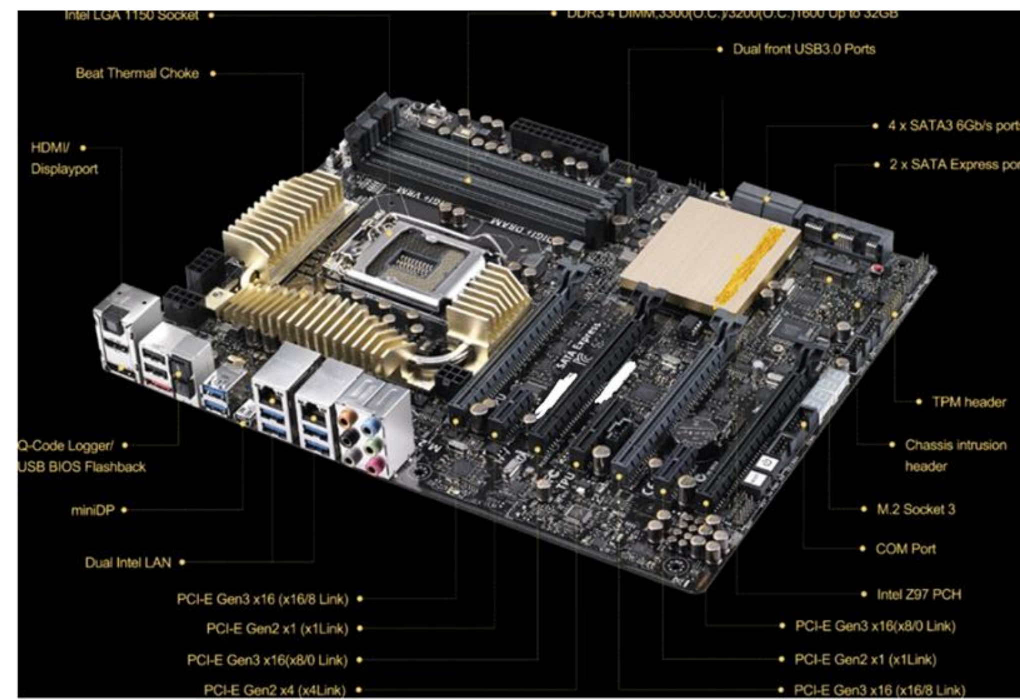
Key Topics / Questions

- Growth: was indicating slower '25 vs. '24 and down '26; drivers?
- NB: Cammm2 module to save height space; higher ASP; penetration rate forecast?
- AI PC impact on Lotes
- UQD for liquid cooling; update on opportunity and the barrier to entry (patents) and whether this biz is sticky enough.
- XXXXXXX
- XXXXXXX
- XXXXXXX
- XXXXXXX
- XXXXXXX
- XXXXXXX
- XXXXXXX

Lotes (3533 TT) Cont.

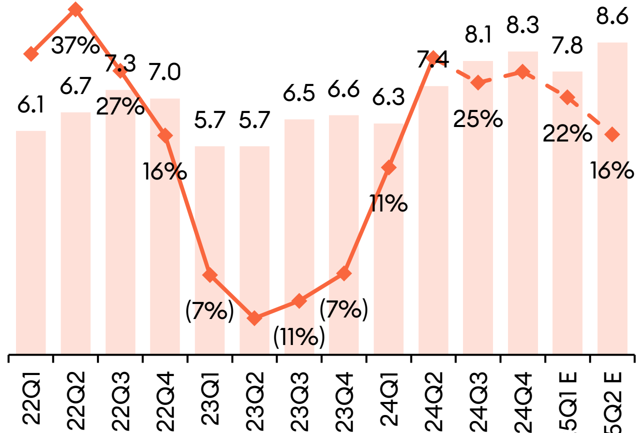
Key Topics / Questions

- **AI exposure & opportunities** NVDA GPU to adopt socket. Is Lotes qualified?
  - Certain AMD GPU's use socket and others use connectors, based on design; what are the pros/cons
  - Will GPU volumes or pricing of the systems be the biggest factor in socket vs. connector?
- **Jentech share gains w/ INTC CPU Socket**
  - Why does Jentech dominate ILM and is that an opportunity for Lotes to penetrate?
- **Margins:** GM's increased from < 30% to > 50%; as Server mix increased and DT decreased; sustainability and impact from particular products within each segment?
- **R&D has increased by 100 BP's** in past few years; what are the main projects
- Universal Quick Disconnect (UQD)
  - Patent Protection: CPC, CEJN, Parker Hannifin, and Stäubli hold patents on critical design features, including sealing mechanisms, locking mechanisms, and blind-mate connectivity
  - Some UQDs are designed specifically for OEM partnerships (e.g., Intel's UQD standard), limiting new entrants unless they license or reverse-engineer designs.
  - Compliance with industry standards (e.g., Open Compute Project (OCP), ASHRAE, and RoHS) adds complexity for new entrants.
  - XXXXXXX
  - XXXXXXX
  - XXXXXXX
  - XXXXXXX

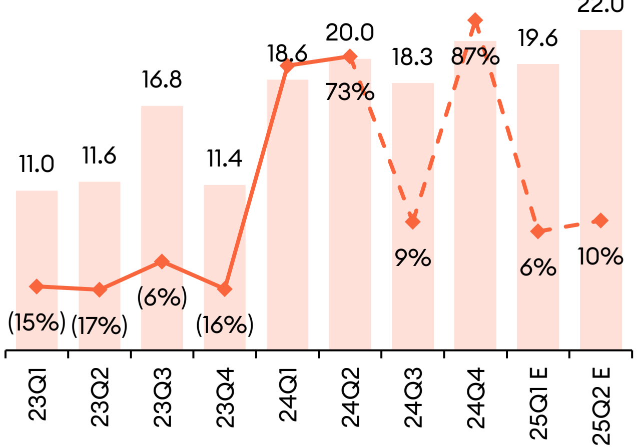


Lotes (3533 TT)

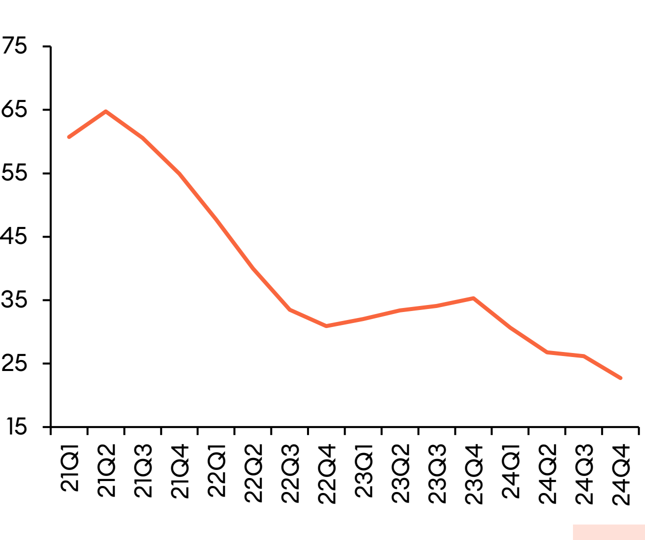
Revenue (TWD$bn)



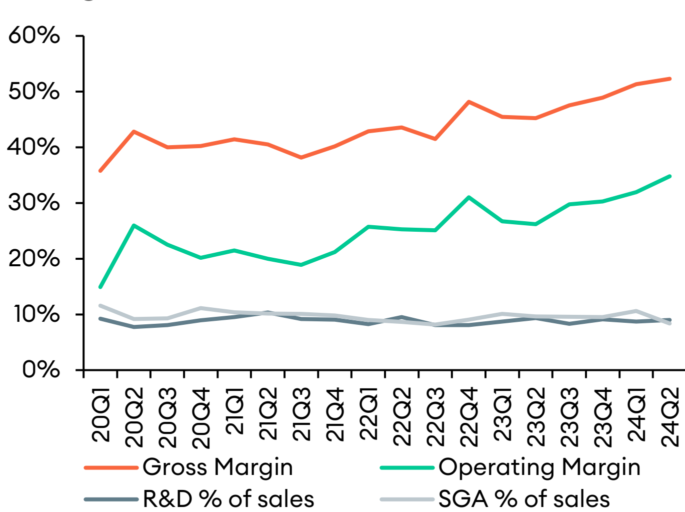
EPS (TWD)



P/E

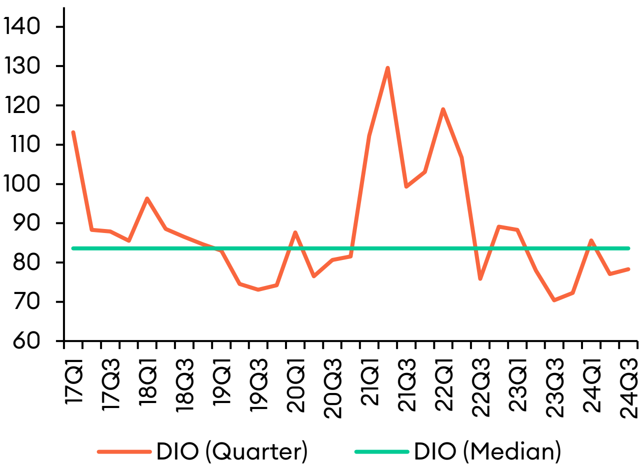


Margins (%)



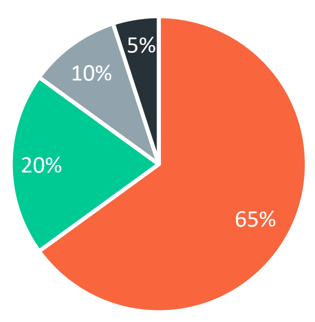
Relative Performance (last 2 years)

DIO (days)



Gigabyte (2376 TT, 254 TWD) EV 5 US$bn Yield 2.5% ADTV 50 US$m

Sales Mix



Server ▪ VGA ▪ MOBO ▪ Other

APAC + China ▪ EMEA ▪ Americas

Company Overview

Business Model
- Channel: they own the products and either design to spec for customer or standard off the shelf
- All NON Hyperscale CSP is their target customer

Servers
- 80% GPU / 20% CPU
- AI: ~56% of sales via Tier 2 CSP / 5% enterprise
- Majority NVDA / Limited AMD Mi300x traction
- AI / HPC / Enterprise / Edge

Graphics Cards
- #3 behind Asustek (2357 TT) & Micro-Star (2377 TT)
- ~80% NVDA / ~20% AMD

Motherboard
- #2 behind Asustek (2357 TT)

Customers
- AI: 10 in '23 | 3-400 in '24
- Top 20 = 80% of sales | leans Tier 2 CSP vs. enterprise

Other
- Power supply
- PC Cases
- Cooling

Key Topics

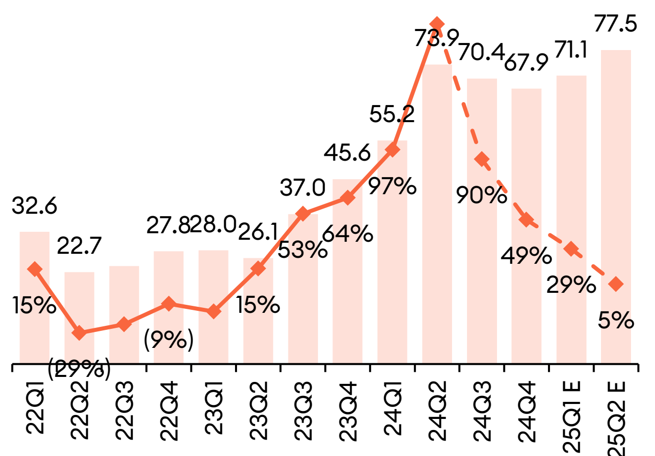
- Lead times on key components, particularly GB GPU
- Data Center capacity & impact on higher density systems.
- Hopper 100, 200 / Blackwell transition
- AMD Mi300x / Ecosystem limits traction. ZT Systems deal neutral to positive for industry / faster time to market
- General server / no recovery
- Adding capabilities in power supply, thermal, firmware, software. Thermal: 2nd highest focus of R&D behind GPU.
- Giga Computing / IPO shelved for now / focus on strong growth opportunities
- AI PC: was too optimistic / '25 better but need killer app
- Share gains vs. SMCI
- Margins: particularly for server as overall are declining trend
- What solutions are your customers looking to solve; what are the business cases

Gigabyte (2376 TT) Cont.

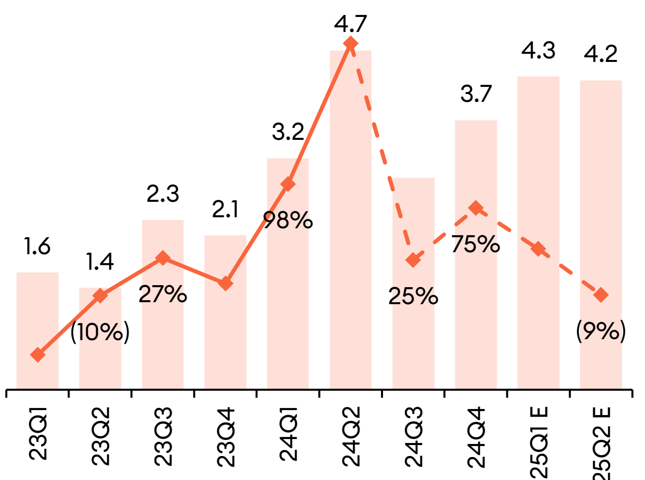
- **AI server:** 80% Tier 2 CSP vs. 20% Enterprise. Shipping L10 or L11 whereas for regular server they just ship bare boards to SI or Disti
  - Is 100% of AI direct to end customer or is there SI or Disti biz as well.
- **GB 200 was not shipping as of Late Oct '24:** update on this and what their mix of Hopper to GB will be.
  - Are there still tech or design changes which are influencing your shipment schedules?
  - Given tech changes, do you see customers changing what configuration they will buy? IE NVL 36 or 72 or GB 200 or 300
- **Ruben timing:** have they seen product or spec and when testing?
- **Enterprise; flush out what type you will focus on.** Fortune 500 like TSM, MediaTek or smaller? Also discuss different configurations and how they vary by the size of the model or the vertical
- **AI Margins:** low double-digit GM: lower vs. SMCI (declining from high teens to low double digit) as Gigabyte is smaller.
  - customers are asking for 'more' support, that should mean better margins?
- **Networking: elaborate on your involvement:** contribution to revenue, growth. Do you see customers looking for alternatives to NVDA
- **Thermal:** policy is to work with champions: who are the best and who are most advanced moving TO system vs. component.
- **AI overprovisioning:** power and thermal: we hear from others hyperscale's are over provisioning ; not clear if simply to be safe, stockpile enough inventory, or whether this drives more stable performance
- **Geographic Mix:** where are you seeing the most traction for AI: within APAC & China, which countries are driving the biz; and is your geo mix where the customer is or where you ship
- **ASIC's:** do you anticipate these being offered to merchant market and if so, will you get involved?

Gigabyte (2376 TT)

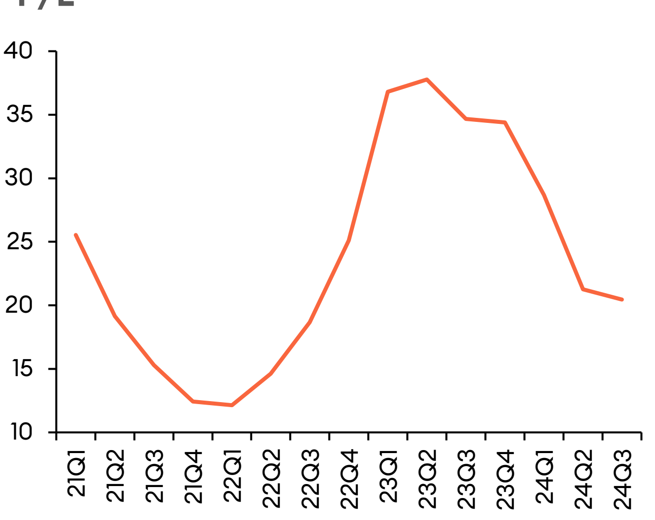
Revenue (TWD$bn)



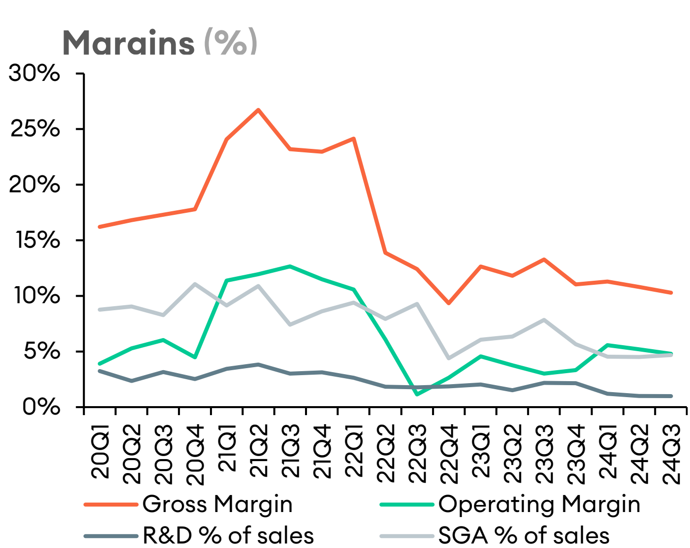
EPS (TWD)



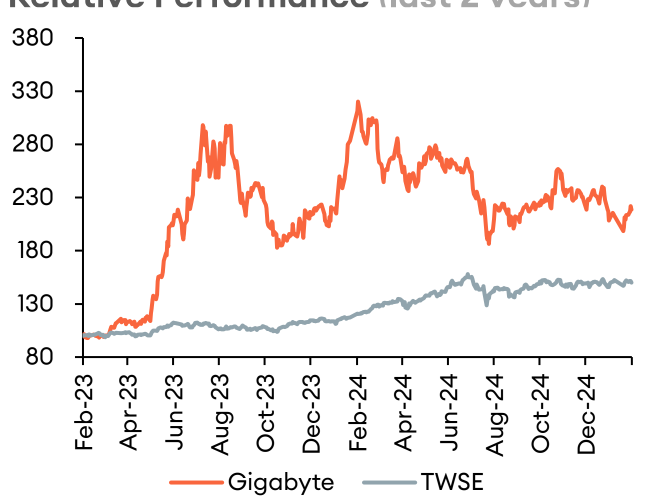
P/E



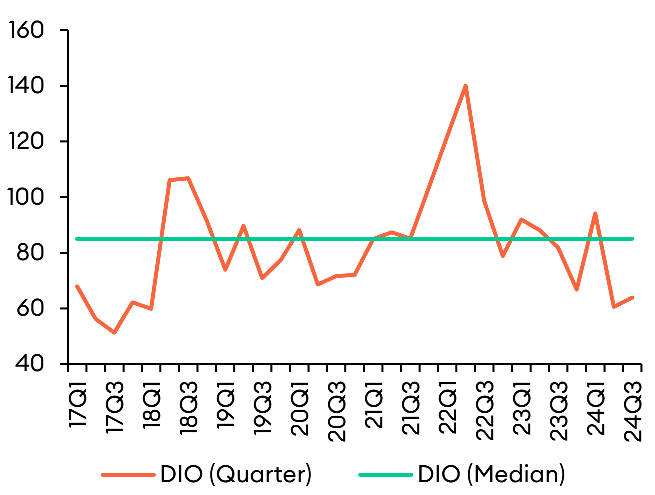
Margins (%)



Relative Performance (last 2 years)



DIO (days)

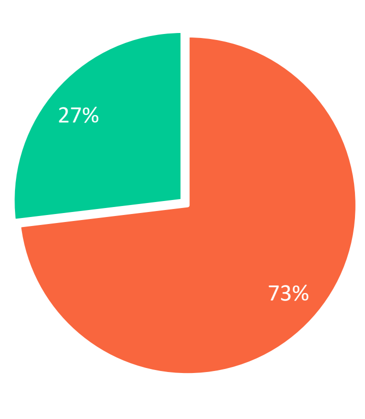


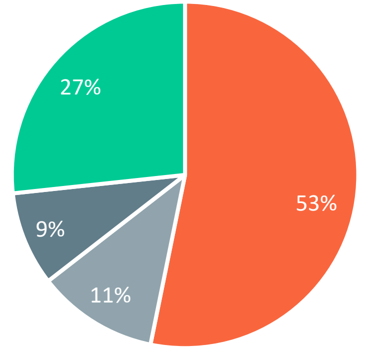
NewStreet Research

Acer (2353 TT, 39 TWD) EV 3.5 US$bn Yield 4.1% ADVT 15 US$m

PC Brand | Gaming | multiple listed subsidiaries

Sales Mix





Company Overview

Stats

- #6 PC Brand | 6% share | ~ 4 mm units/Q
- Core Biz 72% of sales (PC) / 28% New (10 listed subs)
- ODM's:

NB: ~ 53% of sales (4Q 23 last disclosure)

- Product: NB ~ 50% / DT ~ 11% / Display ~10% / Other 30%
- NB high consumer / limited commercial
- Gaming ~ Mid Teens % (NB / DT / Display)
- Geo Mix:
- China: low exposure and mostly non-PC

DT ~ 11% of sales | Display ~9% of sales

Gaming ~15-20% of total, including distribution

- Console gaming accessories
- Gaming NB

Listed Subs: listed in order of revenue size

- Weblink (6776 TT) is largest revenue | Acer e-Enabling (6811 TT) | Aopen (3046 TT) | Protrade Applied Materials (6972 TT) | Acer Gaming (6908 TT) | Acer Gadget (2432 TT) | Acer Cyber Security (6690 TT) | Acer Synergy Tech (6751 TT)

Supply Chain

- ODM: 25% each | Pegatron | Wistron | Compal | Quanta

Geo Mix

- 49% Asia | 27% America | 24% Europe

Competitors | market share

- Lenovo 24.4% | HP 22.6% | DELL 16.7% | AAPL 9%

Customers

- Consumer majority of share | limited commercial

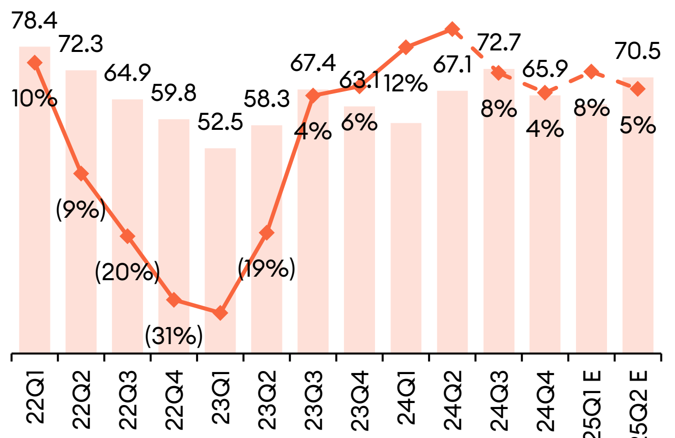
Key Topics / Questions

- AI PC: when do you see NPU's being adopted and what size TOPS will be local. When we see Lunar lake in PCs 3Q 25 with 40 TOPS, what will this mean application wise>
- Acer uses AI to train for medical, gaming, genmotion for 3D game animation (via Winking Studios, Acer sub). Explore this.
- PC Replacement cycle
- Non-PC OP Inc should be > PC at scale.
- 3% OP once NB returns to pre-COVID levels
- 2024 PC units + low/mid single digit
- B sheet / Net Cash 26% of Cap/ will not distribute / acquire companies
- Margins: Sales increasing, GM's flatlined
- Altos: Server & Workstation / Tier 3 supplier / CPU based
- Cash is $1B, down from $1.6B; negative FCF 1st 9 months in '24 | spent $100 mm last 12 months on J/V's

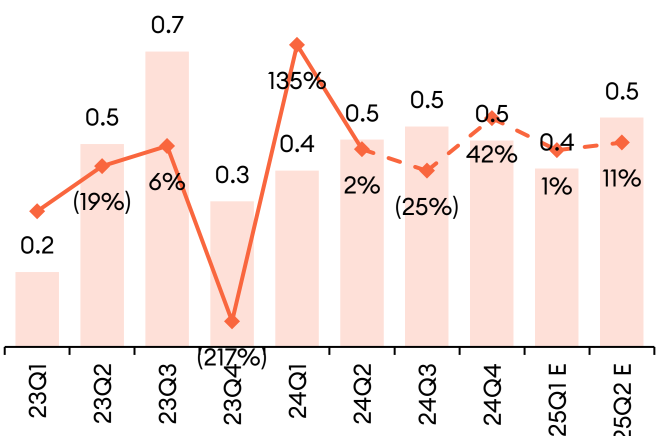
Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Acer (2353 TT)

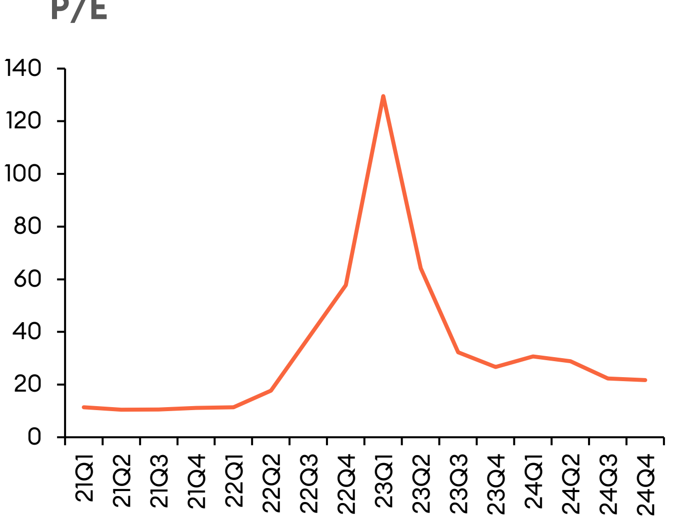
Revenue (TWD$bn)



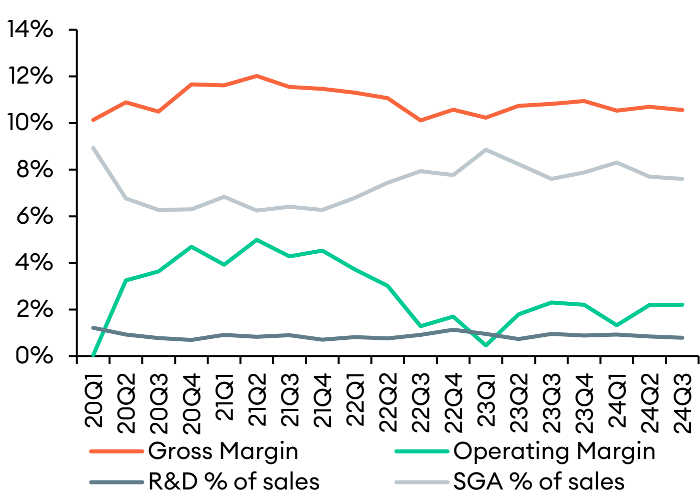
EPS (TWD)



P/E

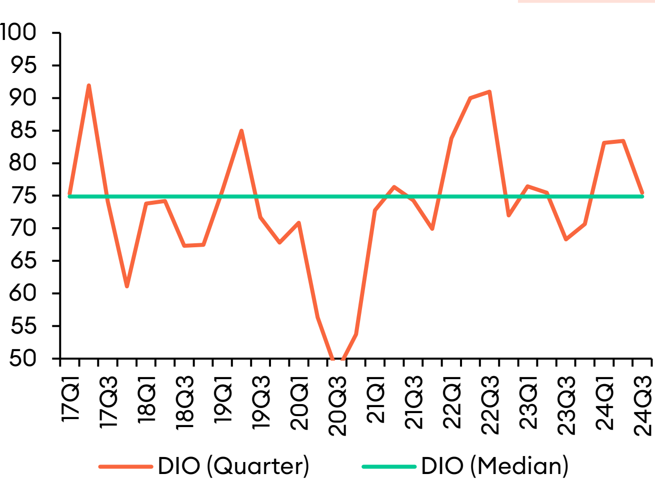


Margins (%)



Relative Performance (last 2 years)

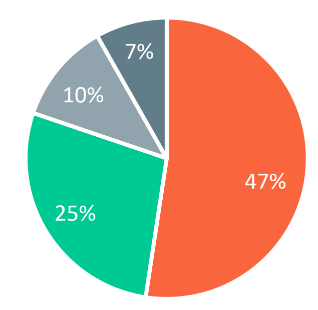
DIO (days)

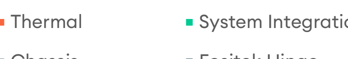


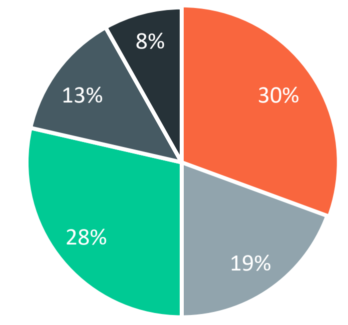
Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Asia Vital (3017 TT, 562 TWD) EV 6.5 US$bn Yield 1.2% ADVT 137 US$m
Thermal solutions | Hinges | Enclosures

Sales Mix







Server 3C SI Telecom Hinge

Company Overview

Growth Drivers
- 3D vapor chamber for H100
- Cold plate module for GB200 and beyond
- Cooling Distribution Unit (CDU) for Sidecar.
- 30% market share in fans

Thermal
- CPU heat sink for DT PC with 35% global share
- DC Fan | Electronically Commutated Fan
- Thin centrifugal fan array
- Active heat sync | heat pipe | vapor chamber
- IGBT Heat Sink-Energy

System Integration
- MOBO | Casing | Cooling module | Hinge | touch panel | camera module
- Not sure application mix

Chassis
- Casings & cabinets

Competitors
- Thermal: Auras | Taisol | CoolerMaster
- Enclosure: Chenbro

Customers
- AAPL 20-30%
- DELL | HP | Lenovo | Acer | Asus | MSFT | Sony | Samsung | CSCO
- NVDA for GPU & CSP's for ASIC
- AMD

Key Topics / Questions

- **Business Model:** overview: key products within each segment, margin profile, growth rate
- **Growth:** street has revenue and margins up through '25; initial view on '26
- **Liquid cooling** related vs. air; believe was 5-6% of '24, below plan due to BW push
- What is System Integration and why does it differ slightly when reported by Segment vs. Product?
- Thermal: discussion on segment overall and mix of Server / Base Station / Consumer
- Growth; mix of ASP vs. Units overall or within key segments. For Server, will thermal for Ruben be up vs. BW
- Margins: GM's have increased from mid/high teens to low 20's; function of mix, asp, UTR, etc.
- System Integration growing fastest / how much 'thermal' is included

Asia Vital (3017 TT) Cont.

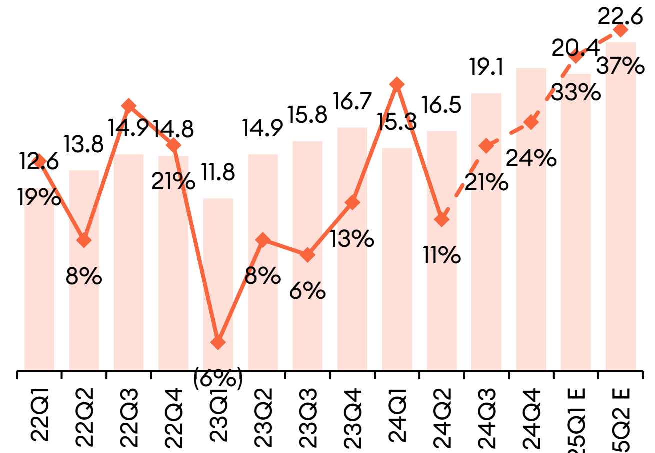
Key Topics / Questions

- **Business Model:** what is System Integration and why does it differ slightly when reported by Segment vs. Product?
- **Product vs. solution sales** what is your mix of components vs. systems and where is this trending
- Cooling distribution unit (CDU) is this strategic for you or just OEM for Quanta or other ODM's suppling pump and fans?
- **Manufacturing: main production sites** in China: Shenzhen, Wuhan, Shanghai, Dongguan, Chengdu
  - Vietnam new line ramping for 3D VC
  - Cold plate module: 50k/month capacity in China + 65k/month in Vietnam (rising to 250k/month, of which 160k/month is for GB200)
- **Thermal Mix:** how much of thermal is for PC | server | telecom
- **Chip Lid,** can you enter this business: similar to what Jentech provides for NVDA; seems you have the capability in house as well.

