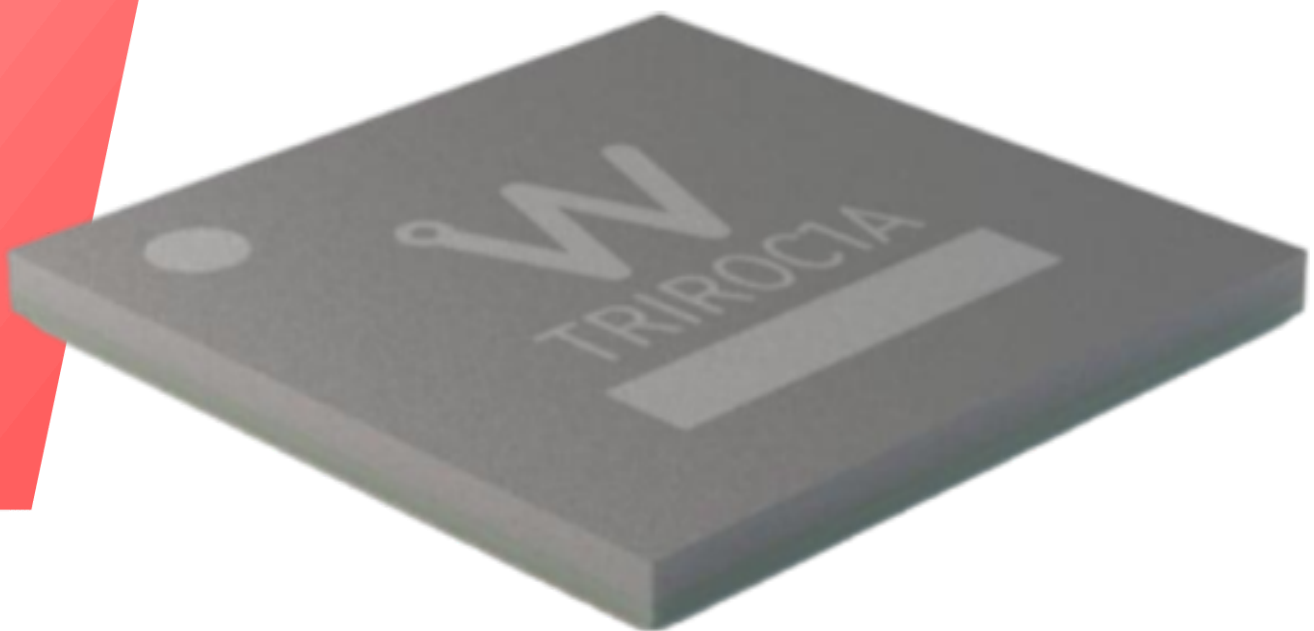


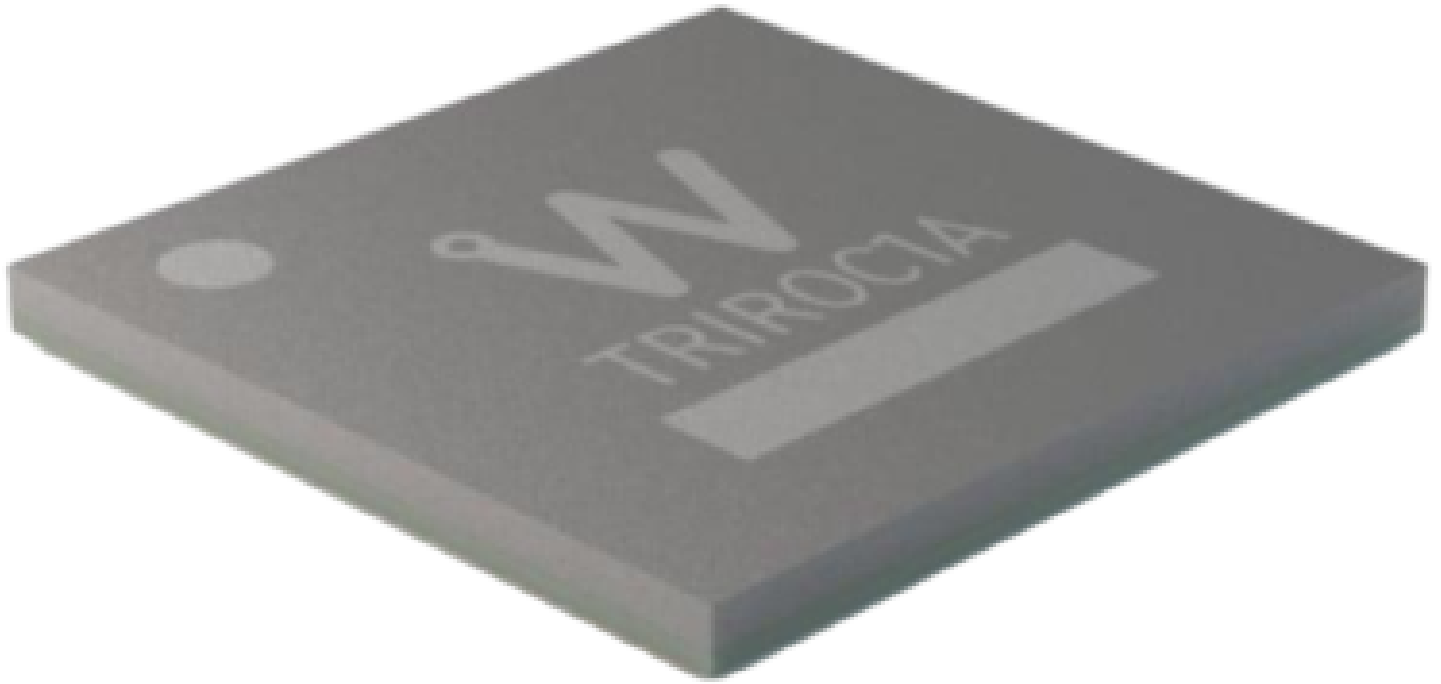
Discontinued

TRIROC 1A

**All in one SiPM read
out for multimodal
PET inserts**



Features



Optimized for

- SiPM
- **Number of channels:** 64
- **Type of measurement:** PET readout, Self-trigger, output charge and time in digital
- **Outputs:** Digital output (energy on 10-bit, time on 10-bit 100ps bin), 1 multiplexed time trigger output, 2 ASIC trigger OR output (64 channels, 2 levels)
- **Input Polarity:** Positive, Negative

Description

TRIROC 1A IS DEPRECATED - NOT RECOMMENDED FOR NEW DESIGN Please consider [Temporoc](#) for new design

Triroc 1A is a 64-channel **front-end ASIC** designed to readout silicon photomultipliers (**SiPM**) with both polarities for particle time-of-flight measurement applications. Triroc 1A 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 30ps-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 10 mW/channel, excluding buffers used to output the signals. The main application of Triroc 1A is PET time-of-flight but it can also be used for any application that requires both accurate time resolution and precise energy measurement. Triroc is available in BGA packaging (12x12mm, 353 balls).

Technical Specifications

Detector Read-Out

SiPM, SiPM array

Number of Channels

64

Signal Polarity

Positive or Negative

Sensitivity

