



KPMG Corporate Finance LLC

Semiconductor Industry and M&A Update – Summer 2024

September 2024



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2024 Semiconductor Industry Outlook

Artificial Intelligence (AI) Spurs Rebound in Chip Demand

Semiconductors Enjoying a Strong Rebound

After experiencing a challenging year in 2023, the global semiconductor market appears on track to rebound strongly this year with 16.0 percent⁽¹⁾ growth to \$611 billion, representing an all-time high, well above \$574 billion in 2022. Much of the growth is expected to be driven by processors and memory segments on the back of growing demand for AI semiconductors, notably data center processing and high bandwidth memory (HBM) chips. Propelled by its dominant position in the AI chip market, NVIDIA's revenue is expected to surpass \$120 billion, overtaking Intel and claiming the number one position after entering the top five for the first time last year.

While processors and memory segments are expected to witness a double-digit growth in 2024, other segments are expected to stay flat and, in some cases, deliver high single-digit declines in 2024 due to global macro challenges, including overall weak demand, inflationary pressures, geopolitical uncertainty, and inventory corrections.

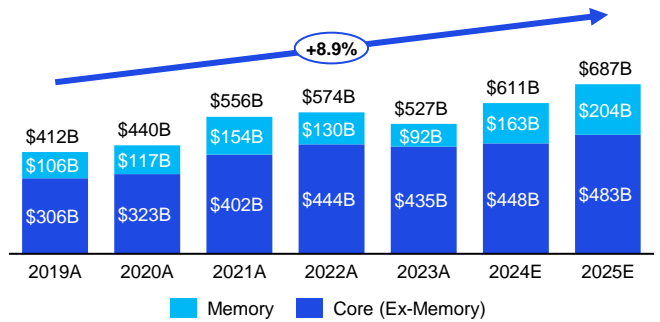
CQ2 Earnings: Mixed Results

Recent public earnings revealed mixed results, with variable outcomes driven largely by differences in end-market exposure. Leading AI chip companies like NVIDIA and AMD continue to outperform and guide to sequential growth. Away from the data center, suppliers into some markets, such as consumer, appear to have found bottom and begun to return to modest growth, while many suppliers into automotive, industrial, and wireless infrastructure continue to guide to sequential quarterly revenue declines.

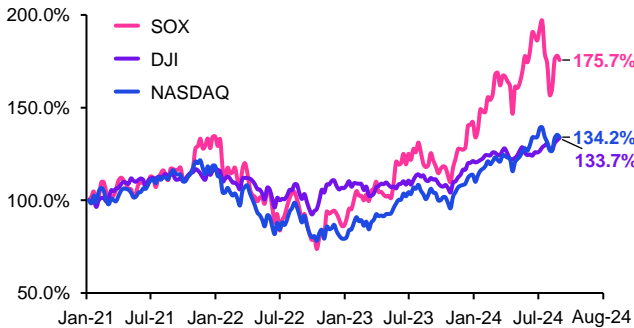
Record High SOX Index: Fueled by NVIDIA and Revised Index Methodology

PHLX Semiconductor Index (SOX) continues to outperform major indices, following very impressive returns of 65% in 2023 and a 24% gain YTD '24⁽²⁾. This is a story of haves and have-nots given the concentration of impact on SOX. As of August 1, 2024, the ten largest constituents accounted for approximately 60% of the index weight, and six of these top 10 SOX constituents have seen their share prices more than double since the beginning of last year, averaging a gain of 226.9%, with NVIDIA being the top mover with an 8.2x share price gain. Additionally, the SOX index was further propelled by the April 2024 adjustments made in the weight caps of the top five companies. Previously, the individual weight of the top five constituents by market capitalization were capped at 8% each. Under the updated methodology, the top three constituents are now capped at 12%, 10%, and 8%. Meanwhile, SOX has delivered approximately 40% expansion in valuation multiple since the beginning of 2023, with NTM EBITDA multiple growing from 17.3x to 24.2x.

Semiconductor Market Forecast (1)

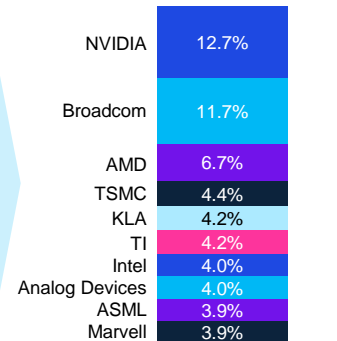


Source: WSTS Semiconductor Market Forecast Spring 2024



Source: S&P Capital IQ, as of August 31, 2024

Top 10 SOX Constituents Index Weight (%) (2)



Source: NASDAQ Global Indexes, as of August 1, 2024

¹ World Semiconductors Trade Statistics (WSTS) Semiconductor Market Forecast Spring 2024

² NASDAQ Global Indexes, as of August 1, 2024



Semis IPO Market Thawing: Signs of a Revival

AI and IPOs

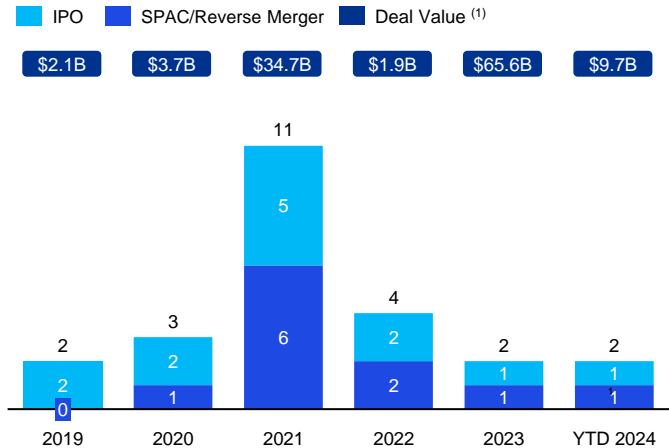
ARM IPO Sparks Confidence in Semis IPO Activity

After the frenzied activity of 2021 (driven largely by the SPAC bubble), the current IPO environment for semiconductor IPOs is more subdued and disciplined. Since 2022, the annual number of IPOs/SPACs has decreased significantly, hurt by a myriad of factors including market volatility, high interest rates, increased investor and regulatory scrutiny on SPAC activity, semiconductor supply chain recovery, and geopolitical uncertainties.

