Resources for Radiation Test Data

Introduction

The performance of electronic components and systems is often limited by the effects of single-event disturb (SEU), single-event latchup (SEL), and single-event gate rupture (SEGR) events, which can occur due to the rapid changes in the state of the circuitry during such events. The Radiation Effects and Analysis Group (REAG) at NASA Goddard Space Flight Center (GSFC) has developed a radiation test data search tool as part of its wide-ranging effort to characterize the effects of space radiation on electronic systems.

Resources for Radiation Test Data

- National Aeronautics and Space Administration (NASA) Center for Space Flight (GSFC), which provides a searchable database of radiation test data (see https://radcentral.jpl.nasa.gov/).
- Defense Logistics Agency (DLA) Land and Maritime, the largest Inventory Control Point (ICP) in the world, which manages over 1.6 million S9C (Construction) and S9E (Electronics) parts and their associated test reports (see http://www.landandmaritime.dla.mil/).
- European Space Components Information Exchange System, which offers many search options including description, manufacturer, part type, and category (see https://esces.esa.int/).
- Jet Propulsion Laboratory, which hosts the European Space Components Information Exchange System (ESCES) and provides a radiation test data search tool (see https://ntrs.nasa.gov/search.jsp?R=20160014609).
- Texas Instruments, which provides a web interface for their National Radiation Data for Space website (see http://www.ti.com/science).
- Defense Threat Reduction Agency (DTRA), which supports the Space Radiation Environment Test Data Research Samples (SREDRS) program and provides a web interface for searching radiation test data (see https://www.dtra.mil).

Test Data Research Samples

- The REAG radhome website allows searching of the database for the aerospace engineer or spacecraft design engineer. Figure 1 shows the REAG radhome web searchable parts interface.
- The IEEE Radiation Effects Data Workshop (REDW) Record website provides a reference to single-event functional interrupts (SEFIs), total ionizing dose (TID), and displacement damage. Figure 2 shows the results of a search for parts with the term “java”.
- The European Space Components Information Exchange System offers many search options including description, manufacturer, part type, and category. Figure 3 shows the search results for DC-DC Converters manufactured by Crane.
- The IEEE Xplore REDW offers access to publications from 1992 to 2020. Figure 4 shows the IEEE Xplore REDW search tool.

Acronyms

- SEFIs = single event functional interrupts (SEFIs)
- RHA = Radiation Hardness Assured (RHA)
- REDW = Radiation Effects Data Workshop (REDW)
- SEL = single-event latchup (SEL)
- SEU = single-event upset (SEU)
- TID = total ionizing dose (TID)

Acknowledgment

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Summary

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