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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- Background on Time-to-Digital Converters -- Radiation-Hardened-by-Design -- The MASH DS Time-to-Digital Converter -- Radiation Hardened Bandgap References -- Low-Jitter Relaxation Oscillators -- Conclusions.
Sommario/riassunto	This book focuses on the design of a Mega-Gray (a standard unit of total ionizing radiation) radiation-tolerant ps-resolution time-to-digital converter (TDC) for a light detection and ranging (LIDAR) system used in a gamma-radiation environment. Several radiation-hardened-by-design (RHBD) techniques are demonstrated throughout the design of the TDC and other circuit techniques to improve the TDC's resolution in a harsh environment are also investigated. Readers can learn from scratch how to design a radiation-tolerant IC. Information regarding radiation effects, radiation-hardened design techniques and measurements are organized in such a way that readers can easily gain a thorough understanding of the topic. Readers will also learn the

design theory behind the newly proposed delta-sigma TDC. Readers can quickly acquire knowledge about the design of radiation-hardened bandgap voltage references and low-jitter relaxation oscillators, which are introduced in the content from a designer's perspective. · Discusses important aspects of radiation-tolerant analog IC design, including realistic applications and radiation effects on ICs; · Demonstrates radiation-hardened-by-design techniques through a design-test-radiation assessment practice; · Describes a new type of Time-to-Digital (TDC) converter designed for radiation-tolerant application; · Explains the design and measurement of all functional blocks (e.g., bandgap reference, relaxation oscillator) in the TDC.