Although there were only two IPO/SPAC semiconductor deals in 2023 (both in the second half), one was ARM's highly successful offering, the largest semiconductor IPO on record. With its share price currently more than double the offering price. ARM's scale and success have helped increase interest in semiconductor IPOs, countering some of the prevailing market hesitancy.

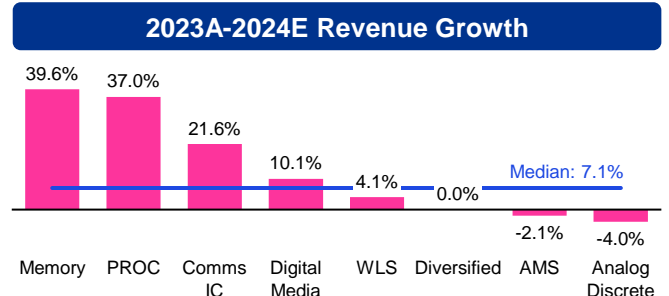
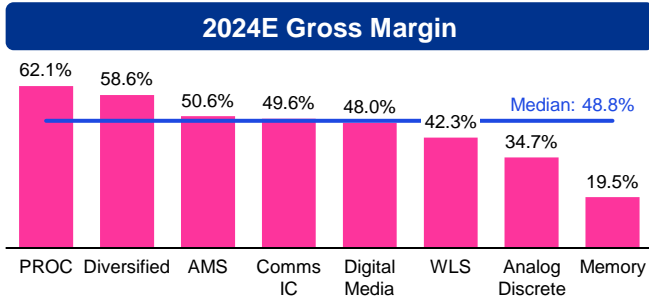
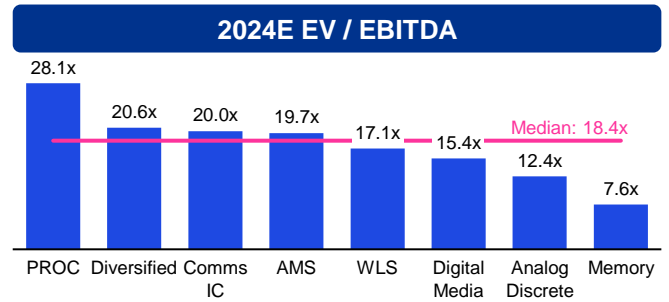
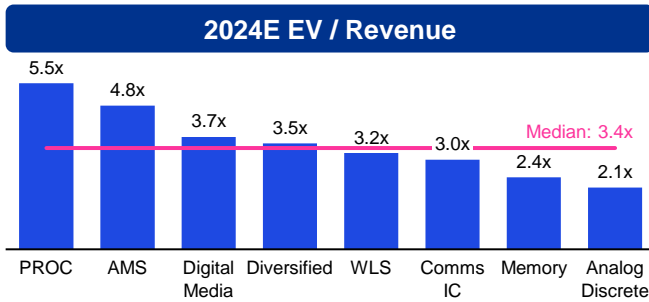
So far this year two public offerings have priced, highlighted by Astera Labs, a high-speed data and memory connectivity solutions provider for artificial intelligence computing and cutting-edge data center applications. Astera Labs had a stellar Nasdaq debut with shares jumping as much as 76% on Day 1 yielding a market capitalization approaching \$10 billion. Riding a wave of AI interest, Cerebras, AI chip maker, filed for an initial public offering (IPO) in August 2024, and several others are working with underwriters, suggesting a pickup in the activity in 2025.

Semiconductor SPACs / IPOs



Source: KPMG Independent Analysis and S&P Capital IQ
Note: The above chart does not include Chinese IPOs/SPACs

Semiconductor Public Valuations and Operating Performance by Subsector



Source: S&P Capital IQ, as of August 31, 2024

1 KPMG Independent Analysis & S&P Capital IQ, as of August 31, 2024



Silicon Surge: Semiconductor M&A Activity

Recovering from slight drops the last two years, semis M&A shows a resurgence

Strong Growth in Semiconductor Deal Volume and Value

Despite a globally challenging M&A landscape, semiconductor M&A activity has shown a notable uptick in transaction count from 33 to 44 transactions so far in 2024⁽¹⁾, while deal value exploded from \$2.7 billion to \$45.4 billion, driven primarily by two major EDA transactions: Synopsys announced in January that it plans to acquire Ansys, a PA-based simulation and analysis solutions provider, for approximately \$35 billion and a month later, Renesas announced its acquisition of Altium, a CA-based PCB design software provider, for approximately \$5.9 billion.

Away from the mega deals in EDA, deal volume was largely driven by the Processors, IP/EDA, Discretets, and Wireless sub-sectors as a result of buyer demand for AI-powered tools and high-performance, power efficient, & low-cost wireless and discrete offerings. These sub-sectors collectively accounted for 77% of deal volume in YTD'24 and 79% of deal volume in same time period of '23.

PE Firms Still Like Semiconductor Buys

While PE/Platform deal activity has been limited in YTD'24, SoftBank Vision Fund ("SoftBank") and PE-backed Quantic announced transactions this year, industrial and A&D focused PE firms continue to actively seek larger platforms as well as bolt-ons to existing portfolio companies. With substantial dry powder and falling interest rates, dozens of PE firms that showed little interest in semiconductors are now aggressively seeking profitable, steady-growth businesses, with a particular focus on the medical, industrial, aerospace, and defense markets.

Semi Buyers Seeking Non-Semiconductor Businesses

In addition to the Renesas-Altium deal, processor companies are also acquiring non-chip companies to enhance their AI platforms and capabilities in high-performance computing applications. NVIDIA has announced four acquisitions this year with focus on tools and embedded AI software, while AMD has announced two transactions: a \$4.9 billion acquisition of server builder ZT Systems in August and a \$665 million acquisition of Europe's largest AI lab, Silo AI. The M&A count below does not include the AMD-ZT Systems transaction, as the target is not a semiconductor, IP, or EDA/embedded software business.

