Standard Logic IC - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

Market Report | 2025-04-28 | 90 pages | Mordor Intelligence

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Report description:

The Standard Logic IC Market is expected to register a CAGR of greater than 3.2% during the forecast period.

Key Highlights
- Standard logic ICs are logic gates in the form of integrated circuits. The ICs are packaged with pins meant for further use in circuitry. The different manufacturing processes and architectures of BiPolar and CMOS technologies provide the difference in operational voltages, response time, and output form. The contributions of logic gates in electronic design and power optimization are essential.
- The scaling down of packaging solutions driven by improvements in ceramics and plastics has played an integral role in choosing the appropriate logic IC for specific purposes. 7400 and 4000 series are among the most broadly used standard logic ICs. The constant focus on scaling down devices, especially consumer electronics, has shaped the industry.
- Manufacturers highlight the use of new and improved logic ICs with better temperature monitoring and adaptability, promising full service in industries like the automotive industry. For instance, in November 2021, Samsung Electronics introduced three new Logic solutions for the next generation of automobiles, including Exynos Auto T5123, Exynos V7, and S2VPS01. The S2VPS01 is a power management IC (PMIC) that regulates and rectifies electrical power input to in-vehicle infotainment performance. The IC is bundled with various features for protection from harsh thermal conditions, including over-voltage protection (OVP) and thermal shut down (TSD).
- The demand for semiconductor devices during the COVID-19 pandemic shifted towards consumer electronics and computing devices for healthcare equipment. This affected the regular demand cycle in the logic IC manufacturing industry for custom builds. Apart from the shift, the demand for standard IC solutions was moderate to steady, with the affected industrial applications compensated by the consumer electronics product lines. In the post-pandemic world, as several industries revive, the demand for semiconductors spikes, accelerating the logic IC market.

Standard Logic IC Market Trends

Automotive Industry to Generate the Maximum Demand

- The automotive industry is looking forward to wide-scale electrification and advancements regularly. The introduction of smart connected tech and autonomous features is driving the demand for the implementation of semiconductors. Hence, the increased use of circuitry, MPUs, and sensors directs the increased deployment of standard logic ICs for power regulation and rectification.
- The new-age technology catering to safety and modification of ride dynamics is aggressively increasing the use of semiconductors in passenger vehicles. To meet safety norms like airbags, autonomous features, electronic stability control (ESC) programs, and others, companies follow strict regulations on circuit level and use one of the best logic ICs available. For instance, companies like Texas Instruments (TI) offers automotive logic devices compliant with the AEC-Q100 standard. The ICs support a wide range of supply voltages, ranging between 5V and 1.2V, to meet the requirements of any automotive system, including infotainment systems, body control modules, automotive lighting, and advanced driver assistance systems (ADAS).
- IoT Services and remote access features like geofencing, telematics, fleet management systems, autonomous and semiautonomous driving assists, in-vehicle infotainment, and other SIM-based utilities are taking the automotive sector towards dense application of communication. This encourages the deployment of communication modules and more sensors to provide detailed schematic input parameters for further processing. The modules and sensors are extensively using logic ICs to maintain electrical safety standards and power efficiency, especially in electric vehicles.
- As the world is shifting toward Electric Vehicles (EVs), the requirement of extensive regulation of electrical parameters invites logic gate ICs for safer implementation of the charging and discharging technologies. Automotive companies utilize the potential and wide range of voltage handling capabilities of logic ICs through the vehicles' and final deployment stages and charging infrastructure. These factors drive the innovation and advancement in the standard logic IC industry to optimize power consumption, operating voltages, and scaling properties.

Asia Pacific Region to Drive the Market Growth

- Some of Asia's biggest manufacturing hubs include China, Taiwan, South Korea, and Japan. The availability of a cheaper skilled workforce, favorable weather conditions, government incentives, robust power, and water infrastructure, transportation and logistics, and attractive investment conditions help the semiconductor fabrication industries flourish. These industries contribute significantly to standard manufacturing logic ICs and storage devices.
- According to the 2021 State of the U.S. Semiconductor industry provided by the Semiconductor Industry Association (SIA), about 75% of the world's total semiconductor manufacturing capacity lies in East Asia. The currently operating manufacturing units have 7 nm and below leading-edge capabilities. The current market conditions promise the region's overall domination to continue rising over the forecast period. Major credit for this high rate of development goes to the significant government incentives that significantly bring down the Total Cost of Operation (TCO) compared to the alternate locations.
- According to SIA, Taiwanese firms founded the foundry model in the late 1980s and 1990s. These units specialized in manufacturing the chips designed by firms from other regions. Today Taiwan comprises two of the five largest foundries globally, hosting 20% of the total global capacity. TSMC is one of the three firms, along with Intel (US) and Samsung (South Korea), that can produce logic chips in advanced nodes (10 nanometers or below). These advanced logic chips are deployed in compute-intensive devices like PCs, data center/AI servers, and smartphones. Most of the world's capacity in the top nodes (5 and 7 nanometers) is located in Taiwan.
- The high concentration of the materials required for semiconductor manufacturing like photoresists, silicon wafers, chemicals

including packaging substrates, or specialty gases also defines the location of manufacturing logic ICs. For instance, C4F6 is required for the etching process, enabling the process completion 30% faster than the closest alternative. Asian countries, especially Taiwan, have figured out such factors. It would take a notable amount of investment and time for the other regions to align such resources to disrupt the Asian dominance.

Standard Logic IC Industry Overview

The standard logic IC market is moderately competitive. The market witnesses regular collaboration among manufacturers and client companies to venture into developing systems. The industry observes sharing expertise, leveraging new advanced logic gate ICs, and boosting operational and power efficiency. Improved heat management, system response time, and power consumption optimization are some of the critical goals.'

- March 2022 - NXP Semiconductors and Hitachi Energy collaborated to fasten the adoption of silicon carbide (SiC) power semiconductor modules in e-mobility. The partnership aims to provide SiC MOSFET-based, more efficient, reliable, and functionally safe solutions. These solutions will be deployed for powertrain inverters, leveraging NXP's advanced, high-performance GD3160 isolated HV Gate Drivers and Hitachi Energy's RoadPak automotive SiC MOSFET power modules.
- May 2021 - Samsung electronics announced the allocation of KRW 171 Trillion in Logic Chip Buniesses by 2030. The plan displays an increase of KRW 38 Trillion compared to the one conveyed in April 2019. The company has also declared constructing a new production line in Pyeongtaek, Korea, expected to be completed by the 2022 second half. The plant will contribute to carrying out 5-nanometer logic semiconductors and 14-nanometer DRAM manufacturing processes, featuring Extreme Ultraviolet (EUV) lithography technology.

Additional Benefits:

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

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