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**Investor Presentation | Japan**

# Semiconductor Production Equipment: SPE Industry Outlook


MORGAN STANLEY MUFG SECURITIES CO., LTD.+

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**SEMICONDUCTOR PRODUCTION EQUIPMENT**

**Japan**
Industry View **Attractive**


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## Coverage / カバレッジ銘柄一覧

| 会社名 | Company | 銘柄コード | 投資判断 | 直近株価（終値） | 目標株価 | 直近株価からの乖離率（%） |
|---|---|---|---|---|---|---|
| 会社名 | Company | Ticker | View/ Rating | Last Close | Price Target | Difference from Close (%) |
| **Semiconductor Production Equipment (Japan)** | | | **Attractive** | | | |
| 荏原製作所 | Ebara | 6361 | OW | ¥4,440 | ¥6,400 | -35% / 161% |
| アドバンテスト | Advantest | 6857 | OW | ¥34,000 | ¥45,000 | -31% / 81% |
| SCREEN HD | SCREEN Holdings | 7735 | OW | ¥13,740 | ¥17,000 | -41% / 106% |
| ディスコ | DISCO | 6146 | OW | ¥54,220 | ¥67,000 | -25% / 94% |
| 東京エレクトロン | Tokyo Electron | 8035 | OW | ¥56,520 | ¥68,000 | -35% / 65% |
| KOKUSAI ELECTRIC | KOKUSAI ELECTRIC | 6525 | OW | ¥9,300 | ¥9,300 | -32% / 53% |
| テクセンドフォトマス | Tekscend Photomask | 429A | EW | ¥3,880 | ¥4,600 | -46% / 145% |
| 日本電子 | JEOL | 6951 | EW | ¥7,689 | ¥7,100 | -65% / 37% |
| レーザーテック | Lasertec | 6920 | UW | ¥40,910 | ¥34,000 | -50% / 58% |
| ニコン | Nikon | 7731 | UW | ¥1,874 | ¥1,100 | -56% / 8% |

| 会社名 | Company Name | Ticker | Mkt Cap | Enterprise | Earnings per Share | | | | P/E Ratio (x) | | EV/EBITDA (x) | | FCF Yield (%) | | Net Debt/EBITDA (x) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | (bn) | Value (bn) | FY0 | FY1 | FY2 | FY3 | FY1 | FY2 | FY1 | FY2 | FY1 | FY2 | FY1 | FY2 |
| 荏原製作所 | Ebara | 6361 | 2,028 | 2,122 | 166 | 240 | 320 | 369 | 18.5 | 13.9 | 14.3 | 9.6 | 1.2 | 2.0 | 0.7 | 0.5 |
| アドバンテスト | Advantest | 6857 | 24,630 | 24,290 | 515 | 971 | 1,591 | 2,045 | 35.0 | 21.4 | 25.3 | 14.4 | 2.5 | 4.1 | NA | NA |
| SCREEN HD | SCREEN Holdings | 7735 | 2,599 | 2,451 | 487 | 683 | 946 | 1,136 | 20.1 | 14.5 | 12.4 | 8.7 | 6.0 | 7.8 | NA | NA |
| ディスコ | DISCO | 6146 | 5,877 | 5,593 | 1,250 | 2,003 | 2,477 | 2,884 | 27.1 | 21.9 | 17.8 | 14.1 | 3.5 | 4.3 | NA | NA |
| 東京エレクトロン | Tokyo Electron | 8035 | 25,880 | 25,429 | 1,255 | 1,852 | 2,733 | 3,197 | 30.5 | 20.7 | 20.8 | 14.2 | NA | NA | NA | NA |
| KOKUSAI ELECTRIC | KOKUSAI ELECTRIC | 6525 | 2,170 | 2,113 | 129 | 253 | 388 | 425 | 36.7 | 24.0 | 21.1 | 14.2 | 1.7 | 3.3 | NA | NA |
| テクセンドフォトマス | Tekscend Photomask | 429A | 391 | 341 | 261 | 288 | 307 | 381 | 13.5 | 12.6 | 6.8 | 5.5 | -7.3 | 2.8 | NA | NA |
| 日本電子 | JEOL | 6951 | 374 | 347 | 433 | 413 | 476 | 575 | 18.6 | 16.1 | 10.7 | 8.8 | 0.6 | 3.1 | NA | NA |
| レーザーテック | Lasertec | 6920 | 3,673 | 3,582 | 863 | 1,062 | 1,329 | 1,627 | 38.5 | 30.8 | 25.6 | 20.2 | 2.7 | 2.8 | NA | NA |
| ニコン | Nikon | 7731 | 616 | 647 | 18 | 59 | 72 | 91 | 31.8 | 26.1 | 12.0 | 9.9 | 0.7 | -2.0 | 0.6 | 0.9 |

Source: Morgan Stanley Research, data as of Sep 25th

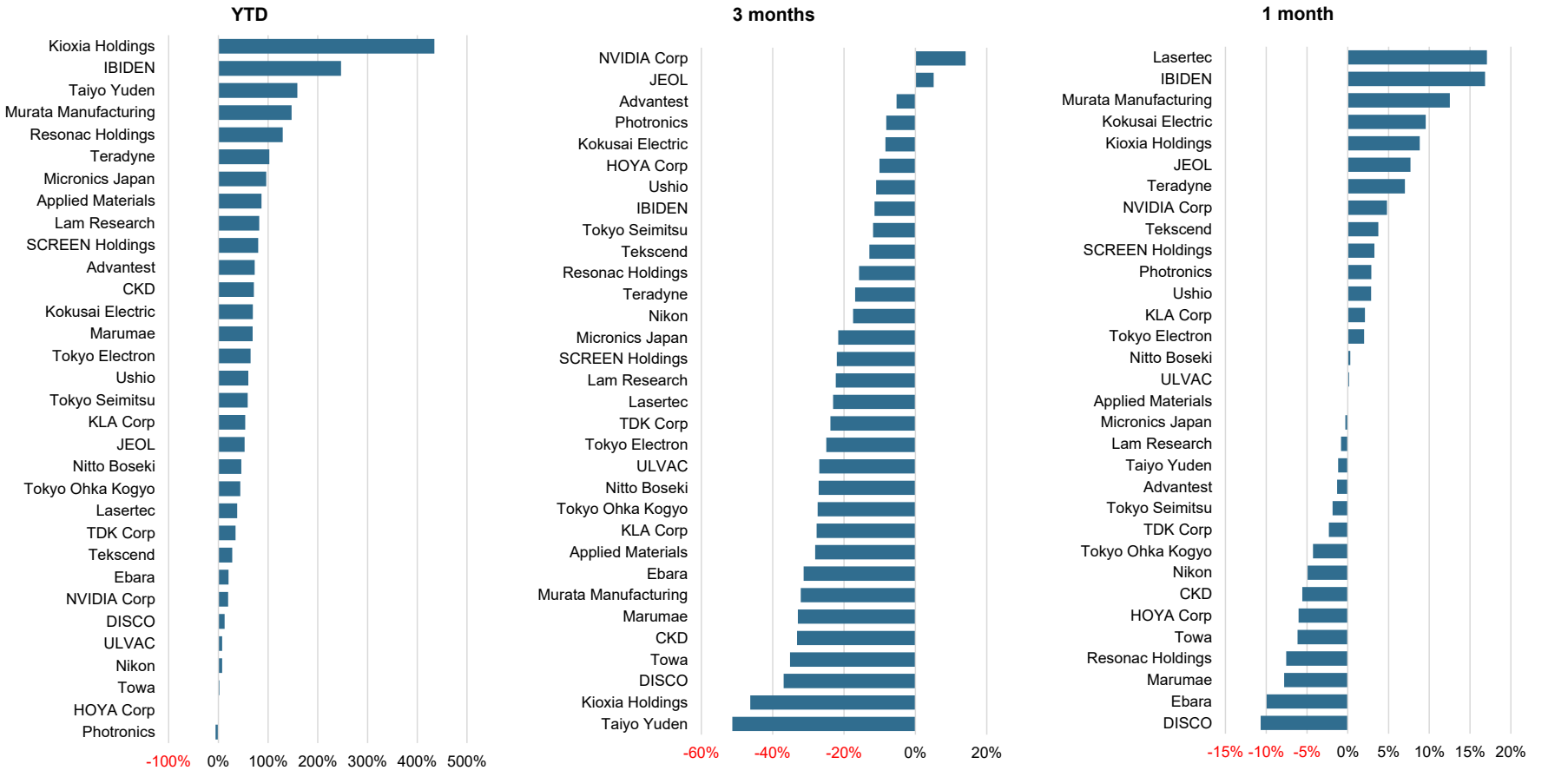
# Summary of earnings updates on Sep 25 / 9月25日付で更新した業績予想のサマリー

