

IT Hardware

AI PC to enhance PC demand in 2H24-2025F

Key message

1. We expect PC shipments to recover to 5.5% growth in 2024F, after a decline of 14-15% in 2023.
2. AI PC shipments will grow followed by CPU/NPU introductions by Qualcomm, Intel and AMD, and also be boosted by Microsoft's Windows 12, which supports AI functionality. We forecast AI PC penetration will reach 5-10% in 2024F (around 20mn units), and over 20% in 2025F.
3. Beneficiaries of AI PC proliferation include PC brands, ODMs, and memory, memory connector, thermal and battery makers.

Event

We forecast global demand will grow 6% YoY in 2024, after a double-digit decline in 2022-23. AI PC proliferation will be another driver of PC industry growth in 2H24-25F.

Impact

PC demand to recover in 2024F. We estimate global PC shipments will fall 14-15% YoY in 2023 due to shaky macroeconomic conditions, which will be the trough after the near-term shipment peak of 342mn units in 2021. However, PC channel inventory returned to a healthy level in 3Q23, and brands have seen demand recover for high-end PCs, such as gaming NBs. In 2024, we forecast global PC demand will grow 5.5% YoY (NB and DT to both grow 5-6% YoY), thanks to: (1) resumption of replacement demand on economic recovery, following the last cycle peaking in 2020-21; (2) upgrade demand triggered by end-of-service for Windows 10 in 2025F; (3) launch of Intel's (US) new Meteor Lake CPU, which will support AI functionality, in NB in December 2023 and DT in 2024F; (4) the launch of Windows 12 in 2024F, with AI functionality support boosting upgrade demand. We expect the commercial and high-end consumer market to see replacement demand for and upgrades to AI-enabled PCs first. We forecast global commercial PC demand will grow 7% YoY in 2024, which will outstrip consumer PC growth of 3% YoY. This will benefit NB ODMs with higher commercial market exposure, such as Inventec (2356 TT, NT\$45.05, OP) and Compal Electronics (2324 TT, NT\$34, NR).

AI PC demand to boost replacement cycle in 2H24-25F. Qualcomm (US) first launched its AI accelerator, NPU Hexagon, on the Snapdragon X Elite platform, in October 2023, which performs up to 45 trillion operations per second (TOPS). Intel launched its mobile Meteor Lake CPU (Core Ultra processor, produced via the Intel 4 process) on December 14, integrated with neural processing units (NPU), offering 2.5x better power efficiency than the Raptor Lake CPUs. AMD (US) also announced its mobile AI enabled CPU series, Ryzen 8040 (Hawk Point), in December. Performance for Intel's Meteor Lake, including the CPU, NPU, and GPU, is 34 TOPS versus 33 TOPS for AMD's Phoenix CPU (2023), and 39 TOPS for its Hawk Point CPU, which will be launched in 1Q24F. In addition, Intel's next-generation CPUs for both DT and NB, including Arrow Lake, Lunar Lake, and Panther Lake, will provide more advanced performance and greater capabilities. In December, Intel announced an AI PC acceleration program, which will connect independent hardware vendors (IHV) and independent software vendors (ISVs) with Intel resources. Intel is aiming to enable AI functionality on more than 100mn PCs by 2025 (30-35% penetration rate), and targets AI PC penetration of 80% of the PC market by 2028F. AI-enabled PCs have AI and machine-learning capabilities, which can assist users with the creation, editing, optimization, and compression of audio and video. They can also improve the quality and efficiency of workloads, and will help users protect their data and privacy, preventing various threats and attacks. AI PC development is focused on edge AI, which improves the reasoning capabilities of PCs, versus the current AI architecture, which is mainly based on cloud data centers. Following the launch of Windows 12 and the debut of new AI software, we expect more AI PC models to launch in 2H24-2025, which would be another driver of PC industry growth. We forecast AI PC penetration will reach 5-10% in 2024 (around 20mn units), and over 20% in 2025. Amid the AI PC trend, we expect brands, such as Asustek (2357 TT, NT\$424.5, OP), Acer (2353 TT, NT\$40.7, NR), HP (US), Dell (US), and Lenovo (CN), to benefit from greater high-end model sales weightings and ASP expansion. In addition, NB ODMs will see PC demand rise in 2024-25F, in addition to AI server sales growth, further driving sales and profit expansion. To meet higher computing performance requirements, we believe memory and memory connectors will need to be upgraded, and thermal solutions will be enhanced on rising thermal design power (TDP). These component companies' NB PC application sales will increase on spec upgrades. AI PC will also fuel margin expansion and EPS growth.

Stocks for Action

We forecast PC demand will recover in 2024, which will benefit PC brands, such as Asustek and Acer, as well as NB ODMs, such as Quanta Computer (2382 TT, NT\$203.5, OP), Wistron (3231 TT, NT\$92, OP), Inventec, and Compal Electronics. AI server sales will also expand in 2024F. In addition, we expect AI PC demand to fuel memory, memory connector, thermal, and battery makers' EPS growth.

Risks

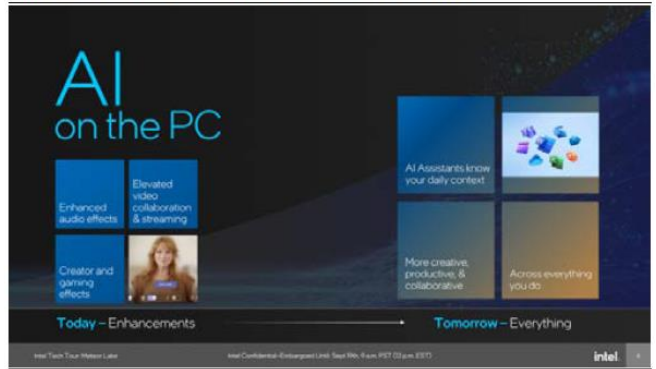
Weak demand; further ASP and margin contraction.