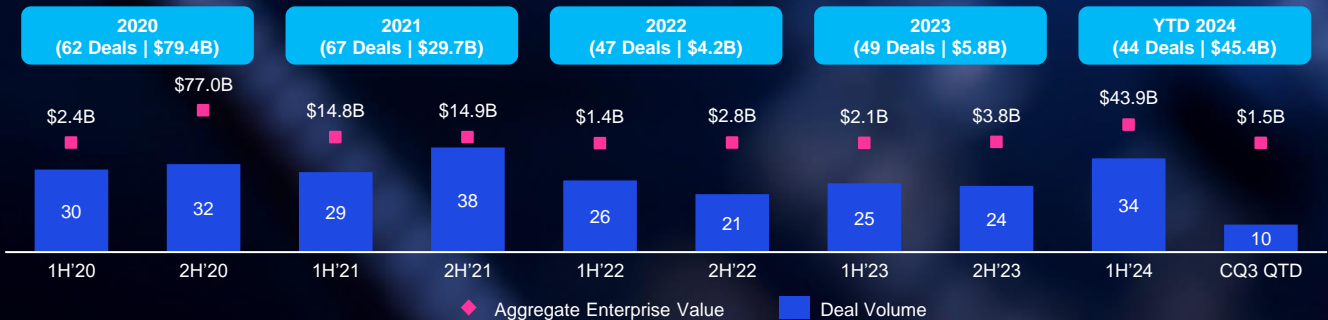
Key Statistics

33% increase in total deal volume from YTD'23 to YTD'24 (33 to 44)

16x increase in total deal value from YTD'23 to YTD'24 (\$2.7 billion to \$45.4 billion)

70% of deals involved participation from at least one U.S. party

Semis Deal Activity



¹ YTD represents year-to-date as of August 31, 2024

Source: KPMG Independent Analysis, S&P Capital IQ, PitchBook, and 451 Research as of August 31, 2024

Note: This represents semiconductor and fab deals and excludes China to China deals. IP/EDA category includes embedded software deals announced by semiconductor players

Segment Overview: Processors & IP/EDA

AI continues to emerge as a catalyst for recent IP/EDA deals

Riding the AI Boom: Surge in Deal Activity

Processors and IP/EDA segments⁽¹⁾ continued to drive deal activity aggressively in YTD'24⁽²⁾, with 22 announced deals totaling over \$43 billion. Collectively, these two sectors accounted for half of the total deal volume and 95% of the deal value, with much of the activity focused on embedded software, tools, and design software.

NVIDIA and AMD: M&A Clash for AI Dominance

Recent deals by the two leading AI chip companies exemplify their strategy of expanding beyond core semiconductor offerings to provide comprehensive end-to-end AI platforms. NVIDIA has been on an AI startup buying spree this year, so far announcing four transactions totaling over \$1 billion in consideration. These transactions were strategic moves to expand its cloud infrastructure business, particularly DGX Cloud. Launched last year, DGX Cloud operates on top of service providers, offering quick access to the tools, support, and GPU-powered infrastructure needed to develop and run generative AI applications⁽⁴⁾.

Meanwhile, AMD has announced two significant acquisitions to bolster its AI capabilities. Just a month after announcing its acquisition of Silo AI, Europe's largest private AI lab, for \$665 million, AMD announced the acquisition of server builder ZT Systems for \$4.9 billion. Both deals were strategic moves to plug the gaps in its end-to-end AI solutions to compete with NVIDIA's integrated approach.

Synopsys and Cadence: Continue the M&A Race

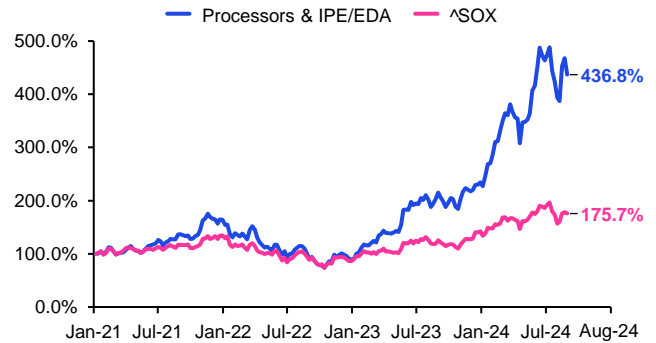
Synopsys and Cadence remain acquisitive as they strive to broaden their core EDA positions. Both players announced three deals last year and continue to pursue significant M&A transactions in what is effectively a two-horse race for EDA supremacy. In January, Synopsys announced the acquisition of Ansys, a PA-based simulator software maker, for approximately \$35 billion, making it the largest semiconductor deal since the AMD-Xilinx deal announced in October 2020.

A few months after the Synopsys announcement, Cadence announced the acquisition of BETA CAE Systems, a physical analysis software maker, for approximately \$1.24 billion. Reported to have participated in the Ansys process but not prevailing, BETA CAE appears to be a strategic response by Cadence to similarly expand its product portfolio.

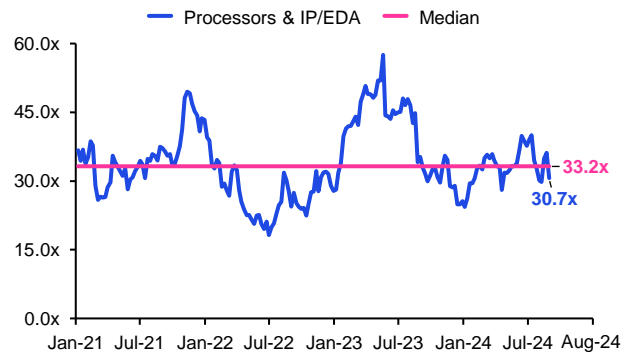
New EDA Entrant: Renesas

Renesas entered the EDA market through its acquisition of Altium, a PCB design software provider, for \$5.9 billion. This acquisition will allow Renesas to offer a comprehensive digital device design offering, enabling system designers to perform digital iteration of design processes.

Processors & IP/EDA⁽³⁾ Stock Price Performance



Processors & IP/EDA⁽³⁾ Valuation Multiples



Source: S&P Capital IQ, as of August 31, 2024

¹ IP/EDA category includes embedded software deals announced by semiconductor players

² YTD represents year-to-date as of August 31, 2024

³ Processors and IP/EDA index includes Processors: NVIDIA, AMD, Intel, Microchip, Astera Labs, Lattice, and QuickLogic; IP/EDA: ARM, Synopsys, Cadence, eMemory, Rambus, Interdigital, Alphawave IP, PDF Solutions, Acacia, CEVA, and Immersion

⁴ CRN: [Nvidia Expands AI Cloud Capabilities With Fourth Acquisition This Year](#)

Segment Overview: Processors & IP/EDA

AI continues to emerge as a catalyst for recent IP/EDA deals

SoftBank: Project Izanagi

SoftBank has long shown interest in the AI chip space. In February, the company announced Project Izanagi (named after the Japanese god of creation and life) – a plan to raise \$100 billion to build an AI chip venture to compete with NVIDIA⁽¹⁾.