| | Sales | | OP | | Pre-tax Profit | | Net Profit | | EPS | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (¥bn) | y-y | (¥bn) | y-y | (¥bn) | y-y | (¥bn) | y-y | (¥) | y-y |
| **Semiconductor Production Equipment** | | | | | | | | | | |
| **(6857) Advantest (IFRS)** | | | | | | | | | | |
| 25/3 | 779.7 | 60% | 228.2 | 180% | 224.8 | 188% | 161.2 | 159% | 218.7 | 159% |
| 26/3 | 1,128.6 | 45% | 499.1 | 119% | 516.7 | 130% | 375.4 | 133% | 515.2 | 136% |
| **27/3Ce** | **1,714.0** | **52%** | **846.0** | **69%** | **891.0** | **72%** | **660.0** | **76%** | **911.6** | **77%** |
| **27/3e** | **1,848.0** | **64%** | **909.0** | **82%** | **952.4** | **84%** | **704.8** | **88%** | **971.5** | **89%** |
| 27/3e (FactSet) | 1,756.5 | 56% | 882.9 | 77% | 912.3 | 77% | 676.0 | 80% | 933.4 | 81% |
| **28/3e** | **2,945.6** | **59%** | **1,558.0** | **71%** | **1,560.3** | **64%** | **1,154.6** | **64%** | **1,591.4** | **64%** |
| 28/3e (FactSet) | 2,264.7 | 29% | 1,179.4 | 34% | 1,187.1 | 30% | 850.8 | 26% | 1,212.3 | 30% |
| **29/3e** | **3,748.4** | **27%** | **2,003.0** | **29%** | **2,005.3** | **29%** | **1,483.9** | **29%** | **2,045.3** | **29%** |
| 29/3e (FactSet) | 2,701.6 | 19% | 1,428.4 | 21% | 1,438.3 | 21% | 1,027.6 | 21% | 1,471.0 | 21% |
| **(8035) Tokyo Electron** | | | | | | | | | | |
| 25/3 | 2,431.6 | 33% | 697.3 | 53% | 707.7 | 53% | 544.1 | 50% | 1,182.4 | 51% |
| 26/3 | 2,443.5 | 0% | 624.9 | -10% | 630.3 | -11% | 574.5 | 6% | 1,254.6 | 6% |
| **27/3 1H Ce** | **1,620.0** | **37%** | **458.0** | **51%** | **464.0** | **51%** | **349.0** | **44%** | **767.5** | **-** |
| **27/3e** | **3,571.0** | **46%** | **1,110.0** | **78%** | **1,118.0** | **77%** | **840.0** | **46%** | **1,851.9** | **48%** |
| 27/3e (FactSet) | 3,413.5 | 40% | 1,013.8 | 62% | 1,021.0 | 62% | 775.5 | 35% | 1,706.0 | 36% |
| **28/3e** | **4,621.0** | **29%** | **1,634.0** | **47%** | **1,642.0** | **47%** | **1,233.0** | **47%** | **2,733.3** | **48%** |
| 28/3e (FactSet) | 4,299.7 | 26% | 1,402.8 | 38% | 1,410.0 | 38% | 1,069.9 | 38% | 2,372.2 | 39% |
| **29/3e** | **5,132.0** | **11%** | **1,901.0** | **16%** | **1,909.0** | **16%** | **1,434.0** | **16%** | **3,196.6** | **17%** |
| 29/3e (FactSet) | 5,001.3 | 16% | 1,730.0 | 23% | 1,747.1 | 24% | 1,322.4 | 24% | 2,952.9 | 24% |
| **(7735) SCREEN Holdings** | | | | | | | | | | |
| 25/3 | 625.3 | 24% | 135.7 | 44% | 138.3 | 47% | 99.5 | 41% | 511.8 | 38% |
| 26/3 | 605.7 | -3% | 122.5 | -10% | 124.3 | -10% | 92.0 | -8% | 486.6 | -5% |
| **27/3Ce** | **743.0** | **23%** | **156.5** | **28%** | **156.5** | **26%** | **115.0** | **25%** | **608.1** | **25%** |
| **27/3e** | **766.8** | **27%** | **176.7** | **44%** | **179.5** | **44%** | **129.2** | **40%** | **683.3** | **40%** |
| 27/3e (FactSet) | 750.8 | 24% | 160.5 | 31% | 162.2 | 30% | 118.0 | 28% | 624.2 | 28% |
| **28/3e** | **939.1** | **22%** | **245.7** | **39%** | **248.5** | **38%** | **178.9** | **38%** | **946.1** | **38%** |
| 28/3e (FactSet) | 900.5 | 20% | 211.7 | 32% | 213.5 | 32% | 156.0 | 32% | 825.7 | 32% |
| **29/3e** | **1,063.1** | **13%** | **295.5** | **20%** | **298.3** | **20%** | **214.8** | **20%** | **1,136.0** | **20%** |
| 29/3e (FactSet) | 1,024.8 | 14% | 250.3 | 18% | 252.2 | 18% | 183.8 | 18% | 973.7 | 18% |
| **(6146) DISCO** | | | | | | | | | | |
| 25/3 | 393.3 | 28% | 166.8 | 37% | 168.9 | 38% | 123.9 | 47% | 1,143.3 | 47% |
| 26/3 | 436.9 | 11% | 185.0 | 11% | 184.9 | 9% | 135.5 | 9% | 1,249.8 | 9% |
| **27/3 1H Ce** | **242.8** | **25%** | **104.9** | **33%** | **104.8** | **32%** | **73.8** | **32%** | **680.4** | **-** |
| **27/3e** | **598.3** | **37%** | **293.3** | **59%** | **294.5** | **59%** | **217.3** | **60%** | **2,003.5** | **60%** |
| 27/3e (FactSet) | 560.3 | 28% | 255.7 | 38% | 255.6 | 38% | 188.0 | 39% | 1,732.8 | 39% |
| **28/3e** | **705.4** | **18%** | **363.0** | **24%** | **364.2** | **24%** | **268.7** | **24%** | **2,477.4** | **24%** |
| 28/3e (FactSet) | 667.7 | 19% | 316.5 | 24% | 316.0 | 24% | 232.7 | 24% | 2,145.4 | 24% |
| **29/3e** | **801.3** | **14%** | **422.8** | **16%** | **424.0** | **16%** | **312.8** | **16%** | **2,884.0** | **16%** |
| 29/3e (FactSet) | 768.2 | 15% | 375.3 | 19% | 373.4 | 18% | 275.8 | 18% | 2,542.5 | 19% |