Figure 1: AI will expand from cloud to edge AI



Source: Intel

Figure 2: AI PC will improve work efficiency



Source: Intel

Figure 3: Intel AI enabled PC acceleration program



Source: Intel

Figure 4: Intel Core Ultra Processors, Meteor Lake, will support GenAI functions



Source: Intel

Figure 5: AI enabled PCs will transform PC industry



Source: Intel

Figure 6: Intel Core Ultra Processors, Meteor Lake, specs



Source: Intel

Figure 7: Intel Core Ultra CPU, Meteor Lake, integrates a CPU with an NPU & GPU



Source: Intel

Figure 8: Intel Core Ultra CPU, Meteor Lake, has improved performance & power efficiency



Source: Intel

Figure 9: More than 230 models with Intel Core Ultra CPU, Meteor Lake, have been launched by ODM partners



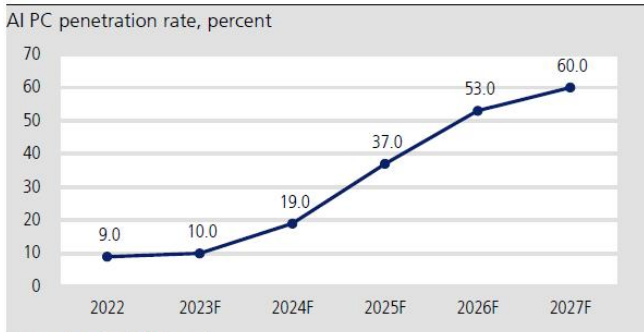
Source: Intel

Figure 10: Positive views from brands on Intel Core Ultra CPU, Meteor Lake



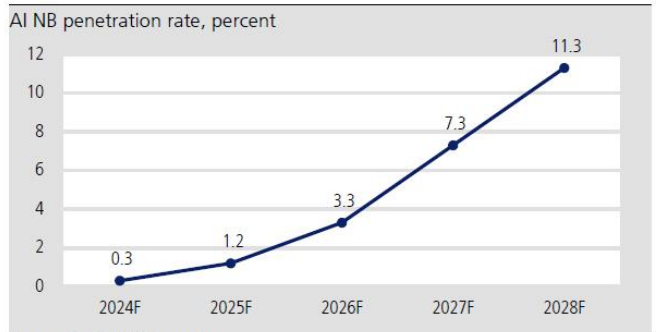
Source: Intel

Figure 11: Canals forecasts AI PC penetration of 60% by 2027



Source: Canals; KGI Research

Figure 12: Omdia forecasts AI NB penetration of 7.3% by 2027, & over 10% by 2028



Source: Omdia; KGI Research

Figure 13: AI PCs to be aggressively pushed by CPU/NPU giants

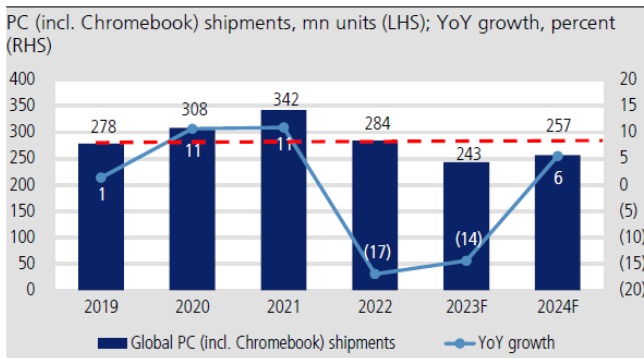
Platform	Intel Meteor Lake	AMD 7040 Phoenix	AMD 8040 Hawk Point	AMD 8050 Strix Point	Qualcomm Snapdragon X Elite
Microarchitecture	Redwood cove	Zen 4	Zen 4	Zen 5	Oryon
Launch Date	4Q23	2Q23	1Q24F	2Q-3Q24F	1H24F
Process	Intel 4	TSMC N4	TSMC N4	TSMC N4	TSMC N4
AI architecture	Movidius VPU	Ryzen AI	Ryzen AI	Ryzen AI	Hexagon
TOPS	34 TOPS	33 TOPS	39 TOPS	>40 TOPS	45 TOPS

Source: Company data; KGI Research

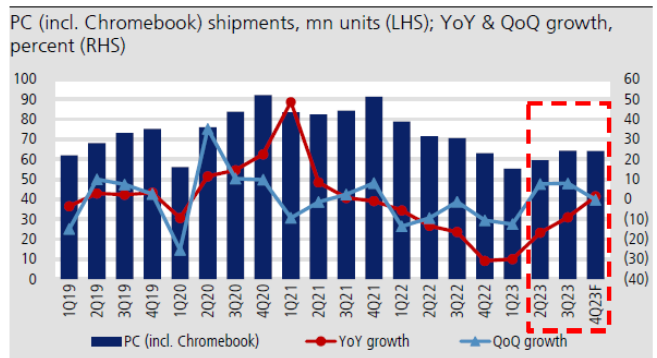
Figure 14: PC brands & CPU vendors' views on AI PC

