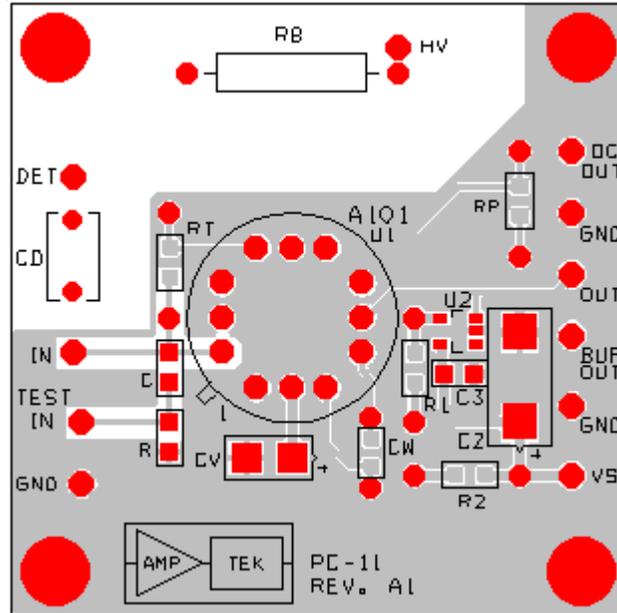


PC11 Test Board for the A101

The PC11 is a printed circuit board designed to facilitate testing of the A101. In addition to testing circuitry, it provides component locations for use with detectors. Ground plane construction minimizes external pick-up.



Dimensions: 1.75 in. square (4.45 cm square)

INPUTS

- IN: Detector input; PIN 12; should be AC coupled with a high voltage capacitor (500 pF - 1000 pF).
- DET: Provides post to connect the detector and input capacitor.
- TEST IN: Input to test circuit as described in specifications.
- V_S: PIN 2; supply voltage (+4 to +10 VDC).
- H.V.: Provides post to connect the detector to the high voltage supply through a resistor.

OUTPUTS

- + OUT: Positive, TTL type output from PIN 5.
- O.C. OUT: Negative, open collector output from PIN 6. (Must be connected through 1 kohm to V_S.)
- BUF OUT: Positive output through a Buffer/Line Driver IC from PIN 5.

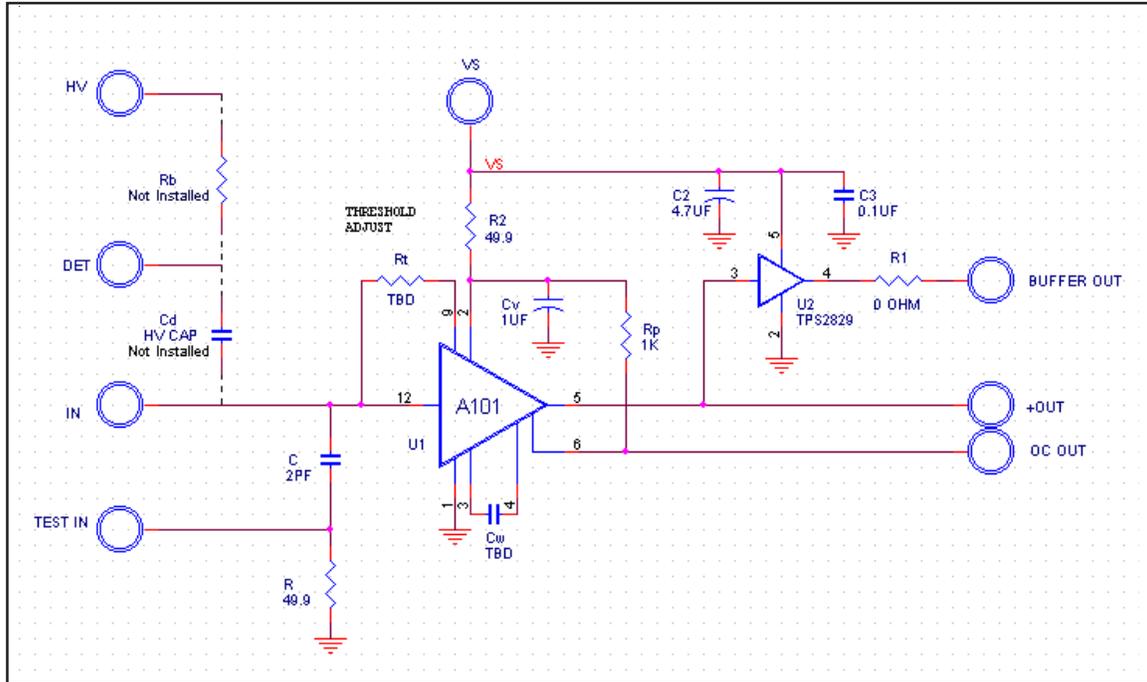
COMPONENTS

- C_V: Filter capacitor.
- R_P: Pullup resistor (1 kohm).
- C: Test capacitor (2 pF).
- R: Test pulse termination resistor (50 ohm).
- R_T: Threshold adjustment resistor.
- C_W: Pulse width adjustment capacitor.
- C_D: High voltage detector coupling capacitor (user supplied).
- R_B: Detector bias resistor (user supplied).
- U₂: Line Driver TPS2829.

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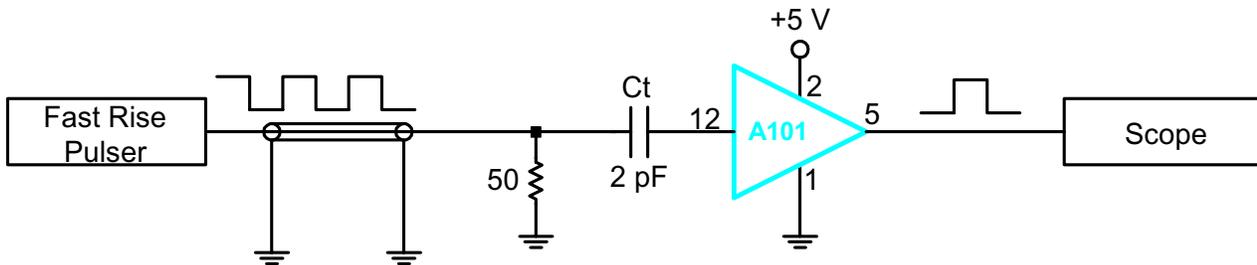
PC11 Wiring Diagram for the A101



The A101 can be tested with a pulser by using the small 2 pF test capacitor to inject a test charge into the input. The unit will trigger on the negative-going edge of the pulse, which should have a transition time of less than 20 ns. Either a tail pulse with a much longer fall time ($>1 \mu\text{sec}$) or a square wave may be used. If a square wave is used, triggering on both the positive and negative going edge will occur for large pulses.

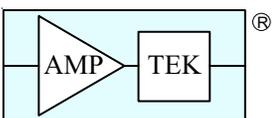
Charge transfer in the test circuit is according to $Q=CV$ where Q =Total amount of charge, C =Capacitor, and V =Voltage.

Typical test circuit



- Examples:
- 1) A 0.25 volts test pulse into 2 pF test capacitor will transfer 0.5 pC into the input of the A101.
 - 2) Using the 2 pF test capacitor, the nominal threshold of the A101 will be at 80 mV.

CAUTION: Use only the TEST INPUT to test the A101 with a pulse. DO NOT connect the test pulser to the input directly or through a large capacitor ($>100 \text{ pF}$) as this can produce a large current in the input transistor and cause irreversible damage.



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