| | Sales | | OP | | Pre-tax Profit | | Net Profit | | EPS | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (¥bn) | y-y | (¥bn) | y-y | (¥bn) | y-y | (¥bn) | y-y | (¥) | y-y |
| **(6525) KOKUSAI ELECTRIC (IFRS)** | | | | | | | | | | |
| 25/3 | 238.9 | 32% | 51.3 | 67% | 50.8 | 71% | 36.0 | 61% | 154.6 | - |
| 26/3 | 235.1 | -2% | 41.8 | -18% | 40.7 | -20% | 30.1 | -16% | 129.0 | -17% |
| **27/3Ce** | **340.0** | **45%** | **79.4** | **90%** | **78.3** | **92%** | **55.5** | **84%** | **237.6** | **84%** |
| **27/3e** | **351.0** | **49%** | **83.9** | **101%** | **83.4** | **105%** | **59.1** | **96%** | **253.3** | **96%** |
| 27/3e (FactSet) | 338.1 | 44% | 80.9 | 93% | 78.6 | 93% | 56.8 | 89% | 243.6 | 89% |
| **28/3e** | **467.1** | **33%** | **127.9** | **52%** | **127.5** | **53%** | **90.4** | **53%** | **387.9** | **53%** |
| 28/3e (FactSet) | 431.2 | 28% | 117.2 | 45% | 114.6 | 46% | 82.6 | 46% | 355.0 | 46% |
| **29/3e** | **506.6** | **8%** | **140.0** | **9%** | **139.8** | **10%** | **99.1** | **10%** | **425.2** | **10%** |
| 29/3e (FactSet) | 517.3 | 20% | 152.0 | 30% | 148.9 | 30% | 107.2 | 30% | 461.8 | 30% |
| **(6920) Lasertec** | | | | | | | | | | |
| 25/6 | 251.5 | 18% | 122.8 | 51% | 119.4 | 46% | 84.7 | 43% | 938.6 | 43% |
| 26/6 | 230.5 | -8% | 105.3 | -14% | 107.9 | -10% | 77.5 | -8% | 863.0 | -8% |
| **27/6Ce** | **290.0** | **26%** | **125.0** | **19%** | **125.0** | **16%** | **90.0** | **16%** | **1,004.1** | **16%** |
| **27/6e** | **294.7** | **28%** | **132.2** | **26%** | **132.2** | **23%** | **95.2** | **23%** | **1,062.1** | **23%** |
| 27/6e (FactSet) | 298.7 | 30% | 137.9 | 31% | 138.4 | 28% | 100.4 | 30% | 1,123.2 | 30% |
| **28/6e** | **353.1** | **20%** | **165.4** | **25%** | **165.4** | **25%** | **119.1** | **25%** | **1,328.8** | **25%** |
| 28/6e (FactSet) | 389.9 | 31% | 186.2 | 35% | 186.7 | 35% | 135.7 | 35% | 1,520.6 | 35% |
| **29/6e** | **415.9** | **18%** | **202.4** | **22%** | **202.4** | **22%** | **145.8** | **22%** | **1,626.7** | **22%** |
| 29/6e (FactSet) | 455.9 | 17% | 218.9 | 18% | 219.5 | 18% | 159.3 | 17% | 1,797.7 | 18% |
| **(6361) Ebara (IFRS)** | | | | | | | | | | |
| 24/12 | 866.7 | 14% | 98.0 | 14% | 99.9 | 18% | 71.4 | 18% | 154.6 | 18% |
| 25/12 | 958.3 | 11% | 113.8 | 16% | 111.0 | 11% | 76.6 | 7% | 166.3 | 8% |
| **26/12Ce** | **1,053.0** | **10%** | **125.0** | **10%** | **142.0** | **28%** | **99.5** | **30%** | **217.9** | **31%** |
| **26/12e** | **1,080.7** | **13%** | **137.5** | **21%** | **154.5** | **39%** | **109.8** | **43%** | **240.5** | **45%** |
| 26/12e (FactSet) | 1,068.1 | 11% | 131.9 | 16% | 143.5 | 29% | 100.7 | 31% | 220.9 | 33% |
| **27/12e** | **1,278.3** | **18%** | **209.4** | **52%** | **206.4** | **34%** | **145.9** | **33%** | **319.6** | **33%** |
| 27/12e (FactSet) | 1,229.9 | 15% | 174.9 | 33% | 173.2 | 21% | 121.7 | 21% | 267.6 | 21% |
| **28/12e** | **1,382.3** | **8%** | **241.4** | **15%** | **238.4** | **16%** | **168.4** | **15%** | **368.8** | **15%** |
| 28/12e (FactSet) | 1,358.8 | 10% | 212.3 | 21% | 209.8 | 21% | 147.4 | 21% | 325.4 | 22% |
| **(429A) Tekscend Photomask (IFRS)** | | | | | | | | | | |
| 25/3 | 118.0 | 10% | 28.2 | 42% | 30.8 | 34% | 9.9 | -38% | 104.2 | - |
| 26/3 | 129.6 | 10% | 27.5 | -2% | 33.4 | 9% | 24.9 | 151% | 261.1 | 151% |
| **27/3Ce** | **140.1** | **8%** | **29.8** | **8%** | **31.2** | **-7%** | **23.7** | **-5%** | **248.1** | **-5%** |
| **27/3e** | **150.0** | **16%** | **35.6** | **29%** | **37.0** | **11%** | **28.6** | **15%** | **287.9** | **10%** |
| **27/3e (FactSet)** | 147.3 | 14% | 32.7 | 19% | 34.9 | 4% | 25.9 | 4% | 263.5 | 1% |
| 28/3e | **171.5** | **14%** | **38.6** | **8%** | **40.0** | **8%** | **30.5** | **7%** | **307.1** | **7%** |
| **28/3e (FactSet)** | 166.2 | 13% | 35.9 | 10% | 38.2 | 9% | 28.1 | 9% | 286.7 | 9% |
| 29/3e | **197.8** | **15%** | **49.0** | **27%** | **50.4** | **26%** | **37.8** | **24%** | **380.6** | **24%** |
| **29/3e (FactSet)** | 190.9 | 15% | 42.1 | 17% | 44.3 | 16% | 32.9 | 17% | 330.9 | 15% |

Source: Company data, FactSet, Morgan Stanley Research; Ce= Company estimates, e= Morgan Stanley Research estimates, e (FactSet) = Factset consensus

## Stock price performances of tech companies / テック関連企業の株価パフォーマンス

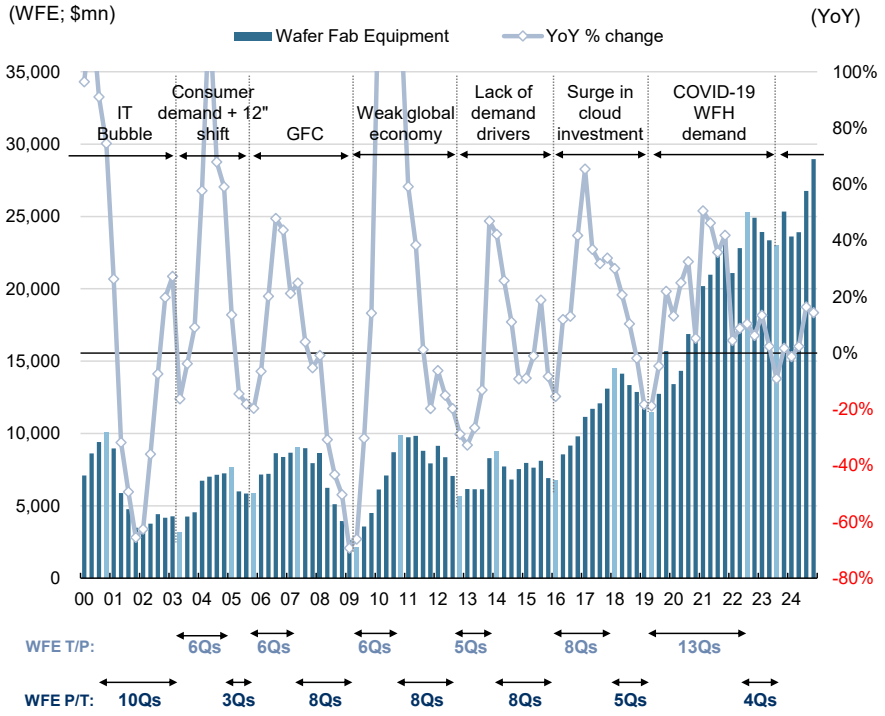



Source: FactSet, Morgan Stanley Research; data as of Sep 26, 2026

# Learning from past cycles / 過去のサイクルからの教訓

**Most up-cycles have lasted for 1.5~2 years, but this time it's likely to be longer / 過去WFE市場のアップサイクルは約1.5～2年続くのが通例だが今回はより長い見通し**

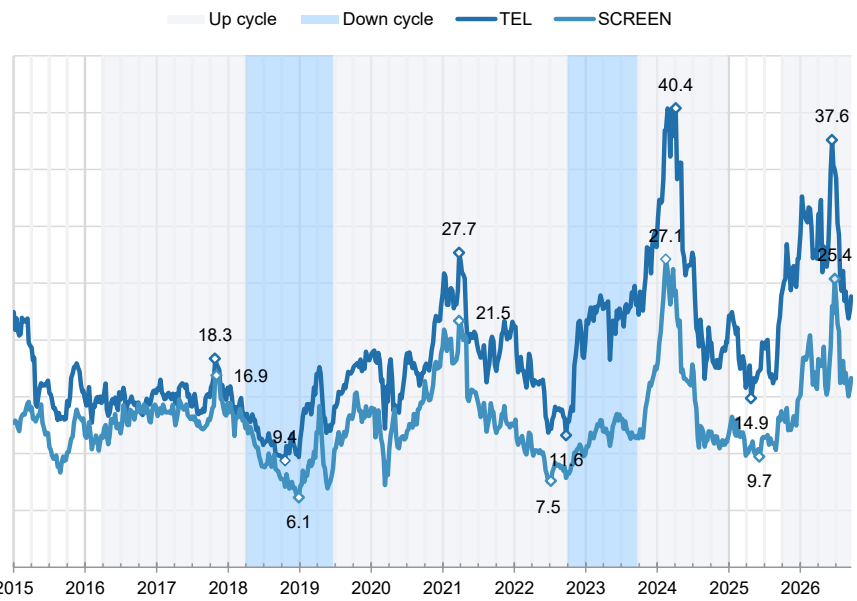
**Quarterly WFE market: Peak to Trough**