Since then, SoftBank entered talks with Intel to co-develop AI chips, but the discussions eventually fell through. Subsequently, SoftBank acquired the struggling British AI chip designer Graphcore for approximately \$520 million, a fraction of the Company's peak valuation of over \$2.5 billion. The acquisition is intended to create synergies with SoftBank's other chip affiliate ARM, to drive future growth in AI.

According to Nikkei reports, ARM also plans to establish an AI chip division and aims to build a prototype by spring 2025, with volume production starting in fall 2025. Once mass production is established, the AI chip business could be spun off and placed under SoftBank⁽²⁾.

Intel : Can They Turn the Ship?

While Intel pushes to return to its former chipmaking glory days, it struggles to keep up with competitors in the data center chip race. Intel reported revenues of \$12.8 billion and a net loss of \$1.6 billion for the June quarter, falling short of Wall Street expectations. In response, Intel announced cutting more than 15,000 jobs as part of a \$10 billion cost-saving initiative and will also begin suspending its dividend starting in the fourth quarter this year. Intel shares fell 26% on the Friday following the earnings, pushing its market capitalization below \$100 billion for the first time since December 2012. A week after its earnings, it was reported that Intel sold its 1.18 million share stake in ARM for approximately \$147 million as it undergoes the restructuring process. Time will tell if Intel can turn the ship as they work to regain process leadership with their aggressive five-nodes-in-four-years march, amidst the recent cost-saving push and an uncertain market position.

Select Processors & IP/EDA Public Companies

(\$M in USD)	Market Cap	Enterprise Value (EV)	EV / Revenue		EV / EBITDA		Gross Margin		EBITDA Margin	
			CY2024E	CY2025E	CY2024E	CY2025E	CY2024E	CY2025E	CY2024E	CY2025E
Processors										
NVIDIA	\$2,928,146	\$2,903,361	NM	16.6x	35.8x	25.5x	76%	75%	65%	65%
AMD	\$240,442	\$237,347	9.3x	7.2x	41.4x	25.3x	53%	55%	22%	29%
Intel	\$94,243	\$121,958	2.3x	2.1x	12.1x	7.6x	40%	41%	19%	28%
Microchip	\$44,079	\$49,967	10.2x	8.6x	29.3x	23.2x	66%	60%	35%	37%
Median			9.3x	7.9x	32.6x	24.3x	59%	58%	29%	33%
Mean			7.2x	8.7x	29.6x	20.4x	59%	58%	35%	40%
IP/EDA										
ARM	\$139,258	\$137,047	NM	NM	NM	NM	96%	97%	46%	53%
Synopsys	\$79,815	\$78,530	12.5x	11.0x	30.2x	26.8x	82%	82%	41%	41%
Cadence	\$73,638	\$73,758	16.0x	14.0x	35.0x	29.6x	89%	90%	46%	47%
Median			14.2x	12.5x	32.6x	28.2x	89%	90%	46%	47%
Mean			14.2x	12.5x	32.6x	28.2x	89%	90%	44%	47%

Note: EV / Revenue and EV/EBITDA multiples less than zero and greater than 20.0x and 50.0x, respectively, are considered not meaningful "NM"

Source: S&P Capital IQ accessed on August 31, 2024

¹ [DCD: Project Izanagi: SoftBank's Masayoshi Son Plans \\$100bn AI chip venture](#)

² [NIKKEI Asia: SoftBank's Arm plans to launch AI chips in 2025](#)

Segment Overview: Wireless

Growth fueled by insatiable demand from critical Microwave and Hi-Rel applications

Wireless (WLS) sector prime for growth and aggressive deal activity

Though wireless infrastructure continues to show lackluster demand, many wireless semiconductor suppliers are seeing demand in emerging markets such as electronic warfare, test & measurement, LEO satellites, and quantum computing. High performance devices are enjoying strong uptake in unmanned systems, such as satellites, drones and autonomous vehicles, along with an array of A&D applications like radar and high-power jamming. M&A deal momentum is likely to be driven by acquirers' interest in these growth markets and access to high frequency and high-power mmWave and microwave components utilizing SiGe, GaN, and GaAs processes.

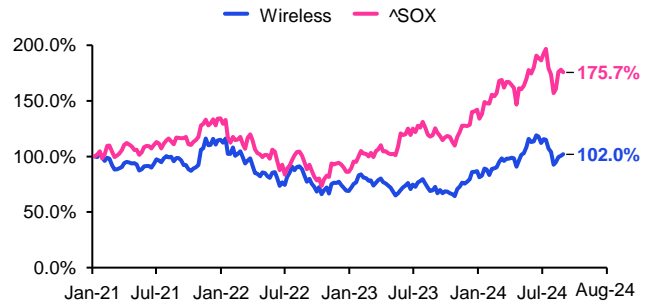
Sequans Offloads 4G IoT Technology to Qualcomm following Renesas Deal Termination

Five deals were announced YTD'24⁽²⁾, and markets appear poised for increased activity likely driven by macro-growth in A&D spending globally. Sequans sold its 4G IoT technologies to Qualcomm for approximately \$200 million in August 2024. This move follows the termination of its \$249 million prior deal with Renesas in February for tax reasons. The technology acquisition complements Qualcomm's portfolio in the burgeoning IoT market. For Sequans, the transaction marks a strategic pivot, enabling the company to focus and invest in growth areas, including 5G technology, while retaining license of 4G IoT technology for its ongoing use.

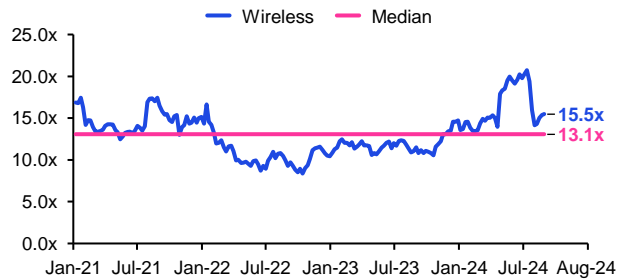
Quantic and Qorvo return to WLS deal making after a brief hiatus

Quantic has completed more than a dozen deals since 2020 and returned to deal-making after a short pause in 2023 with the recent acquisition of M-wave design, a ferrite-based RF and Microwave components company. Qorvo also re-entered the semiconductor M&A market after a hiatus of two years, with the \$94 million acquisition of Anokiwave, a supplier of high-performance beamforming and IF-RF conversion chips for active array antennas in A&D, SATCOM and 5G applications.