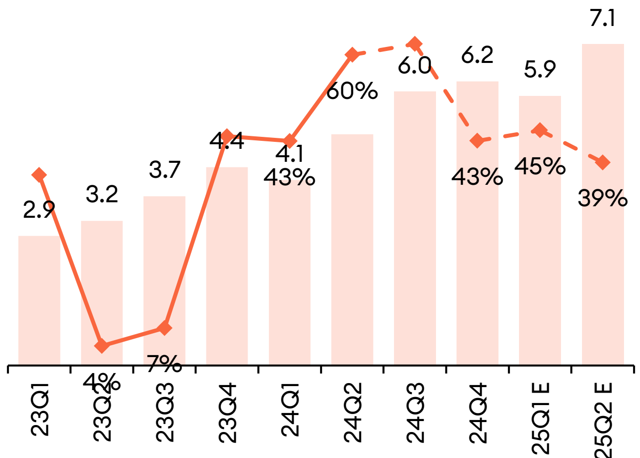
- **Hinge (Fositek) mix** of NB | AIO PC | SP camera | LCD monitor stand | foldable SP
- **System Integration:** web site lists the following products: MOBO | Casing | Cooling module | Hinge | touch panel | camera module. Would like to understand what are the big pieces and applications, IE, PC, NB, Server, Auto
- **As AI proliferates** edge devices, do you see growth from more/higher spec thermal solutions (NB & SP)

Asia Vital (3017 TT)

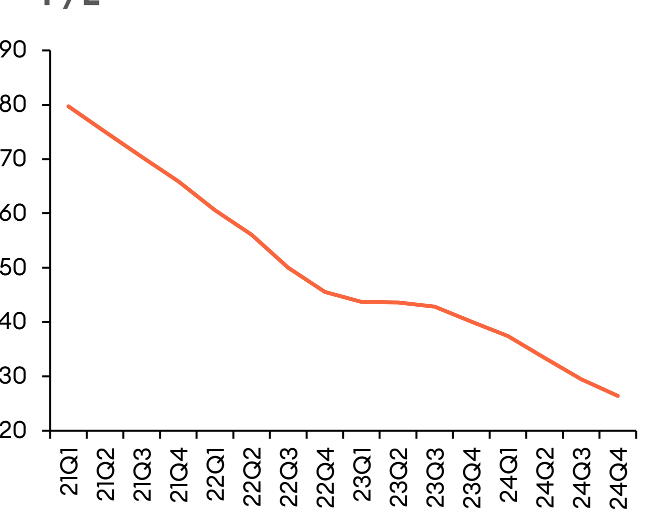
Revenue (TWD$bn)



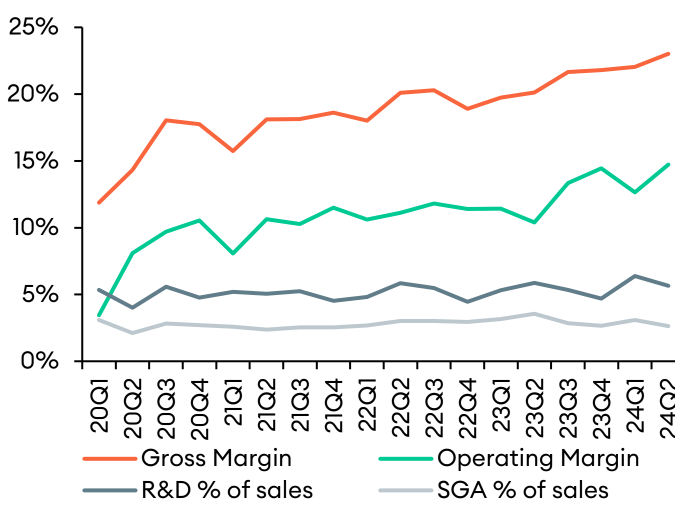
EPS (TWD)



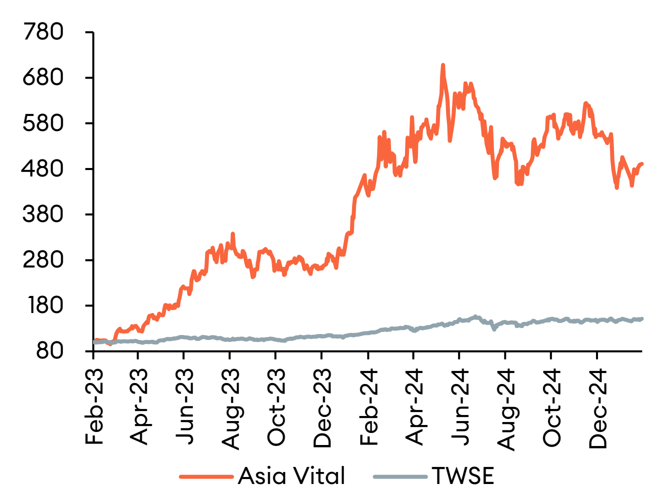
P/E



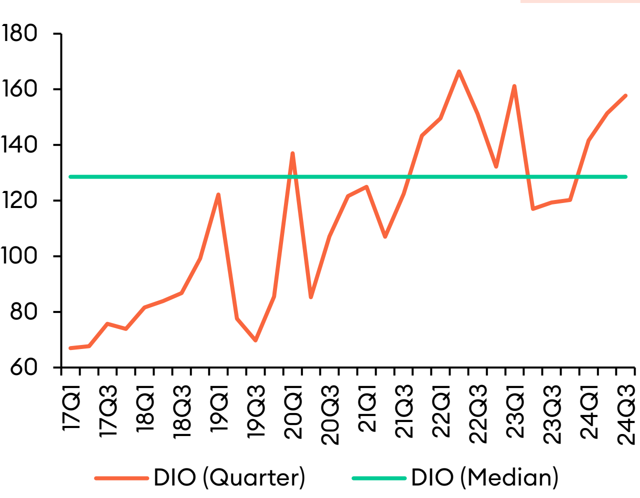
Margins (%)



Relative Performance (last 2 years)



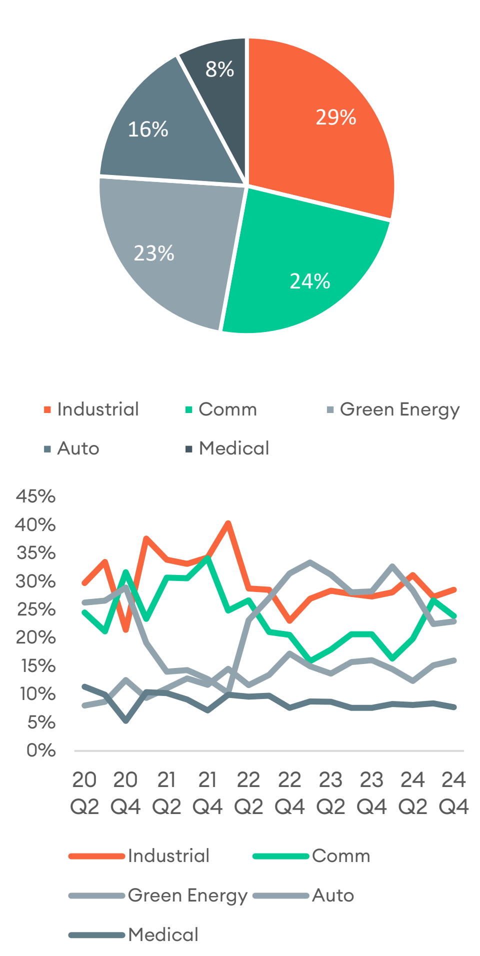
DIO (days)



Sinbon (3023 TT, 269 TWD) EV 1.9 US$bn Yield 3.6% ADVT 9 US$m

Custom cable assemblies & Connectors

Sales Mix



Company Overview

Business Model
- High mix, low volume | in house design (10 days for prototype), tooling (20 days)
- Global: 8 factories across Asia | Europe | Americas

Industrial
- Robots | ECE | Control Cabinet | Cable design

Auto
- Power domain control unit (PDCU) & Motor Control Unit (MCU)
- Some EV charging booked here

Medical
- Cable assembly for In vitro diagnostics & cardiac gating
- High precision PCBA

Green
- Wind | Solar | Energy storage

Communications
- Bluetooth low energy and single pair ethernet

Customers
- Top 20 = 50% of ’23
- Chargepoint (CHPT US) for EV chargers
- Enphase (ENPH US) Solar & energy storage
- Goldwind (002202 CH)

Competitors
- Amphenol (APH US)
- TE Connectivty (TE US)
- Luxshare Precision (002475 CH)
- Hon Hai (2317 TT)
- Bizlink (3665 TT)

Key Topics / Questions

- **Introduction,** overview with a focus on core strengths, differentiation. Helpful to understand key products and types of customers in each segment.
- **Geographic revenue Mix:** No disclosure but looks like China is ~45%; discuss if this is end customer, manufacturing location, etc.
- **Component vs. System**
- **Distribution:** what % of sales is this for Sinbon, also, what % of sales (if any) for Sinbon goes through the channel
- **Growth:** driven by new projects, new customers, or growth of existing base. Growth was strong through ’23 then flattened out is this macro or company specific
- **Manufacturing Footprint:** China still looks like the largest factories overall, discuss localization; components vs. PCB assembly or box build, etc. Plans for SEA expansion
- **Semi growth area:** 1st is this booked in Industrial or Communications? 2nd which types of SPE tools are they targeting
- **EV Charging** booked in both Green & Auto sort which products and growth rates

NewStreet Research

Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Sinbon (3023 TT Cont.

Key Topics / Questions

- **Growth for '25**
  - Green: Wind power from Chinese customers drives growth ;but EV & Solar inverter sluggish
  - Robots: humanoid projects, outlook what they provide

- **Communications Sector** better understanding of the applications and whether its all commercial or do they have Smartphone/PC exposure

- **Semis, new growth area:** Raw Cable | Cable Assembly | PCB Assembly | Cabinet Assembly

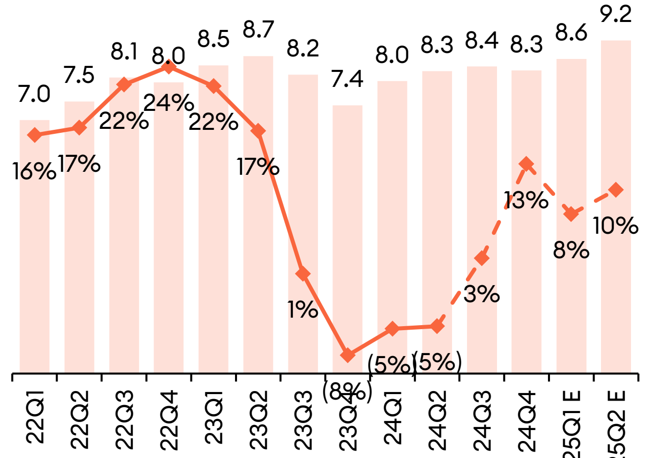
- **Distribution:** Components: Hirose | NDK | Prisemi | Dunte | Galaxy-CAS | MCMChip | 2Pai Semi & RF: SparkLAN | Antenova | Quetel | Acsip | ANGEEI | China Mobile | EmWicon | LinksField | JJPlus | Vertexcom | Rafeal Micro
  - Hirose: Connectors
  - Acsip: System in Package Modules
  - Inpaq: RF Modules & Antennas
- **Applications:**
  - Industrial: Automation & Control | Construction & Transportation | Industrial Robot | Metrology
  - Medical: Diagnostic imaging | patient Monitoring | Precision Medicine | Endoscopy & Cardiology | In Vitro Diagnostics | Cosmetics
  - Automotive and Aerospace: EV | 2-wheel vehicles | Intelligent Vehicle
  - Green Energy: Solar | Wind | Energy Storage
  - Communications: Smart City | Smart Home | Wearables | e-bike
- **Would you take on debt to grow faster;** current net cash positive and generates FCF
- **Competition:** APH & TEL are much larger
  - with higher margins GM's ~1000 basis points higher and operating margins 200-500 basis points higher. Understand the differences
  - Sinbon growth rate is lower vs. both APH & TEL, but higher vs. Bizlink

- **Seasonality:** 2Q & 3Q strongest, 1Q & 4Q weaker. What are the drivers

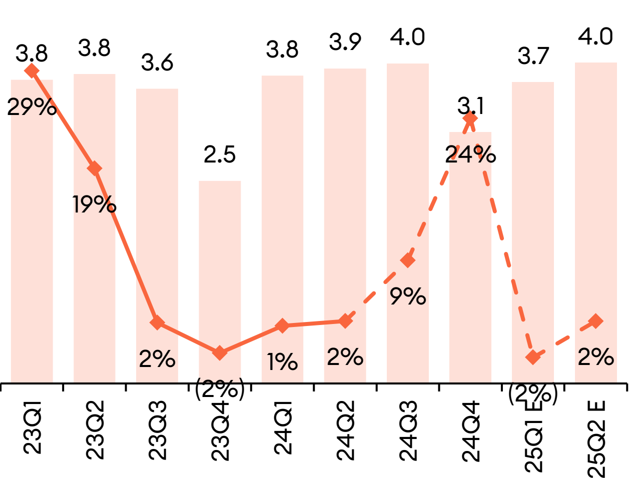
- **Margin drivers:** both GM and OM softer recently; is this Mix, UTR, pricing, labor/component costs, other

Sinbon (3023 TT)

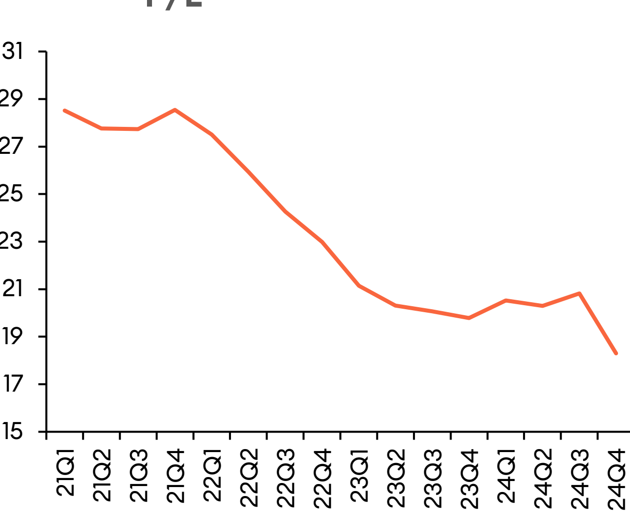
Revenue (TWD$bn)



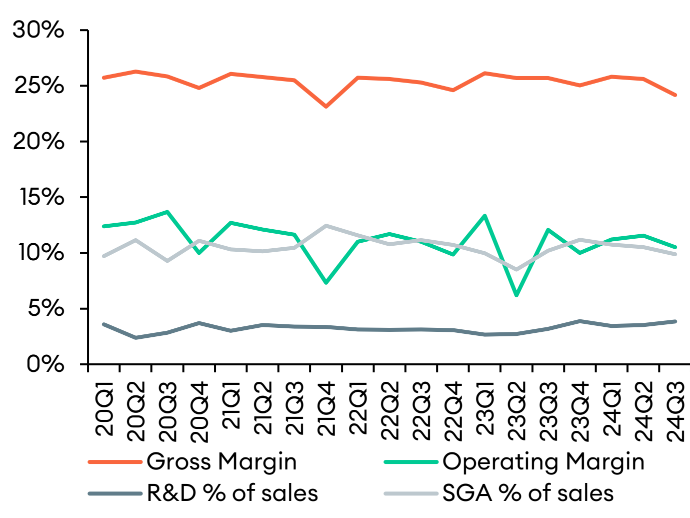
EPS (TWD)



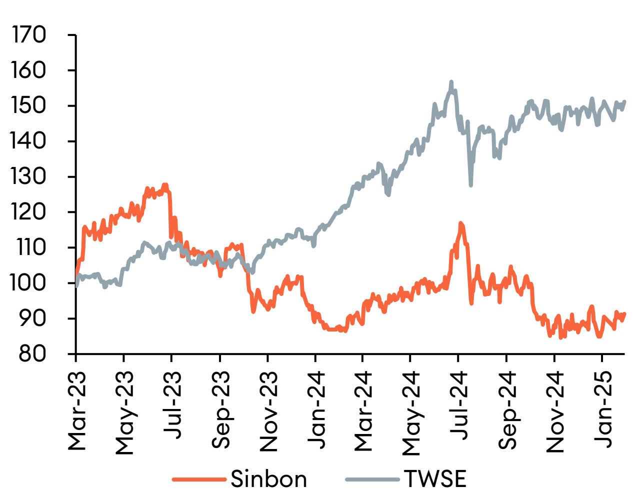
P/E



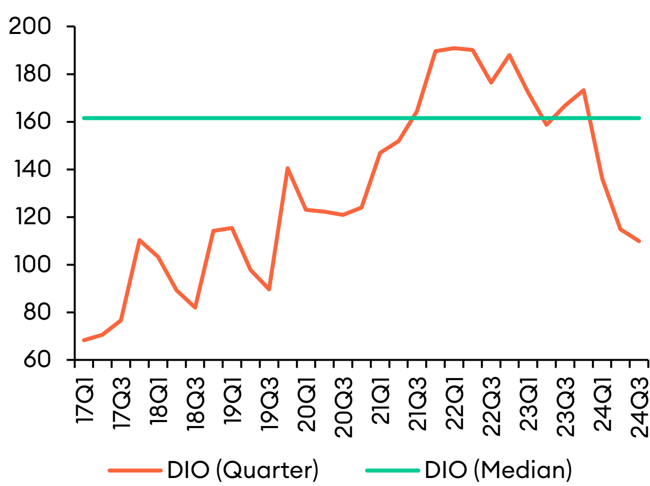
Margins (%)



Relative Performance (last 2 years)



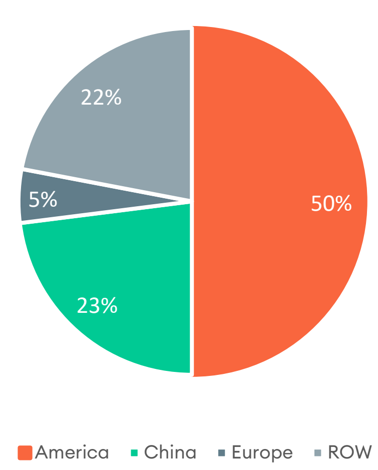
DIO (days)



Chenbro (8210 TT, 264 TWD) EV 977 US$mn Yield 1.9% ADVT 13 US$m

Server & Storage Chassis

Sales Mix



Company Overview

Biz Model

- Sheet metal design | materials | backplane | fan
- Firmware | system validation | optimize power, cooling
- Bare, Rack, Tower Server | Storage | PC Chassis

Joint Development (JDM / ODM) 45% of sales

- Highest margins
- Customers: MSFT | AMZN | BAT who want differentiated chassis

OEM / Cloud 20% of sales

- Lowest margin
- Customers: Cloud with internal R&D

Off The Shelf 30% of sales

- High GM but lower ASP
- Customers: System Integrators | Distributors

Competitors

- Server Chassis: SMCI, Tyan
- Racks: Rittal, Eaton, Vertiv
- Storage: Synology, QNAP, NTAP
- Asia Vital (3017 TT) | AIC (3693 TT)

Customers

- Key Accounts ~ 70% of revenue (3 US | 2 China | 1 Taiwan)
- US: AMZN #1, > 50% of sales | MSFT
- China: Inspur | Sugon | BAT
- Taiwan: Gigabyte | Quanta | Inventec
- SI's: ZT Systems | Hyve Solutions (Mitac)

Key Topics / Questions

- Barriers to entry | differentiation
- Manufacturing
  - 60% China / 40% Taiwan; discuss geopolitics pros/cons
  - Malaysia factory, MP '26;
  - US NCT factory early '25
  - Capacity of 1U, 2U, 4U, etc.
- New CPU / GPU platforms drives growth:
  - AI impact
  - CPU / GPU Mix of units & ASP & capacity
  - Hopper / BW Mix & Ramp
- Margin drivers: ASP, Mix, UTR
- Growth accelerated in '23 and is correcting now;
- New CSP customers in '25 (2 more)

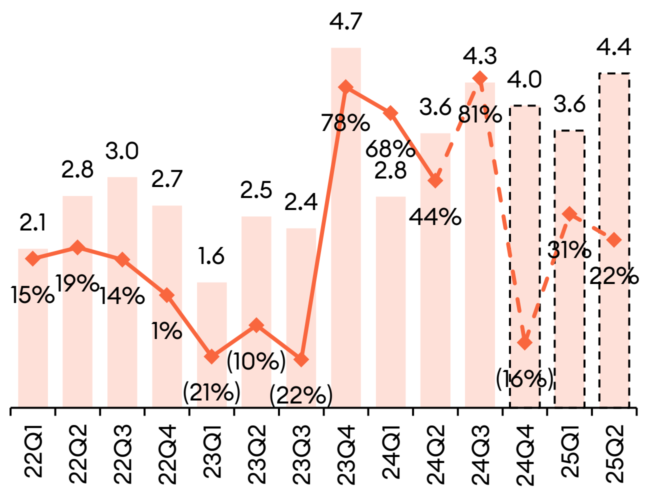
Chenbro (8210 TT) Continued

Key Topics / Questions

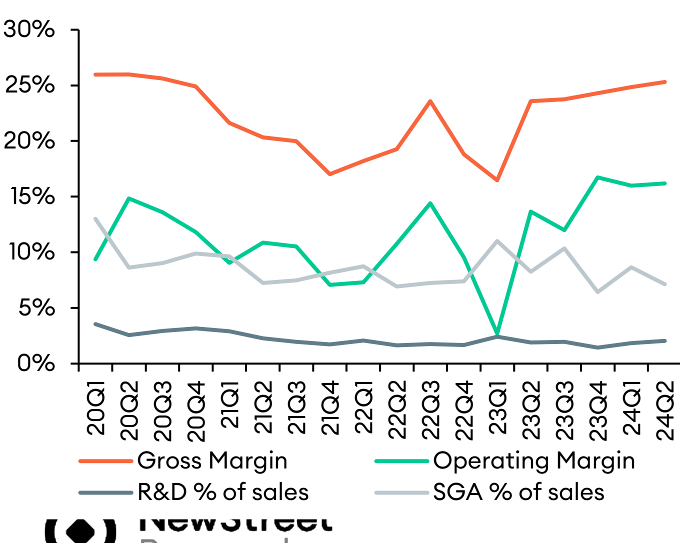
- Thermal integration in the rack vs. external Air/Liquid cooling modules
- Margin drivers: ASP, Mix, UTR
- AMD / ZT Systems: what impact on your business or the industry
- Synergy with Server Rail's?
- Margin drivers: UTR, Mix, Pricing

Chenbro (8210 TT)

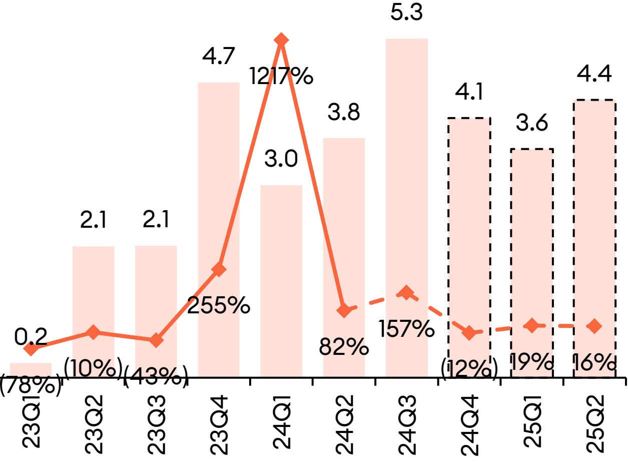
Revenue (TWD$bn)



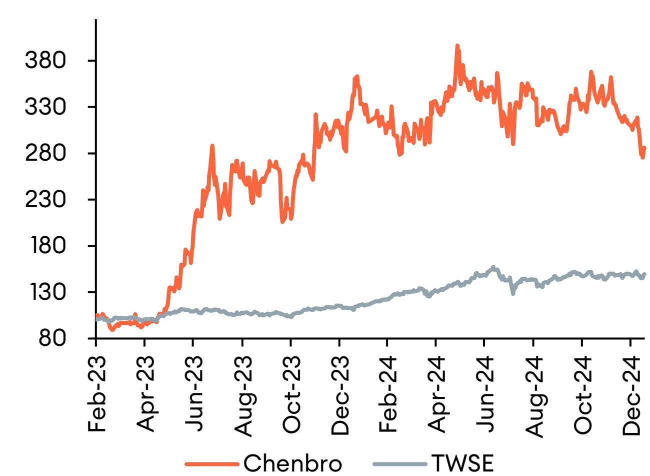
Margins (%)



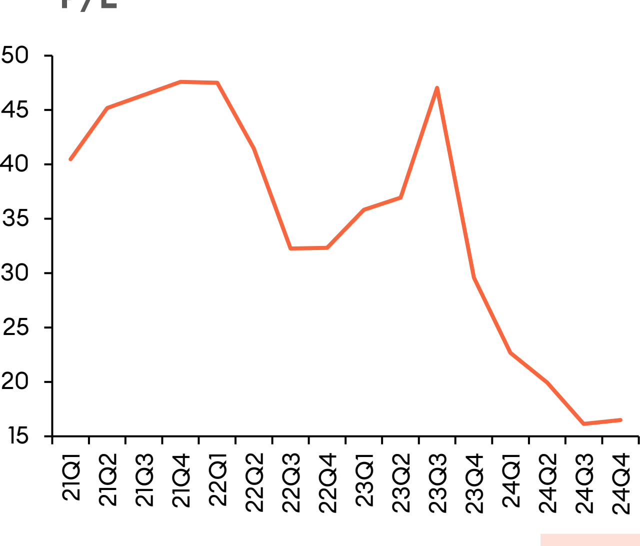
EPS (TWD)



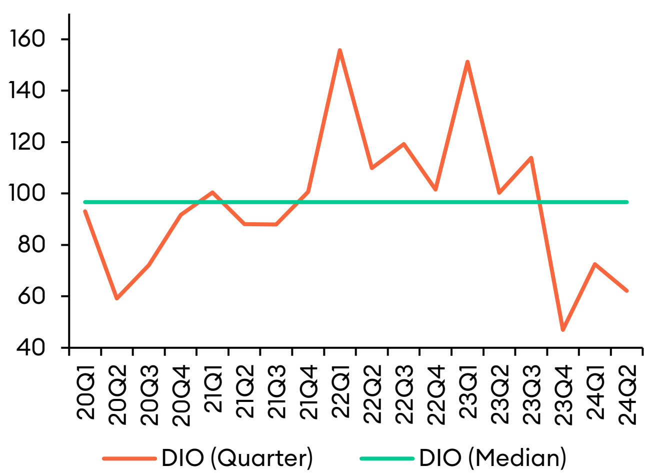
Relative Performance (last 2 years)



P/E



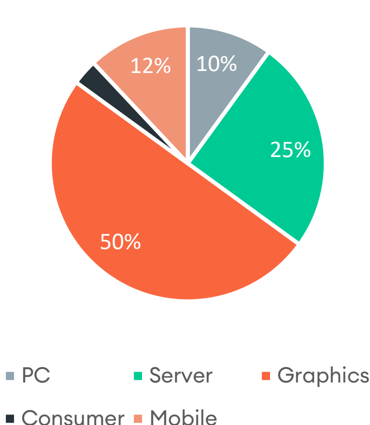
DIO (days)

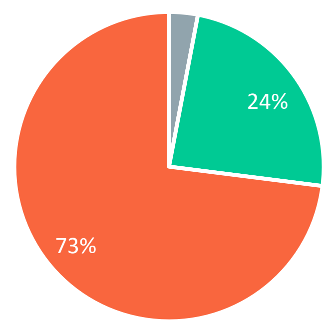


SK Hynix (000660 KS, 171700 KRW) EV 20 US$bn Yield 0.7% ADVT 664 US$m

Memory IDM: DRAM & NAND

MIX: DRAM (top) NAND (bottom)





Company Overview

MIX

- 74% DRAM | 24% NAND

DRAM

- 1Q 25: B/G Low Teen % decrease Q/Q / ASP +Mid Teens Q/Q
- '25 Mid to High Teen % YoY

NAND

- 1Q 25: B/G down High Teens Q/Q / ASP + Mid Teens Q/Q
- '25: Low Teen % YoY

Applications

- PC: Low to mid single digit set growth | Win 10 EOL & AI PCs
- Mobile Low to mid single digit set growth | AI 30% penetration
- Server High single digit set growth | High density & HBM

Capex

- '24 16B KRW | '25 20B KRW | 26 20B (prior peak was 19B in '22)
- '25 up due to M15x / Yong-in
- M15x opens 4Q 25 & contributes to DRAM in '26
- Yong-in 1st fab begins '25; target open 2Q 27

Competitors

- DRAM: Samsung / MU / CXMT
- NAND: Samsung / MU / Kioxia / YMTC

Key Topics / Questions

- End Market Demand
- Legacy Tech recovery: PC / SP / CE
- GPU constraints driving DC project delays
- DRAM / Supply Discipline / ASP still < '21 peak
- HBM custom designs; both SEC & Hynix highlighting; implications for margins, contracts, stickiness
- Inventory levels / DIO 129 exiting Q4 down from 233 peak in Q4; PC & SP OEM's still burning off excess
- 25 demand for PC & SP still subject to inventory drawdown
- Supply Discipline / higher mix of spending on Shell + HBM vs. commodity DRAM
- AI SP penetration of 30% seems high.