Note: quarterly actual numbers are available only till 2024
Source: SEMI, Morgan Stanley Research

**Valuation multiples begin to decline 2–4 quarters before the WFE market peaks / マルチプルはWFE市場金額のピークアウトの2～4半期前から本格的に下落**

**Consensus 1-year forward P/E changes through the past WFE cycles**




Source: FactSet, Morgan Stanley Research

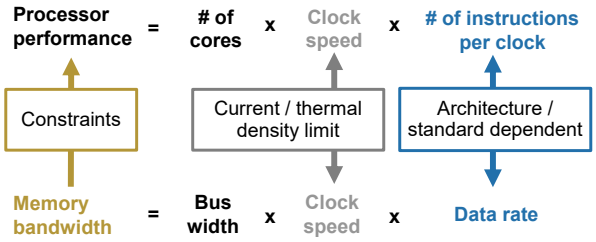
## WFE market outlook / WFE市場予想

| ($mn) | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026e | 2027e | 2028e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WFE Revenue** | **37,931** | **50,164** | **56,714** | **56,581** | **63,539** | **91,092** | **96,222** | **96,008** | **105,057** | **117,530** | **162,782** | **223,360** | **254,124** |
| Foundry/Logic | 20,590 | 23,483 | 22,163 | 28,601 | 34,591 | 50,265 | 59,180 | 70,023 | 69,192 | 75,307 | 94,818 | 127,995 | 143,672 |
| Leading Logic | | | | | | | | 27,500 | 24,500 | 31,000 | 51,189 | 76,572 | 89,589 |
| Mature Logic | | | | | | | | 42,523 | 44,692 | 44,307 | 43,629 | 51,422 | 54,083 |
| Memory | 16,509 | 25,330 | 33,231 | 26,775 | 28,109 | 39,828 | 35,854 | 24,794 | 35,228 | 41,600 | 66,515 | 94,048 | 108,722 |
| DRAM | 7,827 | 10,788 | 16,782 | 13,806 | 13,526 | 20,664 | 18,256 | 19,579 | 29,244 | 31,083 | 52,827 | 70,086 | 77,456 |
| NAND | 8,682 | 14,542 | 16,449 | 12,968 | 14,583 | 19,164 | 17,598 | 5,215 | 5,985 | 10,517 | 13,689 | 23,963 | 31,266 |
| Other | 832 | 1,352 | 1,320 | 1,206 | 839 | 999 | 1,188 | 1,192 | 637 | 622 | 1,449 | 1,316 | 1,730 |
| **y-y** | **NA** | **32%** | **13%** | **-0%** | **12%** | **43%** | **6%** | **-0%** | **9%** | **12%** | **39%** | **37%** | **14%** |
| Foundry/Logic | NA | 14% | -6% | 29% | 21% | 45% | 18% | 18% | -1% | 9% | 26% | 35% | 12% |
| Leading Logic | NA | NA | NA | NA | NA | NA | NA | NA | -11% | 27% | 65% | 50% | 17% |
| Mature Logic | NA | NA | NA | NA | NA | NA | NA | NA | 5% | -1% | -2% | 18% | 5% |
| Memory | NA | 53% | 31% | -19% | 5% | 42% | -10% | -31% | 42% | 18% | 60% | 41% | 16% |
| DRAM | NA | 38% | 56% | -18% | -2% | 53% | -12% | 7% | 49% | 6% | 70% | 33% | 11% |
| NAND | NA | 67% | 13% | -21% | 12% | 31% | -8% | -70% | 15% | 76% | 30% | 75% | 30% |
| Other | NA | 62% | -2% | -9% | -30% | 19% | 19% | 0% | -47% | -2% | 133% | -9% | 31% |
| **WFE by region** | **37,931** | **50,164** | **56,714** | **56,581** | **63,539** | **91,092** | **96,222** | **96,008** | **105,057** | **117,530** | **162,782** | **223,360** | **254,124** |
| North America | 4,669 | 5,492 | 6,202 | 7,801 | 6,053 | 7,755 | 10,239 | 11,347 | 13,657 | 10,578 | 15,464 | 22,336 | 25,412 |
| Europe | 2,335 | 3,805 | 3,602 | 2,309 | 2,664 | 2,879 | 5,982 | 5,742 | 4,202 | 2,351 | 2,767 | 3,350 | 3,812 |
| Japan | 3,900 | 5,419 | 7,995 | 5,769 | 6,049 | 6,879 | 7,244 | 6,439 | 7,354 | 8,815 | 11,395 | 16,082 | 18,551 |
| Korea | 7,182 | 16,021 | 15,378 | 9,125 | 15,038 | 22,757 | 19,656 | 18,966 | 18,910 | 23,506 | 39,068 | 53,606 | 59,211 |
| Taiwan | 11,513 | 10,616 | 8,702 | 17,536 | 15,276 | 23,566 | 26,566 | 19,501 | 15,233 | 27,620 | 43,951 | 62,541 | 71,155 |
| China | 5,689 | 6,984 | 12,269 | 12,282 | 16,634 | 24,695 | 22,104 | 31,681 | 42,548 | 41,723 | 45,579 | 55,840 | 68,613 |
| Other | 2,642 | 1,827 | 2,568 | 1,758 | 1,826 | 2,561 | 4,431 | 2,334 | 3,152 | 2,938 | 4,558 | 9,604 | 7,370 |
| **y-y** | **NA** | **32%** | **13%** | **-0%** | **12%** | **43%** | **6%** | **-0%** | **9%** | **12%** | **39%** | **37%** | **14%** |
| North America | NA | 18% | 13% | 26% | -22% | 28% | 32% | 11% | 20% | -23% | 46% | 44% | 14% |
| Europe | NA | 63% | -5% | -36% | 15% | 8% | 108% | -4% | -27% | -44% | 18% | 21% | 14% |
| Japan | NA | 39% | 48% | -28% | 5% | 14% | 5% | -11% | 14% | 20% | 29% | 41% | 15% |
| Korea | NA | 123% | -4% | -41% | 65% | 51% | -14% | -4% | -0% | 24% | 66% | 37% | 10% |
| Taiwan | NA | -8% | -18% | 102% | -13% | 54% | 13% | -27% | -22% | 81% | 59% | 42% | 14% |
| China | NA | 23% | 76% | 0% | 35% | 48% | -10% | 43% | 34% | -2% | 9% | 23% | 23% |
| Other | NA | -31% | 41% | -32% | 4% | 40% | 73% | -47% | 35% | -7% | 55% | 111% | -23% |

Source: Gartner, SEMI, Company data, Morgan Stanley Research. e = Morgan Stanley Research estimates

# From training to inference and to Agentic AI / 学習から推論、Agentic AIへ

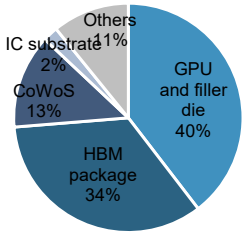
**Benefits are skewed toward back-end in training phase / 学習フェーズでは投資の恩恵が後工程に偏重**




Source: Morgan Stanley Research

**H100 cost breakdown / H100のコスト構成**

- Backend cost intensity is higher than general
- 後工程のコスト比率が一般的なデバイスよりも高い




Source: Trendforce, Morgan Stanley Research

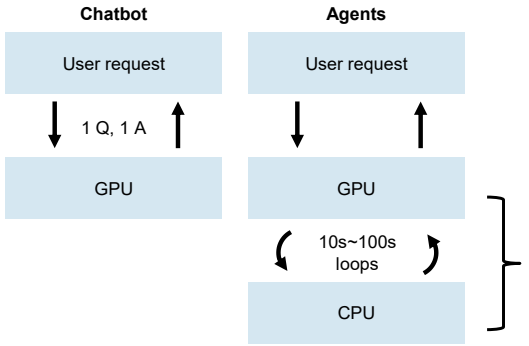
**Wafer capacity required / 所要ウェーハ枚数**

| AP for iPhone | | |
|---|---|---|
| Die size | ~100 | mm^2 |
| DPW | 620 | dies (approx.) |
| Yield (asmp) | 80% | |
| KGD | 500 | dies (approx.) |
| Chips/unit | 250 | mn units/year |
| Wafers/year | 500 | k wafers/year |
| **Wafers/month** | **40** | **kwpm** |

