

1. Product Introduction



The EP-AP3001 Charge-Sensitive Preamplifier for Semiconductor Detectors is a high-resolution front-end readout amplifier designed for semiconductor detectors such as Si-PIN, APD and PN photodiodes. It is mainly used for low-noise amplification of weak charge signals output by detectors. The unit delivers high-SNR energy signals and fast timing signals to meet both energy-measurement and time-measurement requirements.

Featuring low noise, high gain and high sensitivity, it is suitable for radiation measurement of charged particles, heavy ions and other radiations. It can be paired with semiconductor detectors including PIPS, Si-PIN and APD to build front-end readout systems.

2. Functional Indicators

- ▶ 1 Suitable for readout of weak charge signals from semiconductor detectors including Si-PIN, APD and PN photodiodes
- ▶ 2 Outputs high-SNR energy signals and fast timing signals for concurrent energy and time measurement
- ▶ 3 Features low noise, high gain and high sensitivity

3. Application Scenarios

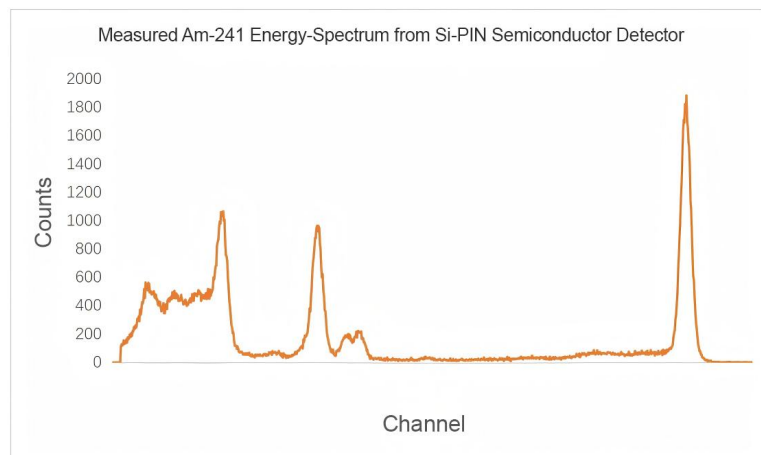
- ▶ 1 Radiation measurements for charged particles, heavy ions, etc
- ▶ 2 Front-end signal readout when used with semiconductor detectors such as PIPS, Si-PIN and APD

4. Performance Parameters

- ▶ Supply Voltage $\pm 12\text{ V}$
- ▶ Gain 1475mV/pC
- ▶ Time Constant $400\mu\text{s}$
- ▶ Rise Time 11.6ns (with 3 pF feedback capacitor)
- ▶ Operating Temperature $-20\text{ }^{\circ}\text{C} \sim +50\text{ }^{\circ}\text{C}$
- ▶ Product Dimensions $108\text{mm} \times 75\text{mm} \times 45\text{mm}$

5. Energy-Spectrum Test

Test Result: A 6 mm^2 Si-PIN detector was used to measure Am-241 gamma-ray (59.5 keV), yielding an energy resolution of 2.25% .



• Measured Am-241 Energy-Spectrum from Si-PIN Semiconductor Detector