EP-AP3111

SiPM Time-Resolved Preamplifiers

1.Overview

EP-AP3111 is a fast current preamplifier designed for SiPM adaptation, featuring high speed, high swing output, high pulse throughput, and can be coupled with various types of crystal scintillators, liquid scintillators, and plastic scintillators. It is widely used in the field of high time resolution and high count rate nuclear radiation measurement.

2.Functional indicators

- 1 ····· Suitable for SiPM detectors
- 2 ····· Allows high voltage input range of 0~+50V High speed, high signal swing outputs
- 3 ····· Direct coupling of all types of scintillators
- 4 ····· Combined use with scintillators in time spectrum measurement applications

3.Performance parameter

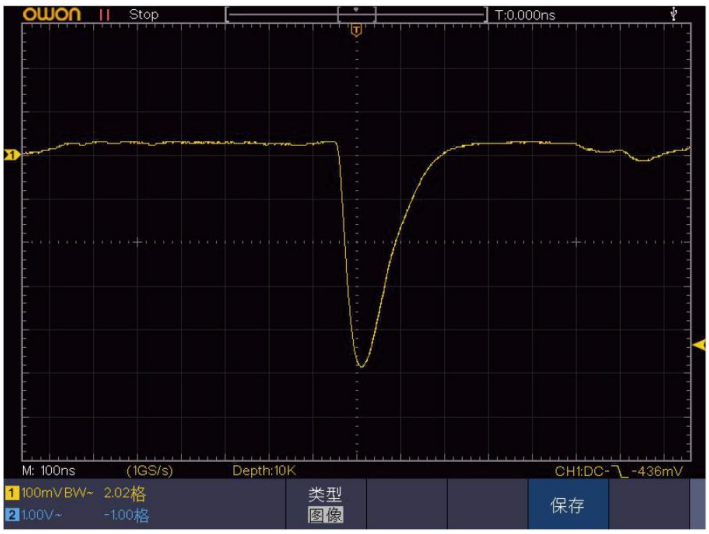
Power supply	Power	High Voltage Output Voltage	Gain Linearity	I/V Conversion ratio	Rising time	Output swing	Analog bandwidth	Output resistance	Gain Temperature Stability	Operating temperature	Storage temperature
+12V	140mW	±50V MAX	<0.01%	20mV/1μA	<10ns	±3.4V	1600MHz	50Ω	<±1%/℃	0℃~+50℃	-65℃~+150℃

4.Electromechanical interface

- INPUT ····· 12V power supply input
- TEST ····· Detector Connection Port
- HV ····· High-voltage input port (up to ±50V high voltage)
- POWER ····· DC power input port (±5V)
- E ····· Energy output signal
- T ····· Time Output Signal

5.Performance testing

Figure 1 Preamplifier Signal Output Diagram



Alpha and Beta particle activity monitoring system

Adopting EP-AP3111 fast current preamplifier and EJ-444 plastic scintillator and SiPM detector to form a radioactivity monitoring system, it can effectively complete the measurement of α, β particle activity.

Figure 2-1 Measurement System Block Diagram

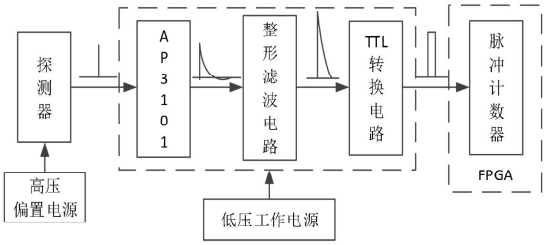
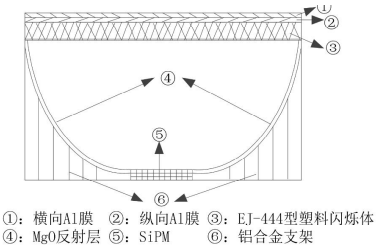
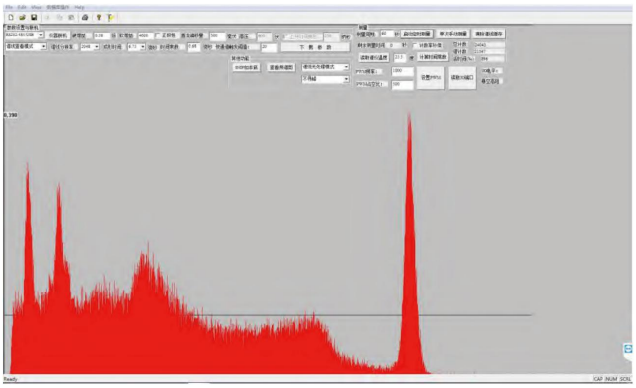


Figure 2-2 Schematic structure of the detector and physical drawing



6.Applications

Figure 3 EP-AP3111 test spectrum



The $LaBr_3$+SiPM detector was tested using a charge-sensitive preamplifier model EP-AP3111, with a measured ^{137}Cs energy resolution of 2.2%@662keV.