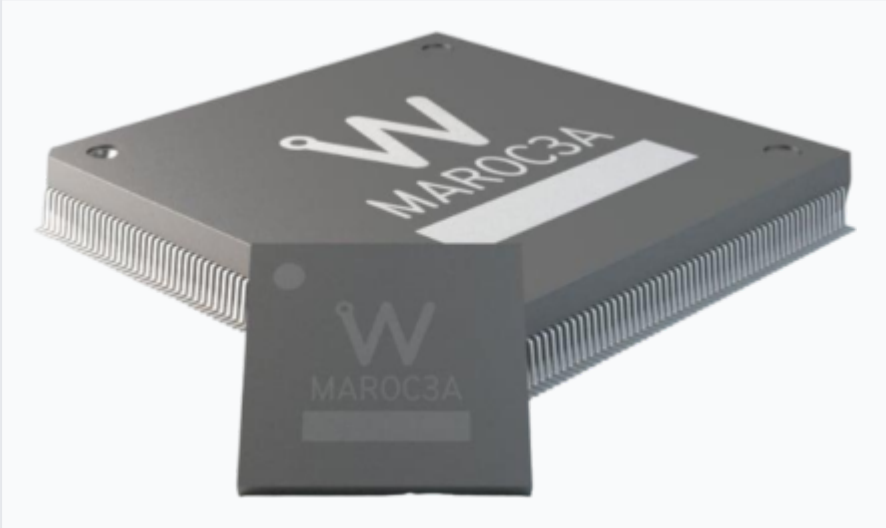
MAROC 3A

Photomultiplier tubes read out chip

DISCONTINUED

TFBGA353	64	MA-PMT, PMT, SIPM, SiPM array
Package	No. of Channels	Compatible Detectors



MAROC 3A is a deprecated 64-channel front-end ASIC optimized for negative fast input current pulses from multi-anode photomultiplier tubes (MA-PMTs). It supports self-triggered charge integration, photon counting and trigger timing, with 64 trigger outputs, discriminator OR outputs, a multiplexed analog charge output and an integrated 8, 10 or 12-bit digital charge measurement. Each channel provides 0–4 variable gain adjustment, charge measurement up to 30 photoelectrons (~ 5 pC) with 2% linearity, and photon counting up to 30MHz.

Overview

Product Highlights

- Optimized for MA-PMT
- Number of channels: 64
- Type of measurement: Self triggered, Charge integration, Photon counting, Time (trigger)
- Outputs: 64 trigger outputs, OR of the 64 triggers for each of the 2 discriminators, 1 multiplexed analog charge output, 1 digital charge measurement (8, 10, or 12 bits)
- Input Polarity: Negative
- Main performances: Energy measurement, Photon counting 30MHz, MA-PMT gain adjustment

Product Description

MAROC3A IS DEPRECATED – NOT RECOMMENDED FOR NEW DESIGN Please consider Poproc for new design

MAROC 3A is a 64-channel **front-end ASIC** designed to readout negative fast input current pulses such as those provided by **Multi Anode Photo Multipliers**. Each channel provides a **100% trigger** rate for signal greater than 1/3 photoelectron (50fC) and a charge measurement up to 30 photoelectrons (~ 5 pC) with a linearity of 2%. The gain of each channel can be tuned between 0 and 4 thanks to an 8 bit variable gain preamplifier allowing to compensate the non- uniformity between detector channels. A slow shaper combined with two Sample and Hold capacitors allows storing the charge up to 5 pC as well as the baseline. In parallel, 64 trigger outputs are obtained thanks to two possible trigger paths: one made of a bipolar or unipolar fast (15 ns) shaper followed by one discriminator for the **photon counting** and one made with a bipolar fast shaper (with a lower gain) followed by a discriminator to deliver triggers for larger input charges (> 1 pe). The discriminator thresholds are set by two internal 10-bit DACs. A digital charge output is provided by an integrated 8, 10 or 12 bit Wilkinson ADC.

For more information, visit the **Weeroc website**. For customer and technical support on Weeroc ASICs, please contact Weeroc directly using the details provided on their **Contact us** page.

AT A GLANCE

Package	**TFBGA353**
No. of Channels	**64**
Compatible Detectors	**MA-PMT, PMT, SIPM, SiPM array**
Input Polarity	**Negative**
Main Applications	**PHA, Photon counting**
Time Measurement	**Trigger-based**

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Technical Specifications

Detector Read-Out	MA-PMT
Number of Channels	64
Signal Polarity	Negative
Sensitivity	Trigger on 1/3 photo-electron
Timing Resolution	60ps RMS on single photo-electron, threshold 1/3 of photo-electron
Dynamic Range	5 pC (106 PM gain), Integral Non Linearity: 2% up to 5 pC
Packaging & Dimension	• PQFP240 (deprecated) • TFBGA 353 12x12mm
Power Consumption	3.5 mW /ch, power supply= 3.5V
Inputs	64 current inputs

Outputs

- 64 trigger outputs
- OR of the 64 triggers for each of the 2 discriminators
- 1 multiplexed analog charge output
- 1 digital charge measurement (8, 10, or 12 bits)

Internal Programmable Features

- Gain adjustment between 0 and 2 over 8 bits for each input preamp
- Trigger threshold adjustment (10bits)
- Analog and digital charge measurement
- 64 trigger masks

Evaluation systems	Evaluation board : Available – 64 channels

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Ordering Information

ORDERING CODE	DESCRIPTION	STATUS
WWMAROC3ABAA	MAROC 3A – Photomultiplier tubes read out chip – BGA (Ball Grid Array)	Discontinued

1. Ordering codes and descriptions are reproduced from the product record. Availability is confirmed at order entry.

Related Products

Weeroc Testboards — Control Systems for Weeroc ASICs

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