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Maroc 3A

MAROC3A is a 64-channel chip 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.

Detector Read-Out	MAPMT, SiPM
Number of Channels	64
Signal Polarity	Negative
Sensitivity	Trigger on 1/3 photo-electron or 50 fC with a 106 PM gain
Timing Resolution	75ps RMS on single photo-electron
Dynamic Range	5 pC (10 ⁶ PM gain), Integral Non Linearity: 2% up to 5 pC
Packaging & Dimension	PQFP240 (being discontinued, repair only), TFBGA353
Power Consumption	3.5 mW /ch, power supply= 3.5V
Inputs	64 current inputs
Outputs	64 trigger outputs Wired OR of the 64 triggers for each of the 2 discriminators 1 multiplexed analog charge output that can be daisy chained 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 outputs, 64 trigger masks

Learn more about MAROC3A

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