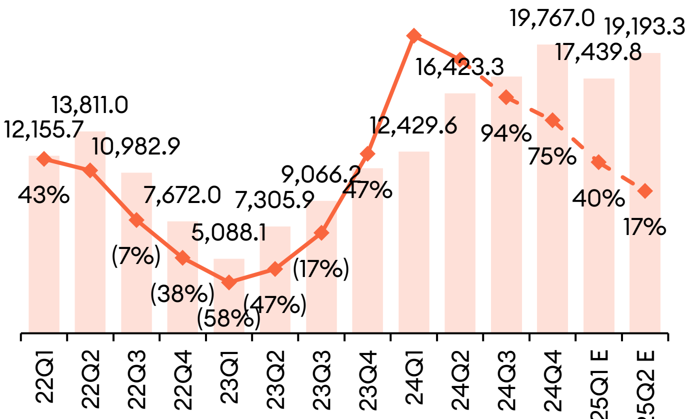
SK Hynix (000660 KS) Continued

Key Topics / Questions

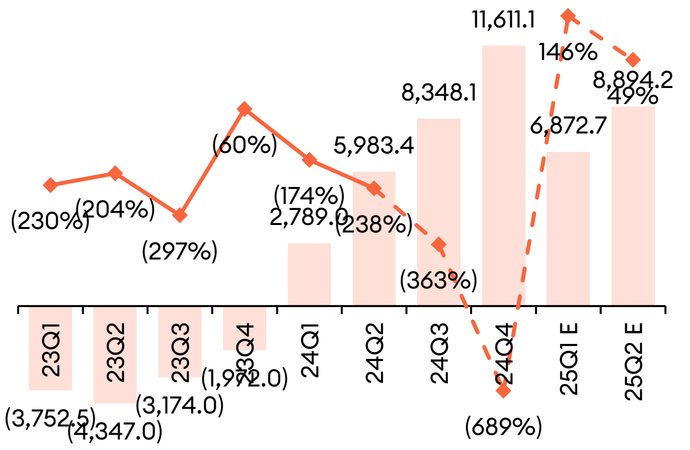
- **HBM:** view give Samsung qualified for 3E. Will be looking for significant change in tone.
  - > 40% of DRAM revenue | sales > 2x in '25 | increasing ASIC mix vs. GPU
  - '25 bit shipments up 2x: initial view on ''26
  - HBM 3e 12 high in 4Q 24 | 16 high in R&D
  - HBM4: starts with 12Hi 2H '25 | followed by 16Hi 2H '26 | will use TSM for the base die to enhance performance and power efficiency.
- **DRAM:** mid to high teens bit growth in '25
  - PC: low to mid single digit unit growth | 30-40% penetration for AI PC
  - Mobile: low to mid single digit unit growth with AI penetration 30%
  - Server: HSD unit growth; HBM and High Density DRAM
  - HBM: custom designs w/in 2-3 years.
- **NAND:** low teen % bit growth in '25 | no clear signs of improving demand
- **Capex:** infrastructure increasing meaningfully; new fab construction, but OVERALL capex "increment" will be limited. Capex focused on profitable products. Flexible adjustments based on market conditions. Mainly driven by HBM
  - Limitations or restrictions from Chips Act $$ (800 B Won)
- **CXMT: capacity > 2x btw '23 –'25.** Tech remains 45% less dense vs. MU 1B, 5 years behind, consuming ~ 2x more power. Disqualifying factor for > 80% of the market.
- **Shareholder returns:** 50% of FCV; more aggressive policy: Div increase 25%/year; remainder for special dividend

SK HYNIX (000660 KS)

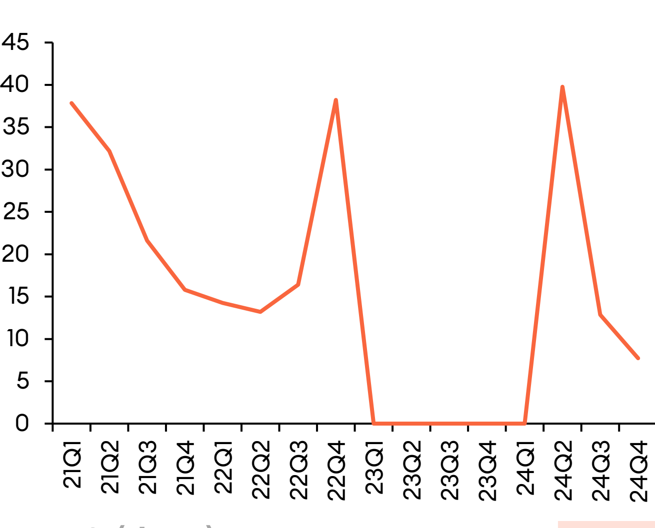
Revenue (KRWtr) and YoY Growth (%)



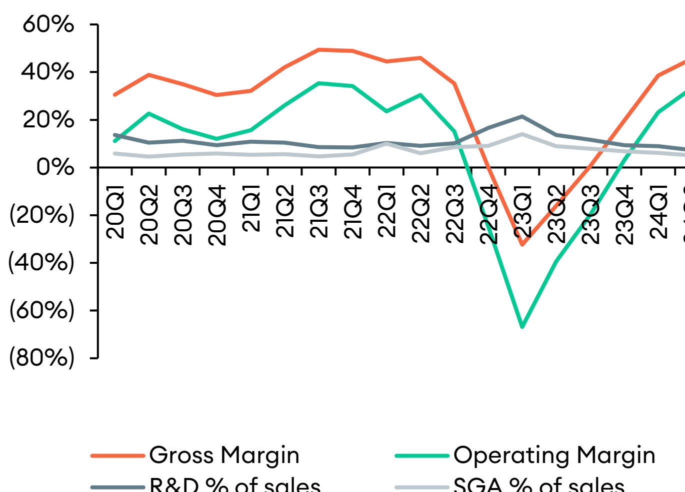
EPS (KRW)



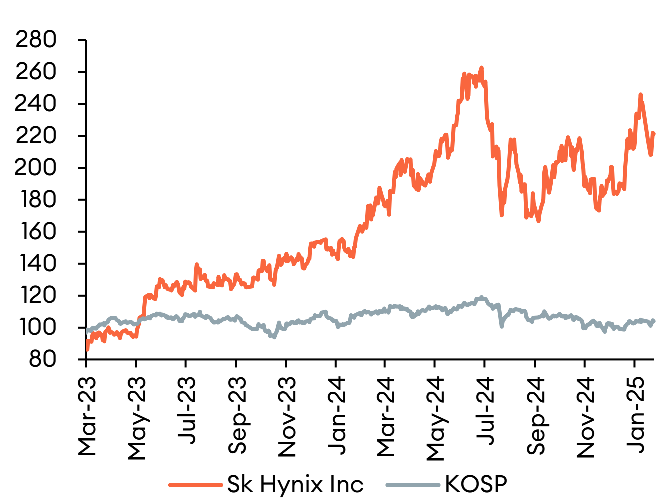
P/E



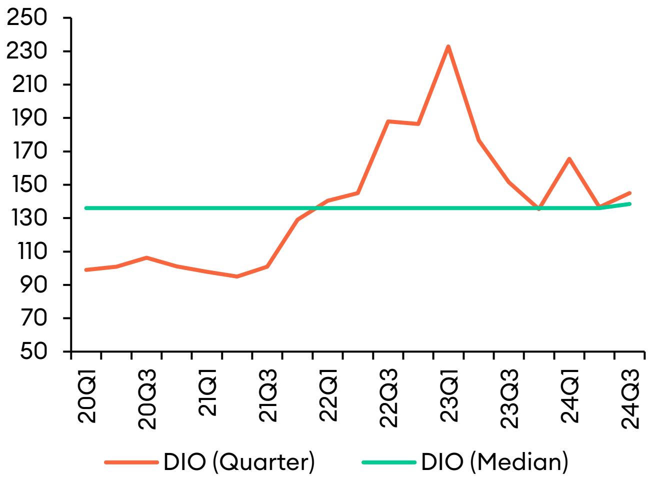
Margins (%)



Relative Performance (last 2 years)



DIO (days)

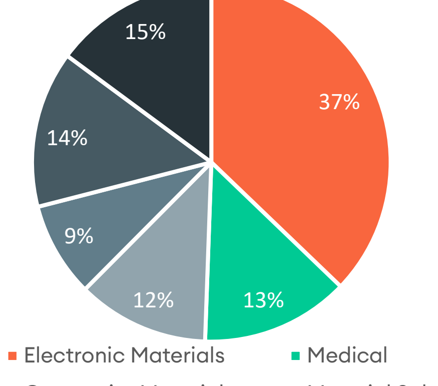


Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

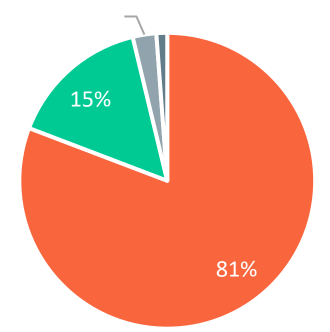
Nitto Boseki - Nittobo (3110 JP, 5920 JPY) EV 1.7 US$bn Yield 1.5% ADVT 22 US$m

Glass Fiber / Life Sciences / Textiles

Sales Mix



'23 Segment %



Company Overview

Electronic Materials

- Glass Fiber for PCB's: Low-dialectic glass (NE-Glass, DE Facto Standard) used in DC & Memory & T-glass used in Semi package substrates
- Epoxy Resin-Impregnated Glass cloth: Core materials in PCB
- Advanced Composite Materials: for Semi packaging & high frequency circuits.
- Glass fiber Type: High End: T / NE / NER, Mid range is E, Ultra thin

Roadmap

Low Transmission Loss: NE
Ultra Low Loss NER
Next Generation Super Low Loss: NEZ
Next Generation Supler Low Loss 2: DXII
Low CTE High Tensile Elasticity: T
Low CTE, Low Loss: V

Applications

- Telecom Infrastructure: BTE / DC / Swich, Router, Server, AI
- Edge: SP, Table, NB, DT
- Auto: EV ADAS

Competitors

- Asahi Glass (AGC)
- BGF Industries: Glass fabric for electronics
- Valmeira Fiberglass: can be applied to PCB
- Mitsui Plastics: for PCB, partnership with Nittobo, others

Customers

- CCL vendors: Panasonic / Elite Materials / Taiwan Union Tech / ITEQ

Key Topics / Questions

- Introduction & Overview
- Would like to focus majority of time on Electronic Materials
- What are the key products in this segment / Nittobo's position / growth rates/ margin structure
- Production process / key steps / raw materials
- Tech Roadmap (NE / NER / NEX / DX II / T / V
- Capacity / UTR
- Application mix for Electronic Materials
- Mitsui Plastics Partnership
- Competition
- Customers
- China
- Geo Mix
- Auto opportunities
- 6G IC's (AVGO working on this)

Expansion of Special Glass Applications for Semiconductor Markets

- Mainly **logic** and **memory** applications have been expanding from communication information infrastructures through edge equipments to automobiles.

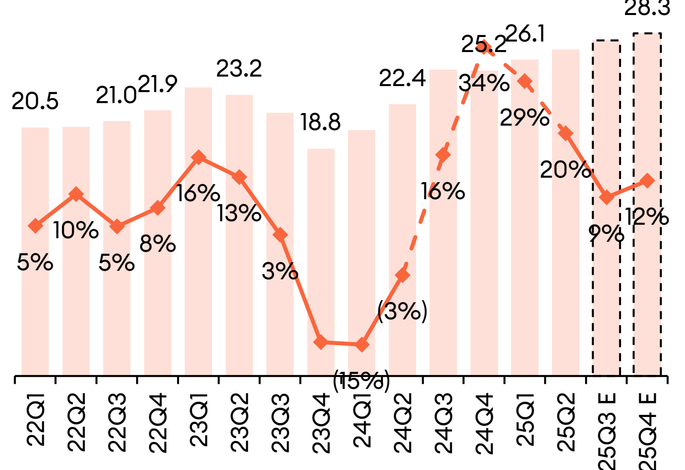
Application		Device/ component	Substrate type		Required performance	Glass fiber type	
						High-end	Middle-end
Telecom/ infra-structure	・Base stations ・Data center Switch/Router Server ・AI servers	Processor・controller	Semiconductor package substrate	CPU/GPU	Low CTE	T	E
				NAND memory	Low CTE	T	E
				DDR memory	Low dielectric tangent	NE	E
		Motherboard	Data center Switch		Low dielectric tangent	NE／NER	E
			AI servers/switch		Low dielectric tangent	NE／NER	E
Edge equipment	Smartphone Tablet Mobile PC	Processor	Semiconductor package substrate	AP/CPU	Low CTE	Ultra-thin T, T	Ultra-thin E
		Non-volatile memory		NAND memory	Low CTE	Ultra-thin T	Super ultra-thin E
		Volatile memory		DDR memory	Low CTE	Ultra-thin T (Smartphone)	
		Volatile memory		DDR memory	Low dielectric tangent	NE(PC)	
		Motherboard	Motherboard		Low dielectric tangent	Ultra-thin NE New	Ultra-thin E
		Wireless communication	RF package substrate		Low dielectric tangent	Ultra-thin NE	Ultra-thin E
	Desktop・Laptop PC	CPU・memory	Semiconductor package substrate	CPU/GPU	Low CTE	T	E
		Motherboard		DDR memory	Low dielectric tangent	NE(PC)	E
	AR/VR・Drone	Advanced SoC	Semiconductor package substrate		Low CTE	T	Ultra-thin E
Automobile	EV・ADAS	Advanced SoC	Semiconductor package substrate		Low CTE	T	E
		Millimeter wave radar	Module board		Low dielectric tangent	Ultra-thin NE	E

Copyright (C) NITTO BOSEKI CO., LTD. All Rights Reserved

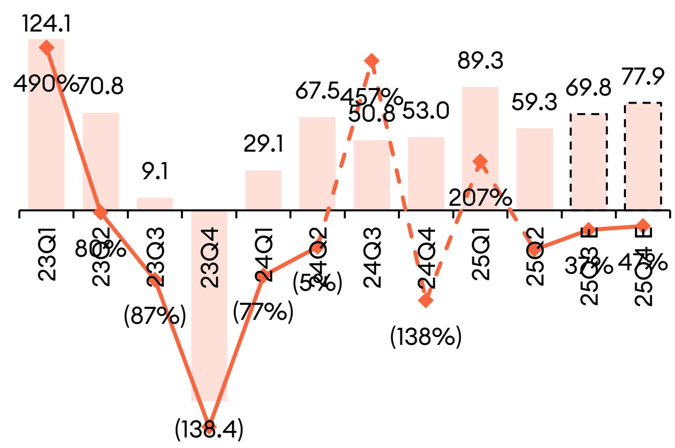
Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Nitto Boeski – Nittobo (3110 JP)

Revenue (JPYbn) and YoY Growth (%)



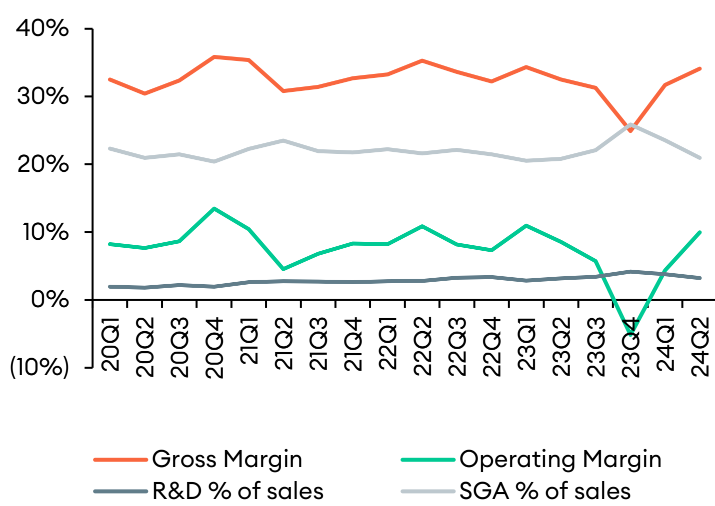
EPS (JPY) and YoY growth (%)



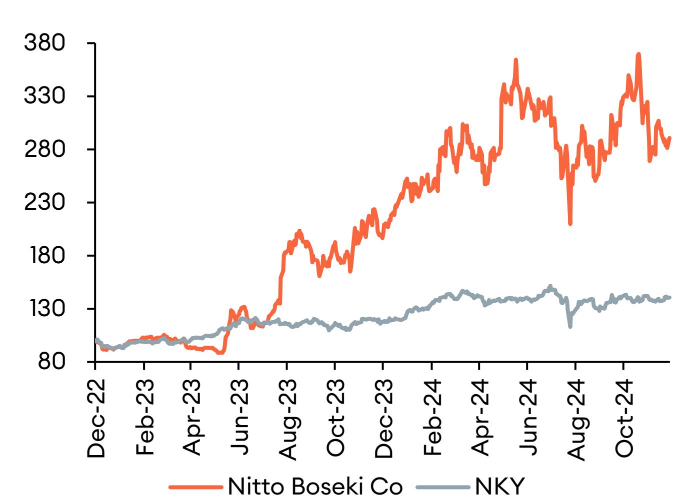
P/E

180
160
140
120
100
80
60
40
20
0
21Q1
21Q2
21Q3
21Q4
22Q1
22Q2
22Q3
22Q4
23Q1
23Q2
23Q3
23Q4
24Q1
24Q2
24Q3
24Q4

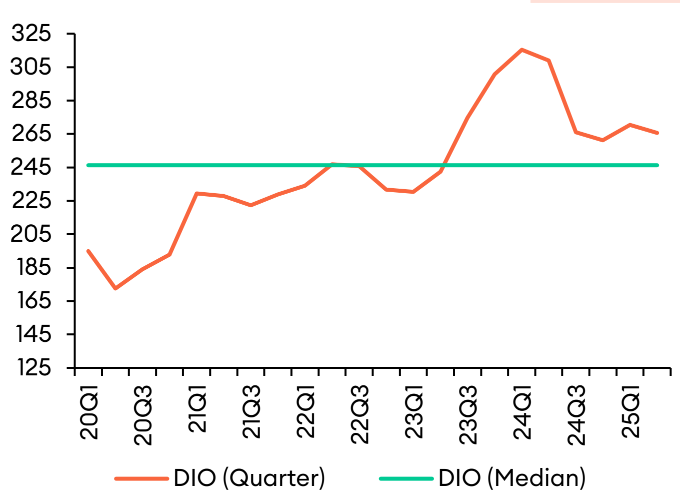
Margins (%)



Relative Performance (last 2 years)



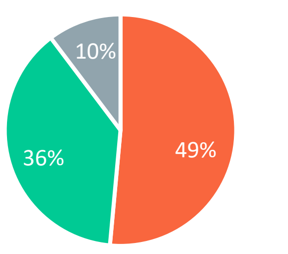
DIO (days)



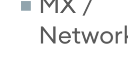
Samsung Elec (005930 KS, 56700 KRW) EV 243 US$bn Yield 2.55% ADVT 1.1US$b

Memory IDM / Components / Smartphones / Consumer Elec / Appliances / Auto

Sales Mix (top)
OP Mix (bottom)



Devices
Semis
SDC



MX / Network
VD / DA
DX
DS
SDC
Other

14%
32%
45%
35%

Company Overview

DRAM

- 42% global share
- Roadmap: Double & Quad Patterning, EUV, 36 GB HBM3E
- HBM: ‘23 40-50k WSPM / exiting ‘24 130k / 60-70% NVDA / ‘4 samples ‘25 w/ 12 and 16 L (TCB or Hybrid)

NAND

- 34% global share
- Roadmap: Vertical & Multi Stack, Lateral Shrink, Cell Over Peri, V9 & 10
- Cap Ex low base: V9 focus @ P4 / migrate Xian to higher L

Foundry

- Slowing investment yet talking up 2 nm GAA

SP

- 18% global share | NA 23% | EMEA 31% | LA 40% | Asia 18%
- 226 mm units ’23 | 230 mm in ‘24
- ‘25 overall limited growth | AI penetrates high mid range | flagship growth slows
- High competition in mass market / EM

Samsung Display (SDC)

- OLED & LCD display
- OP pressure | increasing competition

Harman

- Auto A/V 4%

Cap Ex

- 54B Won in ’25, 55B in ’26 | higher equipment mix

Key Topics / Questions

- New CFO open to more transparency
- Discuss the tech struggles of late, and what happened and how to fix
- Data center projects delayed in 4Q 24
- HBM 3e qualified but lower quality? Which markets can they ship into. Discuss customer mix of ASIC, GPU, China
- HBM: due to export controls, the volatility of demand will be unexpectedly high
- ASIC’s w/ CSP: seems opportune time to offer technology and capacity and allow CSP to decrease dependence on NVDA
- Foundry: mix of SP AP, internal vs. external and design wins for non mobile, non-SEC
- Legacy / Ex-AI demand recovery: SP / PC / Server / pull forward of builds in 1H 24
- Mobile: view on AI penetration & replacement cycle.
- AI SP: what applications beyond picture search & translation are killer apps

Samsung Elec (005930 KS) Continued

Key Topics / Questions

- **DS:** Memory & Foundry + LSI | HBM & high density DDR 5 drives growth | Mobile & PC soft | LSI weak due to mobile | Foundry lower UTR & higher R&D

- **MX/NW:** focus on AI for '25; slight growth for the year. Inventory levels @ OEM and Channel: healthy or still digesting
    - Flagship growth slows in '25, higher demand for high end of mid range. Sounds more bearish on SP due to Trump/Consumer, etc.
    - Rising component costs remains a risk
    - AI functionality in mid range to drive that segment

- **Memory:** mid to high teens bit growth in '25 | recovery begins in 2Q 25
    - Accelerating 1d nm migration | expanding server DDR 5 & QLC SSD
    - Reduce exposure to commodity DRAM & NAND | Increase mix of HBM, LPDDR5, QLC SSD | Inventory levels normalizing?
    - DDR4 30% of '24 declines to single digit in '25
    - **CXMT: capacity > 2x btw '23 –'25.** Tech lags & consumes ~2x more power. Disqualifying factor for > 80% of the market.

- **HBM:** > 200k WSPM exiting '25 & ~ 20-30% of DRAM capacity existing '25
    - 3e ramp begins in earnest 1Q 25 with full ramp in 2Q 25; customers pausing in 1Q to wait for optimized SEC product in 2Q 25
    - 4Q 24 grew 1.9x q/q, BELOW expectations
    - Customers: majority AI accelerator, NVDA GPU with minority from AVGO | AMD | AWS | INTC & TSLA for Dojo and other ADAS for training
    - HBM 4; samples in '25; with MP 2H 25 driven by Ruben | Spec is totally different vs. HBM3; | Reviewing TCB and Hybrid

- **Foundry:** strategy with seemingly limited penetration for AI or HPC related. Improve profits in mature nodes; new customer traction? How can you improve this biz when CUTTING capex?
    - Austin stronger; reminder of what is produced there, believe its 14 nm at best
    - Foundry: timing of Taylor / AI opportunities vs. legacy chip production
    - 4 nm for HPC in MP and stable | 2 nm customer traction

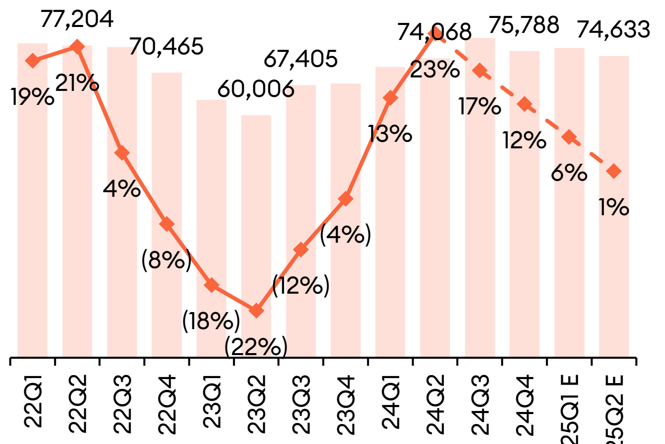
- **LSI:** image sensors & DDIC are the core products | Exynos 2500 strategy

- **SDC:** competitive, focus on high end and expansion into Auto & IT; discuss China panel penetration and impact on pricing/margins.

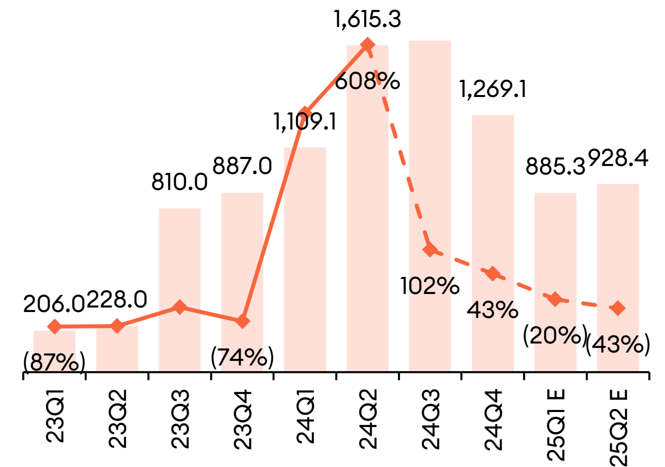
- **Capitol Allocation.** T~ 90B Won net cash | 13 B FCF in '23 and 20B in '25; how much is needed to run the business? M&A strategy / interests

SAMSUNG (005930 KS)

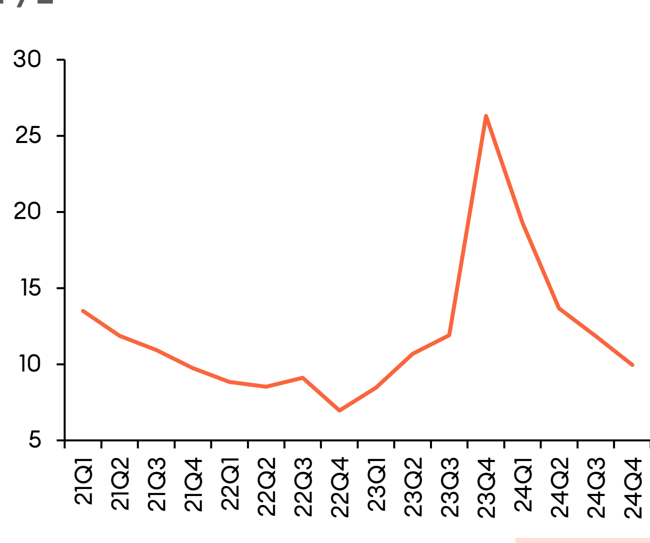
Revenue (KRWtr) and YoY Growth (%)



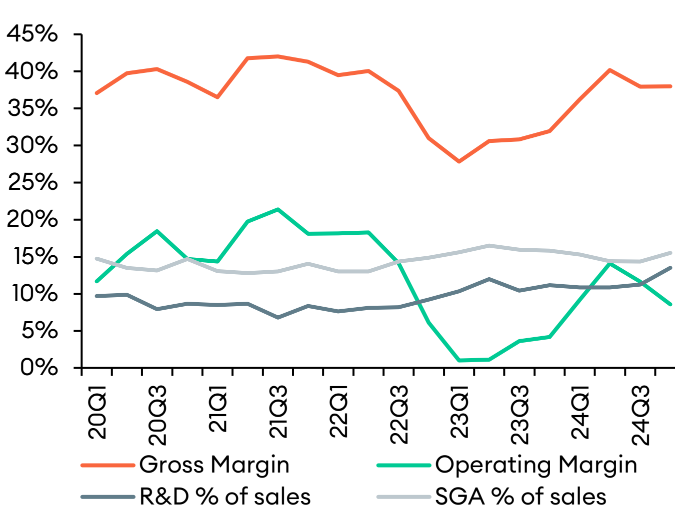
EPS (KRW) and YoY growth (%)



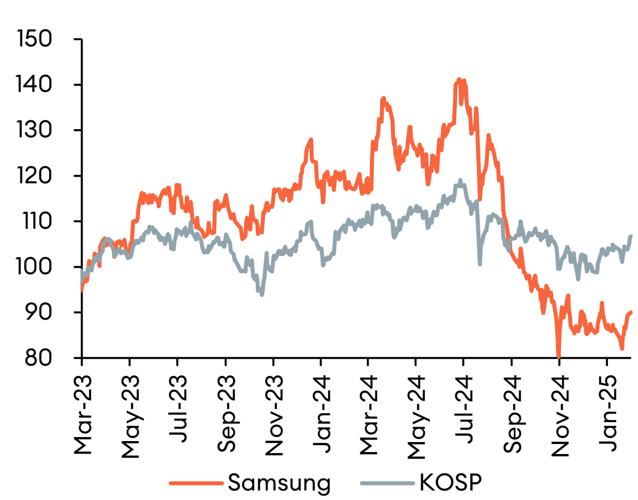
P/E



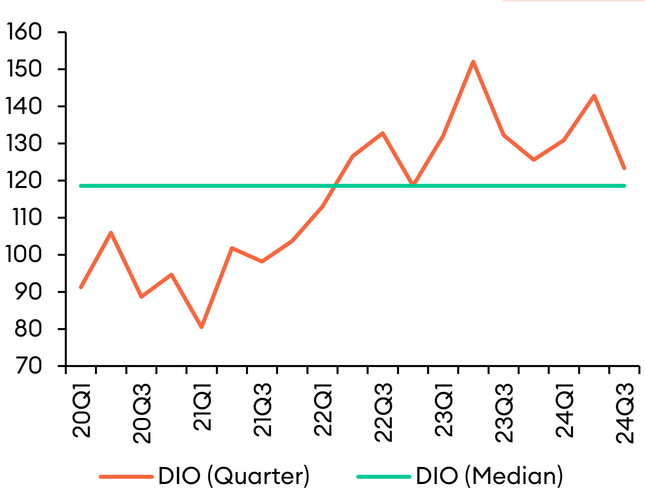
Margins (%)



Relative Performance (last 2 years)

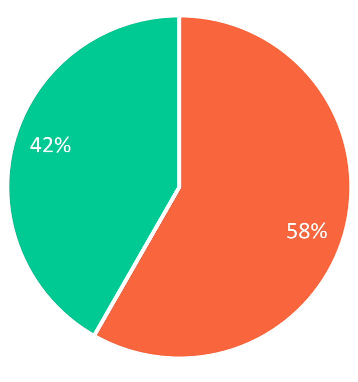


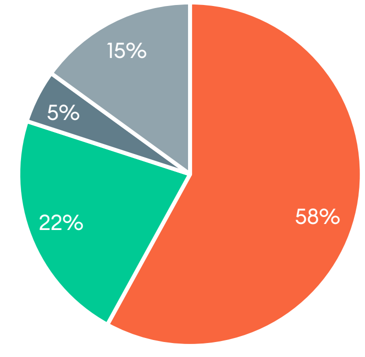
DIO (days)



Wonik (240810 KS, 26250 KRW) EV 800 US$m Yield NM ADVT 4 US$m

Semi & Display Equipment





DRAM | NAND | Foundry | After Sales

Company Overview

Semi & Display Production Equip
- 60% DRAM | 20% NAND | 5% Foundry / 10% After sales
- Semis: CVD | ALD | Thermal
- Display: PECVD | Dry Etcher | Laser Etcher & Drilling | Thermal

DRAM
- 1a & 1b mainly with Samsung & Hynix
- Samsung; 2 process steps + passive layers, 90% share
- Hynix: 1 process step; copper annealing

NAND
- Most spending is upgrading existing lines
- Samsung V9 R&D @ P4; 45k
- Hynix; has not spent on NAND in a few years

Display Equip
- G6 OLED
- Deposition: PCCVD | Etch: Dry & Laser
- Thermal: PI curing / IGZO Furnace | Laser drilling for QD

Competitors
- Tokyo Electron | LRCX | AMAT
- Kokusai (6525 JP)
- Eugene Tech (084370 KS)
- ASM Intl (ASMI AV)

Customers
- DRAM: Samsung 50% | Hynix 30% | CXMT 20%
- NAND: mainly Samsung | YMTC early stages
- Foundry: Samsung 70% | GF 30%
- Display: SDC | BOE | CSOT | Visionox | Everdisplay | Tianma

Key Topics / Questions

- ’25 outlook; was not providing forecasts Dec ’24
- ’26; expecting a strong year
- DRAM up; SEC u/g’s all lines + Hynix M16
- NAND up: off low base, both SEC & Hynix
- Spending outlook from SEC & Hynix & CXMT
- Foundry order trends from SEC
- Hynix opportunities on CVD @ 1a
- MU discussions & dem’s on CVD
- China display opportunities
- R&D focus / 20% of sales
- CXMT had been increasing orders: up in ’25?
- UTR is very low for both Semi & Display; impact on margins and/or ability to reduce fixed costs

Wonik (240810 KS) Continued

Key Topics / Questions

R&D; Focused on DRAM; and 1c and beyond; both ALD & CVD

Locations
- Jinwi (HQ) / Semi Clean Room & R&D | Jinwi 3 / Semi Manu | Gigeung / Semi Thin Film Development | Icheon / Semi Sales | Dunpo / Display Manufacturing / 80 chambers/month | Overseas: Texas & NY / Xian, Wuxi & Kunshan / Singapore, Taiwan

Display; Positive for '25; orders confirmed
- Lead times are at 4- 6 months;
- China will be spending; BOE G8.7, Tianma G6, Visionox G6
- Samsung will be flattish to down ; G8.6 was split over '24 and '25
- Micro Led: R&D stage for VR; first time starting working on this with Samsung; investing at A1 line; very early;

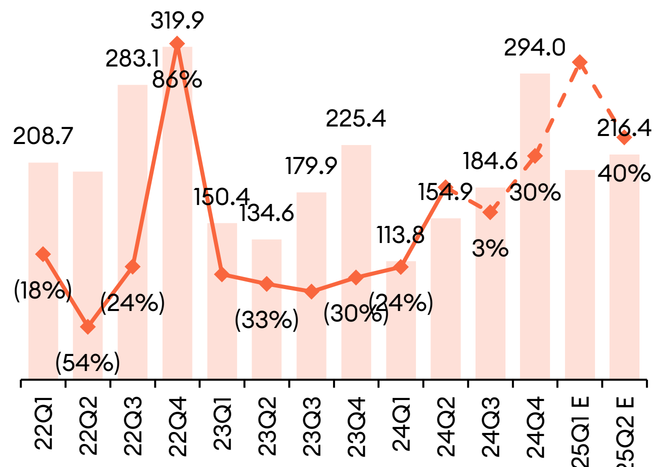
Foundry
- What is your exposure by node:

•**CXMT:** CVD
- 70B Won in '24; Initially expected | post 1Q 24, gradual increase through 3Q 24
- '25; no specific guide for them yet; sales team expects growth
- Not on the entity list; no limitation to sell to them. Wonik's US component content is < 20%; alternative suppliers from Japan and Europe.

