

Radiation-Tolerant Microcontroller Market By Packaging Type, By Application, And Segment Forecasts, 2016-2027

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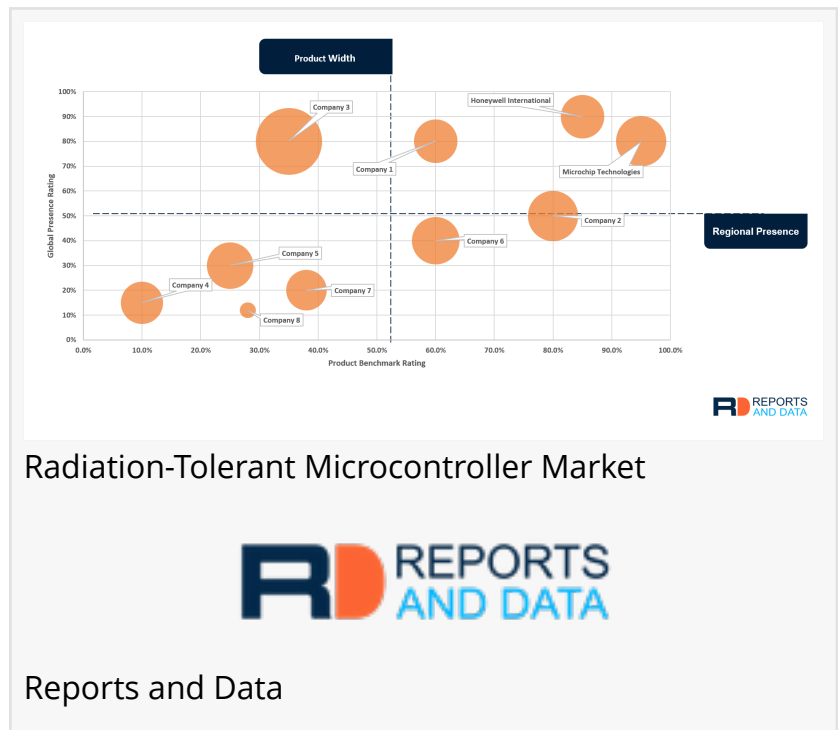
The electronics & semiconductor industry is developing high-reliability ICs suitable for a wide variety of applications, including space, avionics, and military & defense, among others, and is engaged in designing mission-specific devices where SWaP (size, weight, and power consumption), cost, and performance are foremost considerations.

Various kinds of radiation particles exist in space that can damage or disrupt the operation of a semiconductor device, such as a microcontroller. Radiation-tolerant microcontrollers have been designed to operate in environments exposed to radiations, and hence have characteristics that prevent the several types of malfunctioning modalities that radiation may induce in semiconductor materials, such as silicon.

Radiation is considered to be among the factors that have a very negative impact on the functioning of the aerospace and defense electronics systems. It exists naturally in space and at high altitudes on the surface of the earth or may occur from the detonation of a nuclear weapon. Therefore, it is essential to deploy radiation hardened electronic components in electronic systems meant for operation in harsh radiation-exposed environments.

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Growing advancements in commercial and government satellites, along with conventional space applications involve long-term satellite missions in high-earth orbits, innovative high-performance communications, and exploratory orbiting satellites are utilizing some of the state-of-the-art radiation-tolerant ICs for mission reliability. Currently, one of the most significant market drivers for radiation-tolerant microcontrollers is low-earth orbit (LEO) space applications in applications, including communications and earth observation, among others.



Additionally, the radiation-tolerant microcontroller is garnering significant market demand owing to the emergence of NewSpace, which comprises of small short-duration spacecraft occasionally called CubeSats, along with a large constellations of small communications satellites meant to provide internet connectivity.

In January 2018, Microchip Technology announced an innovative microcontroller that has specified radiation performance, as well as low-cost development related to Commercial-Off-The-Shelf (COTS) devices. The ATmegaS64M1 is the second 8-bit mega AVR MCU from the company that deploys a development approach called COTS-to-radiation-tolerant.

Radiation-tolerant microcontrollers are an essential component of electronic system used in nuclear power plants. The Fukushima Daiichi nuclear disaster, a nuclear accident at the Fukushima Daiichi Nuclear Power Plant that caused a total black-out highlights the inevitability for emergency sensing abilities in an environment exposed to radiation. Thus, radiation-tolerant technology is likely to witness high demand as the world is progressing clean energy revolution.

By packaging type, the radiation-tolerant ceramic package is likely to hold a substantial market share in 2018 and is expected to grow at a significant rate in the forecast period. This kind of packaging is primarily meant for space applications.

By application, space applications contributed to the largest market share in 2018. In the year 2020, SpaceX intends to launch 1,500 satellites into its Starlink constellation, which would double the number of active satellites in LEO orbit.

Key players involved in the market are Microchip Technologies, Honeywell International, Microsemi Corporation, Texas Instruments, Maxwell Technologies, Xilinx Incorporation, Intersil Corporation, ST Microelectronics, BAE Systems, and Atmel Corporation among others.

Players in the market are actively involved in research and development activities to stay ahead of the competition and increase their profitability.

In January 2020, Microchip, a leading market player, announced the first Space-Qualified COTS-Based Radiation-Tolerant embedded microcontroller and ethernet transceiver.

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Segments Covered in the report:

This report forecasts revenue growth at a global, regional & country level, and provides an analysis of the industry trends in each of the sub-segments from 2016 to 2027. For the purpose of this study, Reports and Data have segmented the global radiation-tolerant microcontroller market on the basis of production method, packaging type, application, and region:

Production Method Outlook (Revenue, USD Million; 2016-2027)

- Radiation Hardening By Process (RHBP)
- Radiation Hardening By Design (RHBD)

Packaging Type Outlook (Revenue, USD Million; 2016-2027)

- Elastic Package
- Radiation-Tolerant Ceramic Package
- Others

Application Outlook (Revenue, USD Million; 2016-2027)

- Space Applications

- Avionics
- Military & Defense
- Nuclear
- Medical
- Others

To identify the key trends in the industry, click on the link below:

<https://www.reportsanddata.com/report-detail/radiation-tolerant-microcontroller-market>

Regional Outlook (Revenue, USD Million; 2016-2027)

- North America
 - oU.S
- Europe
 - oU.K
 - oFrance
- Asia Pacific
 - oChina
 - oIndia
 - oJapan
- Latin America
 - oBrazil
- MEA

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