

Radiation Hardened Electronics Market by Component (Mixed Signal ICs, Processors & Controllers, Memory, Power Management), Manufacturing Techniques (RHBD, RHBP), Product Type, Application and Geography - Global Forecast to 2029

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Abstracts

The radiation-hardened electronics market is expected to grow from USD 1.7 billion in 2024 to USD 2.1 billion by 2029, at a CAGR of 4.8% during the forecast period. The demand for radiation-hardened electronics is increasing due to space applications, government initiatives, and technological advancements.

“Memory component is expected to grow at higher CAGR from 2024 to 2029”.

Memory in the component segment is expected to grow at the fastest CAGR during the forecast period. A memory device is a hardware component that retains data, enabling communication or functionality. The memory products used for critical applications such as spacecraft and nuclear weapons need to be radiation-hardened to reduce the total ionizing dose (TID) received by the semiconductor components. Compute-intensive applications in the aerospace and space sector are increasingly demanding radiation-hardened memory solutions with high density and performance to handle large quantities of data obtained from various processor nodes and sensors.

“Space application is expected to grow with the largest market share during the forecast period”

Radiation-hardened electronics are specifically designed to weather the storm and ensure reliable operation across diverse space applications. From the beating heart of onboard computers managing satellites to the guidance systems steering rockets, these

robust components power a remarkable range of tasks. They handle communication, fuel efficiency, scientific data collection, and even complex robotic maneuvers on distant planetary surfaces.

“Radiation hardened electronics market in North American region to register largest market size from 2024 to 2029.”

North America accounted for the largest share of the radiation-hardened electronics market in 2023. Factors such as continuous technological advancements in this field, the presence of various government-owned space organizations, and a majority of the key market players in the region are driving the growth potential for radiation-hardened electronics in the region. The US government is continuously making working on capabilities in the manufacture of radiation-hardened electronics.

Breakdown of primaries

In the process of determining and verifying the market size for several segments and subsegments gathered through secondary research, extensive primary interviews have been conducted with key industry experts in the radiation-hardened electronics market space. The break-up of primary participants for the radiation hardened electronics market has been shown below:

By Company Type: Tier 1 – 40%, Tier 2 – 30%, and Tier 3 – 30%

By Designation: C-level Executives – 40%, Directors – 40%, and Others – 20%

By Region: North America –40%, Europe – 30%, Asia Pacific– 20%, and Rest of the World – 10%

Key players in the radiation-hardened electronics market are Microchip Technology Inc.(US), BAE Systems (UK), Renesas Electronics Corporation (Japan), Infineon Technologies AG (Germany), STMicroelectronics (Switzerland), AMD (US), Texas Instruments Incorporated (US), Honeywell International Inc. (US), Teledyne Technologies Inc. (US), and TTM Technologies, Inc. (US). SMEs/startups covered in the study are Cobham Limited (UK), Analog Devices, Inc (US), Data Devices Corporation (US), 3D Plus (France), Mercury Systems, Inc. (US), PCB Piezotronics, Inc (US), Vorago (US), Micropac Industries, Inc (US), GSI technology, Inc (US), Everspin Technologies Inc (US), Semiconductor Components Industries, LLC (US), AiTech (US),

Microelectronics Research Development Corporation (US), Space Micro, Inc (US), and Triad Semiconductor (US).

Research Coverage:

The report describes detailed information regarding the key factors such as drivers, restraints, challenges, and opportunities influencing the growth of the radiation-hardened electronics market. It also includes informations like technology trends, trade data, and patent analysis. This research report categorizes the radiation-hardened electronics market based on components, manufacturing techniques, product type, and region. A detailed analysis of the major industry players was carried out to provide insights into their business overviews, products offered, major strategies adopted that include new product launches, deals (acquisitions, partnerships, agreements, and contracts), and others (expansions), and recession impact on the radiation-hardened electronics market.

Reasons to Buy This Report

The report will help the market leaders/new entrants in the market with information on the closest approximations of the revenue for the overall radiation-hardened electronics market and the subsegments. The report will help stakeholders understand the competitive landscape and gain more insight to position their business better and plan suitable go-to-market strategies. The report also helps stakeholders understand the market's pulse and provides information on key drivers, restraints, opportunities, and challenges.

The report will provide insights into the following pointers:

Analysis of key drivers (Increasing use of radiation-hardened electronics in space applications), restraints (Difficulty in creating real testing environment), opportunities (Favorable government initiatives and increasing space missions), and challenges (Customization required for high-end consumers)

Product development /Innovation: Detailed insights on growing technologies, research and development activities, and new product and service launches in the radiation-hardened electronics market.

Market Development: Comprehensive information about adjacent markets; the report analyses the radiation-hardened electronics market across various

geographies.

Market Diversification: Exhaustive information about new products and services, untapped geographies, recent developments, and investments in the radiation-hardened electronics market.

Competitive Assessment: In-depth assessment of market share, growth strategies, and services, offering of leading players Microchip Technology Inc.(US), BAE Systems (UK), Renesas Electronics Corporation (Japan), Infineon Technologies AG (Germany), STMicroelectronics (Switzerland), among others in the radiation-hardened electronics market.

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About

Radiation hardening is the development of electronic components and systems resistant to destruction or failures caused by ionizing radiation (particle radiation and high-energy electromagnetic radiation), occurring in outer space, high-altitude flights, around nuclear reactors, particle accelerators, during nuclear accidents, or nuclear warfare. Most semiconductor electronic components are susceptible to radiation damage; radiation-hardened components are based on their hardened equivalents, with some design and manufacturing variations that reduce their susceptibility to radiation damage. Due to the extensive development process required to produce a radiation-tolerant design of a microelectronic components, radiation-hardened components tend to fall behind in the race as compared to other classic semiconductor components.

The demand for radiation hardened electronic components is increasing, due to high growth in space, aerospace, and defense sectors. Radiation hardened electronic components such as processors, memory devices, power devices, communication devices, FPGAs, and ASICs have seen a lot of technological advancements, over the last few years. The radiation hardened electronics and semiconductors market can be called mature, though there is still a lot of scope for technological advancement.

Honeywell Aerospace (U.S.) and BAE (U.K.) are the two major players in the radiation hardened electronics and semiconductors market, which together share a major chunk of the radiation hardened electronics and semiconductors market.

This market study covers the full range of radiation hardened electronics and semiconductors components used in various applications, to detail the Radiation hardened electronics and semiconductors market for the period between 2013 and 2020.

In order to analyze the Radiation hardened electronics and semiconductors market worldwide; it is segmented into – Americas, Europe, APAC, and RoW (Rest of world).

Out of the various applications of the radiation hardened electronics components, the following key applications have been considered: Aerospace & Defense and Space (Satellites). The space application segment has been further divided into commercial and military sub- segments for determining the market size (\$million) of radiation

hardened electronics and semiconductors market.

This research study incorporates the usage of extensive secondary sources, directories, and databases such as Hoovers, BusinessWeek, OneSource, and Factiva to identify and collect information useful for the extensive technical and commercial study of the radiation hardened electronics and semiconductors market. Primary sources including experts from core and related industries, preferred suppliers, and service providers have been interviewed to obtain and verify critical qualitative and quantitative information as well as to assess the future prospects. Key players in the radiation hardened electronics and semiconductor market were identified through secondary research and their respective market size was determined through primary and secondary research. It includes the study of annual reports of top market players and interviews with key opinion leaders such as CEOs, directors, and marketing personnel.

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