Kynix: Chip prices continue to rise, a roadblock for car companies to make profits

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HONGKONG, March 30, 2023 /EINPresswire.com/ -- The price increase for chips during the previous two years has resembled a vicious circle. Indefinitely, one after the other. It's time for fabs and automakers to resume negotiations over chip foundry rates for the upcoming year in the last month of 2022.

The dispute between automakers and fabs over the foundry quotation for the upcoming year has reached its peak, according to Kynix, and only a select few fabs are anticipated to effectively modify rates. Despite the limited choice, it seems inevitable that the price would rise.

It is always inevitable for buyers and sellers to "draw punches" to determine the outcome. Car firms, however, are undoubtedly the less strong side in this game of who will succeed or fail. And how do newly manufactured cars that have not yet generated earnings leave the city?

1. Imbalance between "supply" and "demand"

The automotive industry continues to be plagued by chip scarcity.

The current analysis indicates that it is likely that the automotive chip scarcity will last for several more years. The majority of the process nodes needed for automotive chips are centered above 90 nm (inclusive), and components like transmission systems and VCUs are very reliant on established technologies.

Shipments of chips made using methods larger than 90 nm (inclusive) made up approximately 52% of the total in the terminal applications market last year; alone in the automotive sector, 72% of chips were made using processes larger than 90 nm (inclusive). In the automotive sector, there will be around 67% of chips with processes larger than 90 nm by 2030, according to projections. The importance of this need has, however, been greatly underrated.

First off, the outbreak catalyzed the recovery of the automotive industry demand and the rapid rise in chip usage. Since the beginning of last year, fabs have either increased production or, like TSMC, prioritized the production of automotive chips, but the impact has been minimal. If the round factories continue to operate at the same rate, the risk of overcapacity will start to

materialize, and the consumer electronics industry's established manufacturing processes will gradually lower prices.

The price cuts of goods like display driver ICs, which varied from 10% to 20%, were introduced by fabs on both sides of the Taiwan Strait in July of this year. As a result, fabs planned to shut down production lines. The situation is different in the auto sector. Automotive chips that are not in limited supply may be subject to certain price discussions, but the majority of them are "negotiable."

As of October 30, the worldwide auto market had decreased output by around 3.905 million vehicles because of chip shortages, according to statistics from AutoForecast Solutions (AFS). This figure may rise to 4,278,500 automobiles by the end of the year. If the fabs are permitted to lower their prices, either demand will decline or chip production volume will increase, resulting in a quantity-for-price trade-off.

The question is whether this sum will significantly raise the factory's chip inventory level and increase inventory costs. What should the "quantity" be, as well?

Moreover, fabs will likely enter a buyer's market as a result of the rise in chip inventories on the market. Even though there is a high need for established manufacturing techniques, caution must be exercised when using them. Also, the process (even those above 90 nm) pays for its "hard work".

The combined revenues of TSMC's 5nm and 7nm processes made up 50% of the total in the fourth quarter of last year and 53% of the total in the third quarter of this year, respectively; by comparison, the 90nm process made up approximately 2% of the total.

Although there is a strong market for automotive chips, fabs do not reap many benefits from it, making investment excitement difficult.

2. The anxiety of "rising" and "not rising"

Consumer electronics consumption is declining, while the car industry is rapidly transitioning to electrification.

According to Kynix, the need for vehicle electronics will double as autonomous driving progresses from L2 to L4. The need for semiconductors will increase by double when fuel vehicles are converted to electric vehicles. The demand may rise three to four times higher or even more if the car is made smarter.

This also provides a very good explanation for the current disarray in the sector. Although car manufacturing has decreased compared to earlier and the world's capacity to produce chip semiconductors has increased, the lack of cores remains a barrier to the delivery of cars.

The amount of chips employed in a single vehicle varies from 500 to 3,000, according to a September statement from Kynix, with roughly 750 of those chips being utilized in the primary Components. In addition to making these statements, Kynix said that Bosch was short 300,000 controllers in September and urged the delivery of VCUs in the fourth quarter, saying that he dared to attend the public forum hastily out of concern that he would be pursued and intercepted by consumers.

I worry that other significant chip manufacturers are dealing with a similar situation. After all, only a small number of foundries, or IDMs, have a significant amount of control over the production capacity of chip semiconductors, and innovative manufacturing techniques are dependent on the two largest foundries, TSMC and Samsung.

