The TID testing results of the first radiation hardened analog mixed-signal Power Driver with Rotation and Position Sensing IC, the LX7720, are presented. TID characterizations were performed on all the device functions, the resolver ADC, floating current sense, MOSFET drivers, demodulator drivers and supporting circuitry.

Abstract

The LX7720 is a power driver with rotation and position sensing. It contains four half bridge N-CH MOSFET drivers and four floating differential current sensors. Also available are: three differential ADC sense inputs, pulse modulated resolver transformer driver and six bi-level logic inputs. Can be interfaced with an FPGA, microcontroller or other logic element. Manufactured as a dual die MCM solution in a custom 132-lead LQFP package.

II. INTRODUCTION

The LX7720 is a power driver with rotation and position sensing. It contains four half bridge N-CH MOSFET drivers and four floating differential current sensors. Also available are: three differential ADC sense inputs, pulse modulated resolver transformer driver and six bi-level logic inputs. Can be interfaced with an FPGA, microcontroller or other logic element. Manufactured as a dual die MCM solution in a custom 132-lead LQFP package.

The LX7720 TID testing was performed at 100krad(Si–Ld) −5dB degradation. The LX7720 is a power driver with rotation and position sensing. It contains four half bridge N-CH MOSFET drivers and four floating differential current sensors. Also available are: three differential ADC sense inputs, pulse modulated resolver transformer driver and six bi-level logic inputs. Can be interfaced with an FPGA, microcontroller or other logic element. Manufactured as a dual die MCM solution in a custom 132-lead LQFP package.

III. LX7720 TID RESULTS SUMMARY

The LX7720 TID testing was performed at 100krad(Si–Ld) −5dB degradation. The LX7720 is a power driver with rotation and position sensing. It contains four half bridge N-CH MOSFET drivers and four floating differential current sensors. Also available are: three differential ADC sense inputs, pulse modulated resolver transformer driver and six bi-level logic inputs. Can be interfaced with an FPGA, microcontroller or other logic element. Manufactured as a dual die MCM solution in a custom 132-lead LQFP package.

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Conclusions

The results exhibit the LX7720 TID hardening goal for the device. The TID performance at 100krad(Si–Ld) of the different blocks of this highly integrated device is consistent with the pre-radiation results.

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