

KLA Corporation: How Much to Commit to Advanced Packaging?

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Decision scope: Incremental engineering and manufacturing-readiness resources over the next 12-18 months

Case convention: This is a constructed classroom scenario. The public record does not describe an actual KLA board decision or special mandate on this question. Use only information available by the cutoff.

The decision

KLA Corporation sells inspection, metrology and process-control systems used in semiconductor manufacturing. In its fiscal 2024 third quarter, ended March 31, 2024, revenue was \$2.360 billion, down 3% from a year earlier. Product revenue fell 7%, while service revenue increased 12%. Management attributed weaker product demand to semiconductor inventory correction and lower customer spending on capacity expansion. At the same time, customers and suppliers were describing new investment in advanced packaging for increasingly complex chip designs. [1, 2]

Assume you are advising KLA's executive team on a constructed decision: how should it allocate a constrained pool of incremental engineering and manufacturing-readiness resources over the next 12-18 months? One path would stage additional inspection and metrology development for advanced packaging, releasing resources as customer qualification and demand evidence improves. Another would protect the established front-end semiconductor process-control roadmap and pursue packaging projects selectively with existing capabilities. A hybrid is possible, but it must explain what would be funded now, what evidence would unlock more, and what would cause a pause.

The issue is the pace and staging of investment. KLA already serves multiple parts of the semiconductor equipment market; the available disclosures do not establish a discrete packaging budget, an actual board mandate, or a choice to be made at a particular meeting. Your recommendation should therefore distinguish this classroom assignment from KLA's reported plans and decisions.

The core business and a difficult cycle

KLA reported \$2,359.8 million in total revenue for the quarter. Semiconductor Process Control (SPC), its largest reportable segment, generated \$2,096.0 million, down 3% year over year. Nine-month SPC revenue was \$6,425.6 million, down 11%. Specialty Semiconductor Process generated \$130.6 million in the quarter, up 2%, and \$407.4 million for nine months, down 2%. PCB, Display and Component Inspection generated \$133.4 million, up 1% for the quarter but down 18% for nine months. KLA does not report advanced-packaging revenue as a separate segment; packaging applications may span reported segments. Specialty Semiconductor Process revenue should not be treated as a proxy for packaging sales. [1]

The reported mix also shows a growing service business. Services contributed \$590.5 million, up 12% from the prior-year quarter, while products contributed \$1,769.4 million, down 7%. Gross margin was 57.9%, compared with 58.7% a year earlier. These results show different near-term trends in systems and services, but one quarter cannot establish how long the downturn will last or the return on a particular engineering program. [1, 2]

Exhibit 1. Selected KLA results

U.S. dollars in millions; unaudited; fiscal quarter ended March 31, 2024.

Measure	Q3 FY2024	Change from Q3 FY2023	Nine months FY2024	Change from nine months FY2023
Total revenue	\$2,359.8	-3%	-	-
Product revenue	\$1,769.4	-7%	-	-
Service revenue	\$590.5	+12%	-	-
SPC segment revenue	\$2,096.0	-3%	\$6,425.6	-11%
Specialty Semiconductor Process	\$130.6	+2%	\$407.4	-2%
PCB, Display and Component Inspection	\$133.4	+1%	\$412.5	-18%
Research and development expense	\$321.6	-	\$953.2	-

Source: KLA FY2024 Q3 Form 10-Q, MD&A, pp. 41-45. Segment totals are reported values; the three segment figures are not packaging revenue categories. R&D is company-wide spending and does not identify a packaging allocation or fungible pool. [1]

KLA reported \$321.6 million of R&D expense for the quarter, about 14% of revenue. Quarterly operating cash flow was \$910 million and free cash flow was \$838 million; capital returns were \$569.4 million. These figures provide scale for the company's activities and competing cash uses. They do not show that any of these amounts is available for a new packaging program, nor do they quantify the people, facilities or supplier capacity such a program would require. [1, 2]

Customer priorities and competing tools

On April 18, Taiwan Semiconductor Manufacturing Company (TSMC) maintained its 2024 capital-expenditure guidance at \$28-32 billion. On its earnings call, TSMC said about 10% of the total would be allocated to the combined category of advanced packaging, testing, mask making and other; 70-80% would go to advanced-process technologies. The category is broad and the statement is TSMC's guidance. It is not KLA-specific spending or a measure of the market available to KLA. [3]

Dated supplier announcements show that equipment vendors were pursuing packaging applications. Onto Innovation said in August 2023 that it had received more than \$100 million in orders for Dragonfly G3 systems supporting advanced packaging for AI, with deliveries scheduled through the first quarter of 2024 and additional orders extending into the second half of 2024. Onto described inspection and metrology capabilities including sub-micron defect inspection and measurements related to through-silicon vias and redistribution layers. In January 2024, Onto said its Firefly G3 panel-level packaging system had shipped to a tier-one customer and described measurement and inspection functions for AI chiplet packages. These are Onto's own announcements. They indicate activity and capability claims, but do not establish market share, realized economics, or direct substitution for a KLA tool. [4, 5]

Applied Materials had also announced tools for hybrid bonding and through-silicon-via processes in July 2023. Those deposition and chemical-mechanical planarization systems serve adjacent process steps; the release does not describe a directly comparable inspection or metrology system. [6]

The disclosures leave important questions unanswered. They do not reveal customer qualification schedules, tool-level orders for KLA, relative prices, KLA's share, or the economics of an incremental program. Packaging formats and process steps differ. A rival's product description cannot establish that customers would replace a KLA system-or that KLA would win business by investing sooner.