Trigger on first photo-electron

Timing Resolution

88 ps RMS

Dynamic Range

3000 photo-electrons (106 SiPM gain), Integral Non Linearity: 1% up to 2000 photoelectrons

Packaging & Dimension

TFBGA353 12x12mm

Power Consumption

Power supply : 3.3V,10mW/ch

Inputs

64 voltage inputs with DC adjustment for SiPM HV tuning

Outputs Digital

- output (energy on 10 bit, time on 10 bit - 30ps bin)
- 1 multiplexed time trigger output
- 2 ASIC trigger OR outputs (64 channels, 2 levels)

Internal Programmable Features

- 64 HV adjustment for SiPM (64X8bits)
- trigger threshold adjustment (10bits)
- charge measurement tuning
- ADC Track & Hold/Peak Sensing
- 64 trigger masks
- internal temperature sensor
- channel by channel output enable
- trigger latch
- power pulsing

Evaluation systems

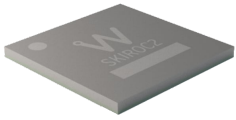
Evaluation board : 64 channels - available

Ordering Options

Code	Description
WWTRIROC1ABA	TRIROC 1A - All in one SiPM read out for multimodal PET inserts - BGA (Ball Grid Array) (Discontinued)

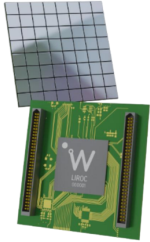
Related Products

SKIROC 2A



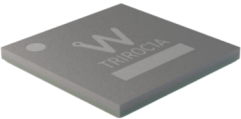
PIN Diode and Low Gain Silicon Detector Read-Out Chip

LIROC 1



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

TRIROC 1A



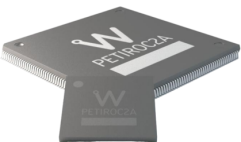
All in one SiPM read out for multimodal PET inserts