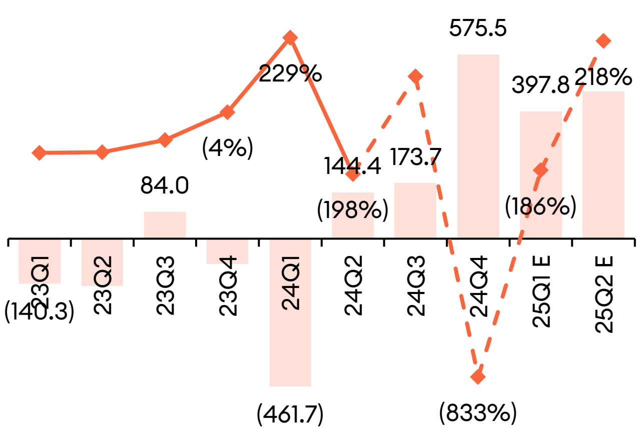
•**3D DRAM & Logic**
- Discuss the opportunities (or risks) if ALD gains share from CVD: DRAM expected to adopt more ALD for VCT DRAM and 3D Stacked DRAM

WONIK IPS CO LTD (240810 KS)

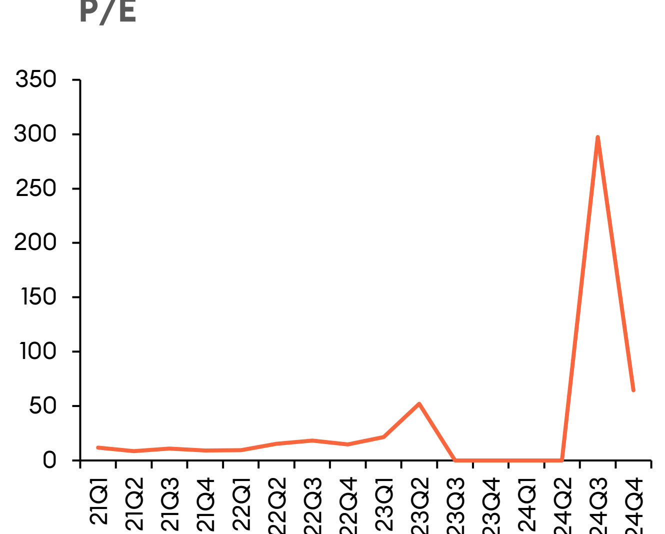
Revenue (KRW$bn) and YoY Growth (%)



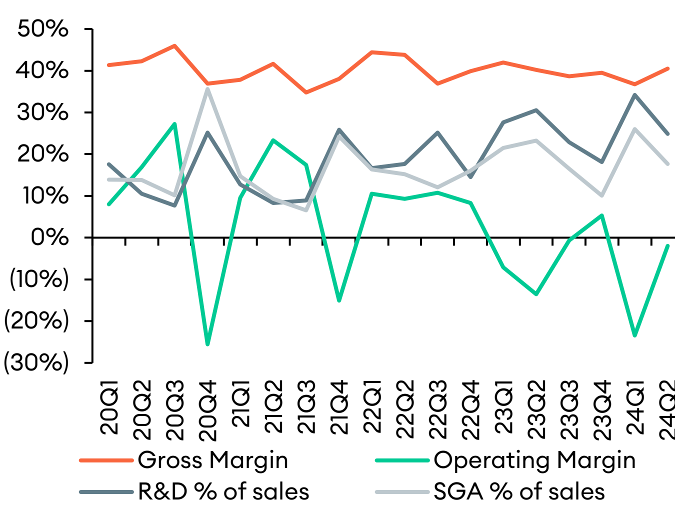
EPS (KRW)



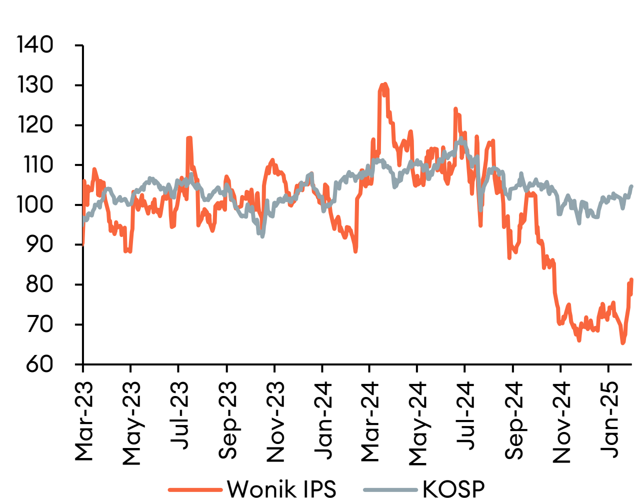
P/E



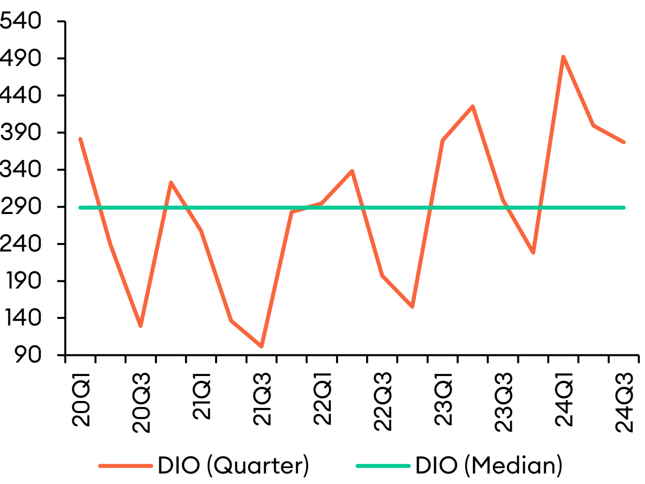
Margins (%)



Relative Performance (last 2 years)



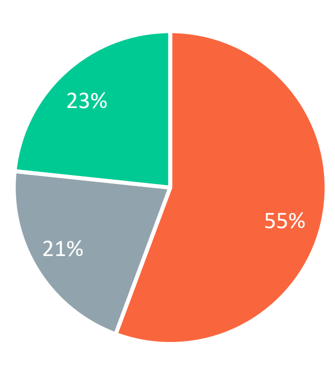
DIO (days)

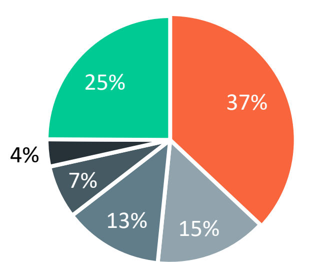


Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Ibiden (4062 JP, 4739 JPY) EV x.x US$bn Yield x.x% ADVT xx US$m
IC Substrates / main supplier for Hopper/Blackwell, AMD & INTC high end CPU

Mix: Segment (top) Product (bottom)





Company Overview

Strategy
- Ceramics is the growth driver: Ceramic fiber / Substrate Holding Mat / Fine Ceramics / SiC-DPF / Graphite specialty

Electronics
- IC substrates using 100% ABF, no BT
- Server substrate is ~70% of segment by March '25 (~ 37% of total sales)
- PC 13% of total sales | module & other 7%
- 50-60% of sales with up to 30% OP margins

Ceramics
- Diesel particulate filter (DPF) for heavy vehicle exhaust | 70% of segment Graphite for SPE Rings (SUMCO is customer) and for SiC manufactures including WOLF & COHR | 17% of segment
- Margins: HSD to low double digit OP margins

Competitors
- Ibiden | Shinko | Unimicron | AT&S have 100% of the high market
- Ibiden (4062 JP) sole supplier for NVDA
- Shinko (6967 JP) limited AI exposure
- AT&S (ATS AV) supplies AMD, INTC & AAPL
- Unimicron (3037 TT) / Nan Ya PCB (8046 TT) / Zhen Ding (4958 TT)
- SEMCO (009150 KS) mostly INTC PC CPU
- Kinsus (3189 TT) 8% XLNX / 7% AMD / 5-6% NVDA

Customers
- INTC: EMIB
- NVDA: 100% share for GPU, not on the UBB or OAM boards
- AMD | AAPL | CSPs

Key Topics / Questions

- ABF given weak results, review the puts and takes as NVDA capacity is sold out, while INTC is under utilized
- Market share of AI IC Substrate as Shinko and Unimicron have negligible share; not sure of AT&S
- PC ABF is 13% of total Ibiden sales; is there pricing pressure here due to weak demand, oversupply and competitors lowering pricing to increase UTR
- PC Recovery; on track for C 3Q 25? Many suppliers suggesting 30% AI PC penetration
- Ibiden only uses ABF for PC's , but do you think BT substrate could penetrate lower end PC
- Substrate growth for CY 25; has visibility improved such that you can narrow your range?
- How important is Auto as a driver for your substrate biz:

Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Ibiden (4062 JP) Continued

Key Topics / Questions

Manufacturing: 3 high end IC substrate in Japan & 1 in Philippines

- Ogaki: 3 factories, 4 cells; Cell 2&3 support AMD & NVDA | Cell 4 (former INTC dedicated) converting for NVDA | Cell 5 dedicated to INTC
- Ono: under construction; Sep '25 production; 100% AI, majority NVDA but seeing ASIC's (not sure if GOOG or AMZN)
- Gama: 4Q 24 production starts; INTC, pushed out ramp for 2 years due to weak demand (transferred equipment to Ono)
- Malaysia: module substrate which is PCB business, mounting the package onto substrate for legacy INTC server
- Philippines: PC package
- Cell 5; INTC dedicated; will this remain or end up being converted for other customers?

Co packaged optics (CPO)

- Timeline for adoption: Shinko and others citing CY 28
- Explain the impact on IC substrate or other ways Ibiden will participate

Cap Ex (80% is for electronics, remainder ceramics & other)

- FY 24 is the peak at 185 B Yen; 100 B Yen in '25 and perhaps ½ that level in '26 or '27. What factors would lead to significantly higher or lower

IC Substrate forecast

- What are the puts and takes for general purpose server demand in CY '25; this is ~ 50% of IC Substrate and has been soft.
- AI: wide range for CY 25 forecasts | General purpose: widest range for CY 25 | PC: tight range
- China ABF suppliers:

EV & SiC demand

- Do you think we have bottomed?
- Do they supply Graphite for SIC into non Auto applications?

SPE demand: SIC into SUMCO

- Understand the business, competitors, growth outlook

Li-Ion Battery Safety material (new area)

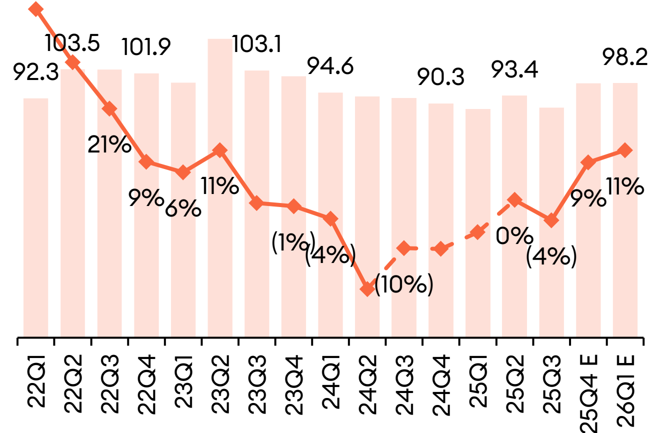
- Heat resistant electrical insulation material; 10B Yen in '27; elaborate on this business model, customers, margins, etc.

R&D

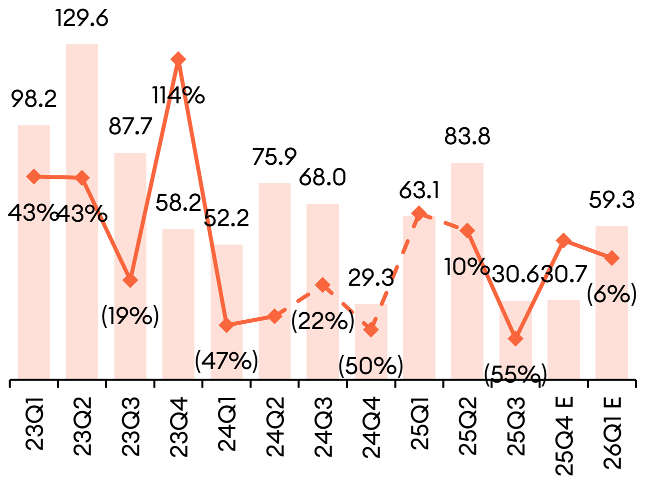
- Ibiden spends $130 mm/year | AT&S $168 mm | Unimicron $160 mm | Zhen Ding $360 mm | Shinko $24 mm. Do they think Shinko will increase spending post acquisition by Japan Investment Group (JIC)

IBIDEN (4062 JP)

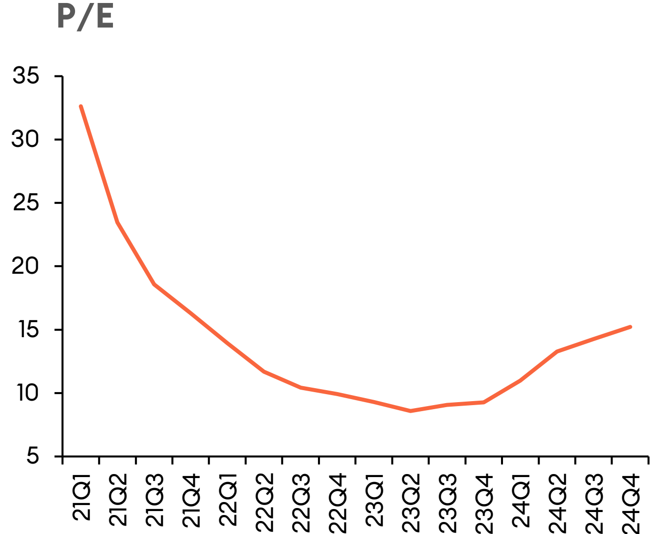
Revenue (JPYbn) and YoY Growth (%)



EPS (JPY) and YoY growth (%)

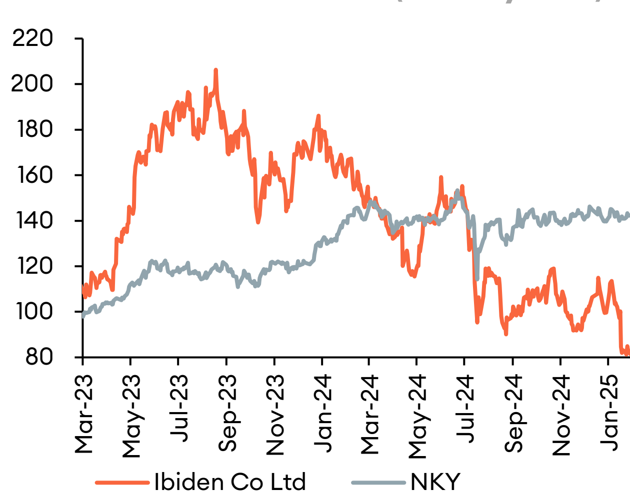


P/E

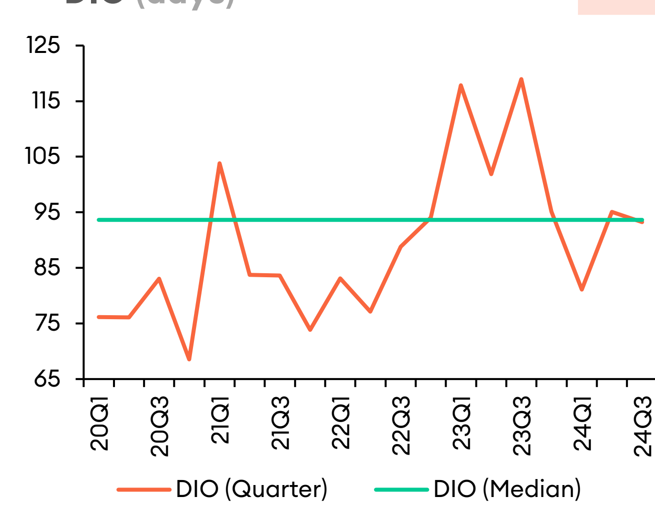


Margins (%)

Relative Performance (last 2 years)



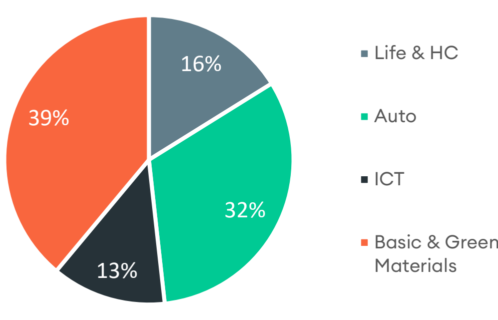
DIO (days)

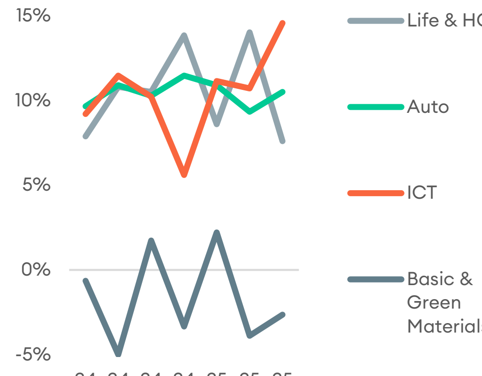


Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Mitsui Chemicals (4183 JP, 3264 JPY) EV 8.4 US$bn Yield 4.6% ADVT 29 US$m
Diversified Chemicals: Petro | Basic | Functional Polymetric

Sales Mix & OP Margins





Company Overview

Strategy
- Growth segments are Auto | ICT | Life & HC
- Basic & Green Materials, is non-core and being restructured

ICT: High Performance Polymers & Electronic Materials
- ICROS Tape protects wafer surface during processing) #1 share globally
- MintRow: Heat Resistant release film used in Semi molding process
- Thermal Release Double Sided Tape; temporary bonding in electronic component assembly
- Solar ASCE: encapsulants to protect PV cells.

Mobility Solutions (Auto)
- Elastomers | Composite materials & Solutions Auto

Basic & Green Chemicals (Largest segment)
- Petrochemicals | Industrial Chemicals | Phenols | Polyesters

Competitors
- Semi Tapes: Lintec (7966 JP) | Nitto Denko (6988 JP) | Furukawa (5801 JP)
- Heat Resis Films: Nitto Denko | Daikin (6367 JP) | AGC (5201 JP) | Toray (3402 JP)
- Electronic Materials: Resonac
- Chemicals: Mitsubishi Chemical | Sumitomo Chemical

Key Topics / Questions

- Introduction to Mitsui Chemicals (see outline on next page)| focus on ICT & Mobility Solutions
- Key products in each segment and your position within the industry
- Margin structure of each segment
- Basic & Green Materials consistently loss making, why?
- Competition from China and Korea for electronic materials.
- Stock has underperformed NIKKEI since July 24, why?
- Understanding key applications for your products in ICT: Semi production, Smartphone Camera Lens, etc.
- Mobility (Auto) overview and mix of ICE to xEV
- Growth drivers

Mitsui Chemicals (4183 JP) Cont.

Segment	Businesses	Main Products
Life & Healthcare Solutions	Vision Care Materials, Personal Care Materials, Nonwovens, Oral Care, Agrochemicals and Medical Business Development	Ophthalmic lens materials (MR™, Do Green™), Medical materials (taurine), Nonwovens (hygiene materials, industrial materials), Oral care materials (restoratives, adhesives, digital equipment), Agrochemicals (dinotefuran, TENEBENAL™)
Mobility Solutions	Elastomers, Composite Materials and Mobility Solutions	TAFMER™, Mitsui EPT™, LUCANT™, PP compounds, Performance compounds (ADMER™, MILASTOMER™, ARLEN™) ARRK KYOWA
ICT Solutions	Semiconductor & Optical Materials, Coating & Engineering Materials, Performance Films & Sheets and ICT Materials	Mitsui PELLICLE™ (DUV, EUV, FPD), APEL™, TPX™, Semiconductor gas, High-performance food packaging materials (sealants, adhesives, coating agents, eco-friendly packaging), Industrial films (ICROS™ Tape, SP-PET™)
Basic & Green Materials	Phenols, PTA&PET, Industrial Chemicals, Sustainable Feedstocks, Polyolefins, Licensing, Polyurethanes and Green Sustainable Chemicals	Phenol, Bisphenol A, Acetone, PTA, PET, EO, Hydroquinone, Ammonia, Exhaust gas reduction agent (AdBlue™*), Polyolefins, TDI, MDI *AdBlue is a trademark of the VDA (Verband der Automobilindustrie).

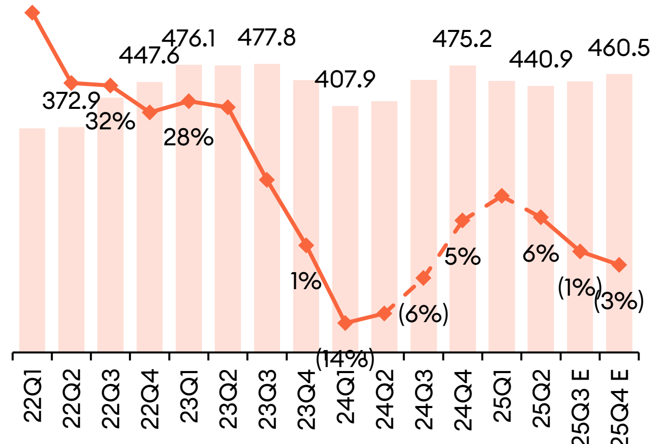
Mitsui Chemicals (4183 JP) Cont.

Key Topics / Questions

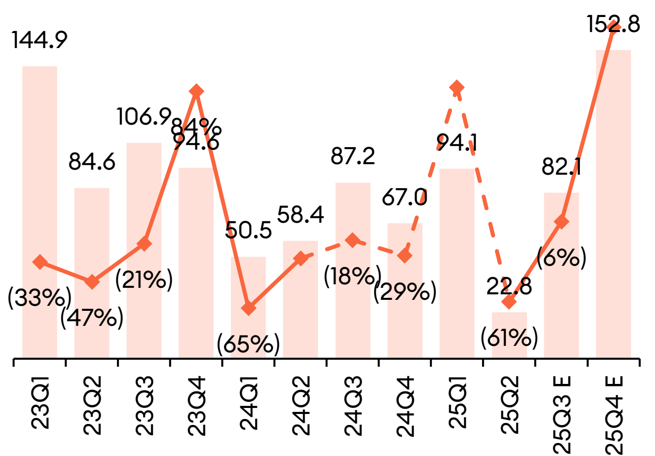
- **ICT Solutions:** Dust covers for photomasks (pellicles) | polyamide varnish for high frequency PCB | resist raw materials for Piezoelectric materials | Semi manufacturing process tapes | Silicon coated heat resistant film
- **ICT Solutions Investment Projects** | Cyclic Olefin copolymers APEL Japan | Pellicle Biz (acquired) | expand CNT pellicles for next gen EUV | Split of Tohcell and transfer of portion of share | Polyurethane Dispersions (PUD) expansion | Strengthen materials development in Semi & Assembly
- **SP Camera Lens:** APEL is cyclic olefin copolymer used in lens; facilitates smaller, lighter products presume they supply to the lens set maker
- **Li-Ion Battery:** Capacitator material for Li-Ion Battery separators
- New protective tape used in fiber laser cutting of metals
- **Semiconductor Products:** gasses including monosilane, disilane and silicon tetrafluoride used in semi, LCD, PV manufacturing | Photoresists | thermoplastic Polymid's used in connectors & sockets | Heat Resistant release Films used in Semi Molding process (see below)
- **Semiconductor Molding Process:** crucial step in semi packaging. protective encapsulant material is applied after die placement and before wire bonding/flip chip. Mitsuis customers are OSAT
- TPX Release Film: applications including Flex PCB
- **Shinko Elec:** they are part of the consortium taking them private. Discuss strategy

Mitsui Chemicals (4183 JP)

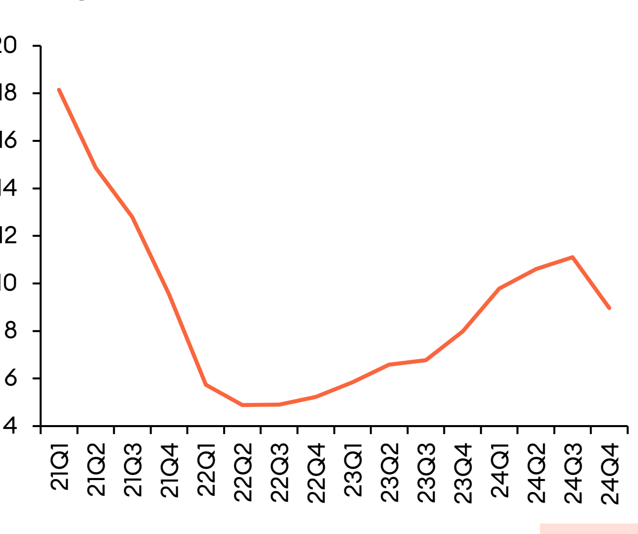
Revenue (JPY$bn)



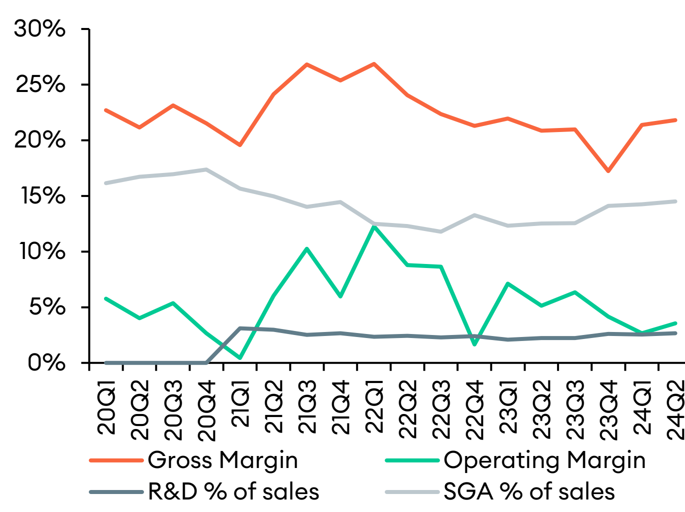
EPS (JPY)



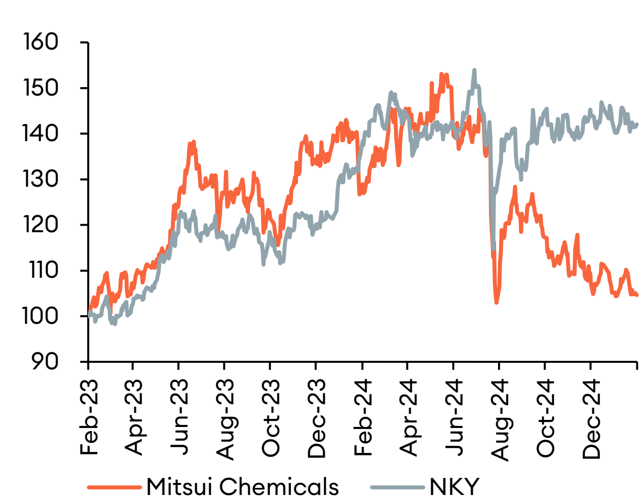
P/E



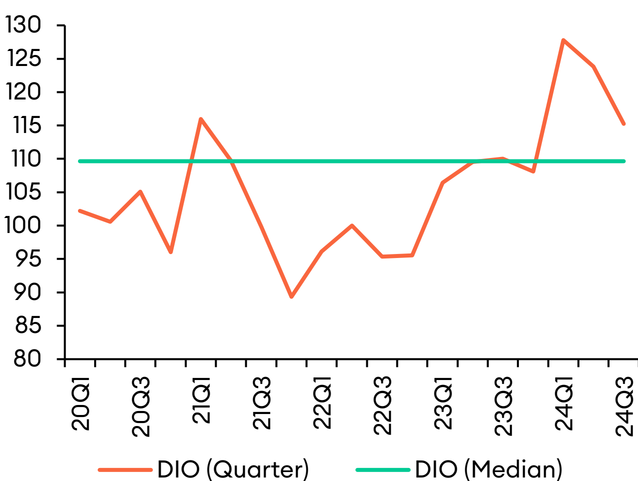
Margins (%)



Relative Performance (last 2 years)

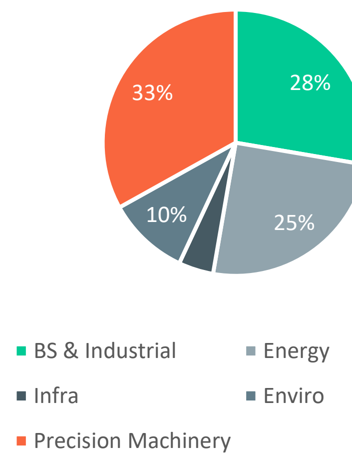


DIO (days)



Ebara (6361 JP, 2577 JPY) EV 7.5 US$bn Yield 1.8% ADVT 45 US$m
Industrial & Environmental Machinery, including SPE

Sales Mix



Company Overview

Precision Machinery
- CMP Systems
- Dry Vacuum Pumps
- Plating Equipment

Chemical Mechanical Polishing (CMP) #2 globally behind AMAT
- Polishing & Grinding Equipment used in 10-20 process steps out of 500
- Consumables: Slurry, Pads supplied by DuPont & Entegris

Dry Vacuum Pumps #2 globally
- Used in Dry & Plasma Etch; maintains low pressure conditions and remove byproducts.
- CVD & PVD: maintains low pressure to enable uniform film deposition and removes excess precursor gasses
- Ion Implant: controlled vacuum for precice Ion Beam control and prevents contamination during doping

Plating Equipment
- Cleanroom compatible electro plating for bumps, rewiring, TSV'

Competitors
- CMP: AMAT, LRCX
- Vacuum: Edwards, Pfeiffer
- Plating:

Customers
- TSM, Samsung, UMC

Key Topics / Questions

- 1st meeting so would like an introduction & overview. We are technology investors so prefer to spend more time on Precision Machinery
- Precision Machinery is outperforming other SPE: what is the primary reason for that? Is this mix of Logic to Memory or other?
- CMP position vs. AMAT / competitive strengths or weaknesses
- Synergies between CMP & Vacuum Pumps?
- Plating equipment: CoWoS, PLP

Ebara (6361 JP) Cont.