Geography and export-control uncertainty

China represented \$996.9 million, or 42%, of KLA's revenue in the March quarter based on customer ship-to location. The comparable quarter a year earlier was \$635.0 million, or 26%. For the first nine months, China ship-to revenue was \$3,050.6 million, or 42%, compared with \$2,156.4 million, or 26%, in the prior-year period. These figures describe where customers were located for revenue reporting. They do not identify Chinese end use, restricted products, customers requiring licenses, or the amount of revenue at risk. [1]

KLA's FY2023 annual report described export-licensing restrictions affecting specified customers and advanced manufacturing facilities in China. It said license denials could affect shipments, remaining performance obligations, customer deposits and service. The filings do not disclose how much of the reported China revenue was exposed to a particular restriction or license outcome. A scenario analysis should distinguish the 42% ship-to share from any assumed revenue-at-risk percentage. [7]

The resource-allocation tension

Advanced packaging may add inspection and metrology needs as chipmakers integrate components using chiplets, interposers, hybrid bonding and panel formats. KLA's disclosed portfolio includes process-control and specialty-process capabilities, and its 2022 Investor Day presentation described advanced packaging as a strategic area. However, the presentation's growth forecast was historical management analysis, not a current forecast. The company has not publicly separated packaging sales, margins, R&D, capital requirements or backlog. [7, 8]

An early, staged push could help KLA work with customers on qualification and retain the option to expand when evidence improves. It could also consume scarce engineering capacity, distract from front-end tools during a cyclical slowdown, and commit manufacturing-readiness resources before adoption or customer economics are clear. A core-first approach protects the established roadmap, but may leave KLA slower to qualify systems in emerging applications where competitors are already making customer claims.

Uncertainty cuts both ways. KLA attributed recent product weakness partly to inventory correction and lower customer capacity spending, which could be temporary. TSMC's guidance identifies continued priority for advanced-process investment as well as a smaller broad category that includes packaging. Competitor announcements suggest customer interest, yet do not tell KLA's executives which projects will scale or what returns they can earn. Neither the downturn nor the packaging opportunity can be extrapolated from the available data alone.

Decision assignment

Recommend how KLA should allocate the constructed pool of incremental engineering and manufacturing-readiness resources over the next 12-18 months. Choose a staged advanced-packaging push, a core-first allocation with selective packaging work, or a hybrid you define. Explain:

1. Which evidence supports your choice, and which important facts remain unknown?
2. What should KLA fund or staff immediately, and what should wait?
3. What customer-qualification, order, technical-performance or capacity evidence should unlock the next stage?
4. How should executives protect core process-control programs while testing packaging opportunities?
5. How would your recommendation respond to weaker semiconductor capex, delayed qualifications, an export-control change or evidence that a competitor is winning customer positions?
6. What is the strongest argument against your recommendation, and what new evidence would change your view?

State any resource envelope, milestone, timing threshold or demand scenario you introduce as a classroom assumption. The case provides no internal KLA budget, program return, qualification probability or customer commitment. Avoid presenting the China ship-to share as revenue at risk. No recommendation is specified as correct.

Sources and information boundary

[1] KLA Corporation, [FY2024 Q3 Form 10-Q](#), quarter ended March 31, 2024, filed April 26, 2024; MD&A pp. 41-45, especially revenue and segment tables (pp. 42-43), R&D and cash flow (pp. 44-45), and geographic revenue (p. 42).

[2] KLA Corporation, [“Reports Fiscal 2024 Third Quarter Results”](#), April 25, 2024; results release and non-GAAP reconciliation.

[3] Taiwan Semiconductor Manufacturing Company, [Q1 2024 earnings-call transcript](#), April 18, 2024, p. 4; and [Q1 2024 earnings release](#).

[4] Onto Innovation, [“Announces Over \\$100 Million in Orders for Systems Supporting Advanced Packaging for AI”](#), August 28, 2023.

[5] Onto Innovation, [“Debuts Firefly G3 Panel-level Packaging Inspection System”](#), January 16, 2024.

[6] Applied Materials, [“Advances Heterogeneous Chip Integration with New Technologies for Hybrid Bonding and Through-Silicon Vias”](#), July 10, 2023.

[7] KLA Corporation, [FY2023 Form 10-K](#), filed August 4, 2023; Risk Factors pp. 15-18, Business pp. 35-36, and segment discussion in MD&A.

[8] KLA Corporation, [2022 Investor Day presentation](#), June 16, 2022, pp. 23-25. Historical company analysis and forecast, not a current outlook.

The cutoff is April 26, 2024, 5:00 p.m. ET. The KLA Q3 10-Q was accepted by EDGAR at 4:05:41 p.m. ET that day. The April 25 earnings call occurred before cutoff, but claims appearing solely in the Motley Fool transcript are excluded because the page's posting time is unverified and the official audio could not be accessed. No transcript-only estimate or adaptation-time claim is used. No information after the cutoff is used. Reported facts, company/customer guidance, vendor statements and classroom assumptions are identified separately.