Brand	AI PC outlook
Asustek	<ul style="list-style-type: none"> * Management expects an AI PC penetration rate of single digits in 2024F, and double digits in 2025F, depending on user experiences and technology maturity. * Asustek expects upgrades for AI PC hardware and software, including NPUs and increased memory, boosting an ASP expansion. * Asustek will launch AI PCs for the commercial and high-end consumer markets.
Acer	<ul style="list-style-type: none"> * Management believes development of AI PC will gradually happen, and will change commercial and consumer market. * Management expects demand for AI PCs or AI-ready PCs to increase by the end of 2023, and holds a positive view on AI PCs.
Dell	<ul style="list-style-type: none"> * Management believes that the AI PC trend will upgrade PC hardware, requiring a larger CPU, more memory, increased storage, and better displays, among other improvements. * Management expects that a PC refresh cycle will occur in 2024F, with advances in AI-enabled architecture from Intel, AMD, and Windows on ARM.
HP	<ul style="list-style-type: none"> * Management guides AI PCs will be launched as early as next year, enabling customers access to AI at a lower cost. * Will launch the software platform "Z by HP AI Studio" in 2024F. * Management believes that by integrating AI capabilities into the PC, it will become approximately 80 percent less expensive, reduce latency, and offer significant advantages for data and privacy protection.
Lenovo	<ul style="list-style-type: none"> * Will launch AI PC in 3Q24F. * Lenovo's AI PC can run large language models, enabling edge computing, without a need for cloud processing.
Samsung	<ul style="list-style-type: none"> * It will launch a new Galaxy Book, equipped with an Intel Core Ultra CPU, in January 2024.
CPU firm	AI PC outlook
Intel	<ul style="list-style-type: none"> * Intel targets AI PC shipments to reach 100mn units (a 30-35% penetration rate) in the next two years, and will penetrate 80% of the overall market in 2028F. * Intel launched its mobile Meteor Lake CPU (Intel Core Ultra processor) in December, integrated with neural processing units (NPU) to support AI functions. * The Meteor Lake CPU can provide 1.7x generative AI performance and 2.5x better power efficiency than Raptor Lake generation * Intel will launch next-gen CPUs, including Arrow Lake, Lunar Lake and Panther Lake, offering more advanced performance and greater capabilities.
AMD	<ul style="list-style-type: none"> * AMD will launch the Ryzen 8040 processor (Hawk Point) in 2024F, providing stronger AI computing abilities. * It will launch a next-gen CPU, "Strix Point", in 2024F which will include AMD XDNA 2 architecture and deliver more than 3 times AI computing performance than the previous generation.
QCOM	<ul style="list-style-type: none"> * Qcom has introduced the X Elite CPU, on TSMC's 4nm process, which is designed for PCs, and has the capability to run complex Generative AI models. * Management expects PCs featuring the X Elite to be launched in mid-2024F.
NVDA	<ul style="list-style-type: none"> * Nvidia has released its TensorRT-LLM for Windows, which speeds on-device LLM inferences up by 4x.