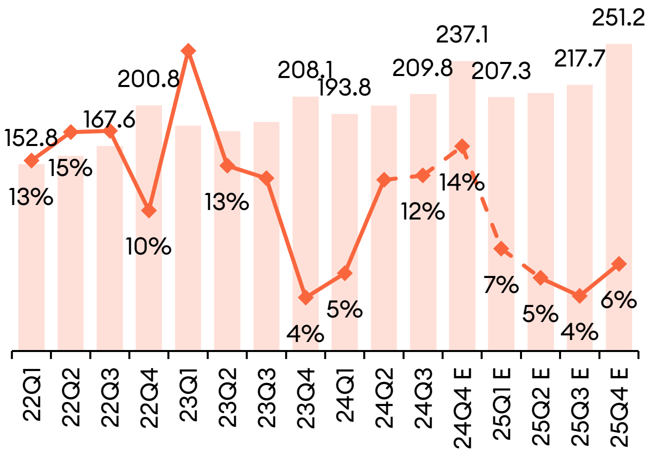
Key Topics / Questions

- CMP overview
    - TAM and Growth rate and competitive position vs. AMAT
    - Should 3D chips and Advanced Packaging drive higher demand?
- Vacuum Pump overview
    - TAM and growth rate and competitive position vs. Edwards
        - More complex chips, stacking, packaging drives higher need for Vacuum
    - How much of the business goes to SPE equipment or the wafer handling equipment or direct to device maker
    - ALD to build ultra thin gate dielectrics
    - Ion Implant
    - CVD & PVD to keep pressure low and remove contaminants
    - EUV to remove particle and moisture from exposure chamber and maintains stable pressure
    - Wafer handling & transfer; vacuum suction for robots, minimizes oxidation risk

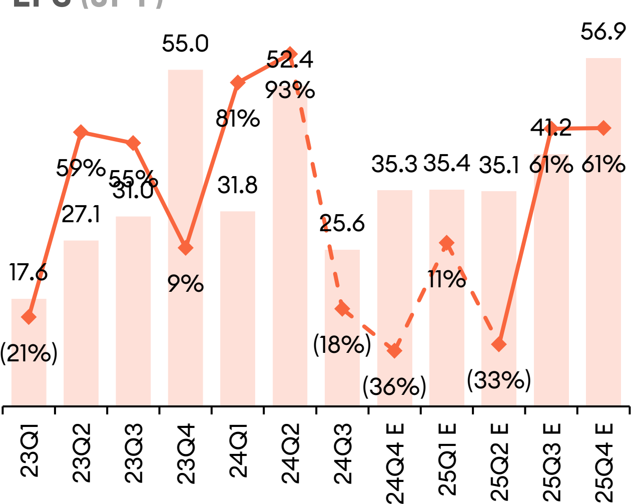
Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

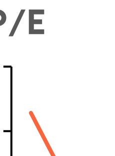
Ebara (6361 JP)

Revenue (JPY$bn)

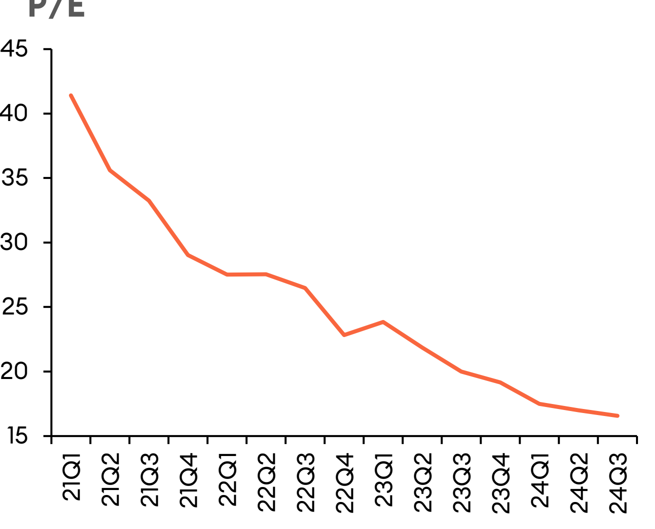


EPS (JPY)

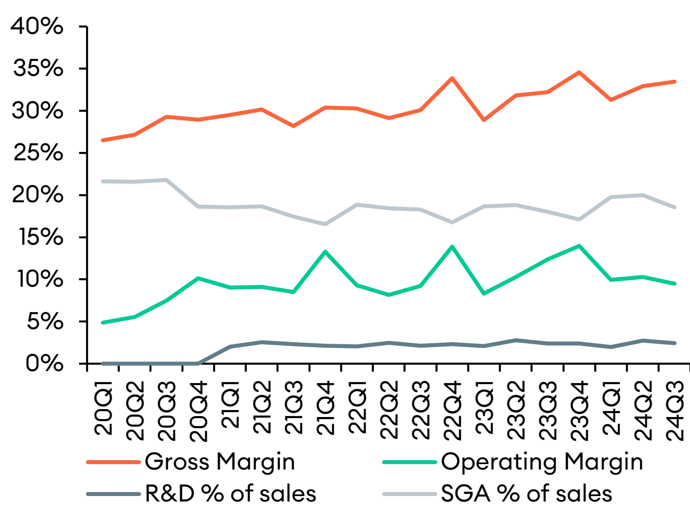




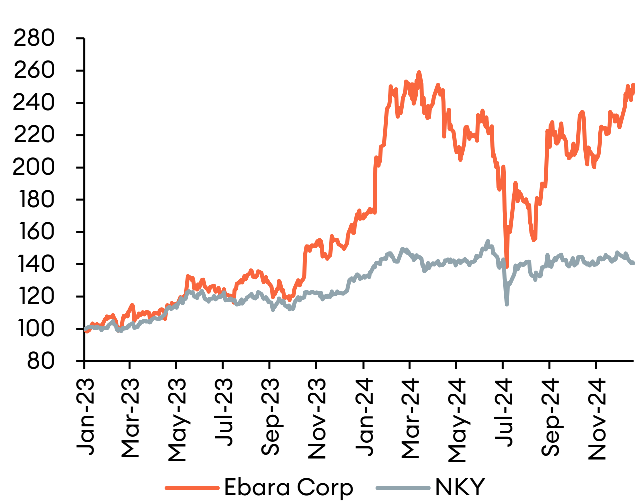
P/E



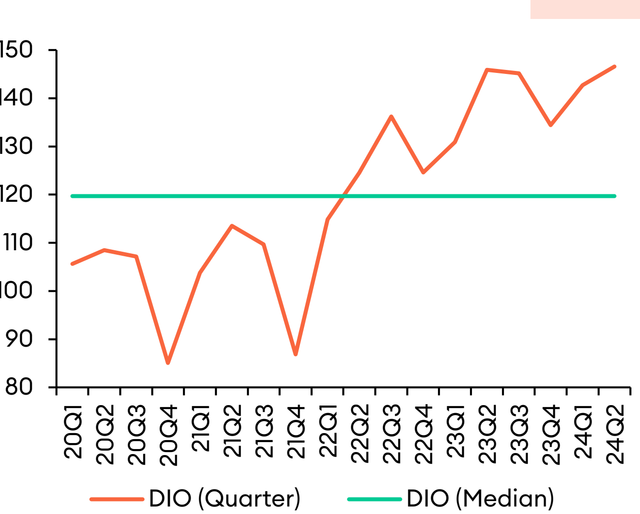
Margins (%)



Relative Performance (last 2 years)

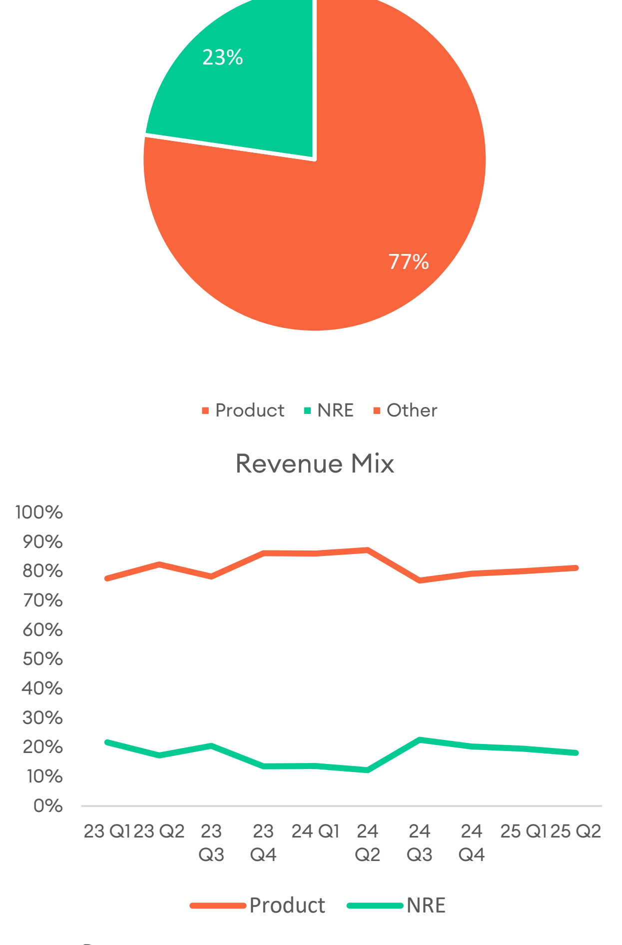


DIO (days)



Socionext (6526 JP, 2623 JPY) EV 2.5 US$bn Yield 1.9% ADVT 118 US$m
Fabless ASIC & SOC design house

Sales Mix



Company Overview

Auto:
- HPC / ADAS / Autonomous Driving 3-7 nm
- LiDar / Camera / Radar / Human Machine Interface 7-22 nm
- Customers: Auto OEM & Tier 1 suppliers in US / Germany / China / Israel
- Israel: as they working with Mobileye, Innoviz, Arbe or Vayya Imaging

Data Center & Networking
- Data Center SOC's for US & India on 3-12 nm
- 5G base station Central Unit / Distributed Unit / Radio Unit
- Customers: US / EU / China / India

Smart devices:
- Computer Vision / AR on 5-12 nm
- DSLR / Action Camera / Network Camera
- Customers: US & EU

Industrial
- (including IoT & radar sensing) / Factory Automation / Testers /RF-CMOS
- Factory Automation / Test & Measurement on 5-28 nm
- Customers: US & EU

Competitors
- AVGO / MRVL / Raydium /MIPS / Alchip / GUC / China (Amlogic / Telechips / NationalChipa / Senscomm / Telink)

Geo Mix
- Japan 42% has been declining as China & US grow
- China 33% / US 15% / Other 8%

Node
- 3-7 nm 70% of mix
- 10-16 nm 9% of mix
- 20 and > 20%
- 40 nm and >

NewStreet Research

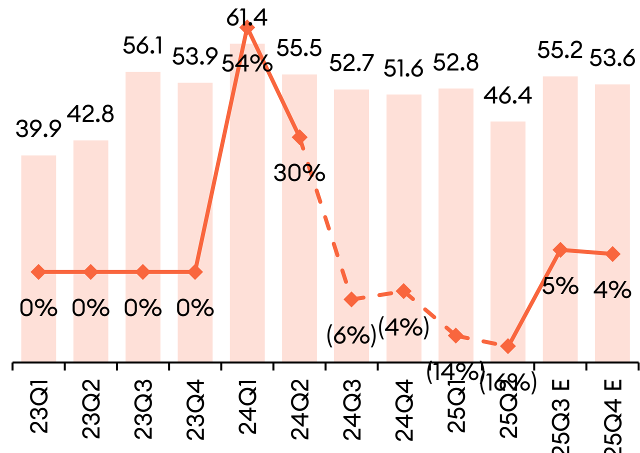
Socionext (6256 JP) Cont.

Key Topics / Questions

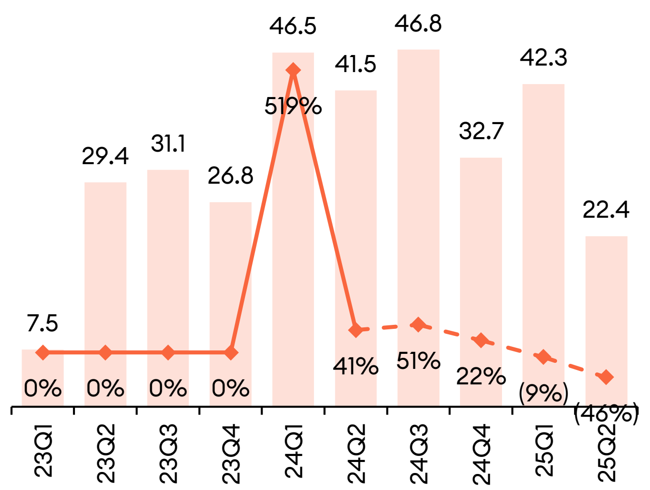
- Introduction / Business Model
    - What is 'Solution SoC model'
    - Understand similarities/differences between Socionext & AVGO/MRVL/Alchip/GUC
    - In house IP / licensed
- Growth
    - Revenue flattish since 3Q 23 (Dec '22)
    - China weak (5G base station)
- Auto project wins to drive growth
- Design wins: DC & Networking account for > 50%, followed by Auto
- Experience with shifting from ASSP to SOC as well as to leading edge vs. mature products and then to US & China
- Engineers; what is mix of experienced front-end, back end, packaging
    - Ability to attract & retain experience
- Data Center: discuss the mix of more complex Switch/CPU/Accelerators vs. SSD controllers
- Industrial: what is the strategic view here as it's a low growth market (printers?), Test & Measurement

Socionext (6526 JP)

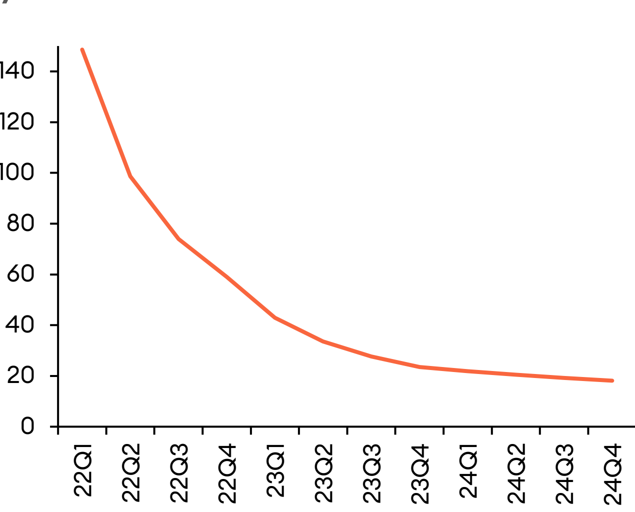
Revenue (JPY$bn)



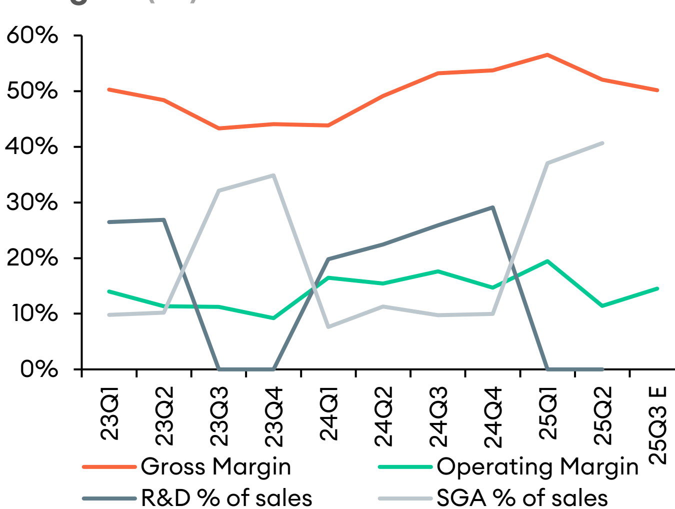
EPS (JPY)



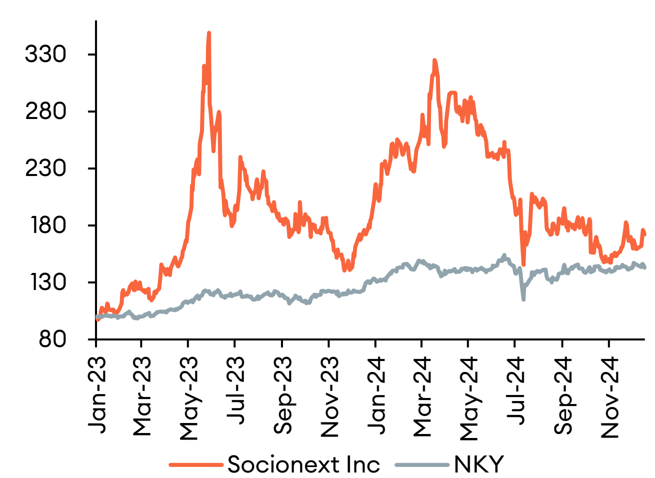
P/E



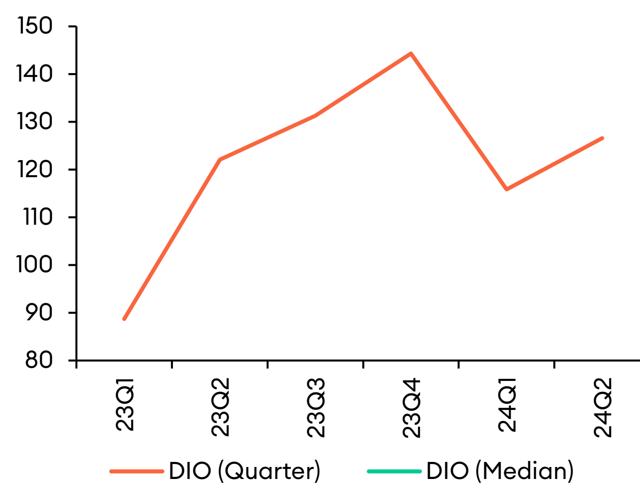
Margins (%)



Relative Performance (last 2 years)



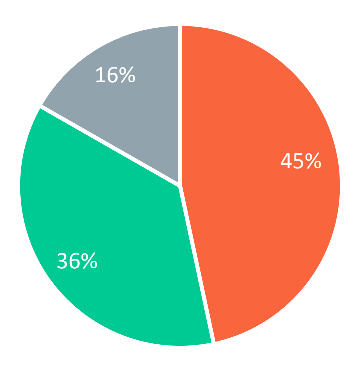
DIO (days)

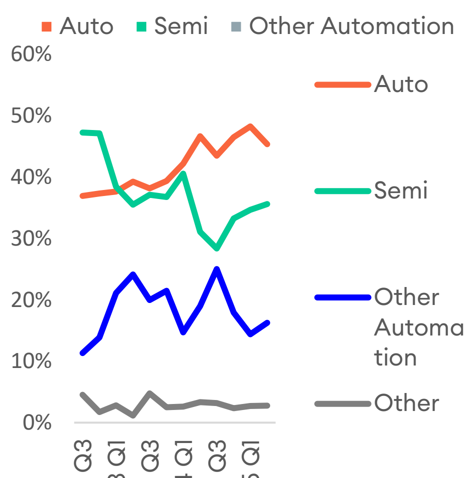


Hirata (6258 JP, 5470 JPY) EV 577 US$m Yield 2.2% ADVT 2 US$m

Builds manufacturing lines (industrial robots & logistics equip.) for Semi | Display | Auto

Sales Mix





Company Overview

Business Model

- The handle large production facilities; build in house, test, disassemble then install at customer site

Auto

- Assembly lines for engines, transmissions and in vehicle components
- Electronic Drive Unit (EDU) assembly for EV
- Battery charging & discharging related equipment

Semi

- Wafer transfer equipment orders growing
- Flat panel display equipment orders declining

Other Automatic Labor-Saving Equipment

- Medical Physiology & Chemical Equipment
- OLED production equipment moved here from Semi's previously
- Home appliances (Dyson had been customer in the past)

Competitors

- Auto: Krause (Thyssen-Krupp sub, transmissions) & Comau (Fiat sub)
- Semis: TDK & Rorze

Customers

- Auto: NA Big 3 | Japan component makers | Japan Battery makers
- Semi: Disco & Ebara main customers: Toppan, Advantest, Ulvac, TSM (direct and via Ebara), YMTC
- Medical: Sonire Therapeutics
- Home Appliance: Dyson, Canon, Sharp, Toshiba, Panasonic, Hitachi
- Display: Tokyo Electron (100% share for coater developer),

Key Topics / Questions

- Introduction with discussion on what types of production lines they build for Auto | Semi | Other
- Growth 100 B Yen in FY 24 (March '25) is up 20%; Auto +35% | Semi +6% | other +18%
- Which products drive the need for more capacity in 2H 25
- Semi recovery: AI related vs. legacy. What drives upgrade cycle of installed equipment. How do they know what is used for AI vs. legacy?
- Auto: ICE growth resuming?
- Display: OLED, Micro LED opportunities?
- Why are US SPE investments lagging
- Exposure to Malaysia or other geographies if larger SPE diversify production.
- Auto Mix of ICE to EV or EV Battery
- EV Battery is a big driver; explain your competitive position
- Panel Level Packaging
- IGBT | SiC opportunities

NewStreet Research

Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Hirata (6258 JP) Cont.

Key Topics / Questions

- **Semis:** wafer transport devices including EFEM, load port and transfer robot. They do not make the FOUP
  - **Wafer transfer robot:** Japanese SPE
  - **Transfer device for finished IC's to inspection:** NA & Japanese device makers and Japanese inspection equipment makers
  - **Panel Level Packaging:** NA device makers and Japanese & European substrate makers

- Auto
  - **EDU :** primarily Big 3 in NA + emerging EV in NA
  - **IGBT:** Japanese component manufacturers
  - **Battery Related** : Japanese battery manufacturers

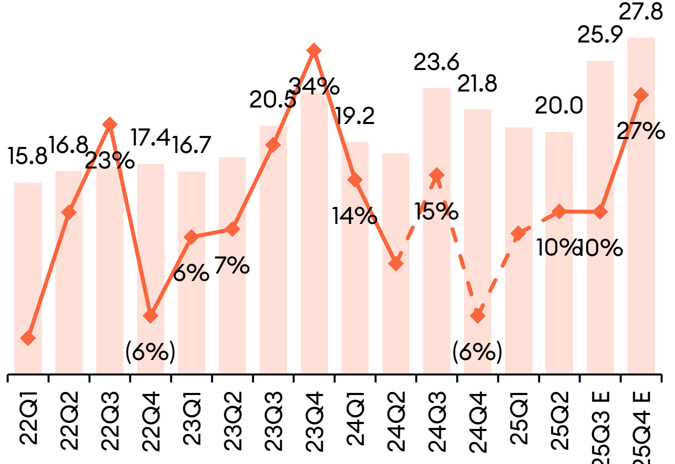
- **Battery Charging & Discharging Equipment:** activating assembled cell (battery) by repeatedly charging and discharging it to give it the functionality of a battery. They manufacture the transport lines and automated warehouse equipment (where batteries are aged and charged/discharged) and integrate with charging & discharging equipment from external suppliers. Hirata has competitive advantage in systematization utilizing conveyance and stocking technologies

- **Geo Mix** and demand trends by region

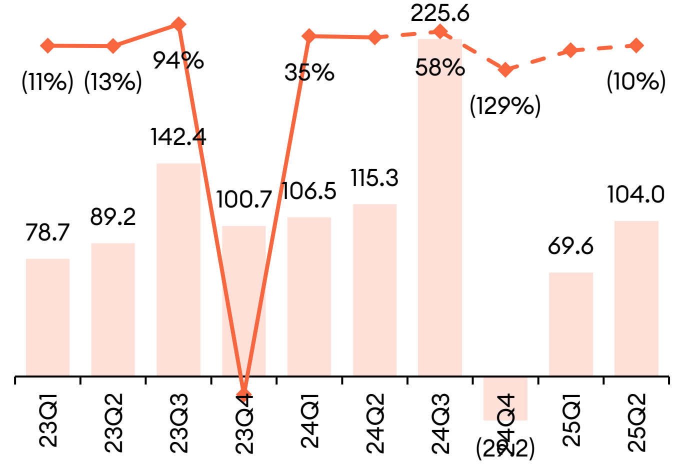
- **Manufacturing Expansion** in Yamaga City and warehouse expansion in Kanto
  - Chinese subsidiary is promoting local production (are they going after Chinese biz)
- **Panel Level Packaging:** discuss the timing, which customers they will be serving and whether they are aligned with other suppliers

Hirata (6258 JP)

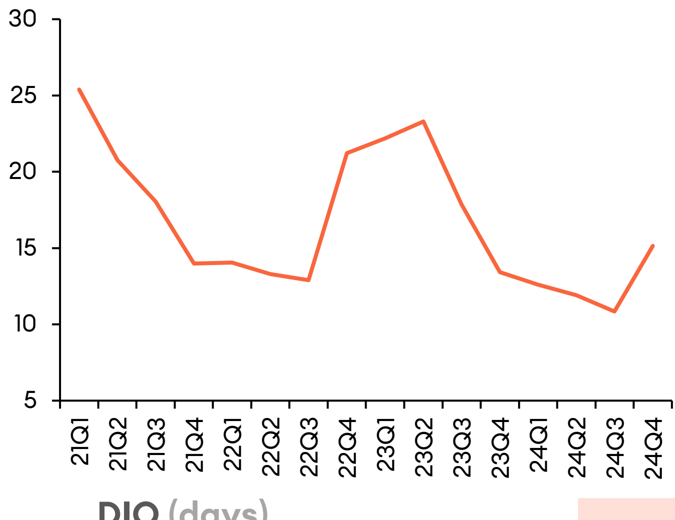
Revenue (JPY$bn)



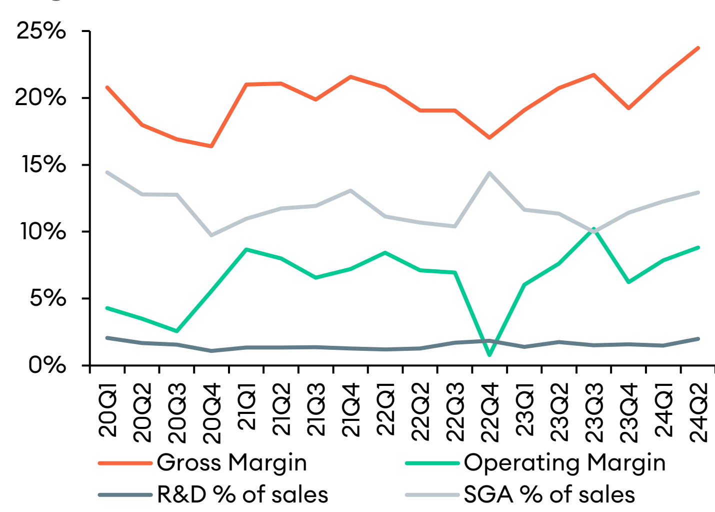
EPS (JPY)



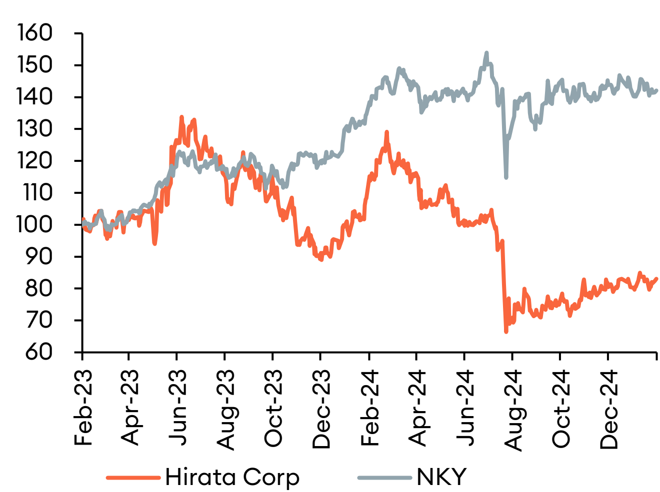
P/E



Margins (%)



Relative Performance (last 2 years)



DIO (days)

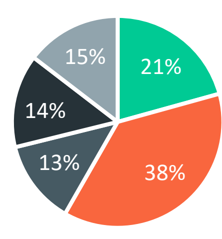
100
90
80
70
60
50
40
30

20Q1 20Q2 20Q3 20Q4 21Q1 21Q2 21Q3 21Q4 22Q1 22Q2 22Q3 22Q4 23Q1 23Q2 23Q3 23Q4 24Q1 24Q2 24Q3

DIO (Quarter) DIO (Median)

NHK Spring (5991 JP, 1928 JPW) EV 2.9 US$bn Yield 3.3% ADVT 10 US$m
Auto Components, IC Test Sockets, Disk Drive Suspensions

Sales Mix



- Auto Suspension
- Auto Seating
- Precision Springs
- Disk Drive Suspension
- Industiral Machinery & Other

Company Overview

Application Mix:
- Auto ~ 58% | IT 22% | Leisure 2% | other 18%

Auto Suspension
- Coil & Leaf Springs, Stabilizers & Torsion Bars

Auto Seating
- Auto seats and related components.

Precision Spring
- > 80% of sales from Motor Cores used for EV drive Motors
- Other: HDD Mechanical components, Wire Springs, Lamella Springs & LCD & Semi Test = MSD % of sales

Disk Drive Suspension
- 1 of largest suppliers globally;
- Used to be includes in Precision Spring segment.
- The Suspension holds the read/write head in place.

Industrial Equipment
- Semi related: Heaters, Cooling Plates, Shower heads for SPE
- Power IC related: Heat Sink for IGBT & SiC
- Brazing, ceramic, spring mechanisms, piping support, parking systems, polyurethane products, security products, lighting apparatus, golf shafts.

Competitors
- Auto: Lear | Magna | Faurecia
- Precision Springs: Daido Steel (5471 JP) | Chuo Spring (5992 JP)
- Industrial Equip: THK (6481 JP) | Nabtesco (6268 JP)
- IC Test Socket: Leeno | Cohu | Smiths | Yokowo | Winway | ISC | INGUN
- DDS: TDK (676P JP) | Mektec (private, supplies WDC & STX)

Key Topics / Questions

- Introduction with some history as unique combination of products and applications. What ties it all together?
- 59% Auto / 40% Non-Auto; mix of Tech related within Precision Springs & Industrial Eqiupment
- HDD related; mix of Near Line for DC
- HAMR & MAMR driving changes to suspensions and other mechanical parts: higher temperature tolerance, stronger mechanical stability,
- # of suspensions per HDD is increasing
- Auto customer concentration: Top 3 = 47% of FY 23 sales. Impact from consolidation in Japan. Opportunities outside of Japan

NHK Spring (5991 JP) Cont.

Key Topics / Questions

- **Disk Drive Suspensions (14% of sales and 50% of OP)** overview of the business, competitors and mix of PC to DC, growth, OP margins are 25% currently
  - 64% growth forecast for FY 25
  - Market share, competitors,
  - 22% OP margins
- **Semi Process Components (~3% of total sales) w/in Industrial Machinery:** Stage Heaters | Cooling Plates utilized in electrostatic chucks during etching | Shower Heads
- **Metal Substrates: (~1% of total sales)** copper, aluminum, iron; for heat dissipation in auto elec, power modules, LED lighting, secondary battery
  - Direct Bonded Insulator circuit for use in IGBT & SiC modules
- **IC Test Sockets (< 1% of total sales)** believe they make “Pogo Pins” with ~ 2.5% global share, behind Yokowo. Overview, applications they address in semis and non semi applications including LCD, Battery, Board to Board Connections, Medical, Auto
  - Strategy, growth, capacity, etc.
- **HDD Mechanical components (< 4% of total sales)** including in Precision Springs
- **Electronic related w/in Industrial Machinery** ceramic components and spring mechanisms for energy storage
- **Auto Customers (top 3 = 47% of FY 23):** Subaru 18% | Nissan 16% | Toyota 13% | Isuzu 7% | Honda 4% | Suzuki 4% | Mazda 1%
- **Manufacturing:** Yokohama (Suspension Springs/seating), Shiga, Gunma, Toyota, Atsugi, Ina Komagane (DDS/ Industrial) Isehara, Miyada, Yasu
  - Thailand | Mexico | Hungary | India | Philippines

Reportable segment classification

The classification of reporting segments has been changed from the existing "Automotive Suspension Springs Business ", "Automotive Seating Business", "Precision Springs and Components Business", and "Industrial Machinery and Equipment, and Other Operations" to "Automotive Suspension Springs Business ", "Automotive Seating Business", "Precision Springs and Components Business", "DDS (Disk Drive Suspension) Business", and "Industrial Machinery and Equipment, and Other Operations", effective from the beginning of the year ending March 31, 2025.

