

1. Overview



The EP-AP5103 is a high-resolution charge-sensitive preamplifier that can be applied to semiconductor detectors such as Si-PIN, APD, and PN photodiodes, etc. The preamplifier outputs a high signal-to-noise ratio energy signal with a fast time signal, and it can be widely used in the field of measurement of charged particles or heavy ions.

2. Functional indicators

- ▶ 1 Suitable for all kinds of semiconductor detectors
- ▶ 2 Synchronized output of energy and time signals
- ▶ 3 Allowable high voltage input range 0~±1000V
- ▶ 4 Built-in input protection circuit
- ▶ 5 Extremely low noise

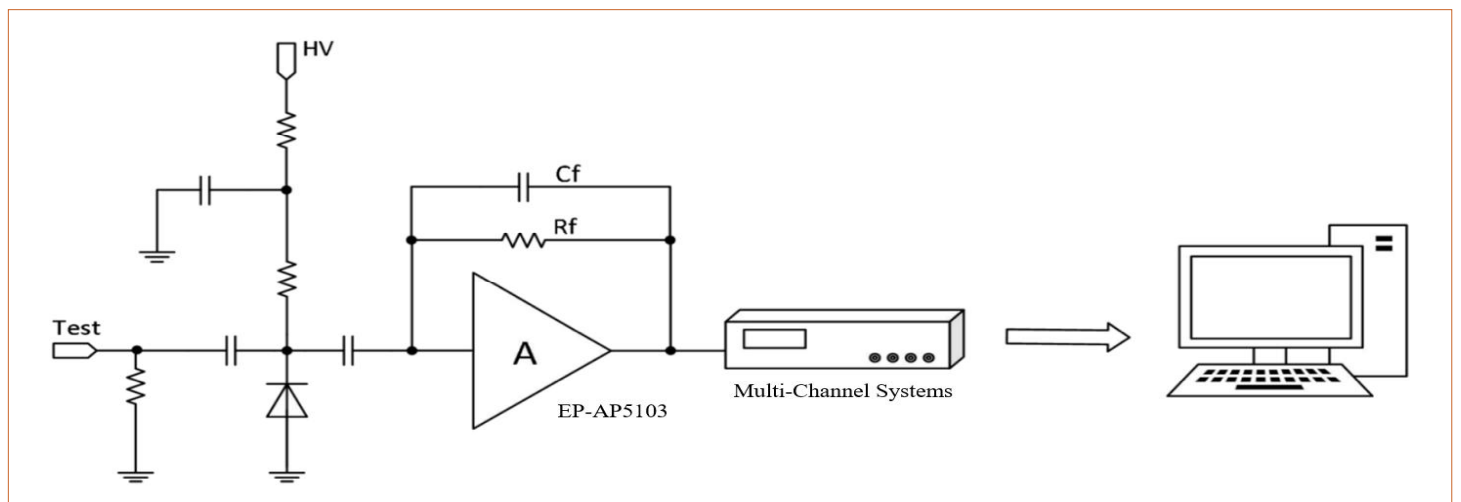
3. Performance parameter

Power supply	Power	High Voltage Output Voltage	Gain Linearity	Charge Gain	Rising time	Decay time constant	Analog bandwidth	Noise voltage	Output resistance	Gain Temperature Stability	Operating temperature	Storage temperature
+12V	240mW	±1000V MAX	<0.01%	1360mV/pC	14.3ns (4pF Feedback capacitor)	500ps	350MHz	±3mV	50Ω	<±0.01%/C	0°C~+50°C	-40°C~+125°C

4. Electromechanical interface

- ▶ INPUT Detector connection port
- ▶ TEST Test signal input port
- ▶ HV High voltage input port (SHV)
- ▶ POWER DC power input port (DB9/NIM standard)
- ▶ E Energy output signal
- ▶ T Time output signal

● Figure 1 Connection method(AC coupled mode by default, direct coupled version available)



5. Performance testing

Figure 2-1 Input signal rise time

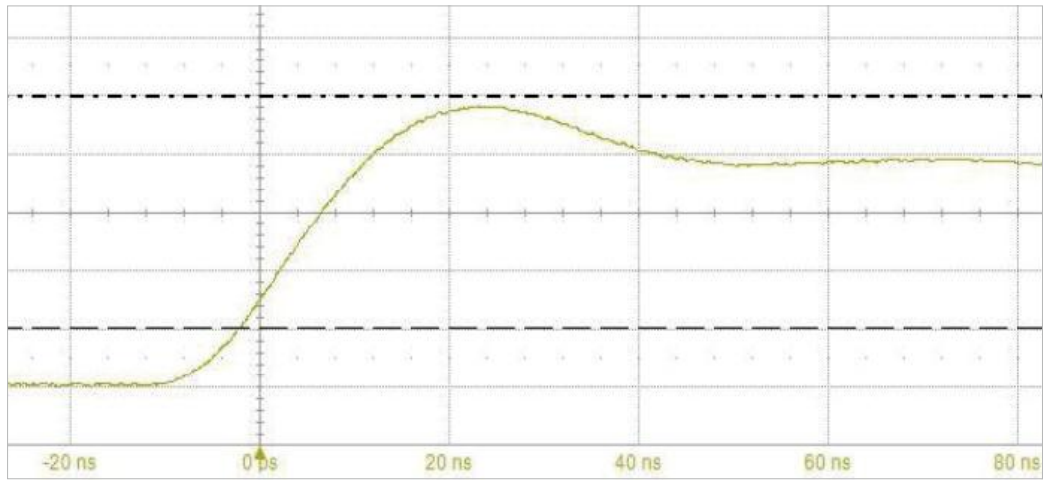
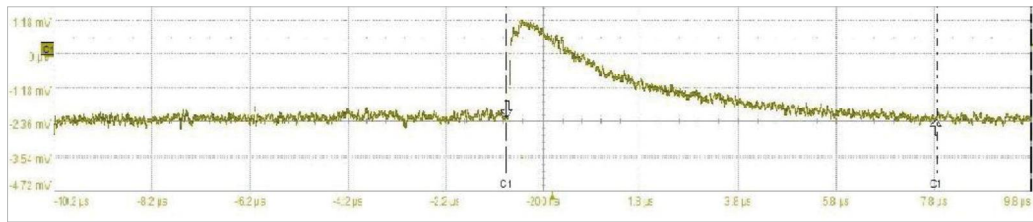


Figure 2-2 ²⁴¹Am 59.5keV Test Signal Diagram



6. Applications

1. For the 6mm²Si-Pin detector, the EP-AP5103 charge sensitive preamplifier is used to realize signal amplification, and the EP-DMCA-1104 digital multi-channel is used to realize the energy spectrum readout, and the measured resolution of gamma rays is 1.9%@59.5keV for ²⁴¹Am.

Figure 3 ²⁴¹Am energy spectra