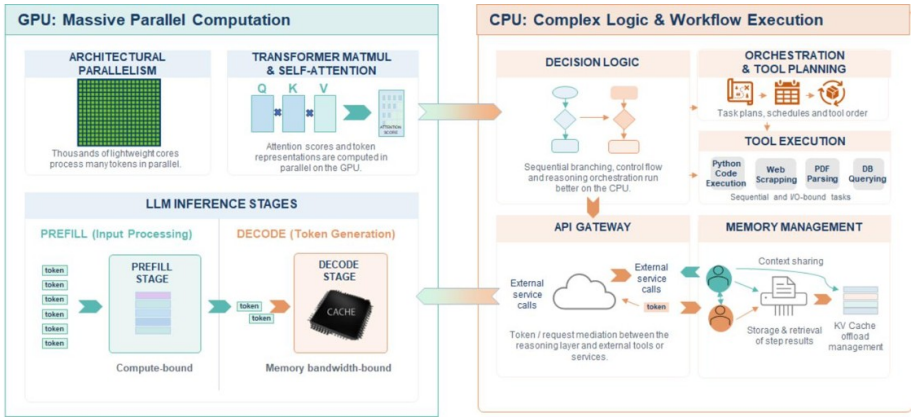
| AI chips - wafer demand after yield loss | | | | |
|---|---|---|---|---|
| | 2024 | 2025 | 2026 | 2027 |
| **TOTAL** | **247** | **605** | **1,172** | **1,778** |
| *y-y* | | *145%* | *94%* | *52%* |
| AI GPU | 182 | 474 | 664 | 688 |
| ASIC | 59 | 128 | 426 | 862 |
| AI CPU | 0 | 0 | 82 | 228 |
| **Wafers/month** | **21** | **50** | **98** | **148** |

Source: Morgan Stanley Research estimates, calculated by our team based on Morgan Stanley forecasts

**Agentic AI has broader impact to industries / Agentic AIはより産業及効果が大きい**

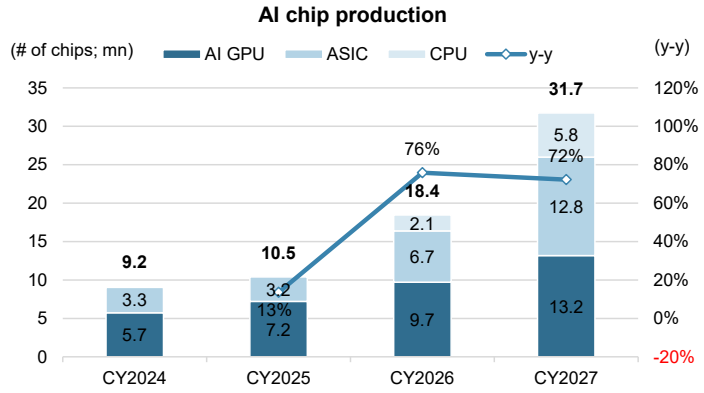



Source: Morgan Stanley Research

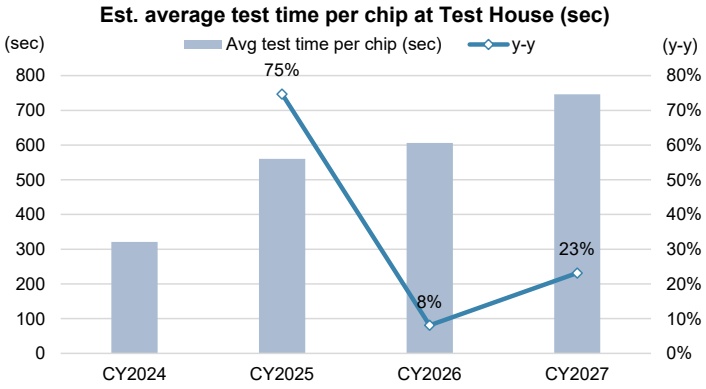



Source: Morgan Stanley Research

# Bottom-up testing demand / ボトムアップでテスト需要を計算




Source: Morgan Stanley Research estimates, calculated by our team based on Morgan Stanley forecasts




Source: Morgan Stanley Research estimates, calculated by our team based on Morgan Stanley forecasts of a Taiwan test house

| | CY2023 | CY2024 | CY2025 | CY2026 | CY2027 |
|---|---|---|---|---|---|
| **Compute TEST TAM (2024=100)** | | **100** | **198** | **377** | **799** |
| Intensity factor y-y | | 0% | 75% | 8% | 23% |
| x Volume factor y-y | | 0% | 13% | 76% | 72% |
| **Δcompute TEST TAM** | | | **+98** | **+179** | **+422** |
| **y-y** | | | **NA** | **82%** | **137%** |
| | | | | | |
| **Our Asia team's estimates on final test time at KYEC** | | | | | |
| H-series | 350 | 350 | 350 | 350 | 350 |
| B-series with GDDR7 | | | 350 | 350 | 350 |
| B-series with HBM | | | 850 | 1,000 | 850 |
| R-series | | | | 1,000 | 1,275 |
| G CPU | | | 300 | 300 | 300 |
| V CPU | | | | 700 | 700 |
| TPU blended | | | 186 | 340 | 450 |
| GOOGL CPU blended | | | | 300 | 300 |

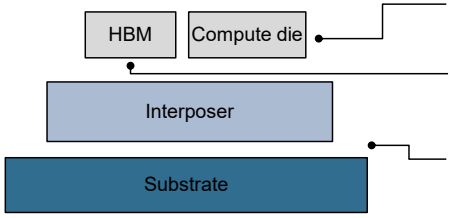
Source: Morgan Stanley Research estimates

| (JPY mn) | 24/3 | 25/3 | 26/3 | 27/3 | 28/3 | 29/3 |
|---|---|---|---|---|---|---|
| **Computing/Communication** | | | | **MSe** | **MSe** | **MSe** |
| **Computing/Communication** | **147,360** | **396,360** | **729,030** | **1,307,000** | **2,289,000** | **2,975,000** |
| ***USD mn*** | ***1,030*** | ***2,591*** | ***4,860*** | ***8,434*** | ***14,766*** | ***19,196*** |
| y-y | NA | 151% | 88% | 74% | 75% | 30% |
| V93000 EXA Scale price (¥mn) (asmp.) | 243 | 260 | 255 | 264 | 264 | 264 |
| ***$mn*** | ***1.7*** | ***1.7*** | ***1.7*** | ***1.7*** | ***1.7*** | ***1.7*** |
| *y-y* | *NA* | *0%* | *0%* | *0%* | *0%* | *0%* |
| **Implied units (unit)** | **606** | **1,524** | **2,859** | **4,961** | **8,686** | **11,292** |
| y-y | NA | 151% | 88% | 74% | 75% | 30% |

Source: Company data, Morgan Stanley Research; MSe = Morgan Stanley Research estimates

# Test becoming a key source of added-value for AI device production / AIデバイス生産においてテストの付加価値が大きく上昇

**Shift from target of cost reduction to revenue generator / 従来コスト削減の対象となってきたテスタが現在は売上最大化のkey enablerに**




**Test complexity compounds / テストの複雑性が指数関数的に増加**

**Silicon**: more Transistor, more designs

x

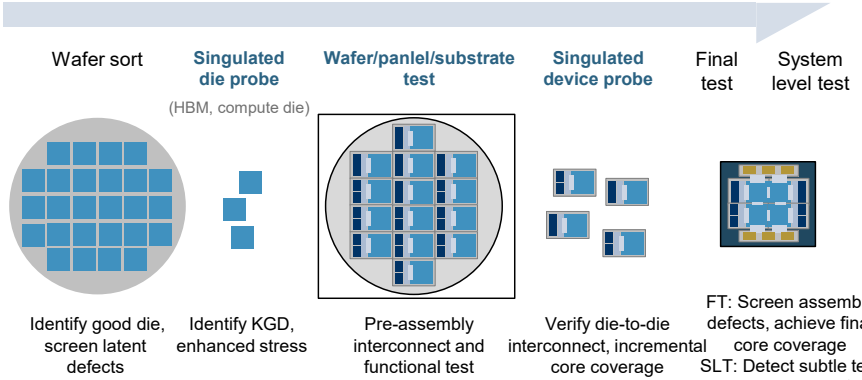
**Memory I/O**: more HBM stacks, more BWs, more I/O channels, more protocols

x

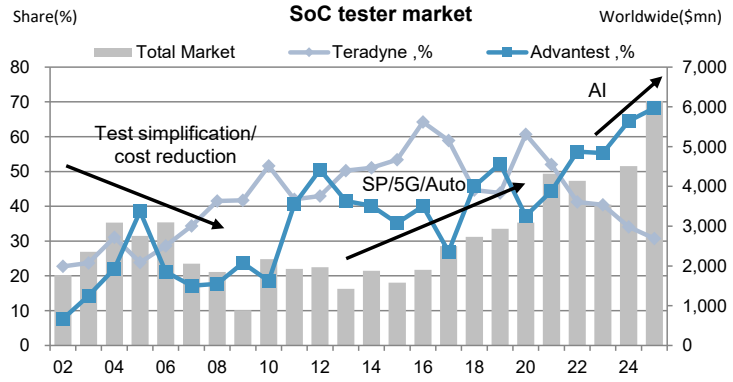
**Package**: more dies per PKG, more interconnects, more integration options