A5204



64 Channel Radioroc unit for FERS-5200

PETIROC 2A



SiPM read out for time of flight PET

PSIROC



PIN Diodes, Silicon Strips amnd GEMs Read-Out Chip

DT5204



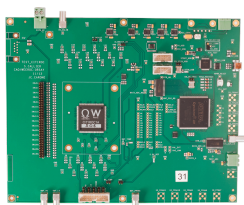
64 Channel Radioroc unit for FERS-5200

RADIOROC 2



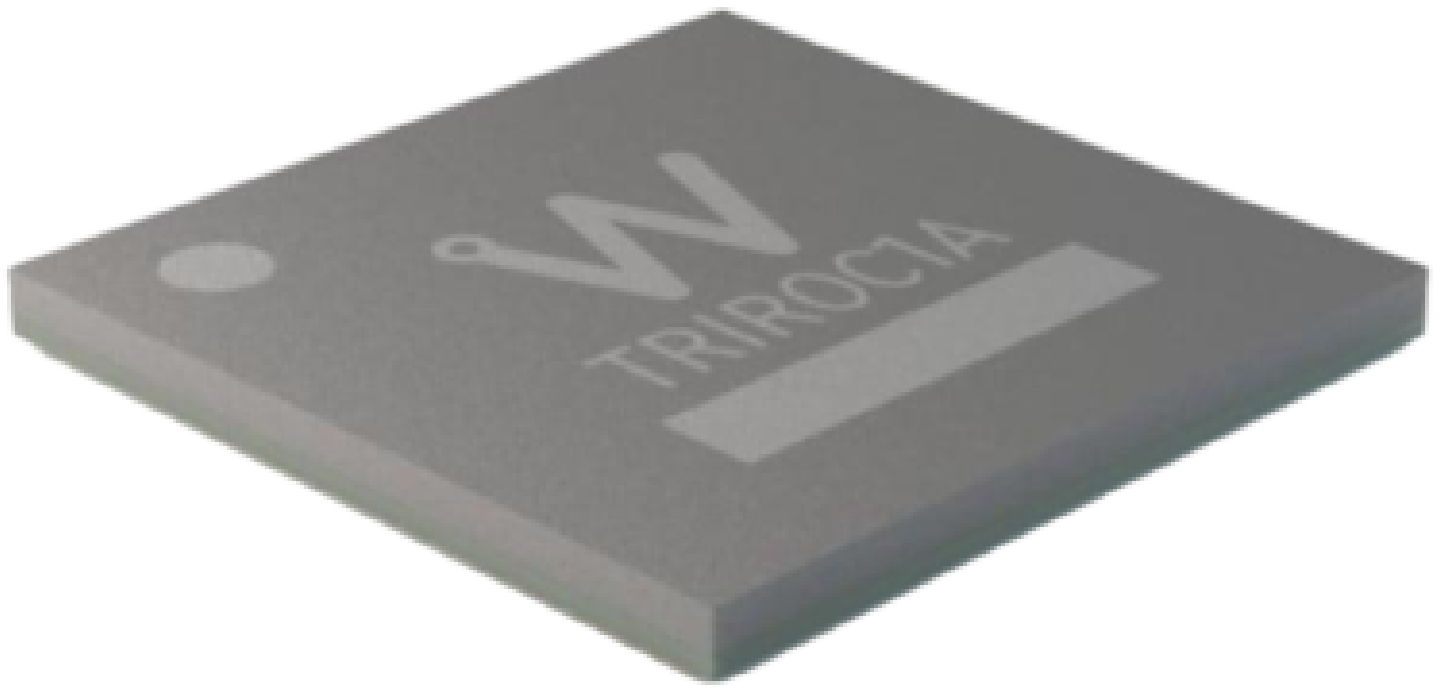
Multi-purpose SiPM analogue read-out chip

Weeroc Testboards



Control Systems for Weeroc ASICs

Gallery



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CAEN S.p.A.

Via Vetraia 11
55049 - Viareggio
Italy

Phone +39.0584.388.398

Fax +39.0584.388.959

info@caen.it

www.caen.it

CAEN GmbH

Brunnenweg 9
64331 Weiterstadt, Germany

Phone +49 (0)212.254.4077

Mobile +49 (0)151.16.548.484

info@caen-de.com

www.caen-de.com

CAEN Technologies, Inc.

1 Edgewater Street - Suite 101
Staten Island, NY 10305
USA

Phone +1.718.981.0401

Fax +1.718.556.9185

info@caentechnologies.com

www.caentechnologies.com

CAENspa India Private Limited

B205, BLDG42, B Wing,
Azad Nagar Sangam CHS,
Mhada Layout, Azad Nagar, Andheri West
Mumbai, Maharashtra 400053, India

info@caen-india.in

www.caen-india.in

