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# EASIROC 1B TQFP160 CHIP

EASIROC 1B 集積回路 チップ

Extended Analogue Silicon PM Integrated Read-Out Chip

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## ABSTRACT

**ASIC name** : EASIROC (Extended Analogue Silicon PM Integrated Read-Out Chip)

**Current available version** : 1B

**Number of channel** : 32

**Polarity of input signal** : positive

**Detector read out** : SIPM, MPPC, compliant with PM, MA-PM

**noise** : to be determined

**Gain** : to be determined

**Max input signal** : 2000 photoelectrons at min gain



Photo = OLD Ver.1A CHIP

EASIROC standing for Extended Analogue Si-pm ReadOut Chip is a 32 channels fully analogue front end ASIC dedicated to readout **SiPM** detectors. This **low power** and highly **versatile** ASIC was developed from the chip SPIROC which has been designed for the Analogue Hadronic Calorimeter foreseen at the International Linear Collider.

EASIROC integrates a 4.5V range 8-bit DAC per channel for individual SIPM gain adjustment. A multiplexed charge measurement from **160 fC up to 320 pC** is available thanks to **2 analogue outputs**. These charge paths are made of 2 variable gain preamplifiers followed by 2 tuneable shapers and a track and hold.

A trigger path integrates a fast shaper followed by a discriminator the threshold of which is set by an integrated 10-bit DAC. These **32 trigger outputs** can be used for timing measurements. The power consumption is lower than **5 mW/channel** and **unused features** can be powered **OFF** to decrease the power consumption.

The chip has been designed in AMS 0.35μm SiGe technology and 5000 dies have been produced in 2010. Its versatility allows its use in many photo detector experiments and is already used for PEBS, MuRAY, E40 @ JPARC and medical imaging.

Centre de Microélectronique OMEGA /FRANCE 社製

## チップ性能 要約

- ① 設定変更可能なプリアンプ、シェーパー、ディスクリミネーター
- ② 入出力 32チャンネル
- ③ 4.5 V 8bit-DAC 内臓
- ④ high gain およびlow gain の2種類のゲインが調整可能
- ⑤ ADCとして160fC から320pC のダイナミックレンジを満たす