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Utmel: PC chips, at a turning point

Looking back at the development of the semiconductor industry, the emergence of the PC led to the rise of the first giants, but the PC market is waning in 2022.

HONGKONG, February 24, 2023 /EINPresswire.com/ -- According to preliminary results from Utmel, PC shipments totaled 65.3 million units in the fourth quarter of 2022, down 28.5 percent from the fourth quarter of 2021 and the largest quarterly shipment decline since the mid-1990s. PC shipments for the full year 2022 totaled 286.2 million units, down 16.2 percent from 2021.

Expectations of a global recession, increased inflation and interest rate hikes have all had a significant impact on PC demand. Many consumers have already purchased relatively new PCs during the epidemic and therefore will not have any incentive to buy when they cannot afford it, which has led to a decline in consumer demand for PCs to the lowest level in years and has also spread to the PC chip market, making it full of crises and challenges.

Due to the sluggish PC market, several PC chip technology giants have expressed a cautious outlook and are coincidentally making preparations to survive the winter - cutting expenses and downsizing.

In previous decades, Intel has become one of the world's largest chip companies by dominating the global PC processor market with its X86 architecture. However, the market share of Intel and AMD in the X86 market in the fourth quarter of 2022 can be seen, the X86 architecture Intel's long-term "king" processor market pattern is being changed.

According to market research reports, AMD's market share in the central processor market reached nearly one-third in the fourth quarter of last year, reaching 31.3%. Although Intel still holds the leading position in the x86 processor market, with a market share of 68.7%, the market share is gradually eroded by AMD.

The slowdown in the PC market has had a very different impact on AMD and Intel. In contrast to Intel's poor revenue, AMD's revenue of $5.6 billion in the fourth quarter of 2022 exceeded expectations. AMD made such significant progress thanks more to the success of its Zen architecture processors, Zen, and Zen2 helped AMD gain a firm foothold, and with the Zen3 architecture, AMD's Raider 5000 processor not only continued its previous dominance in multi-core performance but also surpassed single-core performance also surpassed that of Core for the first time. Today, its desktop and notebook platforms on the Zen4 architecture Raider 7000 has been shipped in large numbers.

As you can see, the competition between Intel and AMD is becoming more and more intense.

Another change in the PC processor market is the growth of processors based on the ARM architecture.

In previous years, in the chip field, talking about architecture is nothing but x86, ARM two major architectures. These two architectures have a clear division of labor, x86 occupies more than 95% of the PC market, ARM monopolizes the cell phone market. The penetration rate of ARM into the PC and server market is increasing.

In 2022, driven by Apple's own chips, ARM's market share in the PC chip market reaches 13.3%, up from 10.3% in 2021. However, it is worth noting that in 2020 its market share is only about 3%.

In addition to Apple, Google's Chromebook notebooks have also begun to mostly use ARM architecture processors, Microsoft has released the Surface family ARM version series in recent years, and announced in 2021 that Canary Channel has released a version of Edge browser for the ARM platform.

MediaTek and Qualcomm are also actively promoting ARM chips for PCs and servers. Qualcomm is expected to launch the Oryon CPU this fall. solutions from Qualcomm and MediaTek could see more than 50 percent year-over-year growth in ARM notebooks over the 2024-2025 period. Huawei has already launched several commercial PC chips, which are often based on the ARM architecture.

Utmel expects that laptops with ARM chips will have a 25% market share within five years. The strength of the future ARM architecture in the field of PC chips should not be underestimated. In just a short time, ARM PC chips are difficult to compete with the X86 architecture of the processor.

Today, RISC-V has become the third processor architecture rising after x86 and ARM, with its open source, instruction streamlining, scalability, modularity and other advantages, in the energy-efficient IoT field is greatly sought after. However, this does not mean that RISC-V cannot enter the PC and server markets where higher performance is required.

In the process, a large number of domestic and foreign manufacturers targeting high-performance RISC-V have emerged, gradually exploring the architecture's applications from low-end microprocessors into the field of high-performance computing. Previously, the most prominent label of RISC-V was low power consumption, and Pinto Semiconductor was the first to launch the Xuantie C910 with a maximum main frequency of 2.5GHz in 2019, breaking the industry's imagination of RISC-V performance; at the end of November last year, domestic RISC-V chip maker Saifang Technology launched the world's first high-performance RISC-V chip for PC

applications --Fang-Astonishing 8100; last December, the chip startup Ventana Microsystems released Veyron V1, the world's first server-oriented CPU, at the RISC-V Summit.

Although some countries are currently interested in designing RISC-V-based PC chips, the target sales set for them are few compared to other PC chips. Therefore, in the short term, the PC chip market is unlikely to shift significantly to RISC-V technology. For example, China is planning to use RISC-V technology to build laptops that support various open-source browsers and produce 2,000 PCs by the end of 2022, and Russia plans to sell 60,000 new PC processors based on RISC-V cores in 2025. These goals are small, however, compared to the global PC market's annual sales of about 300 million units in 2020.

Nonetheless, some research institutions also predict that in 2022, the market opportunity for RISC-V-based chips in PCs that can serve the market will be close to 300 million, which will be rapidly released in the future.

At the moment, the PC chip market is accelerating the pace of de-stocking. TSMC's three major customers including Apple, AMD and Nvidia have also collectively lowered their orders.

It is reported that, because the first batch of Apple cell phone shipments target has been cut in half, so Apple in TSMC chip orders were adjusted downward; AMD and Nvidia because of the sharp decline in demand in the PC market and "mining" boom faded, the two companies in the CPU and GPU chip sales than in the past few quarters, and therefore had to TSMC has to adjust its order planning. Previously, MediaTek has cut orders for 5G chips by 30%-35% in the fourth quarter; Qualcomm also cut production of high-end Snapdragon 8 series by 10%-15%. After cutting off new orders, to inventory to become an important means of digesting the high backlog of chips.

Chip makers have now said that in the face of weak market demand and the current situation of high inventory, internally, chip suppliers have been facing pressure to find solutions to consume excess inventory and achieve year-end targets; externally, they need to prepare for headwinds, such as providing greater price concessions and finding new incremental markets. For example: Intel is recently in active talks with select PC brand customers to reduce prices for the sale of last-generation Alder Lake processors. The previous generation i9 processor's price reduction is the largest, the price difference of up to 70-80 U.S. dollars, a reduction of about twenty percent; the second largest reduction for the i7 processor, a price reduction of 40-50 U.S. dollars.

Intel previously expected that there will be hope in the second half of 2023.

Sophia
Utmel Electronic CO.,LTD
+86 13189752889
email us here
Visit us on social media: