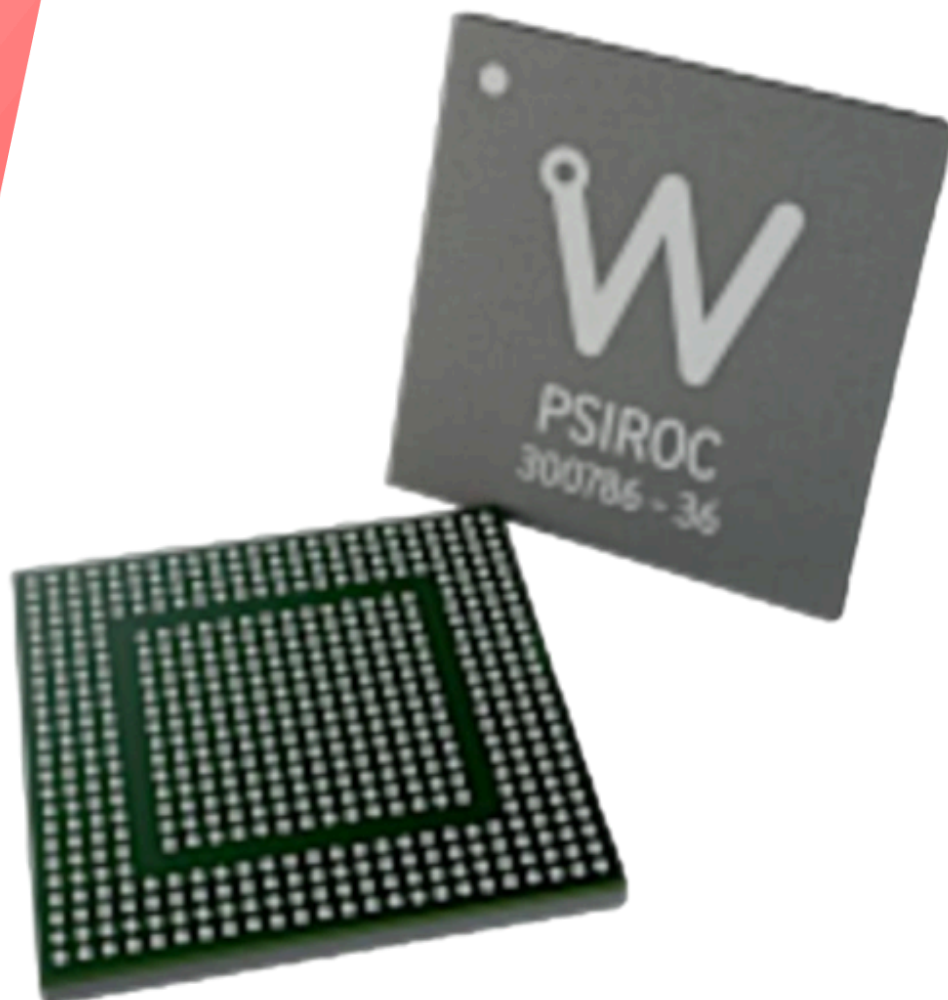


New

PSIROC

**PIN Diodes, Silicon
Strips and GEMs
Read-Out Chip**



Features



Optimized for

- GEMs
- PIN diodes
- Silicon strips
- **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, Negative

Description

Psiroc is a 64-channel front-end ASIC designed to readout PIN diodes, silicon strips and GEMs, handling detector capacitances ranging from 0 up to few hundreds of pF.

Psiroc allows triggering down to 0.5 fC on sub-20pF detector capacitances and provides dual-gain energy measurement with excellent Signal-to-Noise Ratio on the high gain (SNR over 10 for 0.5 fC) and large dynamic range on the low gain. For input signals over few pC a channel-wise ToT output is also available. Psiroc can be programmed to output the shapers HG/LG, individual triggers or ToT signals (two output pins per channels). The preamplifier gain is adjustable from 125 mV/pC up to 4 V/pC.

Charge measurement is done with peak detectors but those can be used in a track & hold fashion thanks to an internal delay cell. Analog data are outputted on two multiplexed analog output and can be read-out with an external ADC. Shapers shaping time can be adjusted from 20 ns to 3 μ s with a step of 20 ns up to 300 ns and a step of 200 ns up to 3 μ s. Data acquisition can be done ASIC wide or channel-wise.

Channel-by-channel calibration on the trigger thresholds for time trigger and ToT can be done with individual 6-bit DACs.

Technical Specifications

Detector Read-Out

PIN Diodes, Silicon strips, GEMs

Number of Channel

64

Signal Polarity

Positive and Negative

Sensitivity

Trigger on 0.5 fC on both polarity

Timing Resolution

< 150 ps RMS @ $Q_{in} = 4$ fC ; $C_d/C_f = 20p/1p$ (pa gain = 1 V/pC)

Dynamic Range

Up to 5 pC with low gain charge measurement and up to 100 pC with ToT

Packaging & Dimension

BGA 20x20 mm²

Power Consumption

350 mW - Supply voltage : 1.2 V

Inputs

64 analogue inputs

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

- 3 trigger threshold tuning (10bits)
- channel-by-channel gain and shaping time adjustment ($\tau = 20$ ns to 3 μ s)
- individual trigger masking and cell powering

Evaluation systems

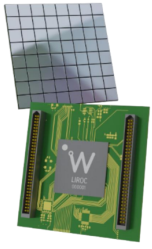
- Evaluation board
- Psiroc + PicoTDC evaluation system

Ordering Options

Code	Description	
WWPSIROC1BAA	PSIROC 1 - PIN Diodes, Silicon Strips amnd GEMs Read-Out Chip	RoHS

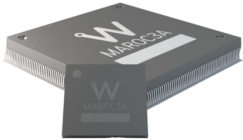
Related Products

LIROC 1



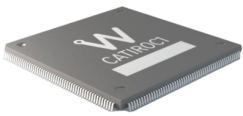
SiPM Analogue Read-out Chip for Lidar and Photon Counting Application

MAROC 3A



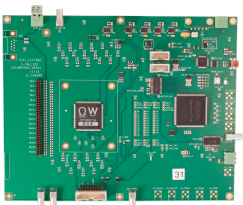
Photomultiplier tubes read out chip

CATIROC 1



Large photomultiplier arrays read out chip

Weeroc Testboards



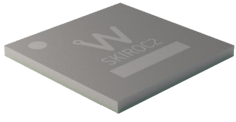
Control Systems for Weeroc ASICs

GEMROC 1



Micromegas and GEMs semi digital read out chip

SKIROC 2A



PIN Diode and Low Gain Silicon Detector Read-Out Chip



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