Wireless⁽¹⁾ Stock Price Performance



Wireless⁽¹⁾ Valuation Multiples



Source: S&P Capital IQ, as of August 31, 2024

Select Wireless Public Companies

(\$M in USD)	Market Cap	Enterprise Value (EV)	EV / Revenue		EV / EBITDA		Gross Margin		EBITDA Margin	
			CY2024E	CY2025E	CY2024E	CY2025E	CY2024E	CY2025E	CY2024E	CY2025E
Wireless										
Qualcomm	\$195,284	\$196,806	5.0x	4.6x	13.1x	11.9x	56%	56%	38%	38%
Skyworks	\$17,503	\$17,420	4.3x	4.0x	13.3x	12.8x	46%	47%	32%	32%
Qorvo	\$10,993	\$11,872	3.0x	2.8x	14.7x	12.3x	44%	44%	21%	23%
MACOM	\$7,885	\$7,853	10.1x	8.8x	34.0x	26.0x	58%	59%	30%	34%
Median			\$4.65	\$4.29	14.0x	12.5x	51%	52%	31%	33%
Mean			\$5.61	\$5.06	18.8x	15.7x	51%	52%	30%	32%

Note: EV / Revenue and EV/EBITDA multiples less than zero and greater than 20.0x and 50.0x, respectively, are considered not meaningful "NM"

Source: S&P Capital IQ, as of August 31, 2024

¹ Wireless index includes Qualcomm, Microchip, Skyworks, Qorvo, MACOM, Impinj, Silicon Laboratories, Nordic Semiconductor, Semtech, MaxLinear, u-blox, RFHIC, Filtronic, M-tron, Airgain, CML, Sequans, Akoustis, and Peraso

² YTD represents year-to-date as of August 31, 2024

Sources: KPMG Independent Analysis, [Global Semiconductor in Military and Aerospace Market Overview November 2023](#) and Press Releases: [Abracon](#), [Qorvo](#), [Quantic](#), and [Qualcomm](#)

Segment Overview: Discretes

Driven by need for high-power and voltage efficiencies in smaller form factors

GaN goes mainstream on the back of its fundamental material advantages

With superior power density than traditional mainstream processes, GaN-based devices are making significant inroads into rapidly-growing electronic vehicle charging, computing (data centers, AI, and infrastructure), renewable energy, industrial power conversion, and fast chargers / adapters markets. As a result, GaN focused suppliers have been the primary M&A targets this year in the Discretes market, propelling YTD'24 deal volume from just two to seven thus far, already more than the six transactions in all of last year.

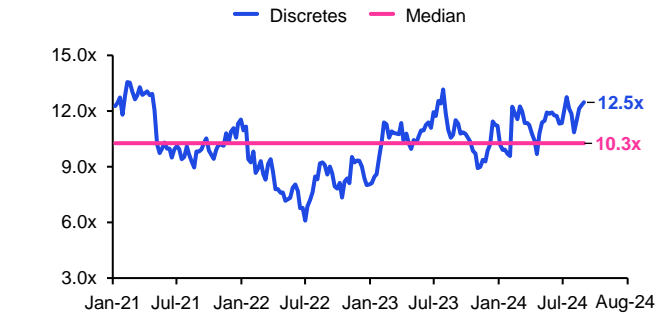
Renesas gains access to GaN through its acquisition of Transphorm

Renesas, an active acquirer over the last several years, expanded its power portfolio with GaN technology through its \$345 million acquisition of Transphorm, a CA-based provider of high-reliability GaN devices for high-voltage power conversion applications. Discrete, AMS and Wireless buyers will likely continue seeking wide bandgap materials enabling higher voltage and switching frequencies than traditional silicon-based technologies.

Discretes⁽¹⁾ Stock Price Performance



Discretes⁽¹⁾ Valuation Multiples



Source: S&P Capital IQ, as of August 31, 2024

Select Discrete Public Companies

(\$M in USD)	Market Cap	Enterprise Value (EV)	EV / Revenue		EV / EBITDA		Gross Margin		EBITDA Margin	
			CY2024E	CY2025E	CY2024E	CY2025E	CY2024E	CY2025E	CY2024E	CY2025E
Discretes										
Onsemi	\$33,356	\$34,338	4.8x	4.4x	13.0x	11.2x	46%	47%	37%	40%
Diodes	\$3,229	\$3,112	2.3x	2.0x	15.2x	10.3x	34%	36%	15%	20%
Vishay	\$2,756	\$3,020	1.0x	0.9x	8.6x	5.9x	22%	24%	12%	16%
Knowles	\$1,631	\$1,820	2.2x	2.3x	11.3x	11.5x	39%	42%	19%	20%
Alpha & Omega	\$1,211	\$1,103	1.7x	1.5x	13.9x	8.6x	27%	26%	12%	17%
Magnachip	\$177	\$77	0.3x	0.3x	NM	NM	21%	23%	(14%)	(7%)
Median			\$1.91	\$1.74	13.0x	10.3x	31%	31%	14%	18%
Mean			\$2.05	\$1.90	12.4x	9.5x	31%	33%	14%	17%

Note: EV / Revenue and EV/EBITDA multiples less than zero and greater than 20.0x and 50.0x, respectively, are considered not meaningful "NM"

Source: S&P Capital IQ, as of August 31, 2024

¹ Discretes index includes OnSemi, Vishay, Diodes, Knowles, Alpha & Omega, and Magnachip

Sources: KPMG Independent Analysis, S&P Capital IQ as of August 31, 2024, and Press Releases: [Mini-Circuits](#), [Renesas](#), and [Power Integrations](#)

Segment Overview: Analog Mixed Signal

Inventory Correction across key Analog Mixed Signal end markets to fuel growth

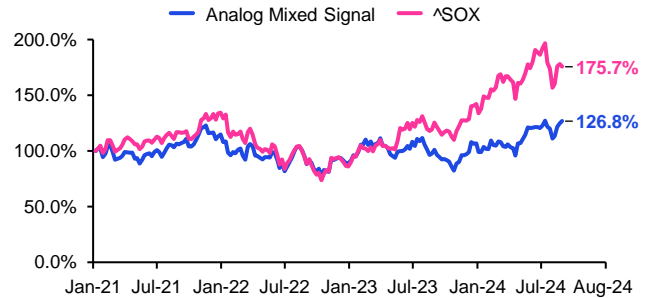
Cautious deal making owing to lackluster demand amidst inventory correction

After tremendous consolidation for years, Analog Mixed-Signal (AMS) has seen extremely limited deal activity despite being an extremely large and profitable segment of the semiconductor industry. Texas Instruments continues to stay on the M&A sidelines while consolidators like Analog Devices continue to focus on operations and returning to growth in their core businesses. Renesas has been the only active acquirer, and much of its activity has been away from AMS.

