Techniques to Develop High Radiation Tolerant Solid State Devices and Their Uses

Number 28 - Article 3

Year of Publication: 2010

Authors:
Romil Bisetwar
Sayan Biswas
Mahesh Kalani

10.5120/519-840

Abstract

Designing the solid state electronic devices and components by using the radioactive material for their fabrication (uranium dioxide) and the dielectric isolation process provides the precise label of stability over high temperature range. Recently there was a failure of India’s maiden lunar exploration mission in which ISRO used CHANDRAYAAN-1 as a space craft on AUGUST 29 2009. The main cause of failure was that of temperature variation (-50°C to 120°C) which lead the malfunctioning of SENSORS. Lunar spacecrafts had ONBOARD two star sensors with one as a backup to determine the orientation or attitude because of all the malfunctioning they had failed. Use of high radiation tolerant solid state devices and the use of radioactive material in fabrication technology provides suitable measures to avoid such failure of electronics devices by temperature variation.
Reference

[1] ROBERT BOYLESTAD AND LOUIS NASHELESKY: ELECTRONIC DEVICES CIRCUITS
[9] . N. Goswami1,* and M. Annadurai2 1Physical Research Laboratory, Ahmedabad 380 009, India 2ISRO Satellite Center, Bangalore 560 017, India

Index Terms

Electronics  Sensors

Key words

Star sensors of chandrayaan 1 
uranium dioxide & dielectric isolation.of solid state devices 

fabrication of