It is challenging for several IDMs to increase output to fulfill the demand on a global scale, with costs being the main barrier. Chip hardware prices are impacted by factors including wafers, packaging, testing, and masks in addition to design costs. For instance, the prices of silicon wafers, IC substrate materials, and high-purity gases have increased by 10% to 30%, according to Japanese semiconductor material producers SUMCO and Showa Denko.

More importantly, developing sophisticated processes is expensive, and during the past two years, the cost of mature processes has also increased. Establishing a facility and increasing production entails new factory processes, new machinery, and increased labor costs. Even the expense of constructing a factory alone will run into billions of dollars.

In general, the associated cost can be assigned to each chip whenever the chip yield rate and output reach a particular level. Yet before the fab is expanded, it is unclear whether the current demand is true demand and how long it can endure.

Infrastructure costs won't go down as customer demand or capacity utilization does, as stated in TSMC's 2021 annual report. The company's profitability will be greatly impacted if customer demand drops. However, according to McKinsey, the manufacturing of 90 nm chips will only rise at a compound annual growth rate of roughly 5% from 2021 to 2026, and the short-term supply and demand imbalance will not be closed.

The primary factor in the reduction of fabs' production capacity was the decline in consumer electronics product demand. Will the lucrative new energy vehicle industry replace traditional growth drivers for semiconductor foundries?

In terms of market share, the worldwide semiconductor industry's revenues last year totaled US$555.9 billion. Despite a 34% rise in sales, automotive-grade semiconductor sales only reached US$26.4 billion, or 4.9% of total sales. It may be stated that factories that don't raise prices are worried about productivity. The automotive chip market is predicted to reach $147 billion by 2030, which will increase fabs' motivation to increase production.

Fabricators have gradually raised pricing for a variety of reasons to maximize production capacity quotas. According to rumors, certain automakers want fabs, IDMs, and Tier 1 to all slow down. Taiwanese media noted that foundry quotes are anticipated to increase by one digit in 2023. (percentage). Auto firms must deal with an OEM that is undoubtedly more aggressive than Apple, which has stronger negotiating strength.

Since the chip manufacturing line is open all year long, if the fab suspends certain equipment's operation now, it will need to be re-debugged later. Whether the production capacity can be restored in time will have an impact on how quickly the next chip supply is produced.

3. When will there be a solution?

Toyota formally confirmed two weeks ago that eight domestic plants in Japan will shut down eleven production lines for 2 to 9 days in November owing to a lack of semiconductors, resulting in an estimated 60,000 unit production loss. Toyota has been steadily decreasing its monthly output in recent months and recently reduced its sales volume for this fiscal year from 9.7 million to 9.2 million.

Price hikes and chip shortages are identical under the theory of scarcity. Manufacturers in the middle and downstream receive a gradual transmission of upstream shortages and price rises. This is how the biggest manufacturer in the world operates, and smaller automakers might be under even greater pressure. The building, maintenance, and depreciation costs of the charging and swapping infrastructure have already been assigned to each given model, especially for new forces like Weilai.

The price puts a high barrier in the way of the development of new energy vehicles and has an impact on fab expansion as well. The first step in fixing this issue is to radically alter the "decoupling" between the semiconductor and automobile industries.

As Kynix said, the automotive industry's innovation cycle has expanded from the initial 4 years (fuel vehicles) to the present 2 years (electric vehicles), which has had a disruptive effect on the industry's overall innovation systems and capabilities.

The supply chain used to be a line in the past, but in the future, it should be a network that enables OEMs and chip manufacturers to stay up. Early on in the growth of the automotive industry, OEMs, Tier 1 and Tier 2, and ECUs in the electrical and electronic architecture of autos, functioned separately, making OTA of fully assembled vehicles rather challenging. But today, OEMs and chip manufacturers are having face-to-face conversations.

For instance, NXP just made three new collaborations with Great Wall Motors, Xiaopeng, and Weilai official. NXP will assist new car manufacturers transition to high-voltage charging platforms at the power management chip level in addition to strengthening cooperation with

Great Wall and establishing a collaborative innovation center. In addition, several IDMs are experimenting with the direct sales strategy to comprehend OEM needs.

The only way we can react swiftly is to keep up. This wave of price hikes that do not correspond to supply and demand can be fully stopped if OEMs tell chip manufacturers what and how much they require.

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