Prior to the previous consolidated fiscal year

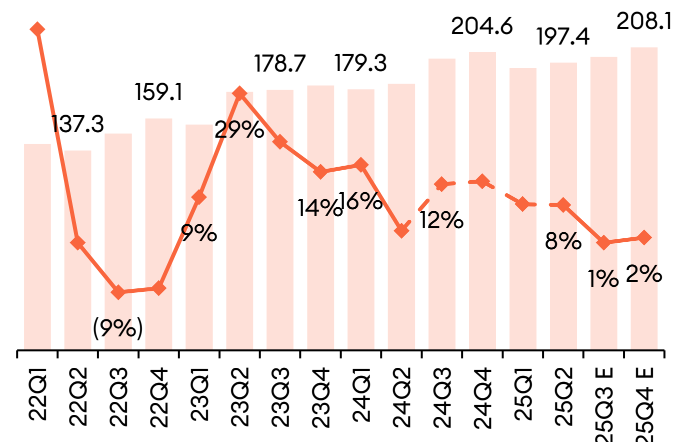
Reportable segments	Major products
Automotive suspension springs	Coil springs, leaf springs, stabilizer bars, accumulators, torsion bars, stabilizer links, stabilinker and others
Automotive seating	Seats, mechanical seating components, trim parts and others
Precision springs and components	HDD suspensions and mechanical components, wire springs, flat springs, motor cores, LCD/semiconductor testing probe units, fastener (screw), precision machine components and others
Industrial machinery and equipment, and other operations	Semiconductor processing products, ceramic products, spring mechanisms, pipe support systems, polyurethane products, metal substrates, automatic parking systems, security products, lighting equipment, golf club shafts and others

From the current consolidated fiscal year onwards

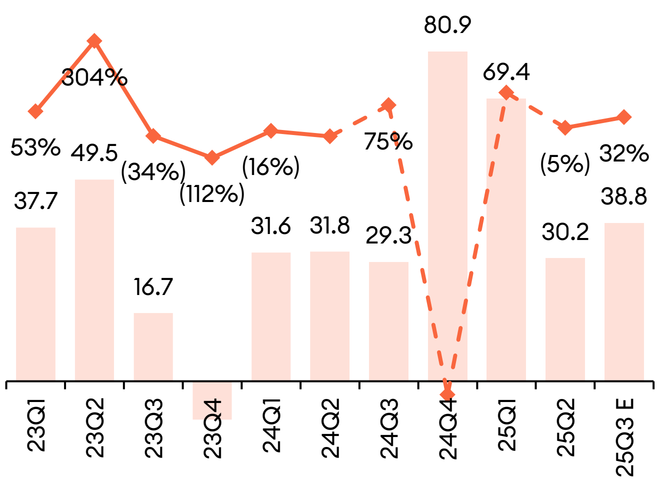
Reportable segments	Major products
Automotive suspension springs	Coil springs, leaf springs, stabilizer bars, accumulators, torsion bars, stabilizer links, stabilinker and others
Automotive seating	Seats, mechanical seating components, trim parts and others
Precision springs and components	HDD mechanical components, wire springs, flat springs, motor cores, fastener (screw), precision machine components and others
Disk Drive Suspension	HDD suspensions, LCD/semiconductor testing probe units and others
Industrial machinery and equipment, and other operations	Semiconductor processing products, ceramic products, spring mechanisms, pipe support systems, polyurethane products, metal substrates, automatic parking systems, security products, lighting equipment, golf club shafts and others

NHK Spring (5991 JP)

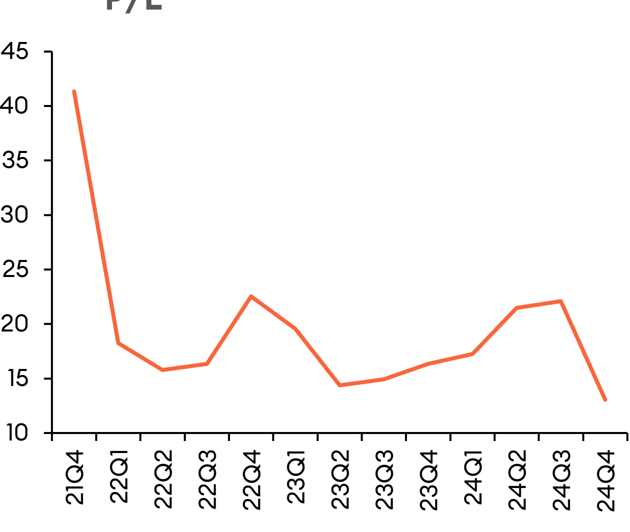
Revenue (JPY$bn)



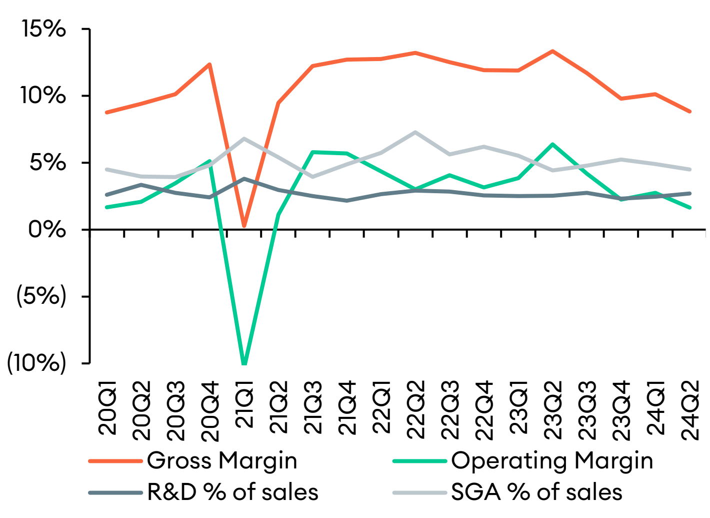
EPS (JPY)



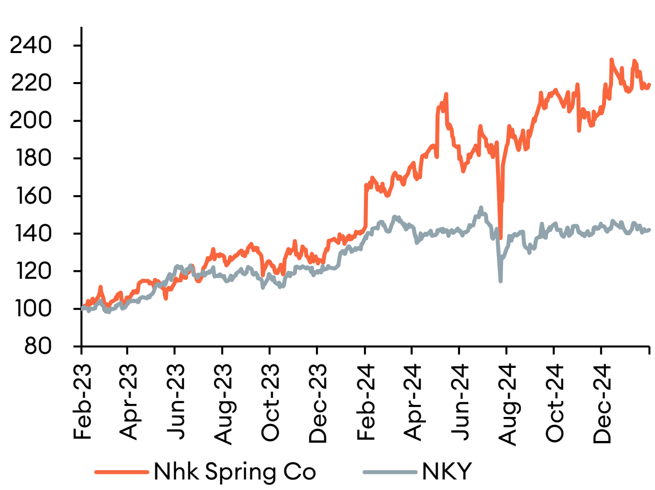
P/E



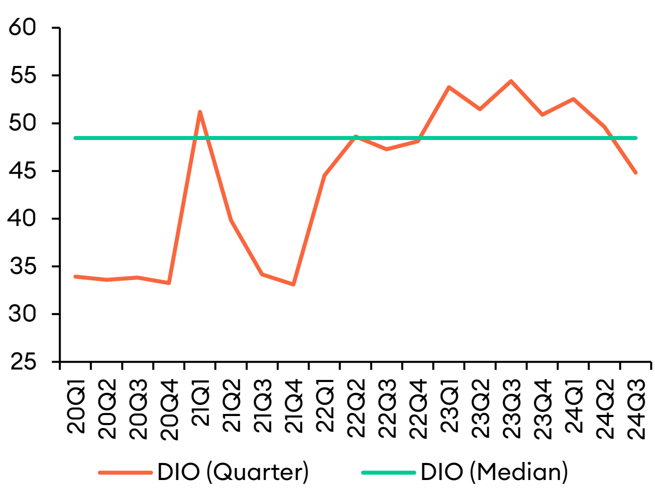
Margins (%)



Relative Performance (last 2 years)

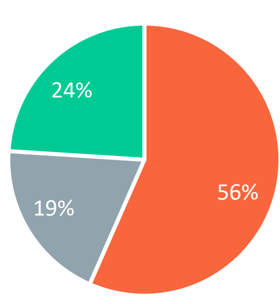


DIO (days)



Ajinomoto (2802 JP, 6260 JPY) EV 24 US$bn Yield 1.3% ADVT 47 US$m
Seasonings & Food = 78% of sales / HC & Other Segment includes 'functional materials' IE ABF

Sales Mix



- Seasonings
- Frozen Food
- HC & Others (ABF in here)

Company Overview

Business Model
- Amino acids used in wide range of biz: ABF film, Medical, IV Food

Seasonings
- Invented Umami seasoning (MSG) | Flavor Seasonings | Menu Specific seasonings
- Instant noodles & soups
- Powdered drinks

Healthcare
- Rx ingredients & contract services
- Nucleic Acid-Based drug development.
- Medical Nutrition

Functional Materials
- 20-25% of HC Segment & MSD % of total Sales
- 80% of Functional Materials = ABF
- 95% share of ABF film market; they invented it
- ABF customer is package house: Ibiden | Shinko | Unimicron, etc.

Growth strategy
- More value-add products (low salt, menu specific seasonings)
- Expand into frontier markets.

Frozen Foods
- 87% of this business is overseas; acquired Windor Quality Holdings in '14; Houston based frozen ethnic foods

Competitors
- Seasonings: McCormick (MKC US) | Olam (OLAM SP) | Kerry Group (KYGA ID) | Kikkoman (2801 JP)
- QBF / Xi'an Tianhe Defense Tech: introduced in '23; as of today not qualified

Key Topics / Questions

- 2030 goal is 50/50 foods/bio and fine chem. Would need to non-Foods to grow 4x. Discuss the strategy
- ABF overview: market size, application, suppliers, manufacturing process
- Is BT a competitive threat to ABF in lower end PC's?
- Business model: does ABF need to be qualified or just the substrate?
- Seasonings: Ajinomoto is larger vs. MKC, Kerry and Kikkoman (smaller vs. Olam but they sell oils and feed); discuss your positioning, growth, M&A potential
- Growth: more value add products (low salt, menu specific); what are they key food trends or growth markets.
- Frontier Market expansion: will use existing products or buy local leaders?

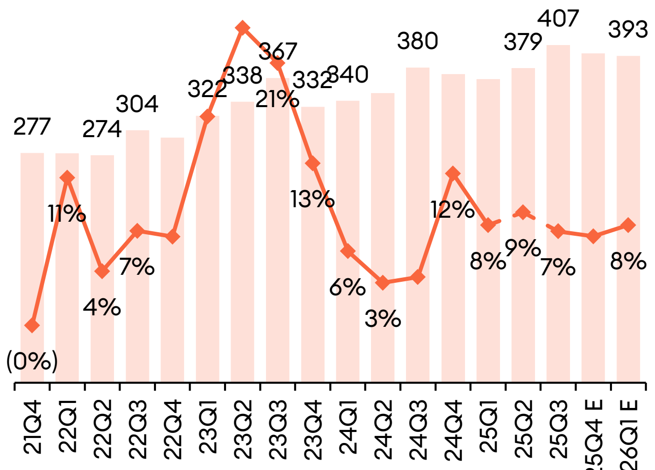
Ajinomoto (2802 JP) continued

Key Topics / Questions

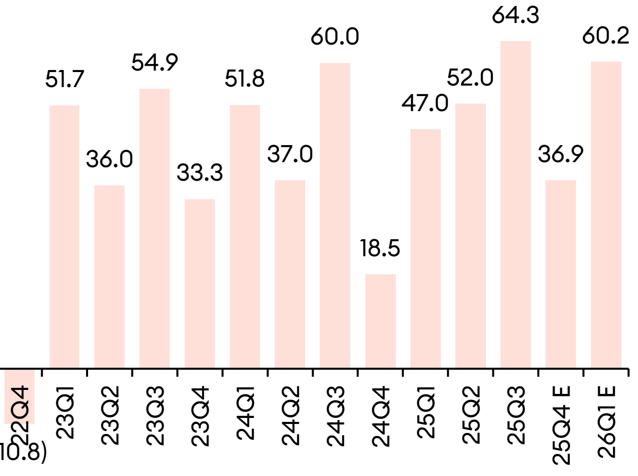
- **Seasonings:** would like to understand their global position next to other key competitors including McKesson, Kerry and Kikkoman (smaller vs. Olam but they sell oils and feed); discuss your positioning, growth, M&A potential
- **Healthcare Margins INCREASED to 14% in Dec Q:** with HC 22% of total company OP & up 40% YoY: confirm this is driven by AB. Would imply HC is 2% OP Margin.
- **M&A:** looks like most companies purchase 10+ years ago: Althea | New Seasons (Knoor) | Amoy;
- **Frozen Foods:** 10 years+ operating post Windsor acquisition; how has the business performed, not sure the Geo
  - Americas is $400 mm or 26% of overall sales: Windsor forecast was 100 B Yen for just NA in '20
- **ABF: 3% of total sales & 20% of total OP** confirm the math based on prior disclosure
  - ABF is included in Functional Materials which is a sub segment of Healthcare
  - Healthcare is 22% of total Sales and 39% of Total OP
  - Healthcare EX ABF is 18% of total sales and 2%double-digitotal OP
  - Functional Materials = 4% of total sales (20% of Healthcare Segment) & 20% of TOTAL Company OP (per company Dec '24)
  - ABF = 80% of Functional Materials or 3% of total Sales
  - If Functional Materials OP is 20% of Total Company, then its 90% of Healthcare OP
  - ABF Growth rate is high single digit to low double digit YoY %?
  - 95% share of global market for insulating films for Semi; maintain high share as they co-devlolp with customer
  - Qualified by both device maker and the substrate maker.
  - Custom Manu Process; embedding; ABF applied to circuit board; processing laser drilled vias; copper adhesion, insulation reliability, warpage;
  - **ABF: 60% OP** Margins?

AJINOMOTO (2802 JP)

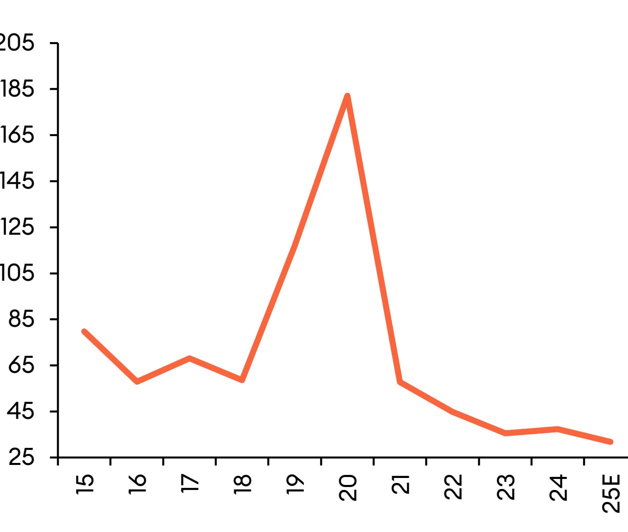
Revenue (JPYbn) and YoY Growth (%)



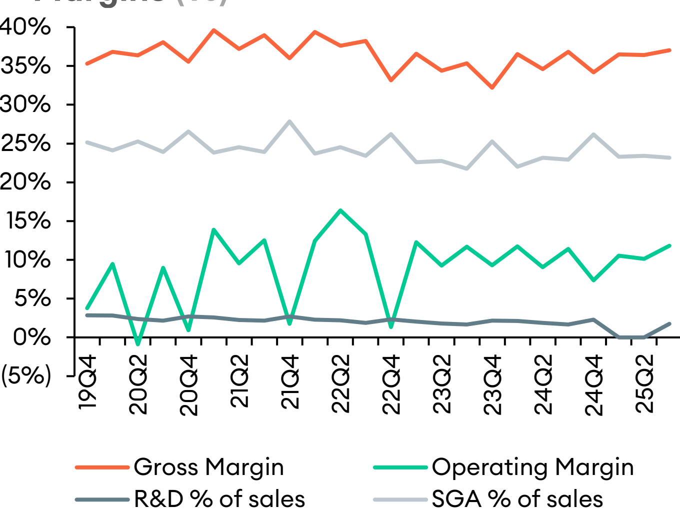
EPS (JPY)



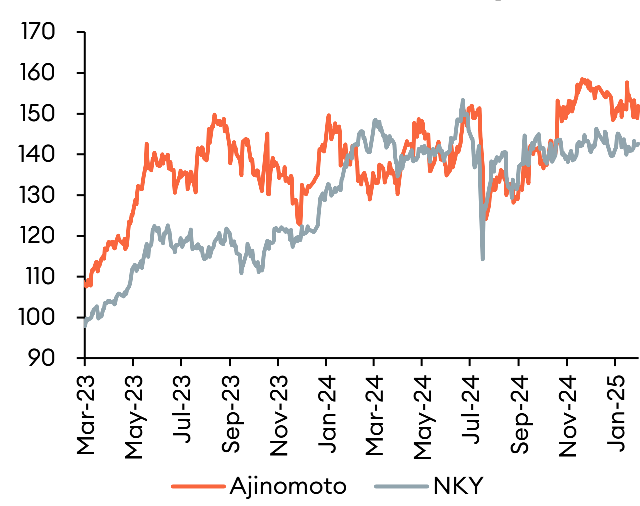
P/E



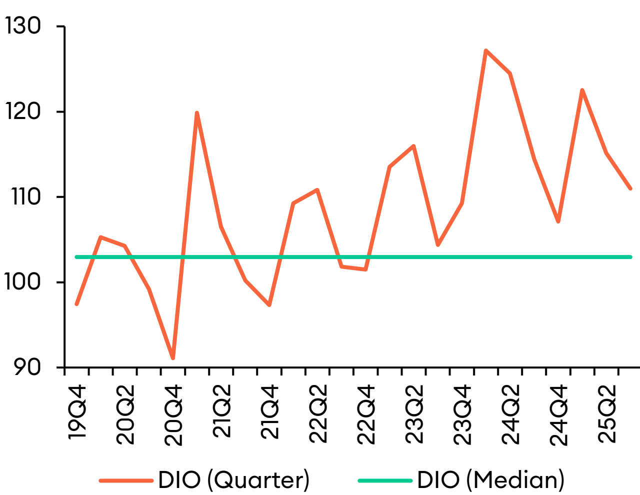
Margins (%)



Relative Performance (last 2 years)

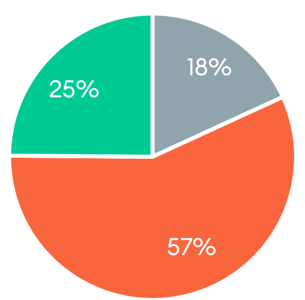


DIO (days)

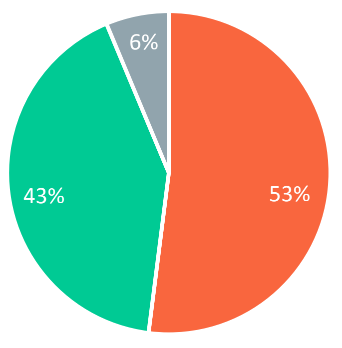


Shinko Electric (6967 JP, 5904 JPY) EV 4.9 US$bn Yield NA ADTV 48 US$m

Semiconductor Packaging & Substrates



■ Lead Frame ■ Packages
■ Hermetc Seal



■ Plastic ■ Metal ■ Other

Company Overview

Plastic Packages

- Flip Chip: 55% of segment & 30% of total sales. Mainly PC & general server, some CE & game console
- Plastic BGA for SP 20%
- IC Assembly for flagship SP's 20%
- They also sell into consumer elec & game consoles.

Metal Packages

- Stamped Lead frames
- Etched Lead frames
- Ceramic Chuck
- Heat Spreaders: 5% of sales

Lead Frames

- Etched 50% | Pressed 35% | Lead on Chip 15%

Hermetic Seal

- Ceramic chuck 85% (LRCX)
- Laser Diode 10%
- Other parts 5%

Customers

- INTC: 25% of sales | AMD 13% | LRCX 11%
- QCOM | Sony

Applications

- PC & Server ~ 30% of sales | SP ~ 22% | SPE ~ 21%

Competitors

- Ibiden | Unimicron | Nan Ya PCB | AT&S | SEMCO
- Ceramic Chucks: NGK Insulators (5333 JP) | Kyocera (6971 JP) | Krosaki Harima (5352 JP) | TOTO (5332 JP)

Sale to JIC Capital

- Fujitsu selling their 50% stake
- Consortium: Dai Nippon Printing (7912 JP) & Mitsui Chemicals (4183 JT)
- Early '25 expected close

Key Topics / Questions

- Tender offer: commenced Feb 18th; could close in 20-60 business days. Will there be any future communication on strategy from Shinko or JCI
- FC BGA packages decreased due to delay in recovery for Servers | intensified competition in PC
- Heat Spreaders for PC today / AI opportunities? Demand is 'stagnant' indicates more PC or general server vs. GPU / AI.
- Hermetic Seal parts grew 27% in June 2024 Q; driver?
- Cap ex: Chikumu facility status; building for multi chip and heterogeneous integrations
- Do you see recovery in either general server or PC in CY 25
- Co packaged optics (CPO) discussion
- Ability to work with TSM (or other foundry) should major customer outsource more wafers

Shinko Electric (6967) Cont.

Key Topics / Questions

AI ASIC from CSP: discuss the opportunity given NVDA has locked up most of the high-end IC substrate capacity with Ibiden

Manufacturing & Capacity

Chikuma Facility: installing equipment Dec ’24 | MP Mar ’25. targeting AI & HPC. Discuss how this facility differs from prior in terms of technology capability. They don’t discuss specifics on capacity overall or how much is dedicated for certain customers, but what is UTR and how is it trending

Co packaged optics (CPO) demo at Semicon Japan Dec ’24. End of ‘28 for MP | AVGO 800 gig switch in center. 6 die & 16 Optical engines. The NTT innovation device is huge but also developing smaller footprint. Module connecting XPU directly to optics is 2030 timing

ABF Substrate: discuss ability to target more AI high-end with the CSP’s or other CPU vendors. What are the gating factors? Seems there should be strong willingness to work with Shinko given NVDA has Ibiden high end capacity locked up.

Ceramic Chuck: for LRCX: they hold the wafers in place during etching process. Explain the product and whether they interact with the SiC rings or shower heads supplied by Tokai Carbon Korea or Hana Materials.
  - What is the replacement rate of these products and what impact does technology migration have
  - Appears many competitors; is there clear differentiation amongst suppliers for specific applications?

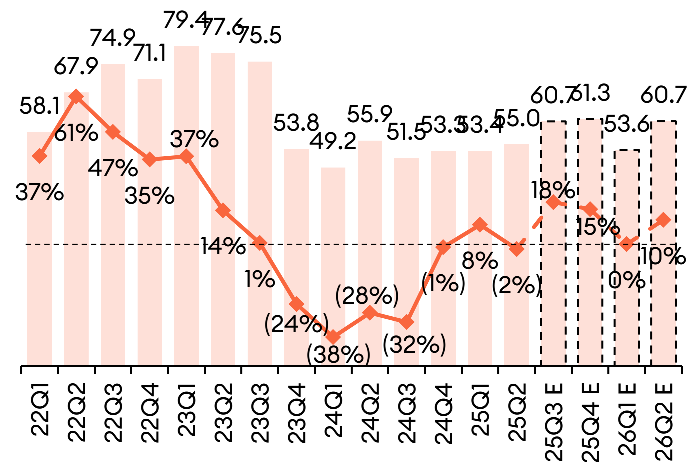
- Packaging: what is the mix of flip chip between PC | Server | Consumer Elec | Game Console
  - For PC & server, which market segment do they have the most exposure can-do high-end low, medium, high.
  - Server; would think given no AI currently, majority is for general purpose server.

Heat Spreader / Sink: 5% of Package & 3% of total sales. This is a big theme; what is your growth plans
  - Heat Spreader | Lots of discussion on thermal, especially for AI | They can do high end products.
  - Application mix not disclosed; but PC & Server: Server growing faster vs. Pc
  - They have capability of high end products;
  - Can use their heat spreader in both air/liquid cooling systems; their heat spreader puts the metal lid onto the chip;

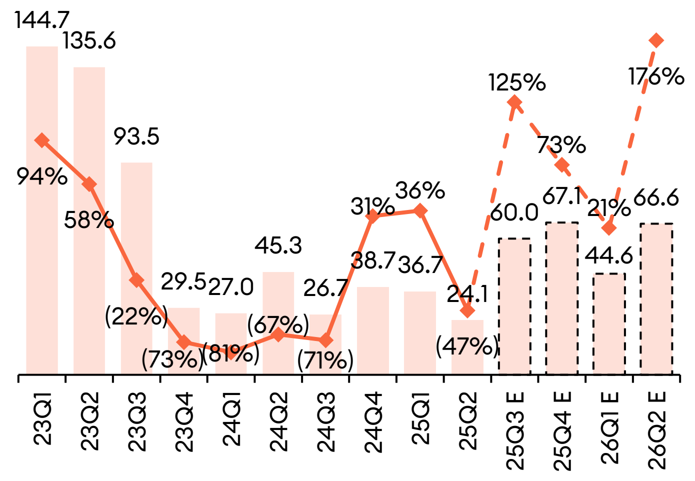
- **Smartphone Exposure:** Plastic BGA for memory & IC assembly for flagships: growth drivers and competitive landscape. Will AI SP impact this business?

Shinko Electric (6967 JP)

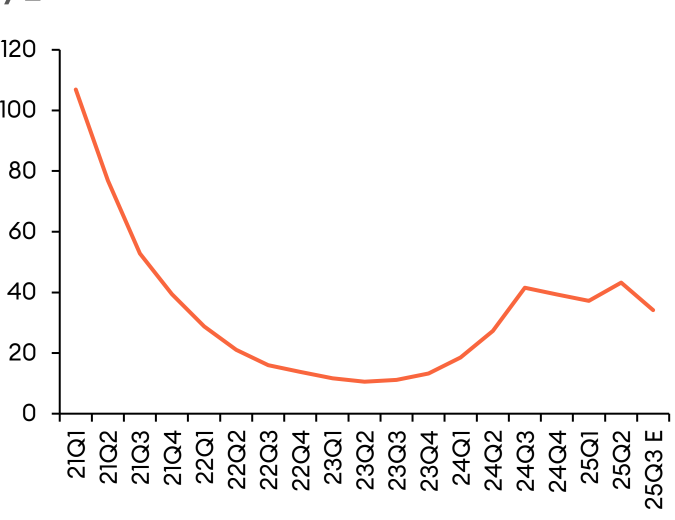
Revenue (JPYbn) and YoY Growth (%)



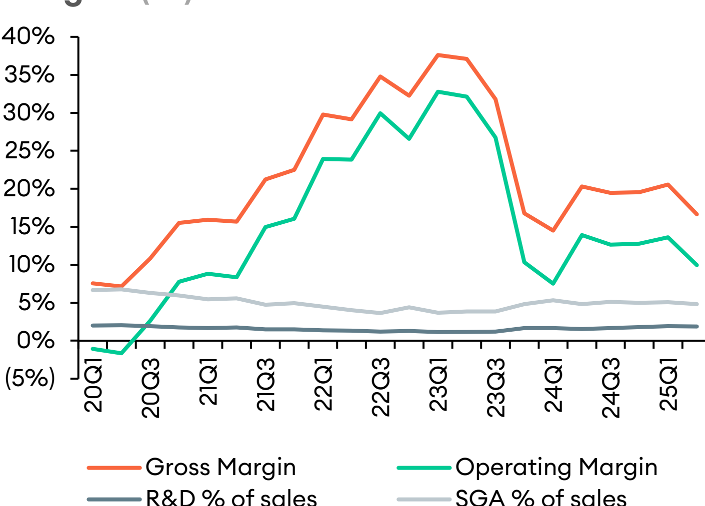
EPS (JPY) and YoY growth (%)



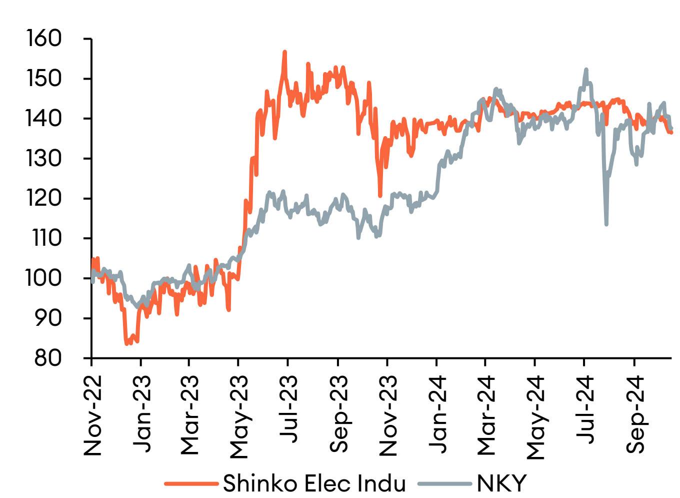
P/E



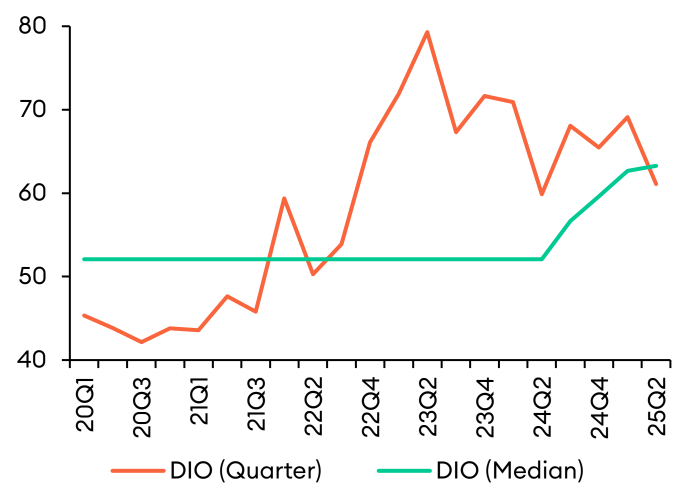
Margins (%)



Relative Performance (last 2 years)



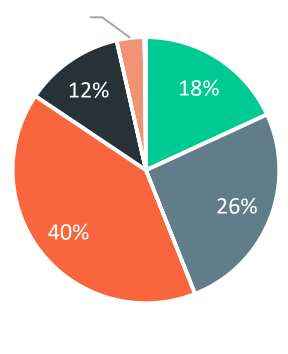
DIO (days)



Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Nidec (6594 JP, 2553 JPY) EV 22.5 US$bn Yield 1.6% ADVT 89 US$m
Electric motors & related components

Sales Mix



Company Overview

Appliance, Commercial & Industrial
- Quite stable with high 20's / low 30's OP margins
- Battery Energy Storage
- Auto Motor & Electronics integrated into this segment

Auto
- Growing sector but drag on earnings given low margins

Small Precision Motors (#1 globally)
- HDD spindle ~ 5% of total sales | Nearline for DC 80% of sales | 60% of units
- DC: increasing demand for Quick Coupling | Liquid Cooling Modules | Coolant Distribution Module
- Other small motors ~15%

Machinery
- Quite stable

Customers
- XXX
- XXX
- XXX

Key Topics / Questions

- Growth Drivers:
  - AI via HDD & Liquid Cooling & Battery Storage & Generators
  - Machine Tools: now with full product/sales line up
- Auto: really pulling back on EV aspirations; difficult to break into both China & Europe
- Small Precision Motors
  - HDD: Nearline storage for DC / Rev growth & + Mix
  - Liquid Cooling
  - HDD margin vs. Other (lower volumes, higher margins / UTR & Mix
- Appliance, Commercial & Industrial: MOEN is the growth driver
- Auto & Industrial Recovery
- Stock divergence vs. Nikkei since June 23
- Auto: What drives the forecast margin improvement in FY 24
- M&A targeted across all sectors
- Battery Storage: driven by green energy or DC

Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Nidec (6594 JP) Cont.