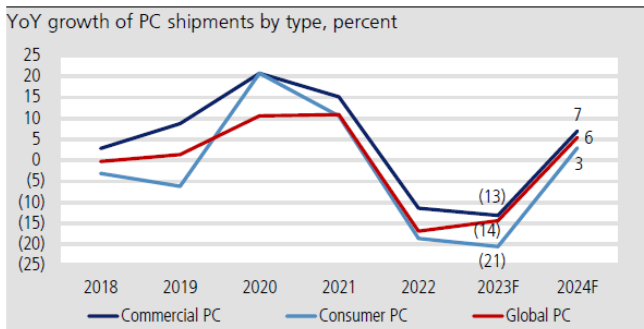
Source: Company data; KGI Research

Figure 15: PC shipments to grow 6% YoY in 2024F


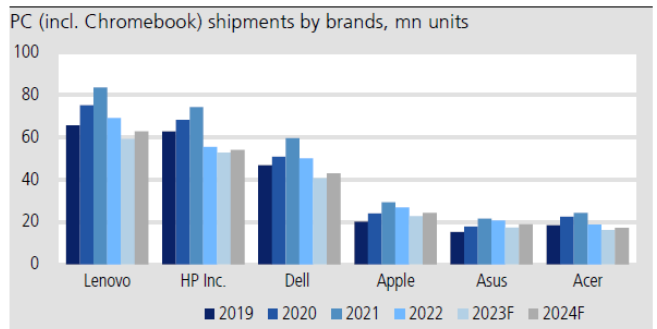
Source: Gartner, KGI Research estimates

Figure 16: PC shipment YoY decline has narrowed since 2Q23


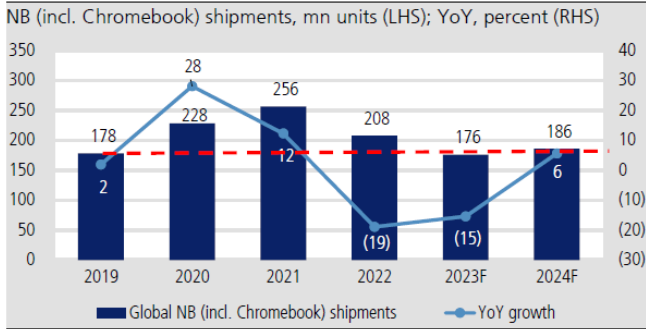
Source: Gartner, KGI Research estimates

Figure 17: Commercial PC growth to outstrip that of consumer PC in 2024F


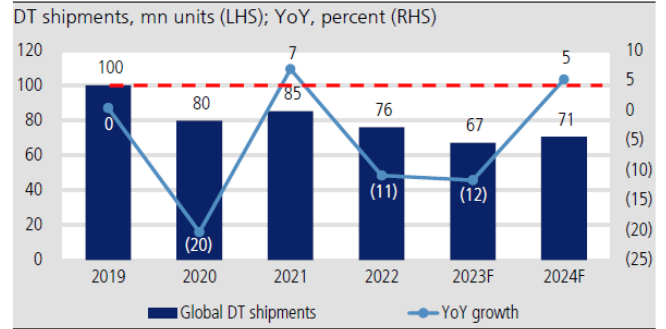
Source: Gartner, KGI Research estimates

Figure 18: Apple & Asustek 2024F PC shipments to exceed 2019 pre-COVID levels


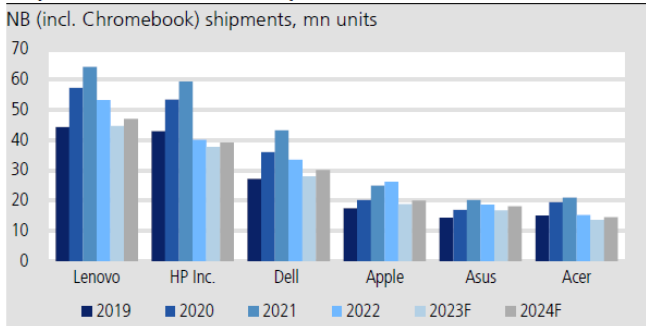
Source: Gartner, KGI Research estimates

Figure 19: Global NB shipments to grow 6% YoY in 2024F & exceed 2019 pre-COVID-19 level


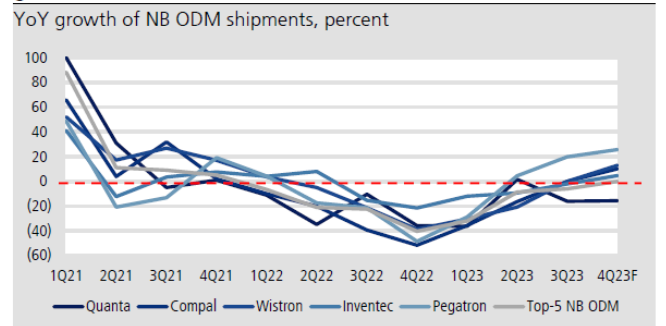
Source: Gartner, KGI Research estimates

Figure 20: Global DT shipments to recover in 2024F


Source: Gartner, KGI Research estimates

Figure 21: Lenovo, Dell, Apple, & Asustek 2024F NB shipments to exceed 2019 pre-COVID levels


Source: Gartner, KGI Research estimates

Figure 22: Most NB ODMs to see shipments resume YoY growth in 4Q23F


Source: company data, KGI Research estimates

Figure 23: Intel & AMD desktop CPU roadmap

	Rocket Lake	Alder Lake	Raptor Lake	Raptor Lake refresh	Meteor Lake	Arrow Lake	Panther Lake	Ryzen 4000 (Renoir)	Ryzen 5000 (Vermeer)	Ryzen 7000 (Raphael)	Ryzen 8000 (Granite Ridge)
Time for launch	1Q21	4Q21	4Q22	3Q23	2024F	2024F	2025F	1Q20	4Q20	3Q22	2024F
Process (node)	14nm++++	Intel 7 (10nm)	Intel 7 (10nm)	Intel 7 (10nm)	Intel 4 (7nm)	Intel 20A	Intel 18A	TSMC N7	TSMC N7+	TSMC N5	TSMC N3
Microarchitecture (P-Core)	Cypress Cove	Golden Cove	Raptor Cove	Raptor Cove	Redwood Cove	Lion Cove	Cougar Cove	Zen 2	Zen 3	Zen 4	Zen 5
CPU sockets (desktop)	LGA 1200	LGA 1700	LGA 1700	LGA 1700	LGA 1851	LGA 1851	LGA 1851?	AM4 (LGA 1331)	AM4 (LGA 1331)	AM5 (LGA 1718)	AM5 (LGA 1718)
DRAM	DDR4	DDR4 / DDR5	DDR4 / DDR5	DDR4 / DDR5	DDR5 LPDDR5X	DDR5	TBD	DDR4	DDR4	DDR5	DDR5
PCIe	Gen 4	Gen 5	Gen 5	Gen 5	Gen 5	Gen 5	TBD	Gen 4	Gen 3	Gen 5	Gen 5