⋮

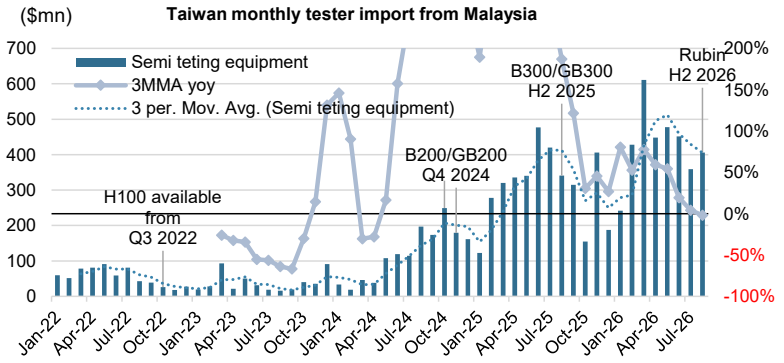
Source: Morgan Stanley Research




Source: Teradyne, Morgan Stanley Research



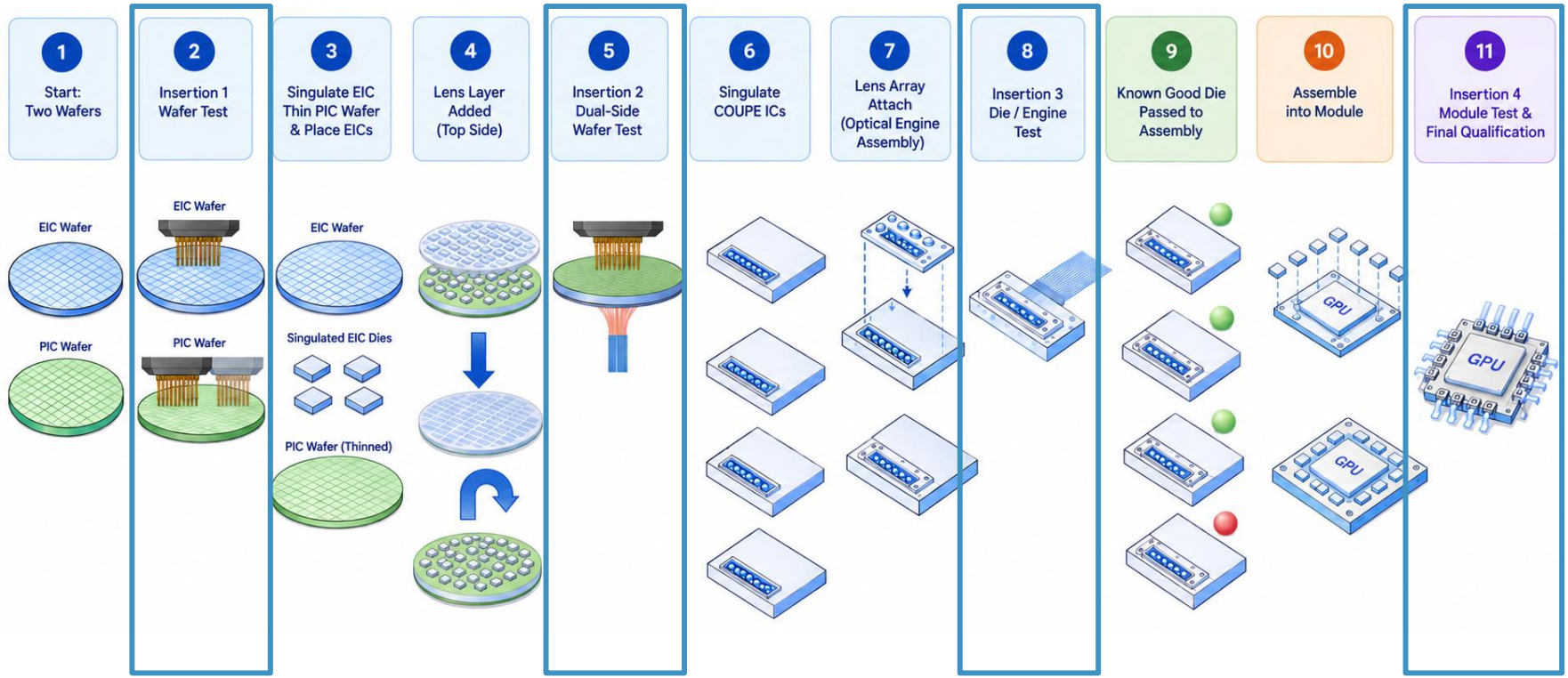

Source: Company data, Morgan Stanley Research estimates




Note: comments in the chart show the timing when each GPU became available

Source: Ministry of Economic Affairs, R.O.C., Morgan Stanley Research

## CPO test insertions / CPOのテストインサーション



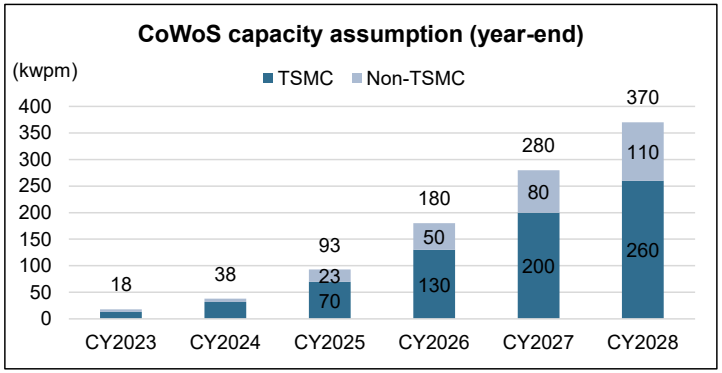

Source: ficonTEC, Morgan Stanley Research

## CoWoS / HBM

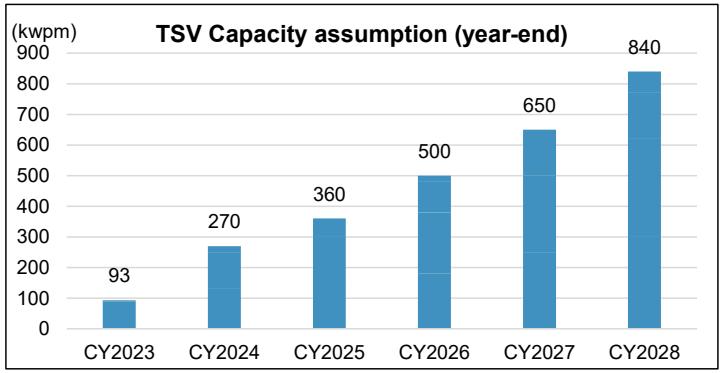
**Our generative AI revenue forecasts for Disco / ディスコの生成AI関連売上 弊社予想**

| (¥mn) | F3/24 | F3/25 | F3/26 | F3/27 | F3/28 | F3/29 |
|---|---|---|---|---|---|---|
| Consolidated shipment/net sales | | | | MSe | MSe | MSe |
| **Consolidated Shipment** | **319,471** | **401,515** | **442,822** | **598,300** | **705,400** | **801,300** |
| **y-y** | **9%** | **26%** | **10%** | **35%** | **18%** | **14%** |
| **Gen AI** | **15,000** | **55,000** | **75,000** | **121,400** | **142,500** | **168,400** |
| Memory | 15,000 | 38,500 | 37,500 | 60,200 | 70,500 | 96,400 |
| Logic | 0 | 16,500 | 37,500 | 61,200 | 72,000 | 72,000 |
| **y-y** | **NA** | **267%** | **36%** | **62%** | **17%** | **18%** |
| Memory | NA | 157% | -3% | 61% | 17% | 37% |
| Logic | NA | NA | 127% | 63% | 18% | 0% |

