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).
- **U_2:** Line Driver TPS2829.
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 μsec) 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**

```
Fast Rise Pulser

<table>
<thead>
<tr>
<th>50</th>
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<tbody>
<tr>
<td>2 pF</td>
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<tr>
<td>A101</td>
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<tr>
<td>Scope</td>
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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 pF) as this can produce a large current in the input transistor and cause irreversible damage.