Programmable ASIC - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

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Report description:

The Programmable ASIC Market size is estimated at USD 18.5 billion in 2024, and is expected to reach USD 28.88 billion by 2029, growing at a CAGR of 9.32% during the forecast period (2024-2029).

The rapidly rising demand for smartphones, tablets, and other mobile devices across the globe is positively impacting the programmable ASIC demand in the consumer electronics segment.

Key Highlights
-The increased pace of new product development, declining cost per function of ICs, and their increasing functionality, and shortened product replacement cycles are some of the factors that are positively influencing the growth of the market.
-The growing demand for various telecommunications applications such as system-on-chip (SoC) applications is expected to boost the revenue of the market in the coming years. Additionally, the growing use of application-specific integrated circuits in consumer electronics and various industrial and automotive applications is further expected to drive the market forward.
-Another factor driving the market is the emergence of IoT devices. These circuits are also used in applications such as environmental monitoring, automotive emission control, and personal digital assistants among others. As the application-specific integrated circuits are capable of integrating both analog and logic functions, hence they enable the formation of a complete mechanism on a single chip, which is expected to boost the growth of the market.
-One of the major restraints in the Programmable ASIC market is the high design cost associated with it. The design and development process requires a significant investment in terms of resources and time, which may be prohibitive for small and medium-sized enterprises. For instance, Apple's A14 Bionic chip, which was designed on a 5nm process, is estimated to have cost around $400 million in design and development.
-The use of third-party intellectual property (IP) in Programmable ASIC design can lead to licensing issues and legal disputes. For

instance, in 2020, Nvidia and Arm Holdings were involved in a legal dispute over the use of Arm's IP in Nvidia's products. This dispute could potentially impact the development and availability of Nvidia's products in the future.
-The COVID-19 pandemic led to significant disruptions in the global supply chain, which impacted the production and delivery of Programmable ASICs. The pandemic led to delays in product launches, which impacted the revenue of companies in the Programmable ASIC market. For instance, Xilinx faced delays in the release of its Versal ACAP product line in 2020 due to the pandemic, which impacted its revenue in the fiscal year 2021.
-Governments across the world provided support to the semiconductor industry to mitigate the impact of the pandemic. For instance, as per Economic times, in the United States, the government provided USD 52 billion in funding to support the semiconductor industry in 2021 as part of the CHIPS for America Act. This funding is expected to support the development and production of Programmable ASICs in the country. There has also been an impact of the Russia-Ukraine war on the overall packaging ecosystem.

Programmable Application Specific Integrated Circuit (ASIC) Market Trends

Increasing Demand from Consumer Electronics Segment to Drive the Market

- Manufacturers are incorporating cutting-edge technology such as artificial intelligence (AI), machine learning (ML), and the Internet of Things (IoT) into their consumer electronics products. Programmable ASICs are the greatest solution for consumer electronics manufacturers because they provide the processing power and flexibility required to support these technologies.
- To maximize battery life, consumer electronics gadgets must consume as little electricity as possible. Programmable ASICs are designed to consume less power, making them an excellent choice for consumer electronics gadgets.
- AI and machine learning are becoming increasingly important in consumer electronics, particularly in smartphones and smart speakers. Programmable ASICs provide the computing power required to support these technologies, making them the ideal choice for consumer device manufacturers.
- In the consumer electronics sector, the use of IoT devices is rapidly increasing. Programmable ASICs are an excellent choice for consumer electronics manufacturers looking to produce IoT devices because they can meet the connectivity and processing needs of IoT devices.

Asia-Pacific to Witness High Growth

- In the Asia Pacific region, there is a growing market for consumer electronics, and programmable ASICs are being employed in more and more of these products. For instance, Samsung declared that it had created a brand-new Programmable ASIC for usage in its 5G devices in 2021. The new processor is the best option for 5G handsets since it delivers higher data transfer rates and increased power efficiency.
- The Asia Pacific region's automobile industry is implementing cutting-edge technologies like ADAS, which need for high-performance computing options like Programmable ASICs. For instance, a top producer of programmable ASICs, Xilinx, revealed in 2021 that it had teamed up with Chinese carmaker SAIC Motor to create a new ADAS platform. The platform offers cutting-edge safety features including lane departure warnings and autonomous emergency braking thanks to Xilinx's Programmable ASICs.
- Asia Pacific continues to see tremendous investment in the semiconductor sector. For instance, the Taiwanese government declared in 2021 that it will spend USD 334 million over the following five years on the development of cutting-edge technologies, such as Programmable ASICs. The investment will help Taiwan maintain its position as the region's top producer of semiconductors.

- The growth of the semiconductor sector has continued to get assistance from governments in the Asia Pacific area. The Production-Linked Incentive (PLI) scheme for the semiconductor industry, for instance, was introduced by the Indian government in 2021. The programme offers financial incentives to semiconductor manufacturers, particularly those working on Programmable ASICs, to entice them to establish or grow their operations in India.
- The increasing usage of cloud computing and other digital technologies is fueling a significant increase in demand for data centres throughout the Asia Pacific region. A new cloud-based Programmable ASIC platform named X-Engine was created in 2021, according to an announcement made by Alibaba Cloud, one of China's top cloud service providers. The platform leverages Programmable ASICs to give processing performance that is faster and more effective, making it the perfect option for data centre applications.

Programmable Application Specific Integrated Circuit (ASIC) Industry Overview

The programmable application-specific integrated circuit (ASIC) market is moderately competitive owing to the presence of many large vendors operating in domestic as well as international markets. The market appears to be moderately concentrated moving towards the moderately competitve stage with the major players adopting strategies like product innovation, joint ventures, partnerships, and mergers and acquisitions. Some of the major players in the market are Analog Devices, Inc., Infineon Technologies AG, STMicroelectronics, and Texas Instruments Inc. among others.

- September 2022 - In a significant step towards the commercialization of CXL, which will enable extremely high memory capacity with low latency in IT systems, Samsung Electronics Co., Ltd., the world leader in advanced memory technology, today announced its development of the industry's first 512 gigabytes (GB) Compute Express Link (CXL) DRAM. The new CXL DRAM, which boasts four times the memory capacity and a fifth of the system latency compared to the prior Samsung CXL offering, is constructed using an application-specific integrated circuit (ASIC) CXL controller.
- July 2022 - The FPGA-Go-ASIC prototyping platform was introduced by Faraday Technology Corporation, one of the top producers of ASIC design services and IP. Customers can quickly enter the circuit creation and system verification process with the help of Faraday's SoCreative! SoC platforms and optional FPGA prototyping platforms with this solution. In conjunction with its extensive FPGA-Go-ASIC solution, Faraday can assist clients in improving chip performance as well as hastening and reducing the cost of product development.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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