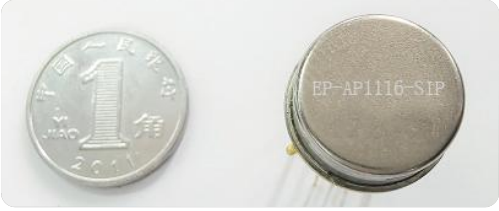
EP-AP1116-SIP

Thick Film Hybrid Charge Sensitive Preamplifier

1.Overview



The EP-AP1116-SIP is a high performance thick film hybrid charge sensitive preamplifier with integrated preamplification, pulse shaping, and pulse discrimination. Developed for systems using photomultipliers, forward counters, and other low capacitance charge generation detectors in pulse counting mode, the preamplifier is suitable for aerospace and portable instrumentation, particle detection, imaging, laboratory and research experiments, medical electronics, and optoelectronic systems. This preamplifier has an internal amplifier circuit based on transistors and outputs an exponential pulse signal and a pulse discrimination signal.

2.Functional indicators

- Energy signal output ..... Exponential signal
- Pulse identification signal output ..... standard TTL signal
- Operating Temperature Range ..... -40℃ to +85℃

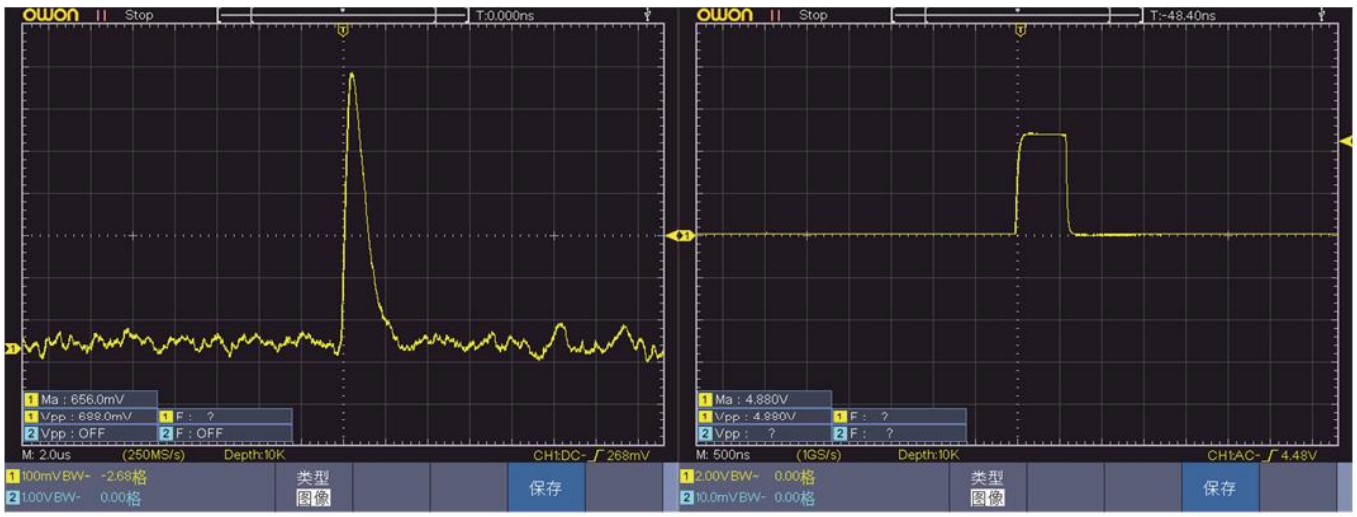
3.Performance parameter

- Weight 5g
- Quiescent current 21mA
- Power 0.1W
- Rising time ..... <500ns
- Pulse width 2μs
- Signal-to-noise ratio 24:1
- Baseline noise 50mV
- Discrimination signal reversal time ..... <200ns
- Power supply ..... +4V to +12V
- Output signal range ..... 0 to +Vs
- Package 12-pin TO-8

4.Performance testing

The following figure shows the measured waveform output with 3-inch NaI(Tl) + EP-AP1116-SIP.

Figure 1 Test waveform of EP-AP1116-SIP.



EP-SA1117-SIP

Pulse Shaping Amplifier

1.Overview

EP-SA1117-SIP pulse shaping amplifiers are typically used after charge-sensitive preamplifier stages and perform three functions: First, they provide output pulses that return to the baseline much faster than charge-sensitive preamplifier output pulses. This is especially important at high count rates, where pulses from consecutive events can "pile up". Second, the shaping amplifier filters noise from the preamplifier output signal. Finally, the shaping amplifier can also be used to provide additional signal gain.