Source: Company data, Morgan Stanley Research; MSe = Morgan Stanley Research estimates



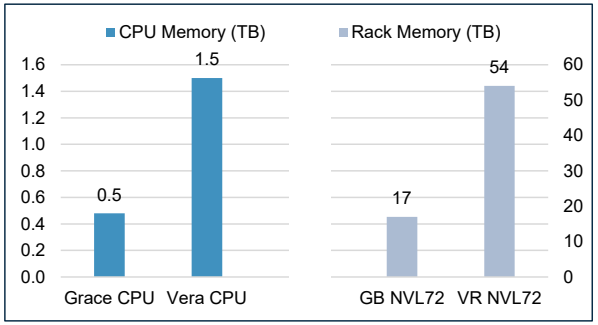

Source: Morgan Stanley Research estimates



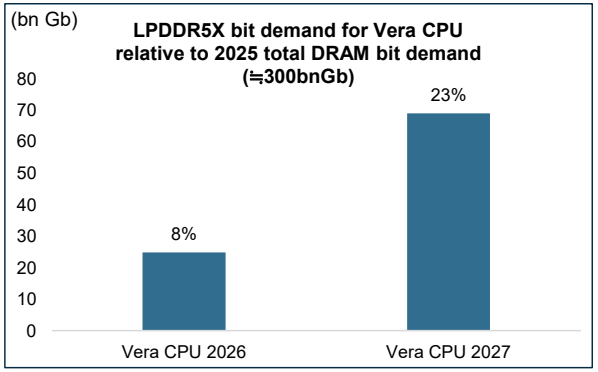

Source: TrendForce, Morgan Stanley Research estimates

# Memory supply/demand related to AI / メモリのAI関連需給

**Sizable memory consumption for latest AI devices / 最新世代のAIデバイスにおけるメモリ消費**




Source: Nvidia, Morgan Stanley Research

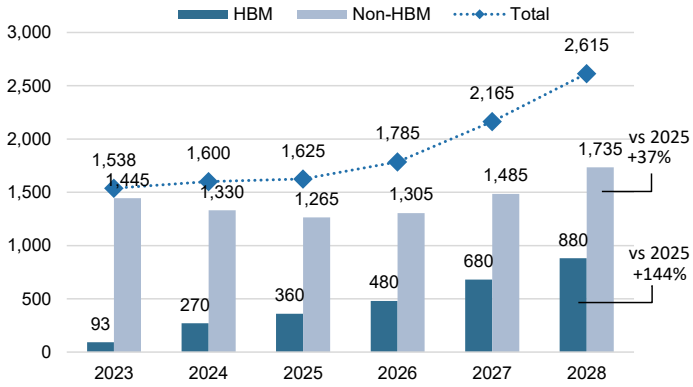



Source: Trendforce, Morgan Stanley Research estimates

| Bottom-up HBM demand (TB) | | | | | |
|---|---|---|---|---|---|
| | 2024 | 2025 | 2026 | 2027 | 2027 |
| TOTAL | 1,011 | 1,946 | 3,765 | 5,349 | 2.7x |
| *y-y* | | *92%* | *94%* | *42%* | vs 2025 |
| AI GPU | 760 | 1,602 | 2,477 | 2,477 | |
| ASIC | 239 | 337 | 1,288 | 2,872 | |
| Others | 13 | 7 | 0 | 0 | |

Note: calculated based on Morgan Stanley Research estimates on CoWoS allocation; includes AI devices such as AI GPUs, AI ASICs and AI CPUs from international AI semi players
Source: Morgan Stanley Research estimates

**Top-3 DRAM makers' capacity (year-end; kwpm)**




Source: Trendforce, Morgan Stanley Research estimates

**HBM4 vs 4E, 8Hi vs 12Hi**

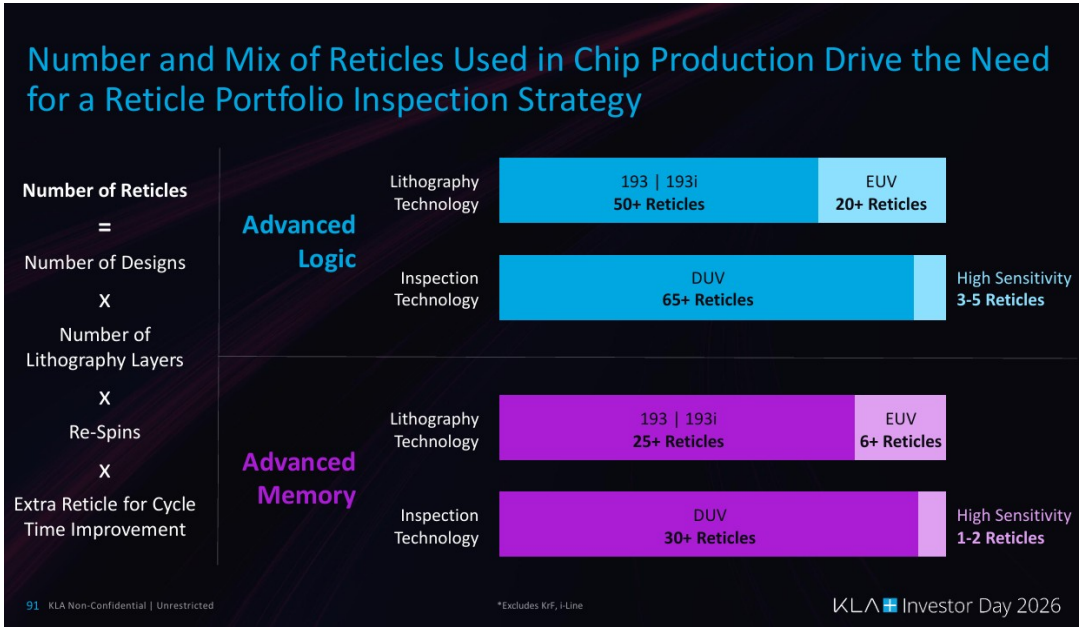
| | | HBM4 | HBM4E | 4E vs 4 |
|---|---|---|---|---|
| Die capacity | Gb/die | 24 | 32 | 33% |
| Die width | mm | 12.8 | 13.7 | (=√186.6) |
| Die height | mm | 11.0 | 13.7 | (=√186.6) |
| Die area | mm^2 | 140.8 | 186.6 | ***33%*** |
| DPW | die/wafer | 432 | 318 | ***-26%*** |
| HBM4 Yeild scenarios | | | | |
| 95.0% | | *95.0%* | 93.5% | -1.6% |
| # of KGD | | 410 | 297 | ***-28%*** |
| 90.0% | | *90.0%* | 87.0% | -3.3% |
| # of KGD | | 388 | 276 | ***-29%*** |
| 85.0% | | *85.0%* | 80.7% | -5.1% |
| # of KGD | | 367 | 256 | ***-30%*** |
| 80.0% | | *80.0%* | 74.5% | -6.9% |
| # of KGD | | 345 | 236 | ***-32%*** |

| **Layers** | **Hi** | **8** | **12** | |
|---|---|---|---|---|
| **Die stacking yeild scenarios** | | | | **12Hi vs 8Hi** |
| 99.4% | /layer | *95.0%* | 92.6% | -3% |
| 98.7% | /layer | *90.0%* | 85.4% | -5% |
| 98.0% | /layer | *85.0%* | 78.4% | -8% |
| 97.3% | /layer | *80.0%* | 71.6% | -11% |
| 95.6% | /layer | *70.0%* | 58.6% | -16% |
| 93.8% | /layer | *60.0%* | 46.5% | -23% |

Note: HBM4 die size is based on JEDEC's standard. HBM4E die size increase vs 4 assumed as equal to die capacity growth but could be higher than that due to peripheral circuit increase. KGD yield for HBM4E is calculated under the assumption of yield density/area is the same with HBM4 assumption. Die stacking yield assumes per layer yield stay the same across different heights, which in reality should not be the case.
Source: Trendforce, Morgan Stanley Research estimates