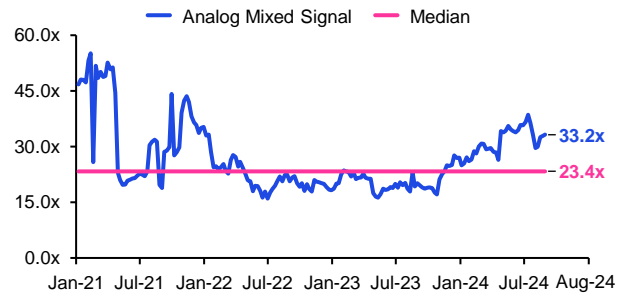
Consumer electronics, largest AMS end-market, drives growth and M&A resurgence

With much consolidation behind us, AMS deal activity is likely to remain modest with possible bright segments in consumer applications where inventory corrections could enable improving financial performance from private point solution providers. The adoption of AI and ML in the edge and in CPE devices, as well as emerging data conversion and power management technologies using SiC and GaN processes enabling more power-efficient and higher power devices for consumer, automotive and industrial applications may well bring renewed M&A activity to AMS suppliers.

Analog Mixed Signal⁽¹⁾ Stock Price Performance



Analog Mixed Signal⁽¹⁾ Valuation Multiples



Source: S&P Capital IQ, as of August 31, 2024

Select Analog Mixed Signal Public Companies

(\$M in USD)	Market Cap	Enterprise Value (EV)	EV / Revenue		EV / EBITDA		Gross Margin		EBITDA Margin	
			CY2024E	CY2025E	CY2024E	CY2025E	CY2024E	CY2025E	CY2024E	CY2025E
Analog Mixed Signal										
Analog Devices	\$116,597	\$122,169	13.2x	11.3x	29.9x	24.5x	68%	69%	44%	46%
MPS	\$45,568	\$44,276	NM	16.8x	NM	42.5x	56%	57%	37%	40%
Cirrus Logic	\$7,781	\$7,191	3.9x	3.7x	14.0x	13.6x	51%	51%	28%	27%
Allegro MicroSystems	\$5,370	\$5,423	6.8x	5.7x	31.2x	19.5x	56%	51%	22%	29%
Silicon Laboratories	\$3,822	\$3,483	5.8x	3.9x	NM	29.2x	54%	58%	(8%)	13%
Power Integrations	\$3,813	\$3,523	8.1x	6.9x	33.0x	24.1x	54%	55%	25%	28%
Melexis	\$3,646	\$3,867	3.5x	3.3x	11.6x	10.6x	44%	44%	30%	31%
SiTime	\$3,346	\$2,901	15.2x	11.8x	NM	NM	58%	60%	5%	14%
Semtech	\$3,296	\$4,382	4.9x	4.0x	25.7x	18.1x	51%	53%	19%	22%
Elmos	\$1,547	\$1,634	2.5x	2.3x	7.6x	7.0x	46%	46%	33%	33%
Wolfspeed	\$1,237	\$5,354	6.6x	4.9x	NM	NM	13%	14%	(30%)	6%
AMS-OSRAM	\$1,214	\$3,683	1.0x	0.9x	4.8x	4.5x	28%	30%	20%	21%
Median			\$5.78	\$4.46	19.8x	18.8x	53%	52%	23%	28%
Mean			\$6.49	\$6.28	19.7x	19.3x	48%		19%	26%































Note: EV / Revenue and EV/EBITDA multiples less than zero and greater than 20.0x and 50.0x, respectively, are considered not meaningful "NM"

Source: S&P Capital IQ, as of August 31, 2024

¹ AMS Index includes Analog Devices, Monolithic Power Systems, Cirrus Logic, Allegro Microsystems, Power Integrations, Melexis, Silicon Laboratories, SiTime, Semtech, Wolfspeed, Elmos, and AMS-OSRAM

Sources: KPMG Independent Analysis, [Global Mixed Signal IC Market 2024-2028 – ResearchAndMarkets](#), [Amid AI sales rush, semiconductors still have an analog inventory problem – S&P Global June 11, 2024](#), [Global Mixed Signal IC Market and Analog Signal IC Market 2024-2028 – Technavio](#)

YTD'24 Spotlight Transactions (1/3)































Date	Acquirer	HQ	Target	HQ	Description	Category	EV (\$M)	Enterprise Value /	
								Revenue	EBITDA
Aug-24	Qualcomm		Sequans' 4G IoT Technology		4G IoT technologies including certain employees, assets and licenses	WLS	\$200.0	-	-
Aug-24	ByNordic Acquisition Corp		Sivers Photonics		Foundry and custom services including designing & manufacturing semiconductor laser products	COMM	-	-	-
Aug-24	Silicon Integrated Systems		Hycon Technology		Provides battery management ICs, mixed signal microcontroller, and capacitive touch ICs	AMS	-	-	-
Jul-24	NVIDIA		Shoreline		Develops software solutions for system incident management and process automation	IP/EDA	\$100.0	-	-
Jul-24	NVIDIA		Brev.dev		Integrated development environment software that helps run build, train, and deploy ML models on the cloud for CPU and GPU clusters	IP/EDA	-	-	-
Jul-24	SoftBank		Graphcore		Develops and manufactures intelligent processing units that can be used to accelerate ML applications	PROC	\$520.0	-	-
Jul-24	AMD		Silo AI		AI lab that develops human-machine workflows that utilize ML, computer vision, and natural language processing	IP/EDA	\$665.0	-	-
Jul-24	L&T Semiconductor		SiliConch Systems		Develops confidential application specific IP & ICs in USB Type-C Ecosystem especially in the areas of Power Delivery and Datapath	IP/EDA	\$21.9	6.6x	-
Jul-24	Accenture		Excelmax		Provides semiconductor design services and custom silicon solutions for consumer devices, data centers, AI and computational platforms	IP/EDA	-	-	-
Jul-24	Synopsys		Valtrix Technologies		Provides design RISC-V and ARM-based software and specializes in SOC and IP validation / verification	IP/EDA	\$24.0	-	-
Jun-24	TST Systems		Wireless Innovative MMIC		Designs ICs for aerospace, communications, and defense industries as well as engages in beamforming integrated circuits (BFICs)	WLS	-	-	-
Jun-24	Sapeon		Rebellions		Gen AI Chip maker that provides AI processor chip integrated with optimized software used in energy-efficient AI hardware	PROC	-	-	-
Jun-24	Vishay Technology		Ametherm		Provides precision thermistors for inrush current limiters and temperature sensing across sizes, forms, and packages	DISC	\$31.5	-	-
May-24	Quantic Electronics (Arcline)		M Wave Design		Supplies ferrite-based RF and Microwave components for aerospace, defense, and quantum computing applications	WLS	-	-	-
May-24	Greenbridge Partners		EPINOVATECH		Manufactures GaN-based epiwafers and chips	AMS	-	-	-