Key Topics / Questions

Small Precision Motors
- 80% + Other | 17% HDD
- HDD motors | Brushless Motors for Home Appliances |Water Cooling Modules | Fan Motors for Server | E-Bike motors

Appliance, Commercial & Industrial
- Nidec Techno Motor | MOEN | New ACIM
- Home AC | Generators | Vacuum Robot | Battery Storage | Compressors | Industrial products
- MOEN: 48% | New ACIM: 44% | Nidec Techno Motor: 8%
- New ACIM is ~ 45% Global Appliances | 40% US Motors | 25% Commercial & Industrial
- MOEN: 60% Energy (storage solutions / generators / EV charger)| 40% Motion (Auto | Elevator | Robots)
- Motors for Home Appliances, Commercial & Industrial Equipment
- Nidec Techno Motor (formerly Totoku, acquired in ’07) : Industrial, Commerical & Residential

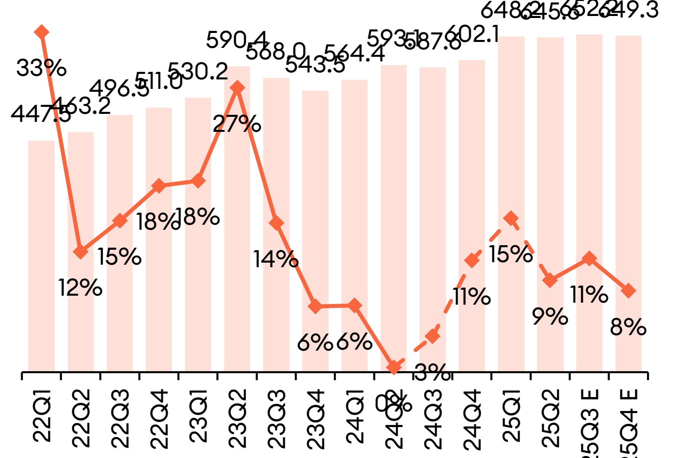
Auto
- Auto 94% | Traction Motor for BEV 6%
- Body | Chassis | Components for transmission & Engine
  - Cooling fans | Seat Adjuster motor | Sunroof motor | Seat fan Motor | Elec Power Steering
- Growing sector but drag on earnings given low margins

Machinery
- Reducer for 6 Axis Robot | Large Machining Tools | Lathe | Gear Cutting Machines | Machine Center | Semi Package Inspection | Wafer Transfer Robot

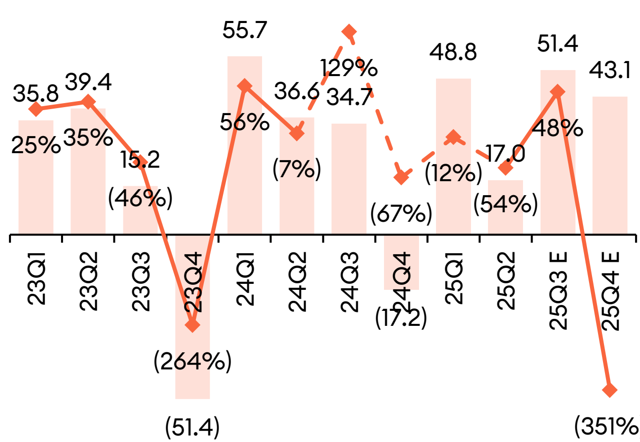
Electrical & Optical Components
- Monitoring camera | camera shutter | Auto Lens |

Nidec (6594 JP)

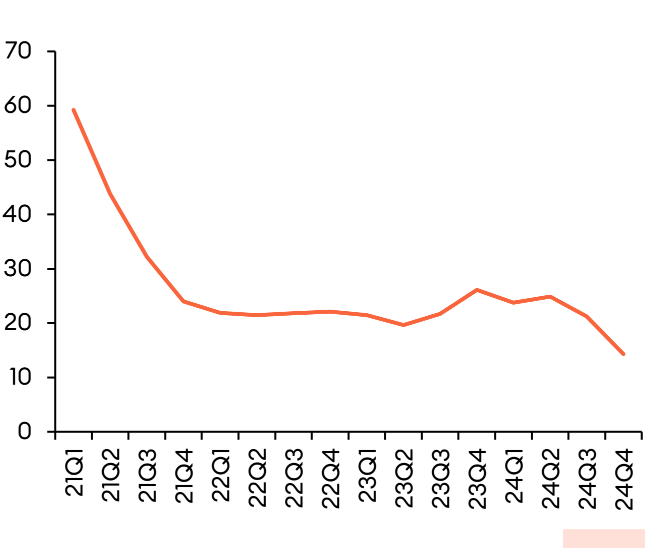
Revenue (JPY$bn)



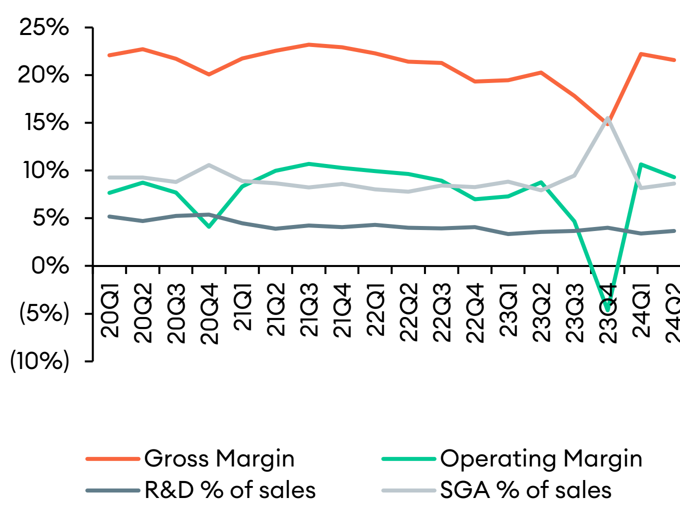
EPS (JPY)



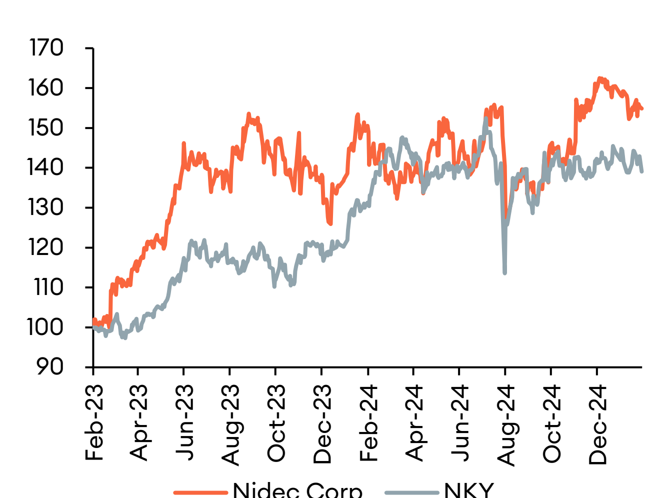
P/E



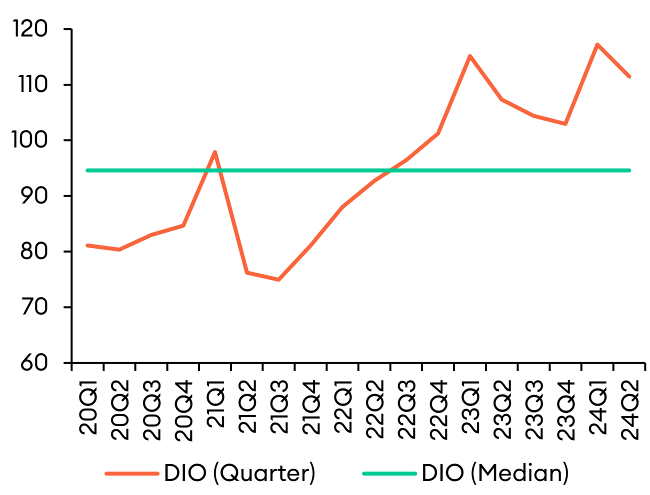
Margins (%)



Relative Performance (last 2 years)



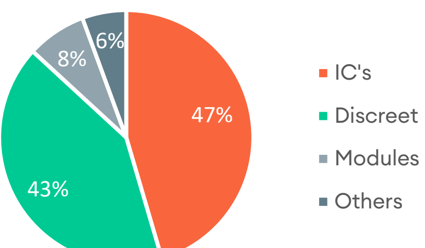
DIO (days)

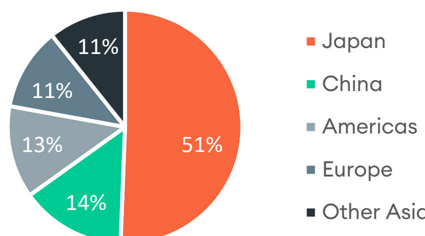


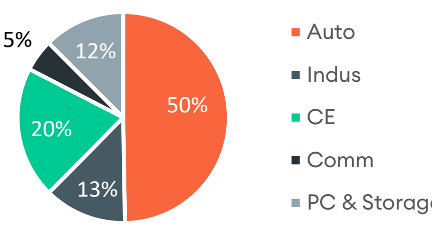
NewStreet Research

Rohm (6963 JP, 1488 JPY) EV 4.8 US$bn Yield 3.4% ADVT 43 US$m

Analog IC's







Company Overview

Products

- IC's PMIC | Amplifiers | Sensors
- Discreet: Diodes | Transistors
- Modules: Power | Sensor | Wireless | Motor Driver | LED's

Auto

- Products: PMIC, Sensors
- Applications: Infotainment | Body | Powertrain | ADAS | xEV
- SiC > 140 design wins in Auto & Industrial

Industrial

- Products: Discreet & Opto-electronics
- Applications: FA | Energy | Home Building

Consumer

- Products: Amplifiers & LEDs for Audio & Display
- Applications: A/V | Home Appliance

Communication

- Products: PMIC's, Signal processing
- Applications: Smartphone & Mobile | Base Station & Infra | Wired

Computers & Storage

- Products: PMIC
- Applications: PC & Server | POS | Office Automation

Competition

- Renesas | ST Micro | ON | TXN | IFX
- Sensors: AMS | TE | Bosch | Vishay
- SiC: WOLF | STM | Mitsubishi Elec | ON
- Wireless: Renesas | SLAB | NXPI | Nordic | QCOM | TXN
- Motor Drivers: STM | ALGM | MXIM

Key Topics / Questions

- SiC
- Outsourcing: 15% of foundry and 30% of OSAT by '30
- Inventory remains elevated; when normalizes
- Cycle Update
- China Competition

Rohm (6963 JP) Cont.

Key Topics / Questions

- Manufacturing:
  - Japan: IC's & Discreet
  - Malaysia: Analog IC's & Discreet
  - Thailand:
  - China:

- SiC Factories: Chikugo Plant, Miyazaki Plan No. 2

China Competition

Power Modules (SiC, IGBT)

- CRRC Times Electric – Major player in SiC power devices for rail, EV, and industrial applications.
- BYD Semiconductor – Focused on IGBT modules for electric vehicles and renewable energy.
- StarPower Semiconductor – Strong in industrial IGBT and SiC modules.
- MACMIC Science & Technology – Specializes in motor drive and industrial power modules.

Sensor Modules

- Goertek – Leading supplier of optical, environmental, and MEMS sensors for consumer electronics.
- MEMSensing Microsystems – Specialized in MEMS-based pressure and motion sensors.
- Huaibei Tec – Manufactures industrial-grade sensors for IoT applications.

Wireless Communication Modules

- Fibocom – Major producer of wireless communication modules (Wi-Fi, 5G, Bluetooth).
- Quectel – Strong in IoT modules, covering Wi-SUN, LTE, and GNSS solutions.
- Sunway Communication – Competes in RF and Bluetooth modules for automotive and consumer markets.

Motor Driver Modules

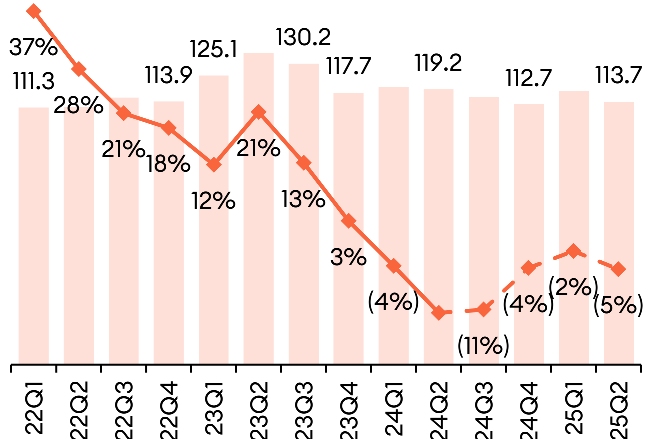
- Leader Electronics (雷达电子) – Specializes in motor control ICs and modules for industrial automation.
- Himax Technologies – Supplies motor drivers for display panels and robotics.
- Fortior Technology – Strong in stepper and BLDC motor driver ICs.

LED Modules

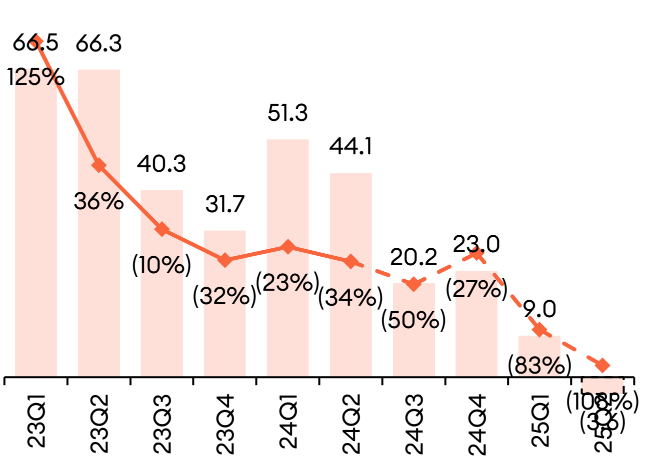
- MLS Co. (木林森照明) – A leading LED module supplier for general lighting and automotive applications.
- San'an Optoelectronics – Major competitor in LED chip and module production.
- Refond Optoelectronics – Specializes in mini LED and automotive LED modules.

Rohm (6963 JP)

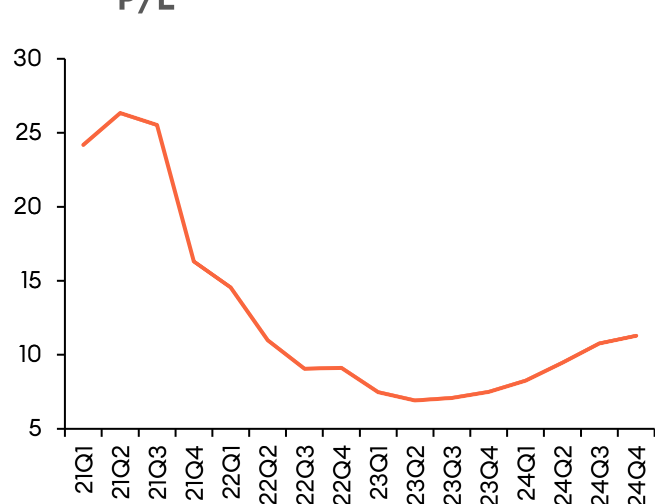
Revenue (JPY$bn)



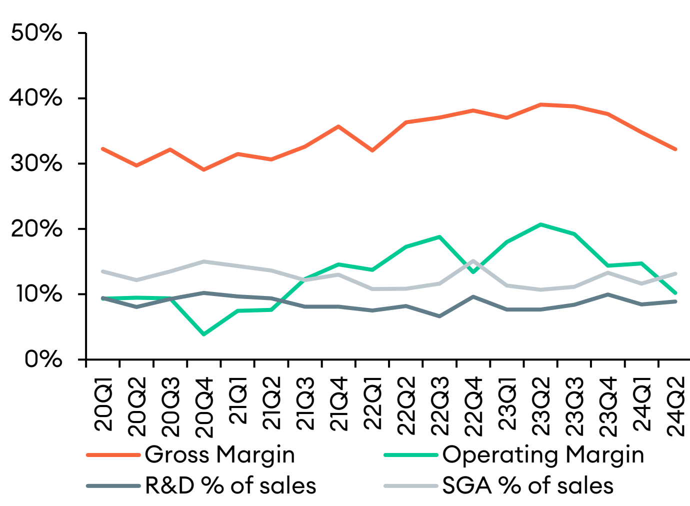
EPS (JPY)



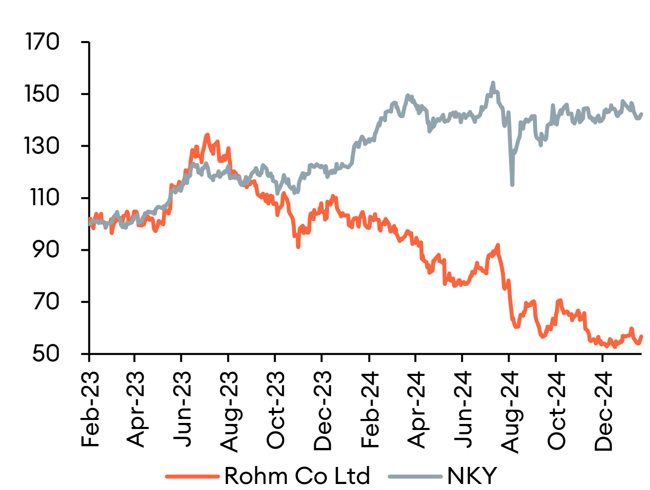
P/E



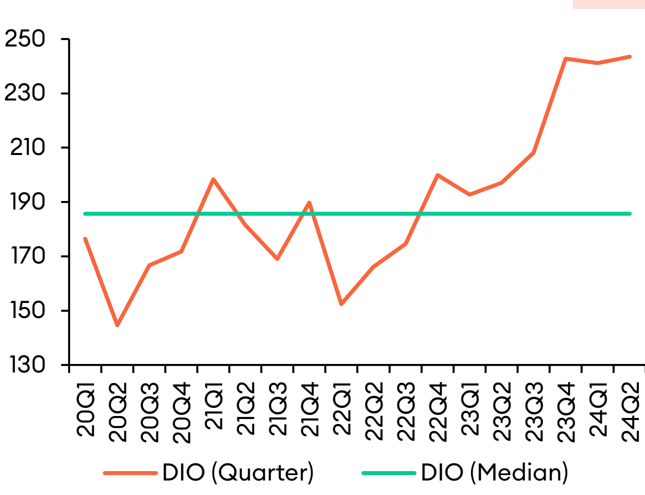
Margins (%)



Relative Performance (last 2 years)



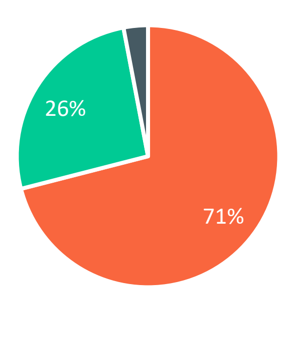
DIO (days)



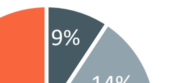
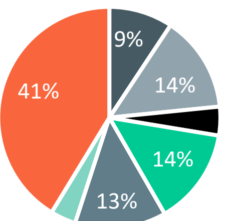
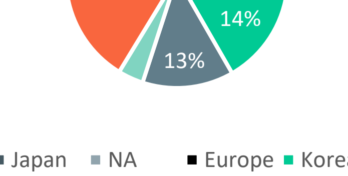
Tokyo Electron (8035 JP, 23135 JPY) EV 67.7 US$bn Yield 2.5% ADVT 735 US$m

Semiconductor Production Equipment (SPE)

Sales Mix



Logic / Foundry / Other ▪ DRAM ▪ NAND

Japan ▪ NA ▪ Europe ▪ Korea ▪ Taiwan ▪ SE Asia ▪ China

Company Overview

Products

- Coater/Developer ~90% share
- Etch #2, behind LRCX
- Deposition
- Cleaning #2, behind LRCX
- Wafer prober
- Wafer Bonder/De-Bonder
- Display Production Equipment

Competitors

- ASML / AMAT / LRCX /KLAC

Capex

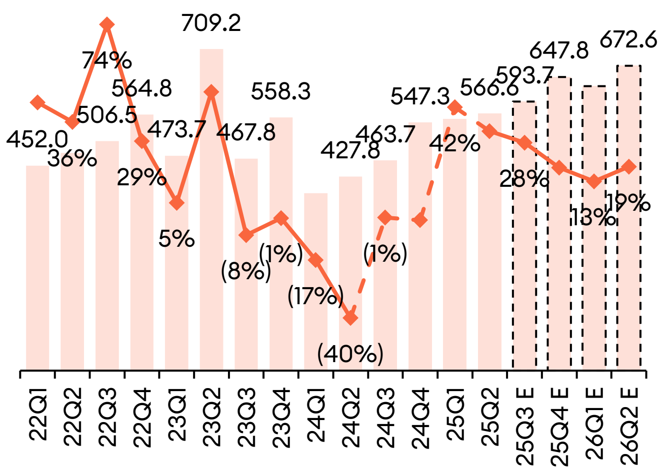
- 170 B Yen '25 / 122 B in '24
- Niraski: Deposition / Etch / R&D
- Oshu: deposition production / logistics
- Kurokawa: Etch
- Koshi: coater/developer, cleaning, bonder / Summer '25

Key Topics / Questions

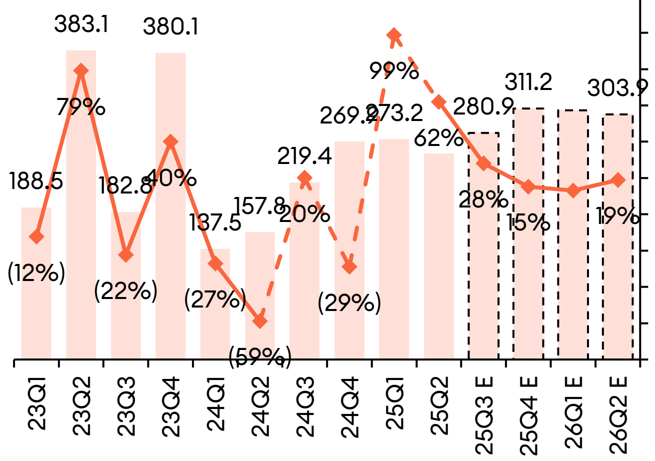
- China has gone from 15% of WFE to 30-40% of sales / what is normalized spend rate
    - Sense of mix China Semi vs. Intl
- NAND cap ex at historic lows; what drives recovery
- Growth Drivers: GAA / Backside PDN / HBM / Testing
- Bonding: HBM & advanced Logic
- Cryogenic Etch for NAND
- On device (SP/PC) drives 15% of WFE / discuss
- WFE '21-'23 quite strong / legacy tech not growing / digestion period
- Which process steps are growing in the next 10 years vs. those declining
- Naura & AMEC (or others) to what extent are they making progress

Tokyo Electron (8035 JP)

Revenue (JPYbn) and YoY Growth (%)

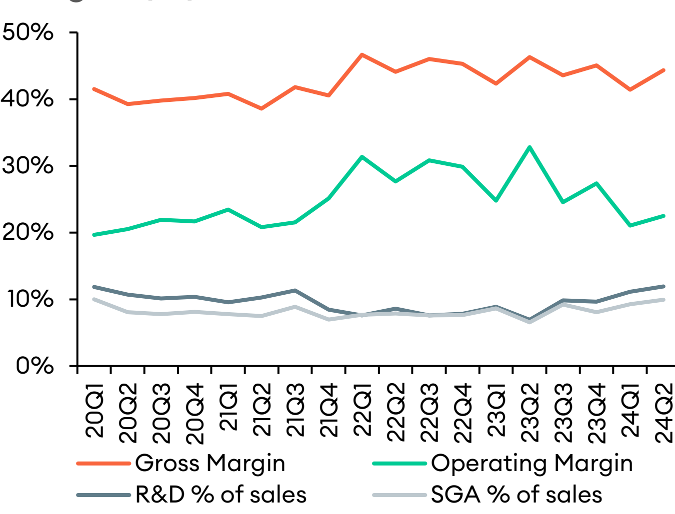


EPS (JPY) and YoY growth (%)

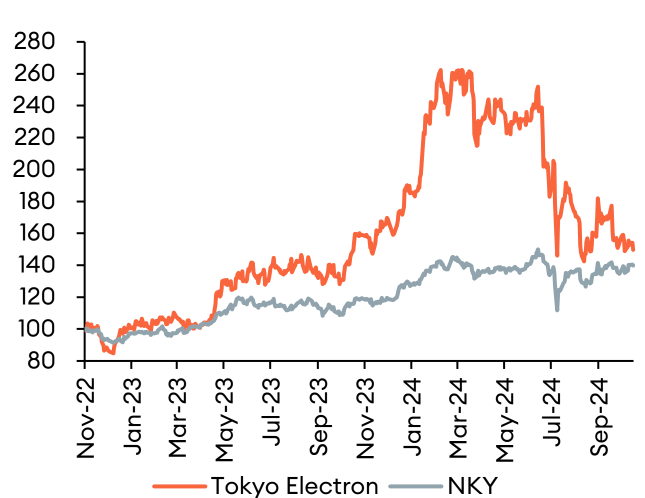


Geo Mix for TEL

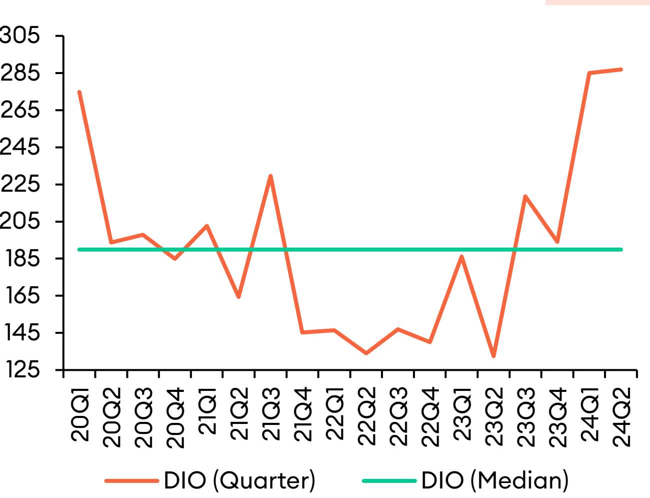
Margins (%)



Relative Performance (last 2 years)



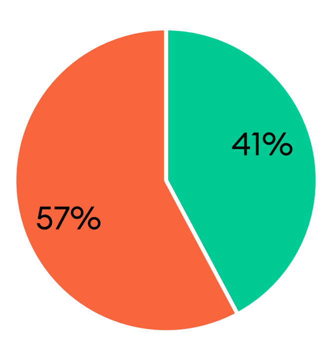
DIO (days)

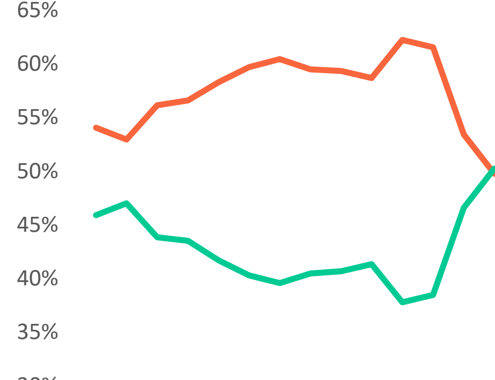


Mitsubishi Gas Chemical (4182 JP, 2722 JPY) EV 4.7 US$bn Yield 3.5% ADVT 13 US$m

Advanced materials, specialty chemicals, and performance products

Mix recent Q, historical trend





Company Overview

Growth Drivers

- 3 ICT biz: Elec Materials, Inorganic Chemicals, Optical Materials

Inorganic Chemicals: cleaning products for semi-Production

- Super-pure ammonium hydroxide (NH_4OH)
- Super-pure Hydrogen peroxide H202 #1 share globally

Optical Materials

- Plastic lens monomers for Smartphone Lens
- ELM Clean: cleaning solutions for Semi & Display production
- Clean Etch: chemical polishing solutions for PCB production

Engineering Plastics

- Engineering Plastics: polycarbonate, sheet film, polyacetal

Electronic Materials

- BT Substrate
- Lubricated Entry (LE) sheets (used in mechanical drilling)

Green Energy & Chemicals (mature traditional chemicals)

- Natural Gas & Aromatics
- Methanol & Ammonia based

Competitors

- Sumitomo Chemical
- Shin-Etsu Chemical
- BASF
- DuPont
- Merck
- H202: Solvay, Evonik, Arkema, Taekwang, Chang Chun, Hansol
- BT Substrate: MGC 40% share, Unimicron, LG Innotek, SEMCO, Ibiden, AT&S, Nan Ya PCB, Kinsus

Key Topics / Questions

- 1st Meeting so introduction / overview helpful
- Complex business with many products and applications. Which products are growth, which are mature and being run for cash flow.
- Within Specialty Chemicals, what is the mix of Inorganic Chemicals, Optical Materials, Engineering Plastics & Electronic Materials?
- Where are you either the #1 or #2 player
- H2O2 overview: supply / demand / growth / market share & capacity expansion
- BT Substrate overview: supply / demand / growth opportunities / new markets beyond mobile
- Lubricated Entry (LE) sheets: overview, growth from higher density PCB's
- Discussion on Korean and / or Chinese players moving into electronics.

NewStreet Research

Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

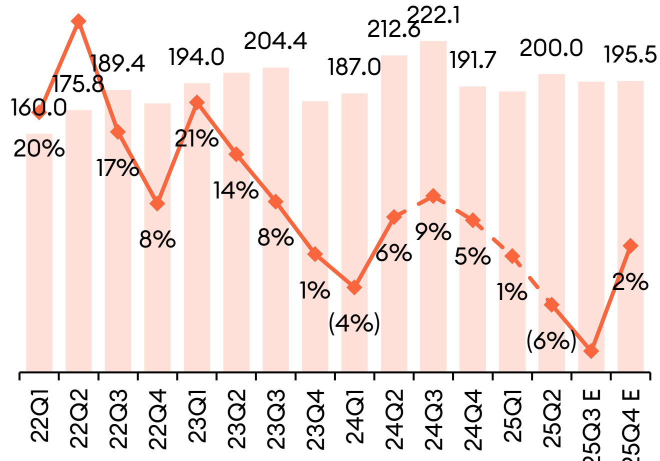
Mitsubishi Gas Chemical (4182 JP) Cont.

Key Topics / Questions

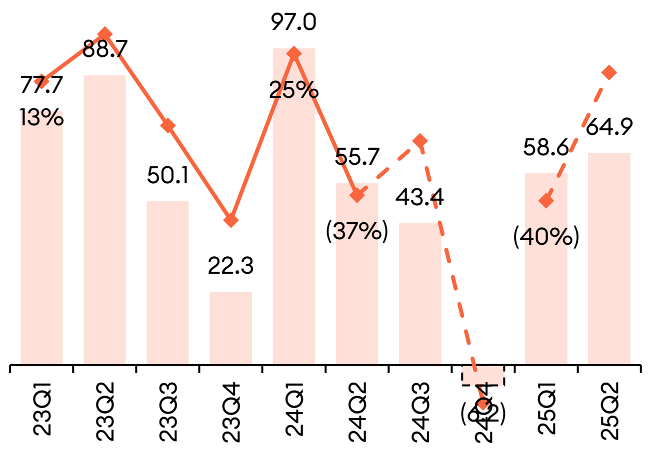
- High market share in semi grade high purity chemicals
- BT Substrate: expanding capacity in Thailand; discuss the growth drivers and what are the new USE cases as alternative to ABF
- Discuss your use of Ortho Positional Effect (OPE) to develop new epoxy resins and related materials
- Underfill materials used for semiconductor bonding, heat sinks, etc.
- Epoxy Mold Compounds (EMC) used in IC Packaging;
- Lubricated Entry (LE) Sheet is an entry sheet for the mechanical drilling of printed circuit boards, with a water-soluble lubricating layer on the aluminum sheet. It can lengthen the life of drill bits by preventing them from wearing out. Furthermore, with an increase in stack height on processing through holes, the drilling cost can be reduced. It also contributes to a higher hole quality.
- ELM Clean: cleaning solutions for Semi & Display production. Cleaning solutions for removing residues, stripping agents for removing photoresists, etching agents, and others.
- Polycarbonate Resin: Iupilon, used in Electronics, Office Automation, Auto
- Polycarbonate Sheet/Film for Touch Panels
- Acrylic Resin for AR/VR or LED Lens
- Optical Resin Polymer: used in SP’s and precision lens

Mitsubishi Gas Chemical (4182 JP)

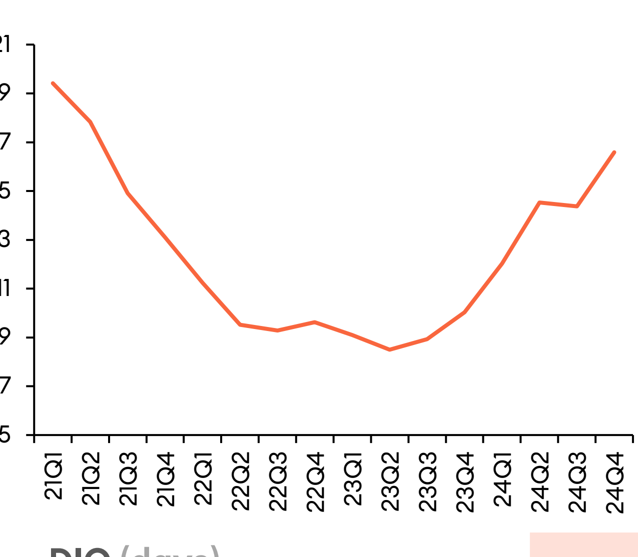
Revenue (JPY$bn)



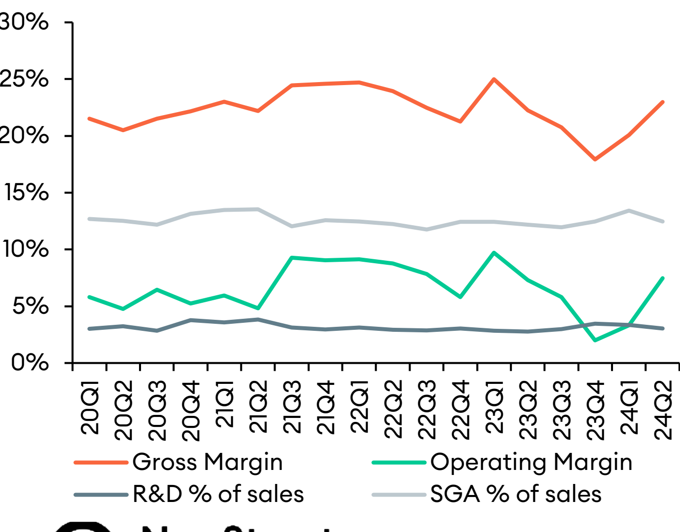
EPS (JPY)



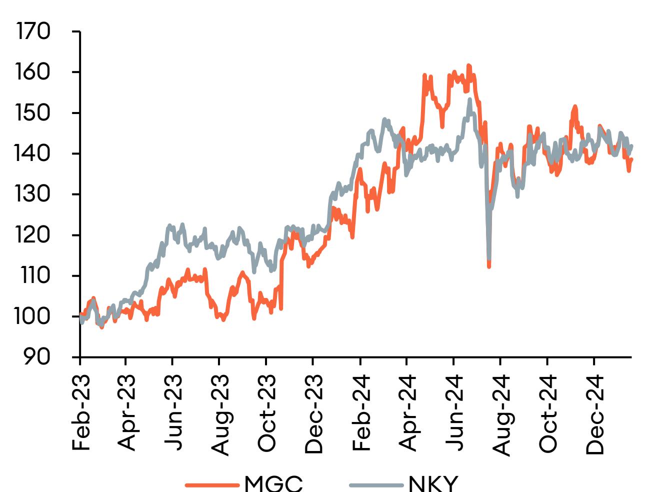
P/E



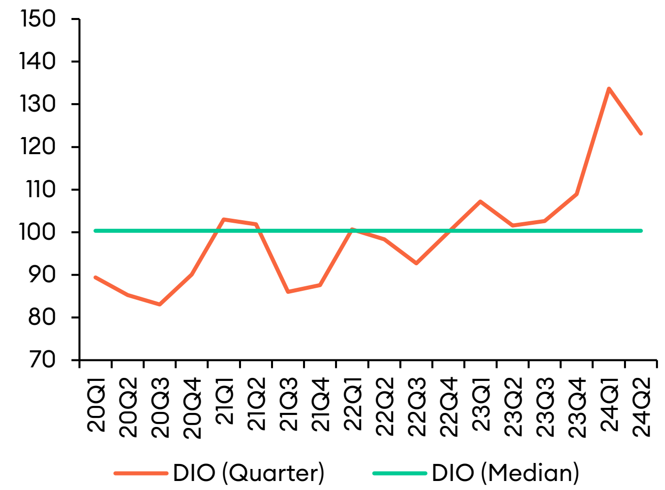
Margins (%)



Relative Performance (last 2 years)



DIO (days)

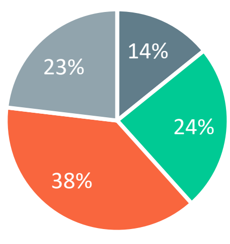


Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

MinebeaMitsumi (6479 JP, 2433 JPY) EV 8.6 US$bn Yield 1.6% ADVT 23 US$m

Precision Tech | Motors | Lighting | Sensing | Semi & Electronics

Sales Mix



- Precision Tech
- Motor, Lighting & Sensing
- Semi & Elec
- Access

Company Overview

Semi & Elec

- 2 main biz: Camera Actuator for iPhone & Game Console / controller for Nintendo. Both are EMS type & low margin
- Analog semi's

Motor, Lighting, Sensing

- xxx

Precision Tech

- Production: 300 mm units/mo. vs. Capacity: 370 mm unit
- Ball Bearings | Rod-ends/Fasteners
- 60% Global market share in bearings
- GDP type growth overall
- AI: DC fans utilize ball bearings
- Spindle motor for HDD
- Applications: Aero 35% | Auto 20% | Fan Motor 16% | Other 26%
- Highest margins: High Teens / Low 20's

Access

- Auto components including door handles, latches, power closure system and door mirrors
- Acquired Honda Lock

Competitors

- Nidec | NSK |

Customers

- Ball Bearings: NSK (6471 JP), several Chinese trying to enter

Key Topics / Questions

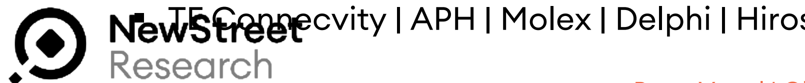
- Aerospace & Data Center driving growth
- Auto remains weak, taking measures to improve profits
- MSD Operating margins
- Orphan stock: covered by tech analysts but is more industrial.
- AI exposure: Precision Tech, via Ball Bearings for Data Center Fans and MLS via HDD motors.
- Sub Core Business: Optical Devices & Mechanical Components; strategy
- Precision Tech: new markets including auto & medical
- LCD BLU; outlook given most LCD is shifting to OLED
- Power semi's; discuss the overall position and IGBT: Med-LT growth from competitive side-gate IGBT technology

Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

MinebeaMitsumi (6479 JP) Cont.