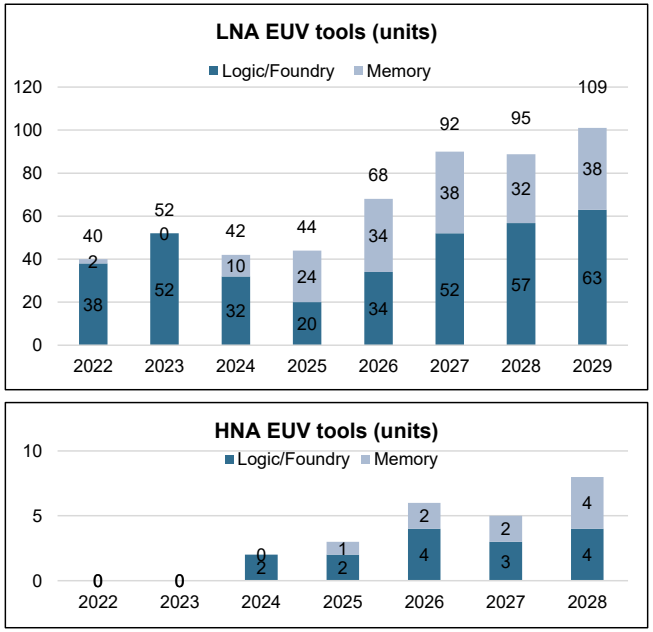
# EUV masks / EUVマスク

**# of EUV masks per chip inspected using Actinic /**
**チップ当たりのアクティニック方式で検査されているEUVマスク数**




Source: KLA

**Our global team's EUV system sales forecasts /**
**弊社のEUV露光装置売上予想**




Source: Company data, Morgan Stanley Research estimates

# Progress seen toward High-NA EUV adoption / High-NA EUV採用の動きが進展

**Major players announced High-NA adoption roadmap /**
**主要半導体メーカーがHigh-NA EUVの採用時期を公表**

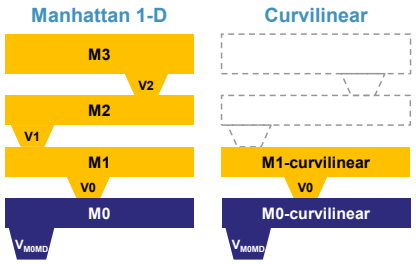
Announced in 2022 / 22年公表
- **Intel:** 2026~ (Intel 18A)

Announced in Sep 2026 / 26年9月公表
- **Samsung:** 2028~ (DRAM)
- **TSMC:** 3030~

Source: Company comments, Morgan Stanley Research

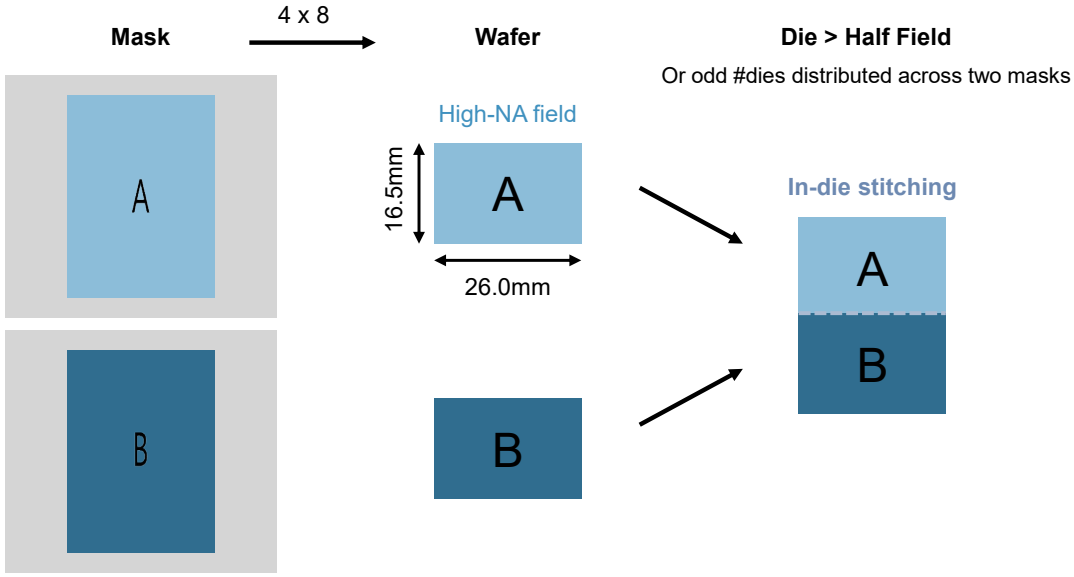
**Merits of adopting HNA / HNA導入のメリット**

- High resolution and image contrast /高い解像度とコントラスト
- Process simplification /プロセスステップ数削減
- Design flexibility y/ デザインの柔軟性




Source: imec, Morgan Stanley Research

**High-NA EUV adoption leading to the need for stitching and large masks /**
**High-NA EUVの導入にあたりスティッチング技術やラージマスクへの移行が求められている**




Source: imec, ASML, Morgan Stanley Research

**Issues for large mask / 大判マスクの課題**

■**Difficulty:** Materials>front-end process>e-beam tools> back-end tools
■**難易度:** 材料>前工程プロセス>電子ビーム描画装置>後工程装置

■ **Price:** LNA EUV HVM mask ~$500k/layer vs Large mask at least >$1mn /layer
■**価格:** LNA EUVマスク ~$500k/枚 vs ラージマスク 最低でも>$1mn/枚

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(as of August 31, 2026)

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For disclosure purposes only (in accordance with FINRA requirements), we include the category headings of Buy, Hold, and Sell alongside our ratings of Overweight, Equal-weight, Not-Rated and Underweight. Morgan Stanley does not assign ratings of Buy,

Hold or Sell to the stocks we cover. Overweight, Equal-weight, Not-Rated and Underweight are not the equivalent of buy, hold, and sell but represent recommended relative weightings (see definitions below). To satisfy regulatory requirements, we correspond Overweight, our most positive stock rating, with a buy recommendation; we correspond Equal-weight and Not-Rated to hold and Underweight to sell recommendations, respectively.

| | Coverage Universe | | Investment Banking Clients (IBC) | | | Other Material Investment Services Clients (MISC) | |
|---|---|---|---|---|---|---|---|
| Stock Rating Category | Count | % of Total | Count | % of Total IBC | % of Rating Category | Count | % of Total Other MISC |
| Overweight/Buy | 1555 | 42% | 450 | 48% | 29% | 767 | 44% |
| Equal-weight/Hold | 1577 | 43% | 395 | 42% | 25% | 770 | 44% |
| Not-Rated/Hold | 3 | 0% | 1 | 0% | 33% | 1 | 0% |
| Underweight/Sell | 559 | 15% | 93 | 10% | 17% | 216 | 12% |
| Total | 3,694 | | 939 | | | 1754 | |

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

## Analyst Stock Ratings

Overweight (O). The stock's total return is expected to exceed the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.
Equal-weight (E). The stock's total return is expected to be in line with the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.
Not-Rated (NR). Currently the analyst does not have adequate conviction about the stock's total return relative to the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.
Underweight (U). The stock's total return is expected to be below the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.
Unless otherwise specified, the time frame for price targets included in Morgan Stanley Research is 12 to 18 months.

## Analyst Industry Views

Attractive (A): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark, as indicated below.
In-Line (I): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be in line with the relevant broad market benchmark, as indicated below.
Cautious (C): The analyst views the performance of his or her industry coverage universe over the next 12-18 months with caution vs. the relevant broad market benchmark, as indicated below.
Benchmarks for each region are as follows: North America - S&P 500; Latin America - relevant MSCI country index or MSCI Latin America Index; Europe - MSCI Europe; Japan - TOPIX; Asia - relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

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## INDUSTRY COVERAGE: Semiconductor Production Equipment

| COMPANY (TICKER) | RATING (AS OF) | PRICE* (09/25/2026) |
|---|---|---|
| **Suzune Tamura, CFA** | | |
| Advantest (6857.T) | O (01/17/2024) | ¥34,000 |
| DISCO (6146.T) | O (07/07/2023) | ¥54,220 |
| Ebara (6361.T) | O (12/04/2024) | ¥4,440 |
| JEOL (6951.T) | E (07/08/2025) | ¥7,689 |
| KOKUSAI ELECTRIC (6525.T) | O (12/19/2025) | ¥9,300 |
| Lasertec (6920.T) | U (07/28/2025) | ¥40,910 |
| Nikon (7731.T) | U (08/08/2023) | ¥1,874 |
| SCREEN Holdings (7735.T) | O (11/13/2025) | ¥13,740 |

| | | |
|---|---|---|
| Tekscend Photomask (429A.T) | E (11/18/2025) | ¥3,880 |
| Tokyo Electron (8035.T) | O (12/19/2025) | ¥56,520 |

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* Historical prices are not split adjusted.

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