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Citiroc 1A

Citiroc1A is a 32-channel front-end ASIC designed to readout silicon photo-multipliers (SiPM).

Citiroc1A allows triggering down to 1/3 pe and provides the charge measurement with a good noise rejection. Moreover, Citiroc1A outputs the 32-channel triggers with a high accuracy (100 ps).

An adjustment of the SiPM high-voltage is possible using a channel-by-channel DAC connected to the ASIC inputs. That allows a fine SiPM gain and dark noise adjustment at the system level to correct for the non-uniformity of SiPMs.

Timing measurement down to 100 ps RMS jitter is possible along with 1% linearity energy measurement up to 2500 p.e. The power consumption is about 2mW/channel, excluding ASIC outputting buffer.



Detector Read-Out	SiPM, SiPM array
Number of Channels	32
Signal Polarity	Positive
Sensitivity	Trigger on 1/3 of photo-electron
Timing Resolution	Better than 100 ps RMS on single photo-electron
Dynamic Range	0-400 pC i.e. 2500 photo-electrons @ 10^6 SiPM gain
Packaging & Dimension	TQFP 160 – TFBGA353
Power Consumption	60mW Analogue Core (excluding outputting buffer) 95mW Asic Outing (all outputs on)
Inputs	32 voltage inputs with independent SiPM HV adjustments
Outputs	32 trigger outputs 1 multiplexed charge output 1 ASIC trigger output (Trigger OR)
Internal Programmable Features	32 HV adjustment for SiPM (16x8bits), Trigger Threshold Adjustment (10bits), channel by channel gain tuning, 32 Trigger Masks, Channel by Channel Output Enable, Trigger Latch

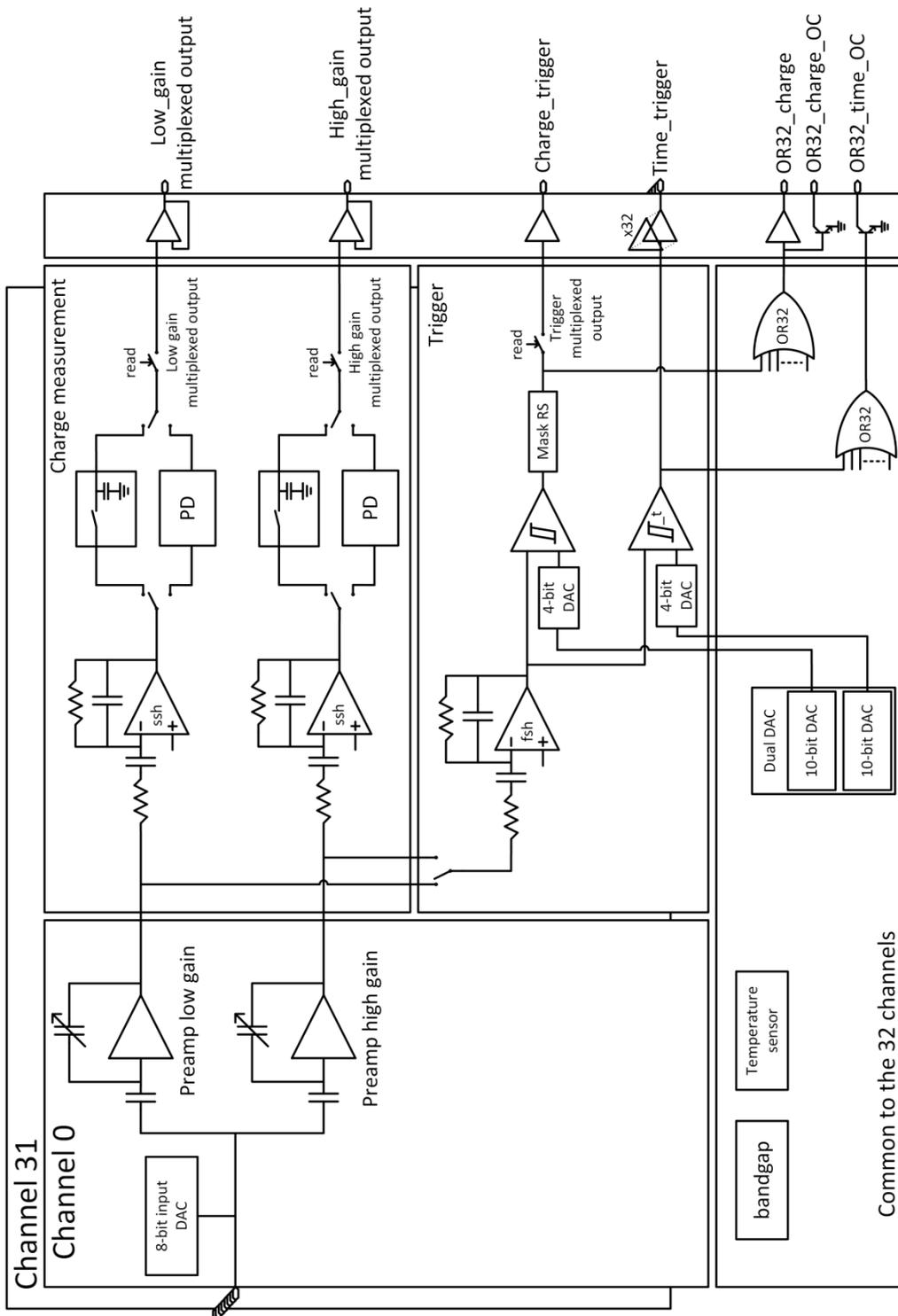
Learn more about Citiroc

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SSH – Slow Shaper ; FSH – Fast Shaper; PD – Peak Detector