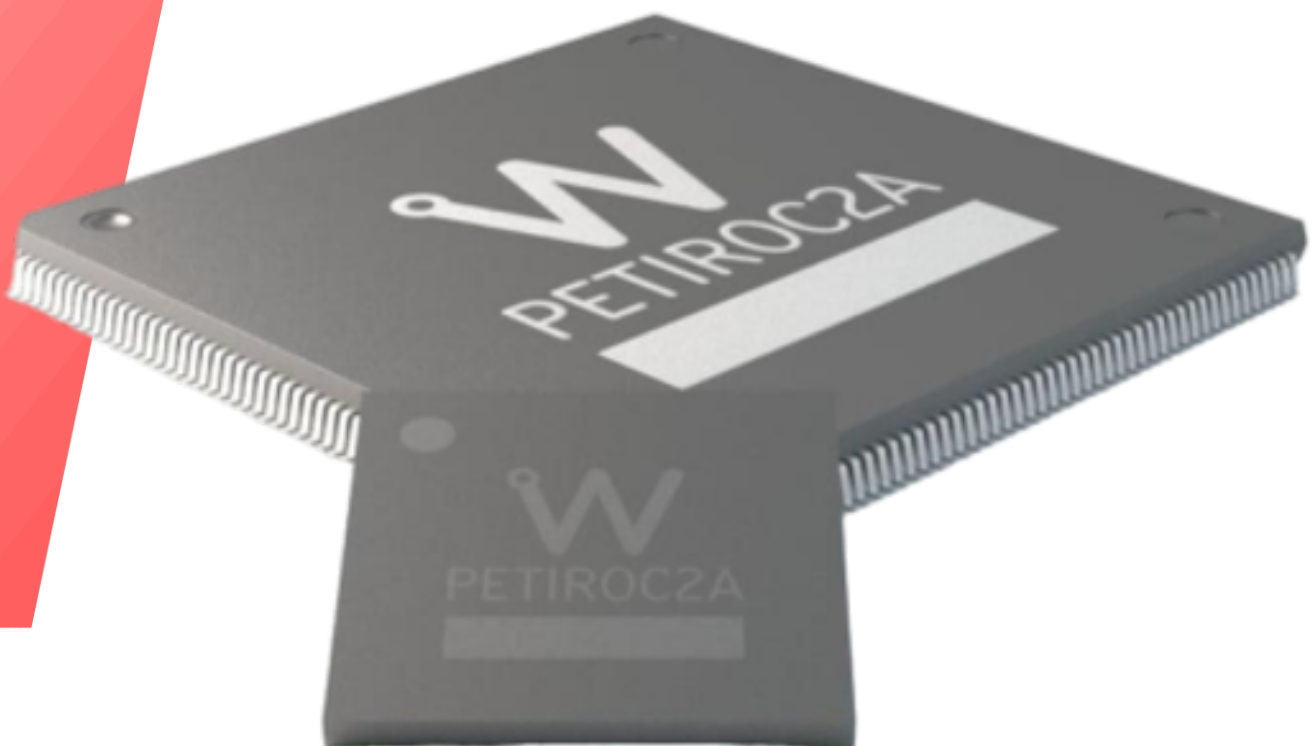


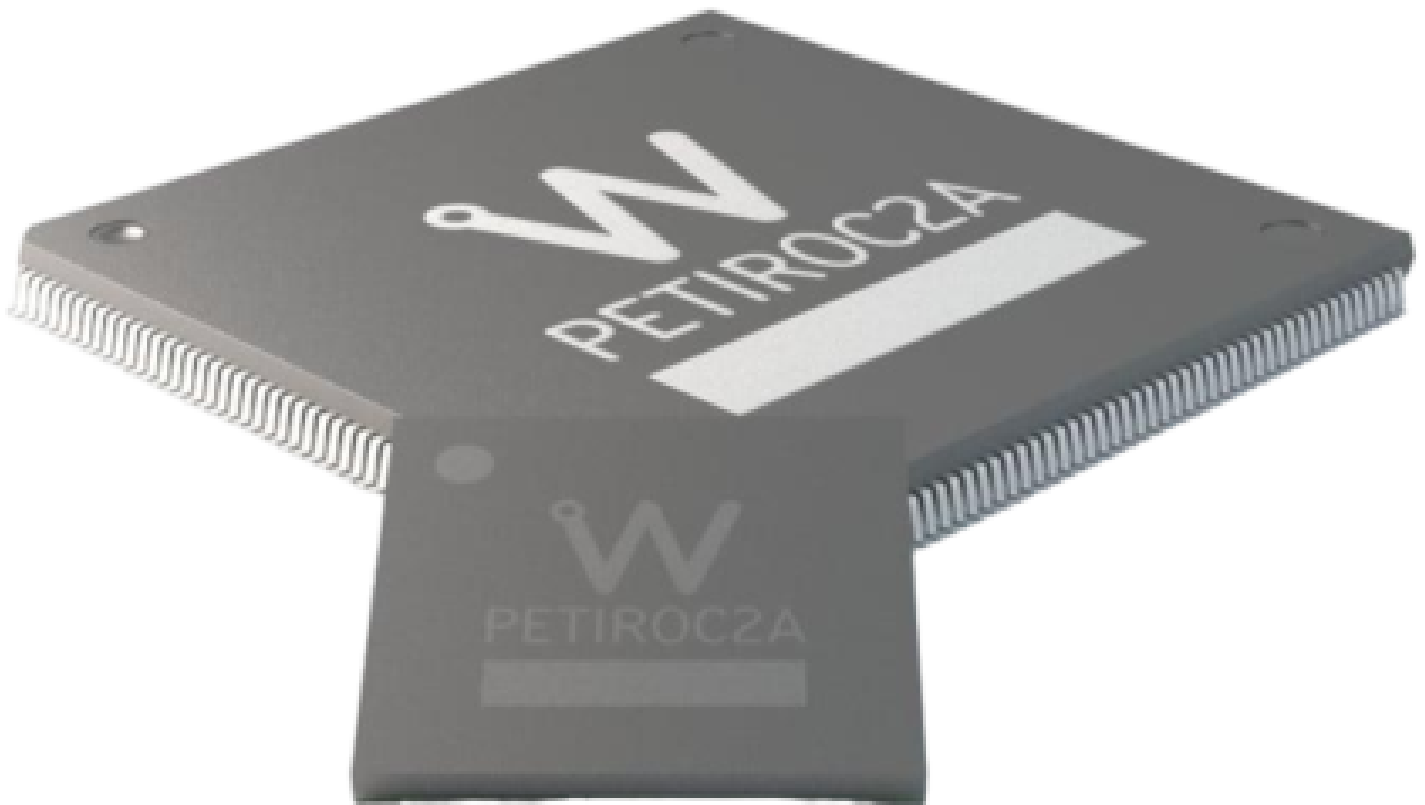
Discontinued

PETIROC 2A

**SiPM read out for
time of flight PET**



Features



Optimized for

- SiPM
- **Number of channels:** 32
- **Type of measurement:** Self triggered, Charge, Time
- **Outputs:** Digital output (energy on 10 bits, time on 10 bits – 40ps bin), 32 trigger outputs, 1 multiplexed charge output, 1 multiplexed hit register, 2 ASIC trigger outputs (Trigger OR on 32 channels, 2 levels)
- **Input Polarity:** Positive, Negative
- **Main performances:** Energy measurement, Time of flight, Photon counting, Input DAC for HV adjustment

Description

PETIROC 2A IS DEPRECATED - NOT RECOMMENDED FOR NEW DESIGN Please consider **Temporoc**, **Liroc** or **Radoroc**

Petiroc 2A is a 32-channel **front-end ASIC** designed to readout silicon photomultipliers (**SiPM**) with both polarities for **particle time-of-flight measurement** applications. Petiroc 2A combines a very fast and low-jitter trigger with accurate charge and time measurements. Energy and time are digitized internally with a 10-bit ADC and 40ps-bin TDC.

