Compendium of Current Total Ionizing and Displacement Damage Results from NASA GSFC and NEPP

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Abstract: Total ionizing dose and displacement damage testing was performed to characterize and determine the suitability of candidate electronics for NASA spacecraft and program use.

Introduction

One of the many elements considered in the development of NASA space electronics is the ability to withstand exposure to the space radiation environment, which includes both ionizing and non-ionizing radiation. Space radiation can be directly affected by varying radiation levels in the form of total ionizing dose (TID) and single-event effects (SEE), which can be a serious concern. A comprehensive list of SEE is compiled by NASA GSFC. SEE can be caused by high-energy cosmic rays, by a proton impact on the device, or by a combination of both. SEE can cause device failure and thereby threaten the overall mission. BiCMOS DC

Biased parts show functional failure between 12 and 18 krad(Si) at Y 100 rad(Si)/s > 50 Y 50 rad(Si)/s and 10 12<FF<18

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