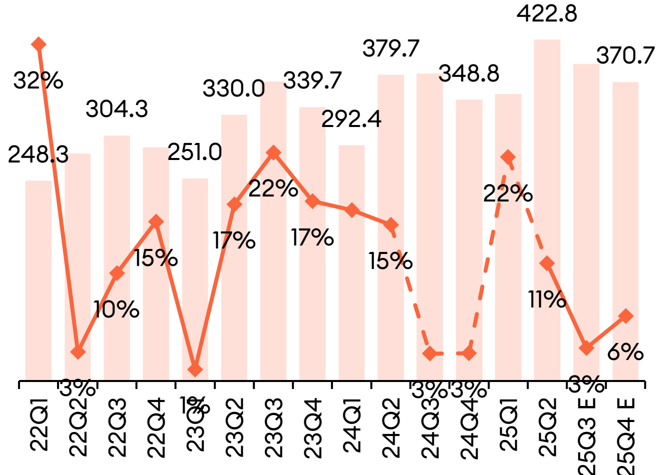
Key Topics / Questions

- Core businesses: Bearings | Analog Semi | Motors | Access | Sensors | Connectors | Switches
- iPhone camera actuators; impact from 2nd source coming in; blessing in disguise given low margins?
- Precision Tech
  - Sales are above prior highs, but OP Margin is lower vs. prior high's (24.4% OP Margin); is there lag effect or structural difference in the biz today. This may be high Aero exposure today vs. prior (lower OP)
  - Spindle motors for HDD's: growth from AI
  - Pivot assemblies: 2% of overall sales | 90% global share
- Motors: discuss the growth opportunities overall either in Auto, Industrial, HVAC
- LCD BLU: discuss options for the tech | IP | Capacity as iPhone moves to 100% OLED
- Robots: discuss opportunities as each finger uses 3 actuators | 15 per hand or 30 actuator per Robot: each actuator requires 2 bearings, 60 units/robot
- Analog Semi's: dig into this more
  - Stitched together ABLIC | Omron's Yasu facility | Hitachi Power Devices
  - Back end capacity: expanding in Philippines
  - ABLIC: Advanced analog tech for small size & low power: acquired ultrasound diagnostic receiving tech from Socionext
- Connectors: Overview (Auto / Industrials focus?); size/scale of this business, type of products comps, given acquisitions of Honda Tsushin Kogyo & Sumico Tec
  - TE Connecvity | APH | Molex | Delphi | Hirose

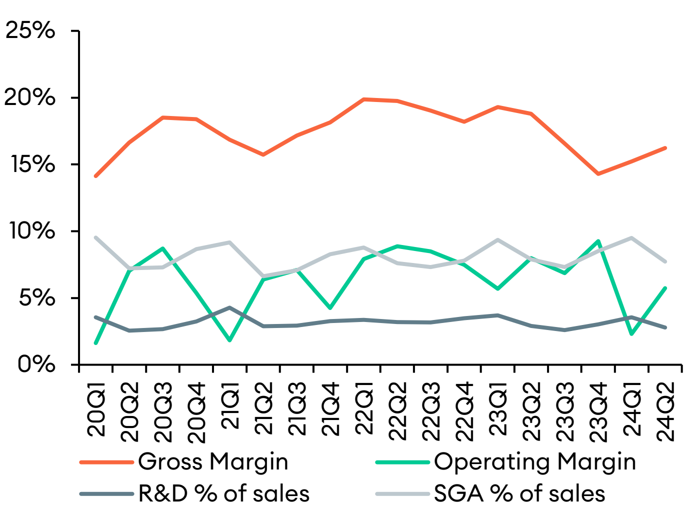


MinebeaMitsumi (6479 JP)

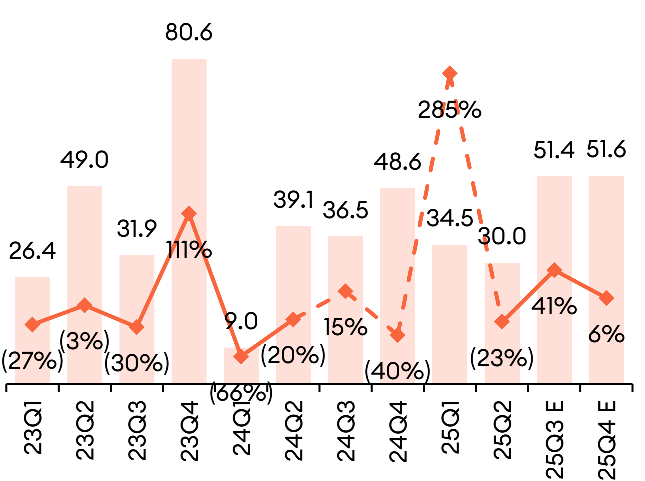
Revenue (JPY$bn)



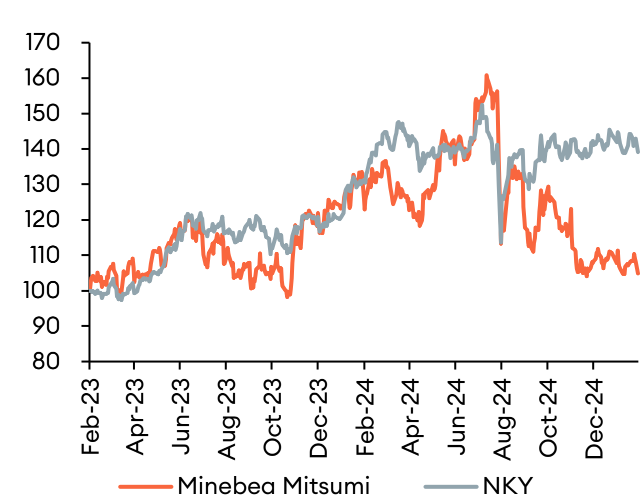
Margins (%)



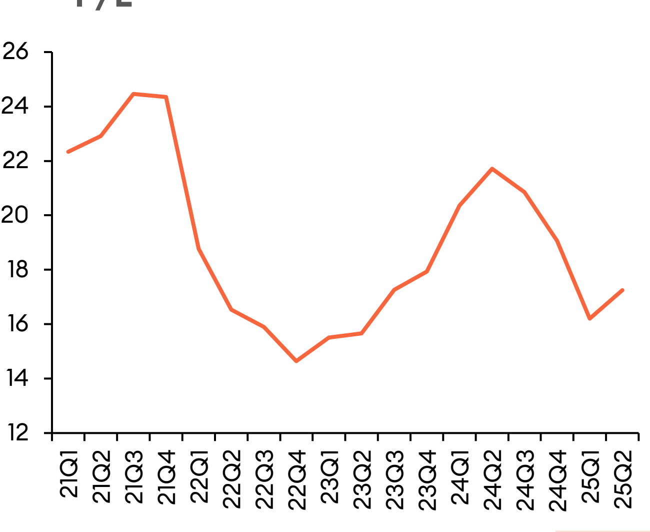
EPS (JPY)



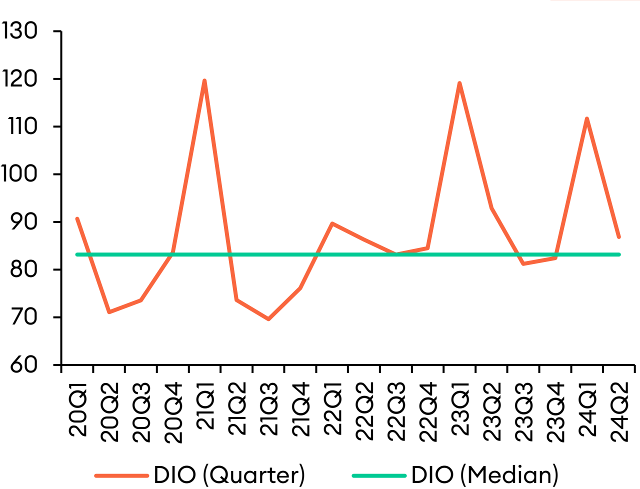
Relative Performance (last 2 years)



P/E



DIO (days)



SUMCO (3436 JP, 1301 JPY) EV 4.9 US$bn Yield 1.6% ADVT 53 US$m

Raw Silicon Wafers / 24% global share overall and ~50% of leading edge

Company Overview

Wafer Demand (leading edge)

- Leading edge: 20% of volumes
- Server ~46% / SP ~ 30% / PC 10% / Networking 4% / Consumer 4%
- 7 nm > 50% / 5 nm > 30% / 3 nm 20%

Competitors

- Shin-Etsu ~ 32% share of 300 mm / ~50% of leading-edge logic
- SUMCO ~24% share / ~50% of leading-edge logic
- GlobalWafers ~ 18% share
- SK Siltron ~13.5% share
- Siltronic ~10% share
- China:
  - National Silicon Industry Group (NSIG)
  - Zhonghuan Advanced

Customers

- 300 mm;
- 200 mm; diversified base; Auto strong with #1, 2, 3 IDM's

3Q 24 Recap

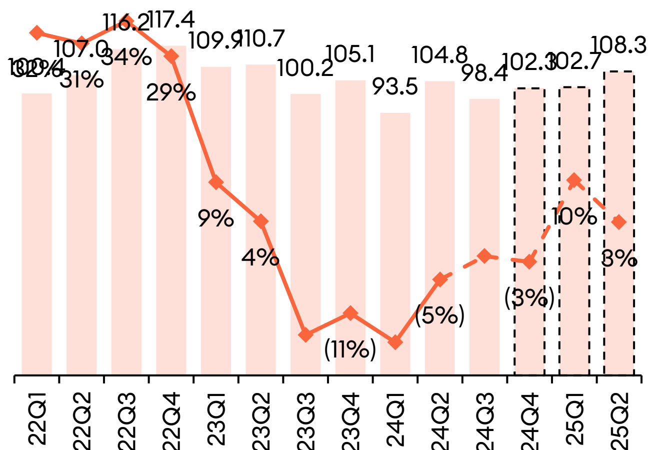
- 300 mm demand bottomed & 200 mm demand remains slow
- 7nm + remain strong
- Inventory remains a problem, particularly for legacy tech / leading edge strong
- Pricing holding / shipments pushed out.
- China production impacting forecasts
- Capacity: no plans to increase / modernize legacy plants

Key Topics / Questions

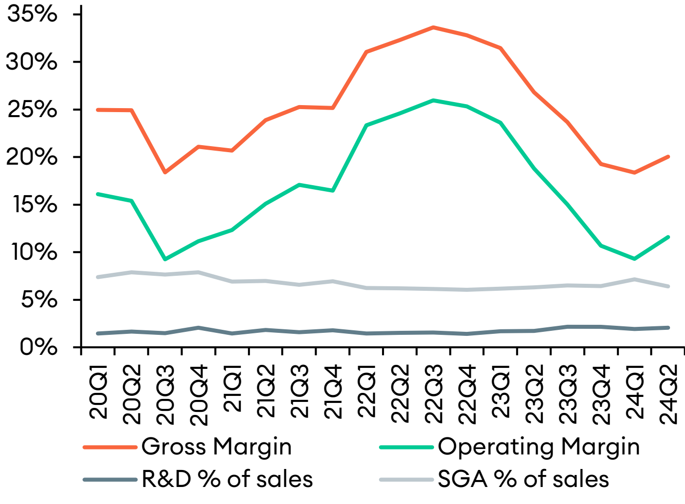
- Mix of leading edge 300 mm vs. legacy products
- China / Geopolitics: 1 mm test wafers but YMTC consuming polished
  - China wafer fabrication improving 1 mm/month, mostly test 40-50% going to the YMTC (SUMCO biz to them decline significantly)
  - Quality does not necessarily appear to be very good, but there is strong pressure to comply with the by China policy.
  - What TAM can test wafers eat into? Who was supplying test wafers previously
- Raw wafers; more complexity / drives higher concentration going forward?
  - GAA (400k wafers/month +100k each year for 4 years) & backside power delivery (BPD) drives demand for more wafers: what quality of wafer will be used
  - Leading edge wafers; structural differences cycle time/other / flatness & surface quality / higher purity silicon required
- Auto & Industrial segments seem to be returning to normal inventory levels of finished goods / growth expectation?
- 200 mm is well below pre-pandemic levels; why is this? Should be around 5-6000 wafers/month? Chinese share gains? Mix shift to 300 mm?
- 300 mm shipments approaching 2022 levels of ~8k/month
- Alternative materials being required for 2 nm / GAA (SiGe or III-V)
- 2 nm growth ramp / growth
- Inventory discussion; what is normal / where its sitting
  - Leading edge Logic lean / memory (NAND > DRAM) high / legacy applications high
  - Customers placing more orders despite high levels, why? Specific types? Are old inventory less useful?
- Modernize facilities; general discussion on time/cost

SUMCO (3436 JP)

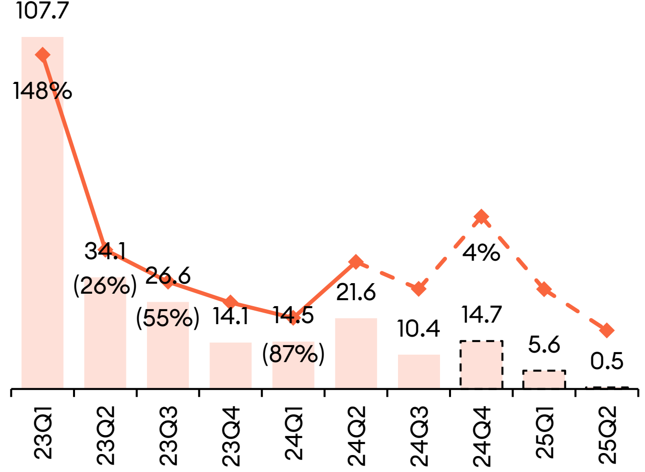
Revenue (JPYbn) and YoY Growth (%)



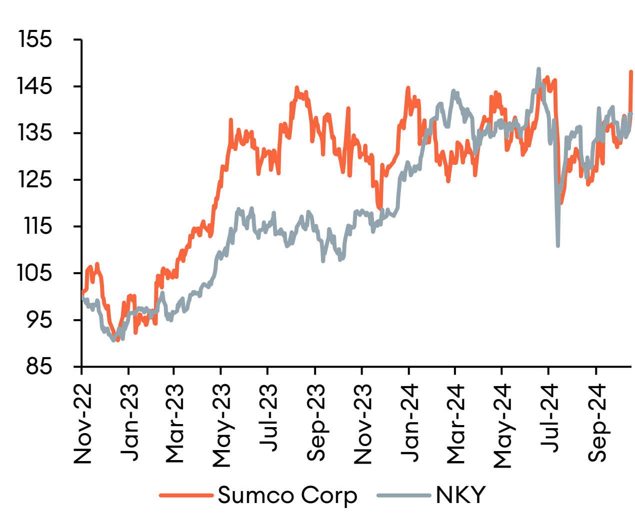
Margins (%)



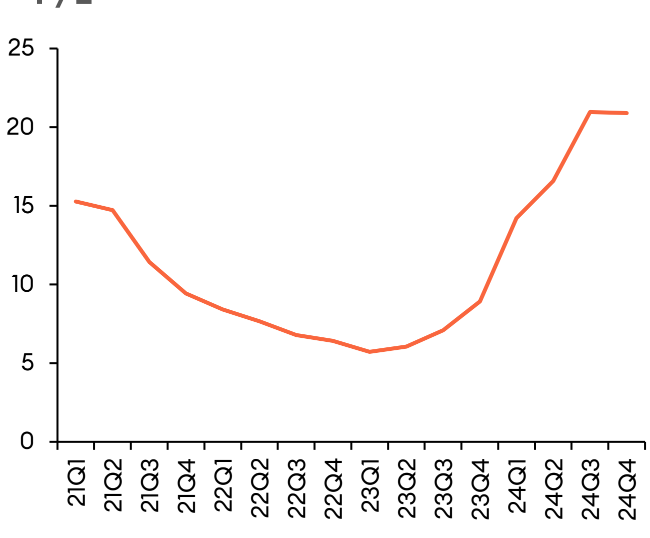
EPS (JPY) and YoY growth (%)



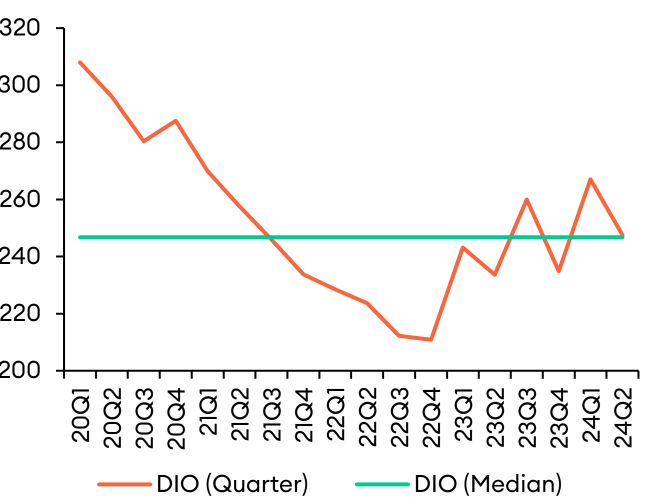
Relative Performance (last 2 years)



P/E



DIO (days)

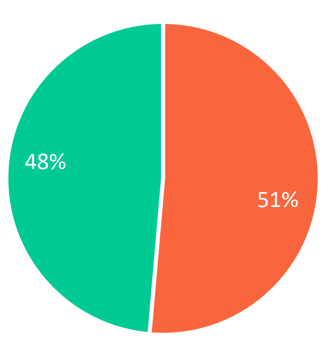


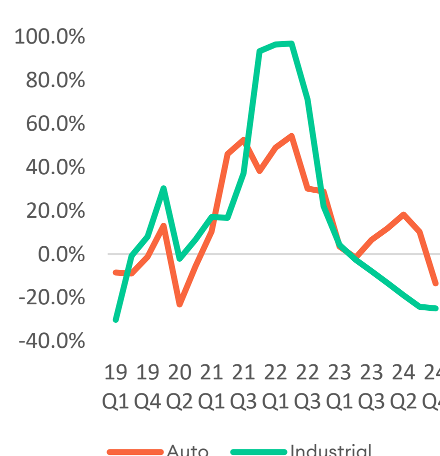
Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Renesas (6723 JP, 2009 JPY) EV 33 US$bn Yield 1.4% ADVT 121 US$m

Analog Semi's

Sales Mix & YoY Growth %





Company Overview

Product Mix

- MCU: 40%+ | Analog 20% | Power 20% | SOC 15%
- #5 globally MCU; #16 total semi share

Auto

- MCU | SoC | Analog | Power
- ICE | EV | ADAS
- 65% Control | 30%+ Infotainment

Industrial, Infra & IoT

- MCU for industrial automation & robotics
- PMIC & Analog for renewable energy
- Ethernet & industrial networking
- 40% IoT | 35% Industrial | 25% Infra

Power IC

- MOSFET | IGBT | SIC
- PMIC | Battery Mgmt | Discrete & Wide Bandgap | Compute
- GaN: Transphorm acquisition Jan '24

Competitors

- MCU & SoC: NXPI | TXN | STM | Ifx
- Analog: ADI | ON | Toshiba
- Auto: NVDA | QCOM | TXN | IFX
- Memory Interface: Montage (688008 CH)

Customers

- Tier 1 Auto suppliers & OEMs: Toyota | Bosch | Conti | Hyundai

Key Topics / Questions

- Biz bottoming, slight improvement forecast; gating factors?
- Inventory' $'s higher vs. expectations, DIO normal. Channel @ 12 weeks. Need to support rush orders. Auto & IoT still elevated?
- short term rush orders increasing
- UTR is 40% overall with 8 inch slightly higher vs. 12 inch. 6 inch is 20% UTR. Die bank increasing; strategic or customer driven?
- AI is growing 2-3x per year; total exposure & key products?
- AI PC traction? $7 content vs. $3 for normal NB: 60% penetration by '27 seems aggressive
- Data Center power: $ content per rack: over provisioning or double ordering?
- 1Q 25 demand pulled forward to 4Q 24 due to CNY. Appliance demand stronger than expected due to tariffs.
- Auto quite weak in 4Q 24; was this a kitchen sink type of flush?
- GaN discussion

Peter Vogel | Global Tech Product Specialist | Peter@newstreetresearch.com | 20 February 2025

Renesas (6723 JP) Cont.

Key Topics / Questions

- **Transition to Product based vs. Segment based;**
- **Outsourcing; for both R&D and Foundry & OSAT:** 2–5-year process. Discuss internal production vs. outsourcing today, future.
- **China:** growth potential and competition from local suppliers?
- **India growing 16-18% to 10% of market by '27;** increasing headcount; discuss local production, partners, infrastructure capability
- **Margins:** currently at/above LT model. Key levers to drive the model higher
- **Design in for Auto & Industrial** inflected strongly in '23; visibility on these programs ramping
- **Analog & Connectivity:** standard products | memory interface | timing | connectivity | sensors
  - Applications: mostly Industrial & Infrastructure with smaller contribution from IoT & Auto
  - Growth: Auto connectivity | industrial Solutions, connectivity, sensors | infra; DDR 5 , MCR| IoT; low power connectivity
- **Auto HPC:** Auto MCU | Auto SoC | custom ASIC & ASSP | Discuss AI integration and which TOPS will be at edge vs. cloud.
- **Memory interface:** discuss the role in HBM situation as data moves between DDR & HBM; content? | MCR/DIMM and how this works/competes with HBM | Compute Express Link (CXL) | Montage competition
- **Smart Device @ edge:** discuss where you see traction, particularly with WIFI & BT and where you compete with the baseband processors from Realtek
- **SIC & WOLF** 10-year supply agreement; why commit to them vs. other wafer suppliers including ON or SICC or TankeBlue?
- **M&A Strategy:** current geopolitical environment makes deals tricker. Discuss how you pivot
- **Altium & streamlining IC design process.**
- **AI: how are you using this internally** for either R&D or just running the business.

Renesas (6723 JP) Cont.

POWER PORTFOLIO FUELING LARGE OPPORTUNITY

COMPREHENSIVE PRODUCTS PORTFOLIO FOR APPLICATION IN AI & DATACENTER SERVERS

$700-$2,200 Power Content per Rack

$100-$200

Switch

Switch SoC

PHY PHY ... PHY

$250-$1,000

AI Server

GPU ... GPU

GPU ... GPU

$80-$400

48V Power Distribution

$180-$300

DDR x32

CPU x2

200G NIC x10

$120-$400

AC/DC AC/DC AC/DC ... AC/DC

Source: Renesas estimates

Renesas existing products & content

- 4th Gen Digital Multiphase Controllers
- 3rd Gen Smart Power Stages
- 48V IBC
- Vertical Power High Density Modules (own + partners)
- DDR5 PMIC
- Custom Performance Testing Tools
- Performance Optimization Software

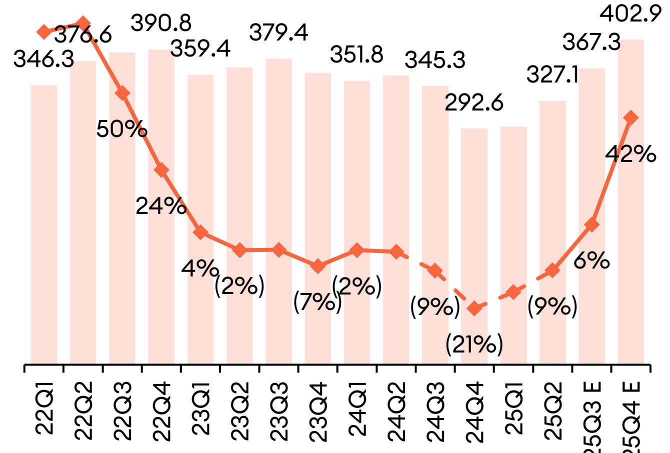
Renesas new products & opportunity

PoL , e-Fuse

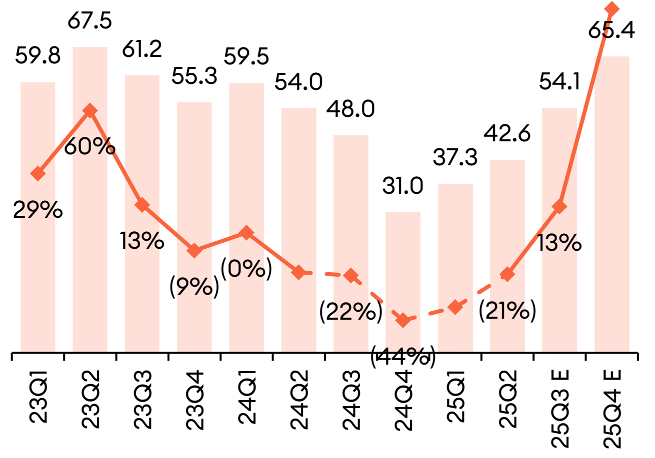
MOSFETs, GaN FETs

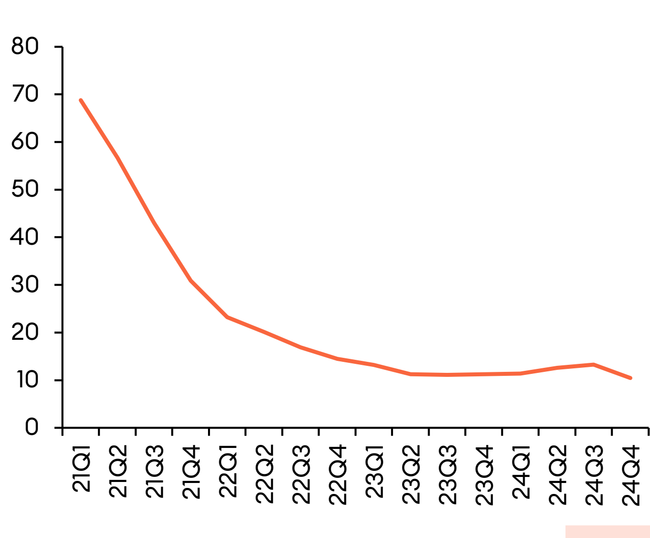
Controllers & Drivers

Renesas (6723 JP)

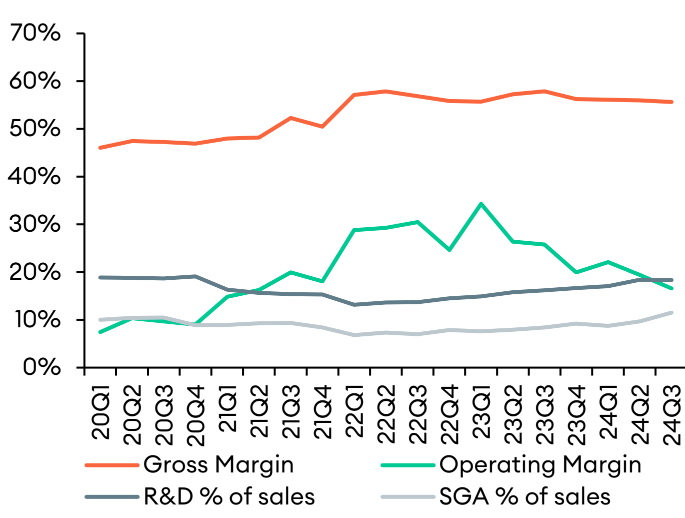


EPS (JPY)

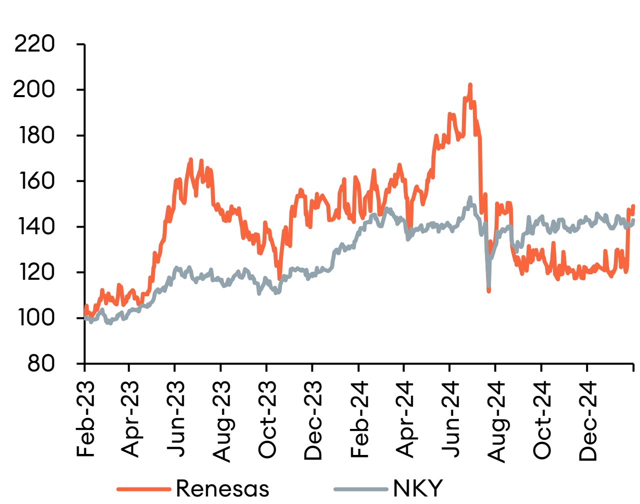




Margins (%)



Relative Performance (last 2 years)



DIO (days)