The concept of the ASIC is to combine two measurement lines that won't interfere one with each other to measure both first incident photon timing measurement and whole crystal light charge integration. An adjustment of the SiPM high voltage is possible using a channel-by-channel input DAC. It allows a fine SiPM gain and dark noise adjustment at the system level to correct for the non-uniformity of SiPMs. The power consumption is 6 mW/channel, excluding buffers used to output the analogue signals. The main application of Petiroc 2A is PET time-of-flight prototyping but it can also be used for any application that requires both **accurate time resolution** and **precise energy measurement**.

Technical Specifications

Detector Read-Out

SiPM, SiPM array

Number of Channels

32

Signal Polarity

Positive or Negative

Sensitivity

Trigger on first photo-electron

Timing Resolution

below 40 ps

Dynamic Range

3000 photoelectrons (106 SiPM gain), Integral Non Linearity : 1% up to 2500 photoelectrons

Packaging & Dimension

- TQFP 208 28x28mm
- TFBGA353 12x12mm

Power Consumption

Power supply : 3.3V 192mW Analogue core (excluding output buffer), 6mw/ch

Inputs

2 voltage inputs with DC adjustment for SiPM HV tuning

Outputs

- Digital output (energy on 10 bits, time on 10 bits - 40ps bin)
- 32 trigger outputs
- 1 multiplexed charge output, 1 multiplexed hit register
- 2 ASIC trigger outputs (Trigger OR on 32 channels, 2 levels)