Representative semiconductor deals announced during year-to-date 2024. YTD represents year-to-date as of August 31, 2024

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Sources: KPMG Independent Analysis, S&P Capital IQ, PitchBook, 451 Research, and company press releases as of August 31, 2024

YTD'24 Spotlight Transactions (2/3)

Date	Acquirer	HQ	Target	HQ	Description	Category	EV (\$M)	Enterprise Value /	
								Revenue	EBITDA
May-24	Focuslight Technologies		AMS OSRAM (Passive Optical Components)		Passive optical components assets of AMS OSRAM	DISC	\$48.5	-	-
Apr-24	Guerrilla RF		Gallium Semiconductor		Provides GaN-based RF semiconductor products for wireless infrastructure, military, and satellite communications applications	WLS	-	-	-
Apr-24	NVIDIA		Deci.AI		Develops deep learning platform designed to build efficient gen AI and computer vision models	IP/EDA	\$300.0	NM	NM
Apr-24	Shin-Etsu Chemical		Mimasa Semiconductors		Silicon wafers processing	FAB	\$829.9	-	-
Apr-24	NVIDIA		Run:AI Labs		Provides cluster management platform designed for orchestrating and accelerating AI infrastructures	IP/EDA	\$700.0	-	-
Apr-24	Broadcom		Seagate HDD India & Singapore		SoC operations of Seagate Technology HDD (India) and Seagate Singapore	MEM	\$440.8	-	-
Apr-24	Microchip Technology		Neuronix AI Labs		Neural network sparsity optimization tech for image classification, object detection, and semantic segmentation	IP/EDA	-	-	-
Apr-24	Mini-Circuits		Analog Devices (CATV amplifier business)		CATV amplifier business of Analog Devices, including 75Ω GaAs and GaN amplifiers and the product development team	DISC	-	-	-
Apr-24	Microchip Technology		VSI		Offers link technologies, chips, SerDes chipset and ethernet transceivers for autonomous vehicles	COMM	-	-	-
Apr-24	Qualcomm		Foundries.IO		Linux / Zephyr micro-platforms for embedded product development & real-time operating system (RTOS)-based applications	IP/EDA	-	-	-
Mar-24	Synopsys		Intrinsic-ID		Provides Physical Unclonable Function (PUF) IP used in the design of SoCs	IP/EDA	-	-	-
Mar-24	Power Integrations		Assets of Odyssey Semiconductor and JR2J		High-voltage power switching components based on proprietary GaN processing technology	DISC	\$9.5	-	-
Mar-24	Vishay Technology		Newport Wafer Fab		UK's largest 200mm, automotive-certified, semiconductor wafer FAB, located on 28 acres with a capacity of 30,000+ wafers per month	FAB	\$223.5	-	-
Mar-24	Certify Holdings		AERI (American Electronic Resource)		Provides capacitors, ICs, military electronic components, semiconductors, connectors, and LCDs	DISC	\$8.5	-	-
Mar-24	Cadence Design Systems		Beta Simulation Solutions		Develops computer-aided engineering software systems catering to the simulation and analysis markets	IP/EDA	\$1,270.4	14.1x	-























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Sources: KPMG Independent Analysis, S&P Capital IQ, PitchBook, 451 Research, and company press releases as of August 31, 2024



YTD'24 Spotlight Transactions (3/3)

Date	Acquirer	HQ	Target	HQ	Description	Category	EV (\$M)	Enterprise Value /	
								Revenue	EBITDA
Feb-24	Satori		MAGnetIC Holding		Leverages self-developed analog IP cores for designing high-performance AMS circuits used in mobile, industrial, and consumer applications	IP/EDA	\$12.9	-	-
Feb-24	Sapeon		Alphawave Semi (Semiconductor Design Services)		Semiconductor design service business of Alphawave Semi	IP/EDA	\$44.8	-	-
Feb-24	Renesas		Altium		Provides computer software for designing electronic products such as PCBs	IP/EDA	\$5,871.8	20.2x	NM
Feb-24	Monolithic Power Systems (MPS)		Axign		Provides high-efficiency and high-fidelity audio amplifier system solutions	PROC	\$33.8	-	-
Jan-24	Qorvo		Anokiwave		Provides IC solutions including SiGe core chip solutions, E-band point-to-point radio MMICs, and GaN & GaAs MMICs	WLS	\$93.7	5.5x	-
Jan-24	Indie Semiconductor		Kinetic Technologies		Provides AMS semiconductors	AMS	-	-	-
Jan-24	Synopsys		Ansys		Provides simulation capabilities (engineering software) for structural, fluids, semiconductor power, and embedded software	IP/EDA	\$33,459.9	14.4x	42.6x
Jan-24	Renesas		Transphorm		Provides GaN semiconductor components for high voltage power conversion applications	DISC	\$345.1	18.0x	-
Jan-24	Infosys		InSemi		Provides semiconductor design and embedded services	IP/EDA	\$33.7	1.8x	-
Jan-24	Intel		Silicon Mobility		Fabless silicon and software company that specializes in SoCs for intelligent EV energy management	PROC	-	-	-
Jan-24	Cadence Design Systems		INVECAS		Provides designing and development of silicon proven IP solutions and ASIC design services	IP/EDA	\$95.2	-	-

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Semi 's Primed for M&A Remainder of '24 & in '25

Resurging Investor Confidence | Improving Demand in End Markets | Inventory Correction

Expanding Technology / Capabilities Portfolio



Semiconductor acquirers expected to continue to seek **complementary and new technologies / capabilities to accelerate their product development timelines**, meet evolving customer needs and expand solutions portfolio/build platforms for strategic customers.