Source: Company data; KGI Research

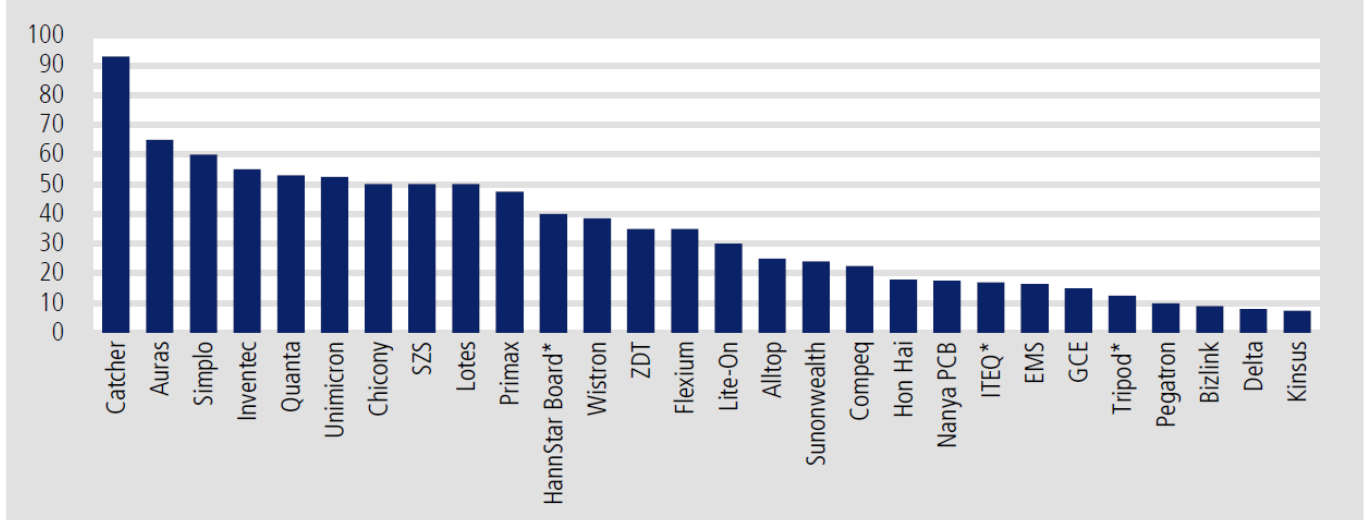
Figure 24: Intel & AMD NB CPU roadmap

	Rocket Lake	Alder Lake	Raptor Lake	Meteor Lake	Arrow Lake	Lunar Lake	Panther Lake	Ryzen 4000 (Renoir)	Ryzen 5000 (Cezanne)	Ryzen 6000 (Rembrandt)	Ryzen 7000 (Phoenix)	Ryzen 8000 (Strix Point)
Time for launch	1Q21	1H22	1H23	4Q23	2024F	2025F	2025F	1Q20	4Q20	1Q22	1Q23	2024F
Process (node)	14nm++++	Intel 7 (10nm)	Intel 7 (10nm)	Intel 4 (7nm)	Intel 20A	Intel 18A	Intel 18A	TSMC N7	TSMC N7+	TSMC N6	TSMC N4	TSMC N4
Microarchitecture (P-Core)	Cypress Cove	Golden Cove	Raptor Cove	Redwood Cove	Lion Cove	Lion Cove	TBD	Zen 2	Zen 3	Zen 3+	Zen 4	Zen 5
DRAM	DDR4	DDR4 / DDR5	DDR4 / DDR5	DDR5	TBD	TBD	TBD	DDR4	DDR4	DDR5	DDR5	DDR5
PCIe	Gen 4	Gen 5	Gen 5	Gen 5	Gen 5	TBD	TBD	Gen 4	Gen 3	Gen 4	Gen 5	Gen 5

Source: Company data; KGI Research

Figure 25: Keyboard, hinge, power adapter, & PCB plays will benefit from PC demand recovery in 2024F