Internal Programmable Features

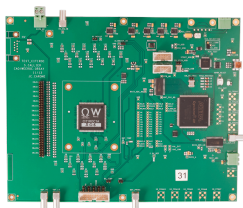
- 32 HV adjustment for SiPM (32x8bits)
- trigger threshold adjustment (10bits)
- charge measurement tuning
- 32 trigger masks
- internal temperature sensor
- trigger latch

Ordering Options

| Code | Description |
|--------------|---|
| WWPETIROC2AB | PETIROC 2A - SiPM read out for time of flight PET - BGA (Ball Grid Array) (Discontinued) |
| WWPETIROC2AQ | PETIROC 2A - SiPM read out for time of flight PET- QFP (Quad Flat Pack) (Discontinued) |

Related Products

Weeroc Testboards

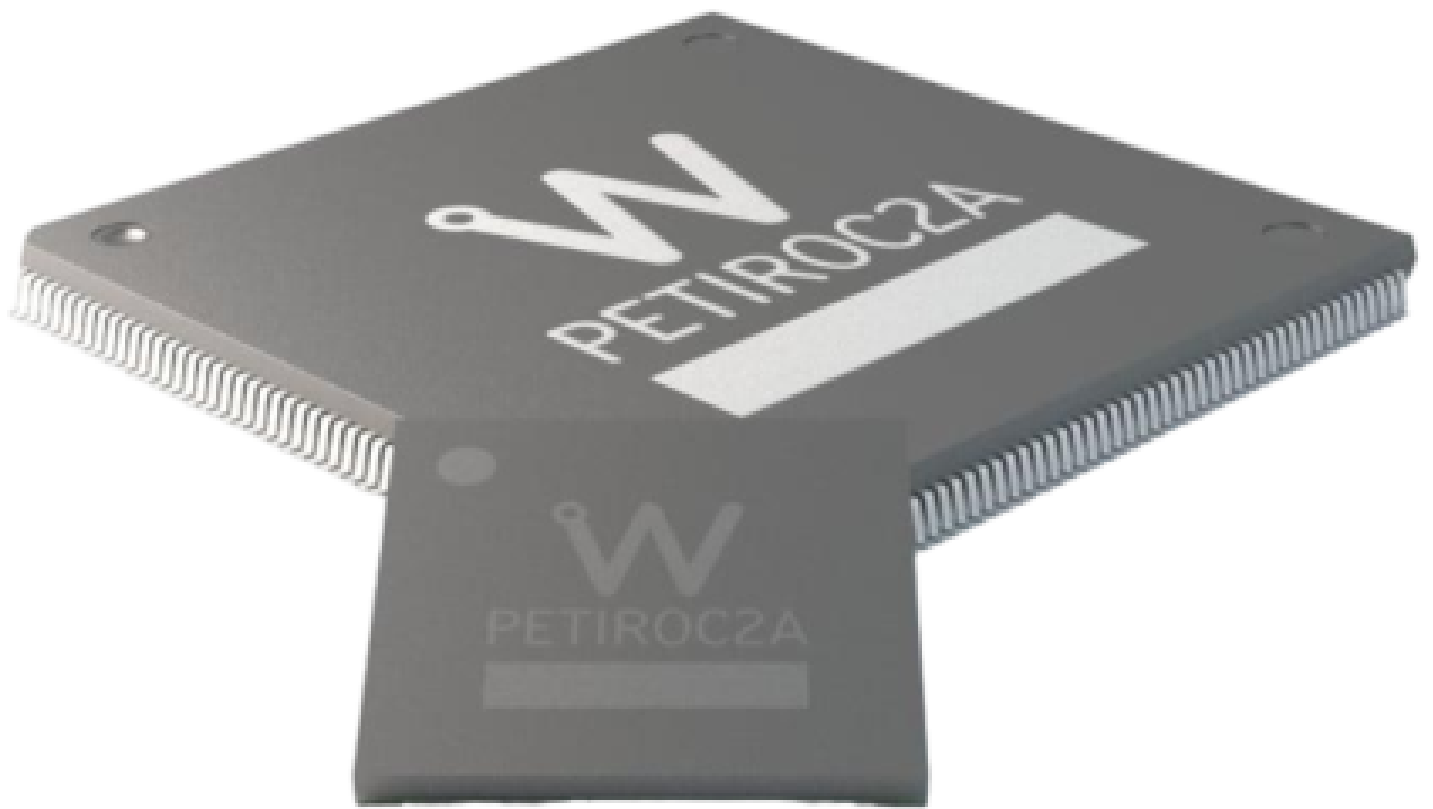


Control Systems for Weeroc ASICs

DT5550W



Complete Readout System based on Weeroc ASIC



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