2.Functional indicators

- Energy signal output ..... Exponential signal
- Pulse identification signal output ..... standard TTL signal
- Operating temperature Range ..... -40℃ to +85℃
- ..... It can be widely used in systems that require analog filter shaping

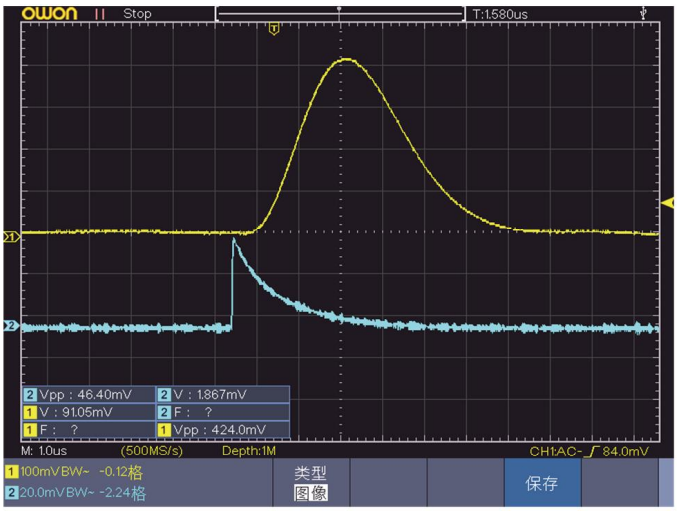
3.Performance parameter

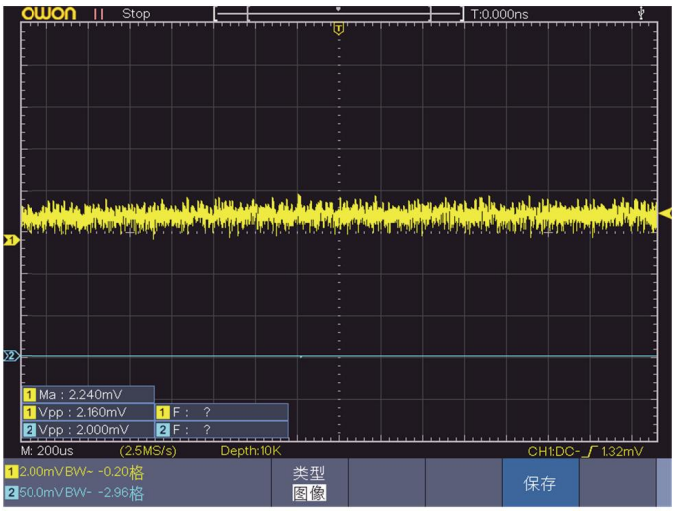
- Output signal ..... Gaussian signal
- Operating Temperature Range ..... -40℃ to +85℃
- Package DIP-14
- Weight 5g
- Quiescent Current 3mA
- Rising time 2.5μs
- Pulse width 6μs
- Signal-to-noise ratio 525: 1
- Baseline noise ..... <2mV
- Power supply ..... +3V to +12V, Vs=±5V

4.Performance testing

Below is the measured waveform of 3-inch NaI(Tl) + EP-SA1117-SIP with 1μs forming time as shown in the figure below with a bias voltage of 705V.

Figure 2 Waveforms of EP-SA1117-SIP.





EP-PH1118-SIP

Thick Film Hybrid Peak Holders

1.Overview

The Model EP-PH1118-SIP is a high-performance thick-film hybrid peak-hold device for tracking and holding the peak of analog input signals. The device also features a low hold-up voltage dropout rate and consumes less than 0.13 mW of power in static mode.Laboratory and commercial applications include nuclear physics; portable instrumentation; nuclear monitoring; aerospace; particle, gamma-ray, and X-ray imaging; medical and nuclear electronics; and optoelectronic systems.

2.Functional indicators

- Operating temperature Range ..... -40℃ to +85℃
- ..... It can be widely used in analog signal amplitude holding systems

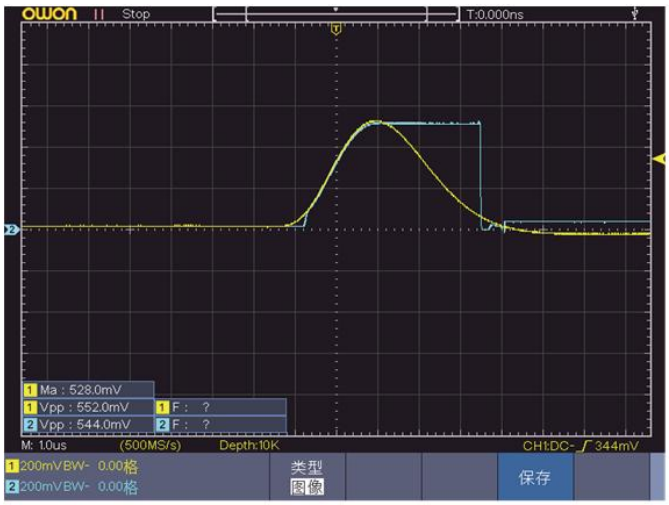
3.Performance parameter

- Package DIP-14
- Weight 5g
- Quiescent Current ..... 26mA@±5V
- Baseline noise ..... <2mV
- Power supply ..... Vs=±5V
- Reset electric level ..... TTL
- Holding capacitance 1nF
- Input signal range ..... 0 to +Vs

4.Performance testing

The following figure shows a 3-inch NaI(Tl) + EP-PH1118-SIP, biased at 705 V. The measured waveform is shown below.

Figure 3 Waveform of EP-PH1118-SIP.



The energy spectrum of ^{137}Cs was measured using a 3-inch NaI(Tl) + EP-PH1118-SIP peak bailer with a bias voltage of 705 V. The results of the energy spectrum measurement of ^{137}Cs are shown below.

Figure 4 Energy spectra of EP-PH1118-SIP tests.