Weighting of PC & NB in total sales, percent



Source: TEJ, Bloomberg, KGI Research

Figure 26: IT hardware supply chain – Valuations

Company	Ticker	Related business	Market cap. (US\$m)	Share price (LCY)	Rating	Target Price (LCY)	EPS (LCY)			EPS YoY (%)			PE (x)			PB (x)			ROE (%)		Cash yield (%)		
							2023F	2024F	2025F	2023F	2024F	2025F	2023F	2024F	2025F	2023F	2024F	2025F	2023F	2024F	2025F	2023F	2024F
Asustek	2357 TT	Brand	10,067	424.5	Outperform	454.0	22.36	30.23	33.99	13.1	35.2	12.4	19.0	14.0	12.5	1.4	1.4	1.3	7.7	10.1	11.0	3.7	5.0
Acer*	2353 TT	Brand	3,961	40.7	Not rated	N.A.	1.72	2.10	2.32	2.9	22.1	10.4	23.7	19.4	17.6	1.7	1.6	1.5	7.0	8.3	9.1	3.5	4.2
MSI	2377 TT	Brand	4,896	181.5	Neutral	176.0	10.71	12.59	14.10	(9.2)	17.5	12.0	16.9	14.4	12.9	2.9	2.7	2.5	18.0	19.4	20.0	3.3	3.9
Gigabyte Tech	2376 TT	Brand	5,277	260.0	Outperform	285.0	7.72	12.47	16.00	(24.9)	61.5	28.3	33.7	20.9	16.2	4.4	4.0	3.7	13.3	20.1	23.6	1.8	2.9
Asrock	3515 TT	Brand	975	251.0	Neutral	245.0	7.01	11.12	12.33	(19.3)	58.6	10.9	35.8	22.6	20.4	3.6	3.4	3.3	10.3	15.6	16.4	1.9	3.0
Inventec	2356 TT	ODM	5,160	45.1	Outperform	53.0	1.57	2.42	2.93	(8.1)	54.3	20.9	28.7	18.6	15.4	2.7	2.6	2.5	9.4	14.1	16.5	2.8	4.3
Quanta	2382 TT	ODM	25,098	203.5	Outperform	310.0	10.13	13.43	17.52	34.8	32.6	30.4	20.1	15.1	11.6	4.4	4.2	3.9	22.6	28.4	34.8	4.0	5.3
Wistron Corp	3231 TT	ODM	8,518	92.0	Outperform	137.0	4.15	6.03	7.68	3.6	45.1	27.4	22.1	15.3	12.0	2.5	2.3	2.0	11.5	15.1	17.3	3.2	4.6
Hon Hai	2317 TT	ODM	45,370	102.5	Outperform	126.0	8.55	10.40	12.92	(16.2)	21.6	24.3	12.0	9.9	7.9	0.9	0.9	0.9	8.0	9.3	11.1	4.3	5.3
Pegatron	4938 TT	ODM	7,232	85.0	Neutral	84.0	6.14	7.00	8.16	8.4	14.1	16.5	13.9	12.1	10.4	1.2	1.2	1.1	8.8	9.8	11.0	4.7	5.4
Compal*	2324 TT	ODM	4,784	34.0	Not rated	N.A.	1.85	2.32	2.62	10.8	25.6	12.9	18.4	14.6	13.0	1.3	1.2	1.2	7.0	8.6	9.0	3.8	4.5
Chicony Elec	2385 TT	Keyboard	4,380	180.5	Outperform	152.0	10.35	11.69	12.61	0.8	13.0	7.9	17.4	15.4	14.3	3.5	3.2	3.0	20.1	21.1	21.0	4.0	4.6
Primax	4915 TT	Keyboard	974	65.9	Neutral	72.0	5.61	6.53	7.43	(8.1)	16.3	13.8	11.7	10.1	8.9	1.8	1.7	1.6	15.1	16.6	17.9	5.6	6.5
SZS	3376 TT	Hinge	704	117.5	Neutral	97.0	4.94	6.45	7.76	(43.1)	30.6	20.3	23.8	18.2	15.1	1.4	1.3	1.3	5.8	7.4	8.8	3.2	4.1
Delta Elec	2308 TT	Power	25,089	302.5	Neutral	325.0	13.26	15.47	17.34	5.4	16.7	12.1	22.8	19.6	17.4	4.2	3.8	3.4	18.5	20.6	20.7	2.5	2.8
Lite-On Tech	2301 TT	Power	8,453	112.5	Outperform	134.0	6.75	6.75	9.04	9.0	9.0	14.4	16.7	15.8	13.5	2.9	2.8	2.6	18.2	18.2	21.3	4.2	4.7
Sunonwealth	2421 TT	Thermal	814	93.6	Outperform	130.0	5.78	7.08	8.24	33.2	22.6	16.3	16.2	13.2	11.4	4.2	3.8	3.5	26.8	30.2	32.1	4.4	5.4
Auras	3324 TT	Thermal	947	335.5	Outperform	445.0	15.86	21.09	26.47	8.0	33.0	25.5	21.2	15.9	12.7	6.3	4.0	3.4	23.0	26.6	28.6	2.0	2.7
Simplo Tech	6121 TT	Battery	2,466	417.5	Outperform	420.0	29.13	34.97	41.04	(25.5)	20.1	17.4	14.3	11.9	10.2	2.2	2.1	2.0	15.9	18.2	20.3	5.1	6.1
Lotes	3533 TT	Connector/ socket	3,590	1,010.0	Outperform	1,075.0	53.78	63.90	79.82	(8.4)	18.8	24.9	18.8	15.8	12.7	4.2	3.7	3.2	24.4	25.8	28.2	2.8	3.3
Alltop Tech	3526 TT	Connector	358	190.0	Outperform	215.0	11.32	12.91	14.13	20.2	14.1	9.5	16.8	14.7	13.4	4.2	4.0	3.8	25.9	28.1	29.2	4.9	5.5
Gold Circuit	2368 TT	PCB	3,353	213.5	Outperform	275.0	7.65	13.42	17.01	(13.7)	75.5	26.7	27.9	15.9	12.6	6.8	5.6	4.4	25.3	38.7	39.5	1.4	2.5
Compeq Mfg	2313 TT	PCB	2,698	70.9	Outperform	100.0	3.84	6.40	7.94	(42.8)	66.6	24.0	18.5	11.1	8.9	2.0	1.8	1.6	11.4	17.4	19.3	2.1	3.7
Elite Material	2383 TT	CCL	3,987	365.5	Outperform	550.0	16.88	23.07	27.00	10.8	36.7	17.0	21.7	15.8	13.5	5.0	4.4	3.8	24.1	29.3	30.0	2.3	3.6
Kinsus	3189 TT	Substrate	1,426	98.3	Neutral	90.0	(0.06)	5.13	8.59	N.M.	N.M.	67.5	N.M.	19.2	11.4	1.3	1.2	1.2	(0.1)	6.7	10.6	0.0	2.5
Unimicron Tech	3037 TT	Substrate	8,498	174.5	Outperform	200.0	7.77	10.84	15.70	(61.3)	39.4	44.9	22.4	16.1	11.1	2.9	2.6	2.3	13.3	16.9	21.9	1.8	2.5
Zhen Ding Tech	4958 TT	FPCB	3,251	107.5	Neutral	99.0	6.77	9.91	N.A.	(54.9)	46.4	N.A.	15.9	10.8	N.A.	1.0	1.0	N.A.	6.5	9.1	N.A.	3.2	4.7
Flexium Intercon	6269 TT	FPCB	916	89.0	Neutral	82.0	6.94	8.23	N.A.	(35.9)	18.5	N.A.	12.8	10.8	N.A.	1.1	1.0	N.A.	8.7	9.6	N.A.	5.6	4.5
Catcher Tech	2474 TT	Casing	4,128	190.0	Neutral	190.0	17.81	12.69	11.08	17.7	(28.8)	(12.7)	10.7	15.0	17.2	0.7	0.6	0.5	6.8	4.1	3.0	5.3	5.3
Foxconn Tech*	2354 TT	Casing	2,330	51.6	Not rated	N.A.	4.34	5.41	5.71	43.7	24.7	5.5	11.9	9.5	9.0	0.5	0.4	0.4	5.8	7.0	7.1	2.9	4.2

