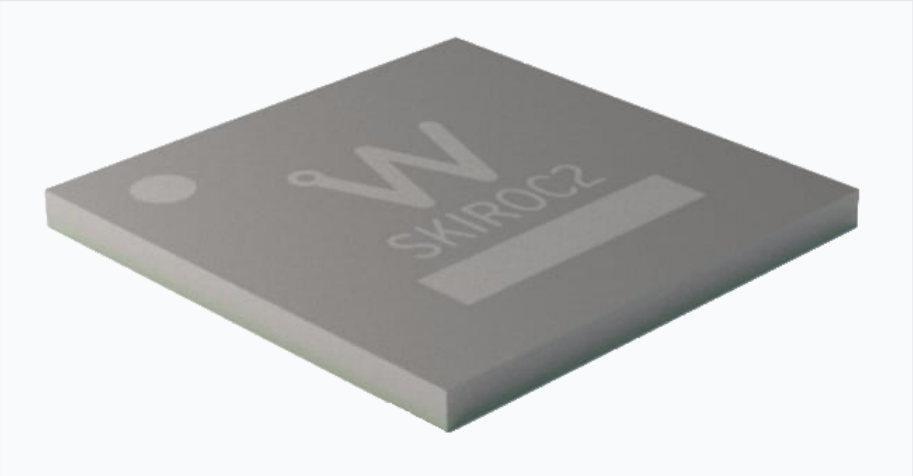
SKIROC 2A

PIN Diode and Low Gain Silicium Detector Read-Out Chip

DISCONTINUED



SKIROC2A is a deprecated 64-channel front-end ASIC for silicon PIN-diode readout, not recommended for new designs. It accepts positive signals from 0.2 fC to 10 pC using variable-gain, low-noise charge preamplifiers and dual shapers with gains of 1 and 10. Each channel provides auto-triggering down to 0.2 fC, 12-bit TDC time tagging, 15-depth SCA storage, multi-channel 12-bit Wilkinson ADC conversion and 4 Kbytes of integrated memory. Power consumption is around 6.2 mW/channel, with individually switchable stages.

Overview

Product Highlights

- TRL Technology Readiness Level 8 – Full system using ASIC running
- Detector Read-Out Si PIN Diodes
- Number of Channel 64
- Signal Polarity Positive
- Sensitivity Trigger on 0.2fC

Product Description

SKIROC2A IS DEPRECATED – NOT RECOMMENDED FOR NEW DESIGN

Pleas consider **Psiroc** for new design

SKIROC is a 64-channel front-end ASIC designed to readout silicon PIN diodes. Each channel is made of a variable-gain and low-noise charge preamplifier followed by two shapers – one with a gain of 1 and the other with a gain of 10 – to provide a charge measurement from 0.2 fC up to 10 pC. A time tagging is performed by a 12-bit TDC ramp. The charges and times are stored in a 15-depth Switched Capacitor Arrays (SCA), the values of which are converted by a multi-channel 12-bit Wilkinson ADC and sent to an integrated 4 Kbytes memory. The analog value of the charge is also available on an output pin. The trigger chain is composed of a high gain fast shaper and a discriminator and allows each channel to auto trigger down to 0.2 fC. Thresholds of the 64 discriminators are set by a common 10-bit DAC and an individual 4-bit DAC per channel. Each discriminator output is sent to an 8-bit delay cell (delay time tunable between 100 ns and 300 ns) to provide the Hold signal for the SCA cells of the slow channel. The power consumption is around 6.2 mW/channel and each stage can be individually shut down when not used. 616 slow control parameters are available to set various configurations and ensure the versatility of the chip.

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Technical Specifications

Detector Read-Out	PIN Diodes, Silicon strips
Number of Channels	64
Signal Polarity	Positive
Sensitivity	Trigger on 0.2 fC
Timing Resolution	Not relevant
Dynamic Range	10 pC
Packaging & Dimension	BGA 400 (17x17mm)
Power Consumption	400mW
Inputs	64 charge inputs

Outputs

- 1 multiplexed analog charge output that can be daisy chained
- 12-bit charge and time measurement
- Wired OR of the 64 discriminators
- Multiplexed trigger output

Internal Programmable Features

- Common gain adjustment for the input preamps from 400fF up to 6pF (4 bits)
- common trigger threshold adjustment (10 bits) and individual threshold (4 bits)
- 12-bit charge and time measurement
- 64 trigger masks, multiplexed analog output, multiplexed trigger output

Ordering Information

ORDERING CODE	DESCRIPTION	STATUS
WWSKIROC2ABA	SKIROC 2A – PIN diode and low gain silicium detector 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

CITIROC 1A — Scientific instrumentation SiPM read out chip

MAROC 3A — Photomultiplier tubes read out chip

SKIROC 2A — PIN Diode and Low Gain Silicium Detector Read-Out Chip

Weeroc Testboards — Control Systems for Weeroc ASICs

GEMROC 1 — Micromegas and GEMs semi digital read out chip

PSIROC — PIN Diodes, Silicon Strips amnd GEMs Read-Out Chip

TRIROC 1A — All in one SiPM read out for multimodal PET inserts

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