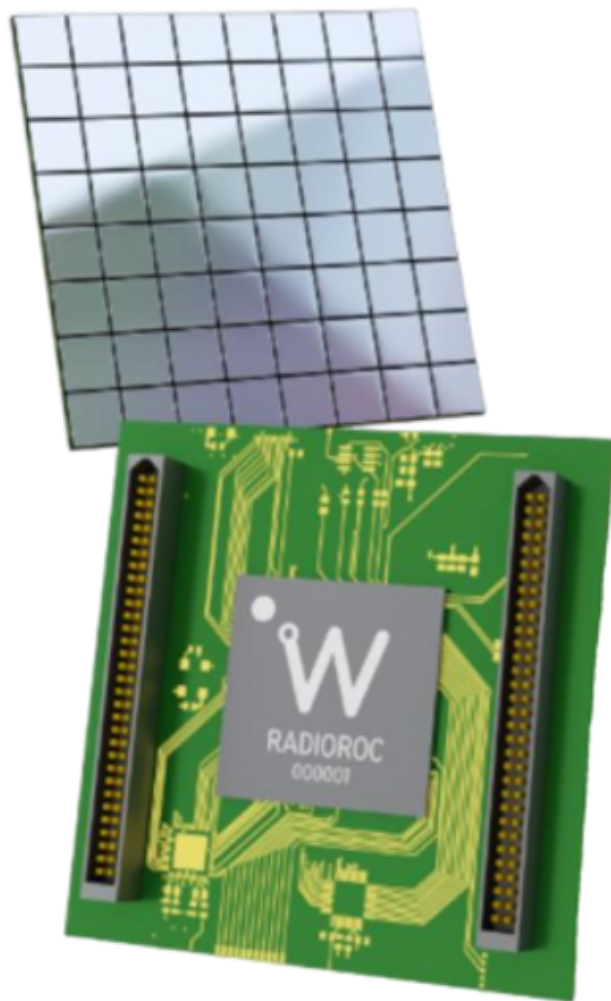


Coming Soon

RADIROC 2

**Multi-purpose SiPM
analogue read-out
chip**



Features



Optimized for

- SiPM
- **Number of channels** : 64
- **Outputs** : 2 outputs per channel (either : 64 LVDS triggers, 2 x 64 TTL triggers, 64 TTL triggers and 64 analog outputs), 2 multiplexed analogue outputs, 3 NOR64 trigger outputs
- **Input Polarity** : Positive

Description

Radoroc 2 is a 64-channel front-end ASIC designed to readout silicon photo-multipliers (SiPM). Radoroc 2 allows triggering down to 1/3 p.e. and provides dual-gain energy measurement with excellent Signal-to-noise ratio on the high gain (SNR over 10 for single p.e.) and large dynamic range on the low gain. Moreover, Radoroc 2 can output the 64-channel triggers with jitter expected as low as 35 ps FWHM on a single p.e. (ASIC only). Photo-counting is foreseen over 100 MHz. An adjustment of the SiPM high-voltage (gain) is possible using a channel-by-channel 8-bit DAC connected to the ASIC inputs. Channel-by-channel calibration on the trigger threshold is also possible thanks to 6-bit DACs. Radoroc can be calibrated using the dark noise of the SiPM. Timing resolution better than 35 ps FWHM is possible along with 1% linearity energy measurement up to 2000 p.e, the dynamic range being limited by the 1.2 V power supply on the input analogue pad. The power consumption is 3.3 mW per channel.

Technical Specifications

Detector Read-Out

SiPM, SiPM array

Signal Polarity

Positive

Sensitivity

Trigger on first photo-electron

Timing Resolution

Better than 55 ps FWHM on single photo-electron (measured)

Dynamic Range

up to 2000 photo-electron @ 10^6 SiPM gain - Peaking time from 20ns to 2us for PSD

Packaging & Dimension

FC-BGA 516 20x20mm (Low-inductance flip chip)

Power Consumption

310 mW - supply voltage 1.2V

Inputs

64 analogue inputs with independent SiPM HV adjustments

Outputs

- 2 outputs per channel, either :
 - 64 LVDS triggers
 - 2 x 64 TTL triggers
 - 64 TTL triggers and 64 analog outputs
- 2 multiplexed analogue outputs
- 3 NOR64 trigger outputs

Internal Programmable Features

- 64 HV adjustment for SiPM (64 x 8 bits)
- 3 trigger threshold tuning (10bits)
- Channel-by-channel gain and shaping time adjustment ($\tau = 20$ ns to 300 ns)
- Individual trigger masking and cell powering

Evaluation systems

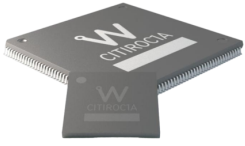
- Evaluation board : Available
- Radoroc + PicoTDC evaluation system : Available April 2024

Ordering Options

Code	Description
WWRADIO2BAAA	RADIOROC 2 Dual Read-Out (Photon Counting & Charge Integration) Multi-Purpose SiPM Analogue Chip RoHS

Related Products

CITIROC 1A



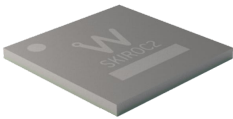
Scientific instrumentation SiPM read out chip

PSIROC



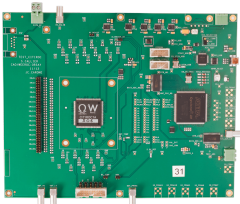
PIN Diodes, Silicon Strips amnd GEMs Read-Out Chip

SKIROC 2A



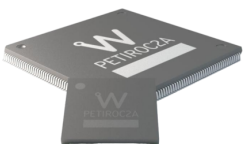
PIN Diode and Low Gain Silicium Detector Read-Out Chip

Weeroc Testboards



Control Systems for Weeroc ASICs

PETIROC 2A



SiPM read out for time of flight PET

Gallery



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