 Source: KGI Research estimates, Bloomberg
 *: Bloomberg consensus

Figure 27: Global PC shipments by brand

Vendor	PC (incl. Chromebook) shipments (mn units)																				
	1Q20	2Q20	3Q20	4Q20	1Q21	2Q21	3Q21	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	2018	2019	2020	2021	2022	1-3Q23
Lenovo	13.1	18.2	20.2	23.6	20.9	20.4	20.2	21.9	18.4	17.6	17.3	15.7	13.0	14.3	16.2	59.9	65.6	75.1	83.4	69.0	43.5
HP Inc.	11.8	18.2	18.7	19.5	19.3	18.6	17.6	18.6	15.9	13.4	12.8	13.2	11.9	13.5	13.5	60.7	62.8	68.2	74.2	55.4	38.9
Dell	10.6	12.2	12.0	15.9	13.0	14.0	15.2	17.3	13.8	12.7	12.6	10.9	9.5	10.4	10.3	44.3	46.7	50.7	59.6	50.0	30.3
Apple	3.8	5.1	6.7	6.4	6.4	5.8	6.9	7.8	7.3	5.3	8.3	5.9	5.2	5.1	5.8	18.5	18.3	22.0	26.9	26.8	16.1
Acer Group	3.7	5.6	6.3	6.8	5.9	6.3	6.0	6.1	5.5	4.8	4.8	3.6	3.5	4.0	4.4	19.8	18.4	22.5	24.3	18.7	11.9
Asus	2.9	3.9	5.7	5.4	4.6	4.9	6.0	6.1	5.6	4.6	5.6	4.9	3.8	3.9	5.0	15.9	15.2	17.9	21.6	20.7	12.7
Microsoft	1.2	1.7	1.7	1.8	1.4	1.3	1.2	2.0	1.4	1.4	1.3	1.3	1.1	1.2	1.0	5.1	5.5	6.4	5.9	5.4	3.3
Sharp	0.3	0.4	0.4	0.7	0.5	0.5	0.5	0.5	0.5	0.3	0.4	0.3	0.4	0.3	0.3	0.3	1.7	1.9	2.0	1.7	1.0
MSI	0.3	0.5	0.7	0.7	0.6	0.6	0.8	0.9	0.9	0.6	0.7	0.6	0.6	0.7	0.7	1.4	1.4	2.2	3.0	2.8	2.0
Samsung	1.0	1.1	0.9	1.1	1.2	1.1	1.0	1.0	1.0	1.0	1.0	0.9	0.8	0.7	0.6	2.2	3.8	4.0	4.2	3.9	2.1
Others	7.5	9.1	10.5	10.2	9.7	8.9	9.0	9.0	8.4	9.6	5.8	5.8	5.4	5.5	5.9	46.6	38.9	37.2	36.7	29.6	16.8
Top-10	48.7	66.9	73.4	81.9	73.8	73.5	75.4	82.2	70.4	61.9	64.8	57.4	49.9	54.1	57.8	228.1	239.6	271.0	305.1	254.4	161.7
Total	56.2	76.0	83.9	92.1	83.5	82.4	84.4	91.3	78.8	71.5	70.6	63.2	55.3	59.5	63.7	274.7	278.5	308.2	341.7	284.0	178.5
	YoY (%)																				
Lenovo	(3.2)	11.8	14.8	29.8	59.4	12.0	0.3	(7.2)	(12.0)	(13.8)	(14.2)	(28.4)	(29.2)	(18.6)	(6.8)	7.4	9.5	14.5	11.1	(17.3)	(18.4)
HP Inc.	(13.1)	18.0	12.8	13.0	63.6	2.2	(5.9)	(4.2)	(17.8)	(27.8)	(27.1)	(29.1)	(24.7)	0.1	5.4	2.4	3.5	8.5	8.8	(25.4)	(7.6)
Dell	1.6	4.6	(1.1)	27.5	23.0	15.3	26.4	8.4	6.1	(9.4)	(17.3)	(37.0)	(30.9)	(18.3)	(18.1)	5.6	5.4	8.6	17.4	(16.0)	(22.7)
Apple	(1.1)	22.3	30.8	22.8	71.9	14.5	2.1	21.1	13.6	(8.8)	20.4	(24.1)	(28.4)	(3.2)	(30.4)	(2.3)	(1.0)	20.0	22.4	(0.4)	(22.8)
Acer Group	(5.7)	27.0	22.2	40.3	56.2	12.0	(4.6)	(10.2)	(5.5)	(22.9)	(21.2)	(41.2)	(36.3)	(17.4)	(7.8)	(3.6)	(7.0)	22.1	8.0	(22.9)	(21.3)
Asus	(22.0)	24.6	38.4	25.4	62.2	25.2	5.0	13.4	20.3	(6.6)	(6.5)	(20.0)	(31.7)	(15.5)	(11.6)	(13.0)	(4.5)	17.3	21.1	(4.5)	(19.8)
Microsoft	0.5	28.4	37.6	4.2	14.7	(24.5)	(26.6)	6.5	2.2	10.5	5.9	(35.6)	(24.2)	(17.8)	(21.4)	21.2	8.3	16.6	(8.8)	(7.9)	(21.1)
Sharp	(23.3)	26.4	(10.6)	51.3	53.6	5.7	8.9	(28.5)	4.1	(26.6)	(6.1)	(33.5)	(33.1)	(9.4)	(24.7)	N.M.	527.5	10.5	2.0	(15.5)	(24.2)
MSI	8.0	70.5	55.3	90.0	88.5	24.5	14.4	36.8	53.7	(0.9)	(16.8)	(33.0)	(38.9)	14.8	4.2	(4.5)	0.9	57.5	34.6	(4.2)	(10.9)
Samsung	(15.6)	21.4	2.0	21.2	25.3	0.2	4.3	(8.2)	(17.0)	(8.0)	2.8	(4.2)	(23.2)	(30.3)	(35.7)	(11.6)	73.9	5.5	5.0	(7.2)	(29.7)