Growing number of semiconductor players are **integrating or expanding their AI capabilities** beyond chips to encompass infrastructure and memory solutions and build out complete platforms and offer end-to-end AI solutions.

- Renesas recently entered the EDA market through acquisition of Altium, a PCB design software company
- NVIDIA's acquisitions of four AI startups in under eight months show its push to stay dominant in AI

Semiconductors Evolving as Ripe Targets for PEs



Flush with capital, PE's have begun aggressively pursuing semiconductors, particularly targets focused on stable, modest-growth markets which are capital efficient such as industrial, medical, and A&D. Startup activity has been robust, with VCs' investing more than \$50 billion in last 5 years⁽¹⁾, and mature private companies will increasingly look to PEs for exits in favor of IPO and strategic sale.

PE's actively in market for profitable, mid-market chip suppliers primarily in **discretes, AMS and RF segments where tape-out costs/capital requirements are modest:**

- M&A activity from Arcline (Quantic), SoftBank and Warburg Pincus, with many others chasing
- European PE firm Ardian is seeking to raise at least €1 billion for its new semiconductor focused strategy

Government Support for Semi Suppliers and Predictable Supply Chain



Learning from the setbacks during the pandemic, governments across the **US, EU, the UK are introducing policies to fund and stabilize supply chains** by bringing manufacturing **on-shore or near-shore:**

- **\$52.7 billion U.S. Chips act and EU mobilizing \$46 billion** for innovation and capacity building in semiconductors
- **Southeast Asia emerging as epicenter of PCB investments** as part of near-shoring, to reduce reliance on China, and even Taiwan
- Next wave of Chips Act allocation of **\$13 billion towards Chips R&D** to establish U.S. as innovation hub and global leader in semiconductors⁽²⁾
- Given geopolitical challenges, many semiconductor suppliers are looking to shift back-end, packaging **from China into other geographies** such as Southeast Asia, India and even back in the US, in some cases utilizing M&A to get that diversification

Strong Stock Market Currency and Lowering Interest Rates



As IPOs gradually return on the back of **resurging investor confidence, a new pool of mid-cap buyers will seek M&A to complement organic growth. The number of large caps continue to grow** (23⁽³⁾) now have market caps above \$10 billion), and have the currency, balance sheet and positive psychology to get more aggressively utilize M&A. Lowering interest rates reduces capital costs and lowers the bar for accretive acquisitions.

Potential Headwinds



Geopolitical tensions and government intervention have mitigated deal activity, both in terminating announced deals but also in deterring prospective deals from ever getting to definitive agreement and announcement. For years dating back to Qualcomm/NXP and NVIDIA-ARM and more recently with Nexperia/Newport Wafer Fab and Intel-TowerJazz, many major transactions have been terminated as a result of regulatory interference. The prospect of regulatory investigation and the negative impacts that 12-18 month delays bring to targets, such as employee turnover and negative customer behavior, will make sellers' boards contemplate long and hard about whether to pursue transactions, particularly large cap, global targets.

Tighter export controls, particularly aimed at limiting China's access to advanced semiconductors, and "no-China" components chatter highlight the intersection of antitrust regulation and national security concerns. Despite trade tensions, volatile interest rates, and uncertainties from upcoming elections, improved target company performance and pent-up demand for acquisitions should overcome headwinds and drive deal activity going forward.

¹ Are semiconductors ripe for PE investment, PitchBook – February 2, 2024

² In Its Second Year, U.S. CHIPS Act Turns to R&D Opportunities, Synopsys – August 9, 2024

³ This does not include fabs, semiconductor capital equipment companies, or Chinese companies

Sources: KPMG Independent Analysis, S&P Capital IQ PitchBook, 451 Research, and company press releases as of August 31, 2024

Strong Track Record

Backed by unparalleled sector expertise and in-depth industry knowledge

KPMG Corporate Finance Selected Semiconductor & Electronics Transactions ⁽¹⁾

  Acquired by 	  SEMTECH High-Reliability Discrete Diodes and Assemblies business Acquired by  A portfolio company of 	 AlphaSense Acquired by 	  Acquired by 	  Acquired by 
 BISTel Semiconductor and flat panel display solutions Acquired by 	  Acquired by  A portfolio company of 	  GRANITE RIVER LABS Acquired by 	  Outsourced its North American technical maintenance services to 	  Acquired by 

Semiconductor and Electronics Published Resources

Global Semiconductor Industry Outlook 2024



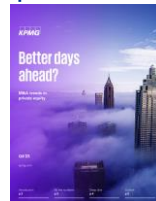
TMT M&A Trends



2024 M&A Outlook for Corporate Deal Makers



2024 M&A Outlook for Corporate Deal Makers



Electronic Manufacturing



2024 M&A Outlook for Private Equity



Government Services Review 2nd Half 2023



Aerospace & Defense M&A 2023



Managing for Growth During a Down Cycle



Automotive Semiconductors



¹ Represents the global Corporate Finance practice of KPMG Corporate Finance LLC and KPMG's international's network of independent member firms



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Global coverage. Industry knowledge. Middle-Market focus.

The global Corporate Finance practices of KPMG International's network of independent member firms⁽¹⁾ was **ranked #1 as the top M&A middle-market adviser globally** by Refinitiv based on number of completed transactions⁽²⁾, from 2004 to 2023.

KPMG Corporate Finance LLC was recently named Transaction Advisory Firm of the Year by The Global M&A Network, and previously named investment Bank of the Year by the M&A Advisor. KPMG Corporate Finance LLC provides a broad range of investment banking and advisory services to its domestic and international clients. Our professionals have

the experience and depth of knowledge to advise clients on global mergers and acquisitions, sales and divestitures, buyouts, financings, debt restructurings, equity recapitalizations, infrastructure project finance, capital advisory, portfolio solutions, fairness opinions, and other advisory needs.

KPMG Combines the Focus of a Boutique Investment Bank with the Resources of a Global Investment Banking Platform

265,000+

Global KPMG Professionals

2,500+

Global KPMG CF Professionals

200+

Global KPMG TMT Investment Bankers

5,000+

M&A Transactions Closed since 2013



¹ Represents the global Corporate Finance practice of KPMG Corporate Finance LLC and KPMG's international's network of independent member firms

² Represents completed deals with a transaction value less than \$500 million or where the deal value is not disclosed



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