

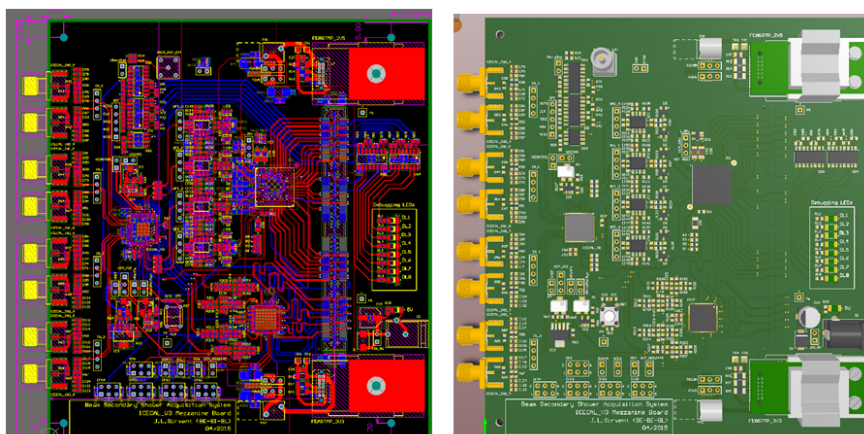
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Parts on Detail

Diamond Detector Secondary Shower Acquisition System

ICECAL_V3 Mezzanine



1. Board Design

- Schematics
- PCB Layout
- Assembly_Data
- Supplier Info (BOM)
- Altium Designer Project

2. Board References

- BPM Digital Front-End FMC ([EDA-03134](#))
- BLM Current to Frequency Converter ([EDA-00593](#))
- IBMS Mezzanine ([EDA-00055](#))
- CMS HF 24-Channel Prototype Readout Module ([CMS-Doc-11974](#))
- Versatile Link Development Board ([EDA-03076](#))

3. Icecal Information

- ICECALv3_DataSheet
- ICECAL Status and Irradiation test at Louvain La Neuve (14/06/2016) [↗](#)

4. Relevant Datasheets [↗](#)

- AD41240 (QUAD 12-BIT 40 MSPS ADC WITH PARALLEL LVDS OUTPUTS, RH and CERN's Developed ADC, **TID=10MRad**)
 - ◆ K.Kloukinas et al 2005. Characterization and production testing of a quad 12 bit 40 Ms/sec A/D converter with automatic digital range selection for calorimetry. [↗](#)
- THS4521 [↗](#) (VERY LOW POWER RAIL-TO-RAIL OUTPUT FULLY DIFFERENTIAL AMPLIFIER, **TID = 1kGy**)
 - ◆ PSI PIF. Logarithmic Amplifiers, ADC Drivers and Voltage Regulators Radiation Test Report [↗](#)
- AD8138 [↗](#) (LOW DISTORTION DIFFERENTIAL ADC DRIVER, **TID > 500 KRad**)
 - ◆ H. Takai. Characterization of COTS ADC radiation properties for Atlas Lar calorimeter readout upgrade. TWEPP2013. 23-27 Sep 2013 [↗](#)

- ◆ Richard D. Harris et al. ELRDS Characterization for a Very High Dose Mission [↗](#)
- ADS6445 (QUAD CHANNEL, 14-BIT, 125/105/80/65 MSPS ADC WITH SERIAL LVDS OUTPUTS, COTS Characterized by H.Takai, **TID=210KRad**)
 - ◆ K.Chen et al 2014. Evaluation of commercial ADC radiation tolerance for accelerator experiments. [↗](#)
- MCP1826 [↗](#) (300 mA, Low Voltage, Low Quiescent Current LDO Regulator, **TID=1KGy**)
 - ◆ P.Oser, G.Spieza, 2014. Radiation Test Report VMO1200 / MCP1824 / UCC3895 Paul Scherrer Institute Proton Irradiation [↗](#)
- FEASTMP [↗](#) (RADIATION AND MAGNETIC FIELD TOLERANT 10W DC/DC CONVERTER MODULE, CERN's Development, **TID>200MRad**)
- LM4121 [↗](#) (Precision Micropower Low Dropout Voltage Reference, **TID=30KRad**)
 - ◆ J.Gilsmore et al. Very Forward muon trigger and data acquisition electronics for CMS: Design and radiation testing. 2013 JINST 8, C02040. [↗](#)
- DS90LV048 [↗](#) (3V QUAD LVDS -> CMOS DIFFERENTIAL LINE RECEIVER, **TID=70KRad**)
 - ◆ Gianluca Di Mattia, thesis, Univ. "La Sapienza" , 2003, Roma [↗](#)
- DS90LV027 [↗](#) (30 DUAL LVDS HIGH SPEED DIFFERENTIAL DRIVER, **not tested under radiation**)

5. Tests Performed on the board

- ADC41240 and THS4521 Drivers: Dynamic Performance
- ADC41240 and THS4521 Drivers: Linearity And Noise
- ICECAL_V3 and AD41240 Readout: Total Linearity and Noise
- ADS6445: Linearity, Noise and Dynamic performance
- ICECAL_V3 and AD6445 Readout: Total Linearity and Noise

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