Others	(24.2)	(11.2)	11.6	8.3	28.5	(1.8)	(13.8)	(10.9)	(13.4)	8.0	(36.0)	(35.8)	(35.1)	(43.2)	1.8	(11.3)	(16.5)	(4.3)	(1.5)	(19.3)	(29.4)
Top-10	(6.5)	15.5	15.0	24.6	51.8	9.8	2.7	0.4	(4.7)	(15.9)	(14.1)	(30.2)	(29.2)	(12.6)	(10.8)	2.3	5.0	13.1	12.6	(16.6)	(17.9)
Total	(9.3)	11.5	14.6	22.5	48.7	8.5	0.7	(0.9)	(5.7)	(13.3)	(16.4)	(30.8)	(29.8)	(16.7)	(9.8)	(0.3)	1.4	10.7	10.9	(16.9)	(19.2)
	QoQ (%)																				
Lenovo	(28.0)	39.1	10.6	17.2	(11.6)	(2.2)	(1.0)	8.5	(16.2)	(4.2)	(1.5)	(9.4)	(17.2)	10.2	12.9						
HP Inc.	(31.5)	54.5	2.8	3.9	(0.8)	(3.5)	(5.3)	5.8	(14.9)	(15.3)	(4.5)	3.0	(9.6)	12.7	0.5						
Dell	(15.4)	15.1	(1.0)	32.3	(18.4)	7.9	8.5	13.4	(20.1)	(7.9)	(0.9)	(13.6)	(12.3)	8.9	(0.7)						
Apple	(28.6)	35.6	32.2	(4.1)	0.0	(9.7)	17.9	13.7	(6.2)	(27.5)	55.7	(28.3)	(11.5)	(2.0)	11.9						
Acer Group	(22.7)	49.3	13.2	7.4	(14.0)	7.1	(3.6)	1.1	(9.4)	(12.7)	(1.5)	(24.6)	(1.8)	13.2	10.0						
Asus	(33.1)	37.0	45.9	(6.3)	(13.4)	5.8	22.4	1.2	(8.1)	(17.9)	22.6	(13.4)	(21.5)	1.5	28.2						
Microsoft	(32.5)	42.5	(2.3)	11.0	(25.7)	(6.3)	(4.9)	60.9	(28.7)	1.4	(8.9)	(2.1)	(16.1)	9.9	(12.9)						
Sharp	(29.2)	30.1	(3.3)	69.8	(28.1)	(10.5)	(0.3)	11.5	4.7	(36.9)	27.5	(21.0)	5.2	(14.5)	5.9						
MSI	(11.4)	57.8	35.6	0.2	(12.1)	4.2	24.6	19.9	(1.3)	(32.8)	4.6	(3.5)	(9.9)	26.3	(5.1)						
Samsung	11.7	10.0	(12.4)	12.7	15.5	(12.0)	(8.8)	(0.9)	4.5	(2.6)	1.9	(7.6)	(16.3)	(11.5)	(6.1)						
Others	(19.7)	20.6	15.1	(2.9)	(4.7)	(7.8)	1.1	0.4	(7.4)	15.0	(40.1)	0.6	(6.3)	0.6	7.3						
Top-10	(26.0)	37.6	9.7	11.6	(9.9)	(0.4)	2.6	9.0	(14.4)	(12.1)	4.8	(11.5)	(13.1)	8.5	6.9						
Total	(25.2)	35.3	10.3	9.8	(9.3)	(1.3)	2.4	8.1	(13.7)	(9.2)	(1.3)	(10.5)	(12.5)	7.7	6.9						
	Global market share (%)																				
Lenovo	23.3	24.0	24.0	25.6	25.0	24.8	23.9	24.0	23.3	24.6	24.6	24.9	23.5	24.1	25.4	21.8	23.6	24.4	24.4	24.3	24.4
HP Inc.	21.0	24.0	22.3	21.1	23.1	22.6	20.9	20.4	20.1	18.8	18.2	20.9	21.6	22.6	21.2	22.1	22.6	22.1	21.7	19.5	21.8
Dell	18.8	16.0	14.4	17.3	15.6	17.0	18.0	18.9	17.5	17.8	17.9	17.2	17.3	17.5	16.2	16.1	16.8	16.5	17.4	17.6	16.9
Apple	6.7	6.7	8.0	7.0	7.7	7.1	8.1	8.6	9.3	7.4	11.7	9.4	9.5	8.6	9.0	6.7	6.6	7.1	7.9	9.4	9.0
Acer Group	6.7	7.4	7.5	7.4	7.0	7.6	7.1	6.7	7.0	6.8	6.7	5.7	6.4	6.7	6.9	7.2	6.6	7.3	7.1	6.6	6.7
Asus	5.1	5.2	6.8	5.8	5.6	6.0	7.1	6.7	7.1	6.4	8.0	7.7	6.9	6.5	7.8	5.8	5.5	5.8	6.3	7.3	7.1
Microsoft	2.1	2.2	2.0	2.0	1.6	1.6	1.4	2.2	1.8	2.0	1.8	2.0	1.9	2.0	1.6	1.9	2.0	2.1	1.7	1.9	1.8
Sharp	0.6	0.6	0.5	0.8	0.6	0.6	0.5	0.6	0.7	0.5	0.6	0.5	0.7	0.5	0.5	0.1	0.6	0.6	0.6	0.6	0.6
MSI	0.6	0.7	0.8	0.7	0.7	0.8	0.9	1.0	1.2	0.9	0.9	1.0	1.0	1.2	1.1	0.5	0.5	0.7	0.9	1.0	1.1
Samsung	1.7	1.4	1.1	1.1	1.5	1.3	1.2	1.1	1.3	1.4	1.4	1.5	1.4	1.2	1.0	0.8	1.4	1.3	1.2	1.4	1.2
Other	13.4	11.9	12.5	11.0	11.6	10.8	10.7	9.9	10.6	13.5	8.2	9.2	9.8	9.2	9.2	17.0	14.0	12.1	10.7	10.4	9.4
Top-10	86.6	88.1	87.5	89.0	88.4	89.2	89.3	90.1	89.4	86.5	91.8	90.8	90.2	90.8	90.8	83.0	86.0	87.9	89.3	89.6	90.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Gartner, KGI Research

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