9. Values for R4, R5, and C6 may differ depending on type of piezoelectric horn used.

10. C2 and R13 are used for coarse sensitivity adjustment. Typical values are shown.

11. R9 is for fine sensitivity adjustment (optional). If fixed resistors are used, R8 = 12 k, R10 is 5.6 k to 10 k, and R9 is eliminated. When R9 is used, noise pickup is increased due to antenna effects. Shielding may be required.

12. C4 should be 22 μF if B1 is a carbon battery. C4 could be reduced to 1 μF when an alkaline battery is used.

Figure 8. Typical Battery-Powered Application

Table 4. Pin Description

Pin No.	Pin Name	Description
1	C1	A capacitor connected to this pin as shown in Figure 8 determines the gain of the on-chip photo amplifier during push-button test and chamber sensitivity test (high gain). The capacitor value is chosen such that the alarm is tripped from background reflections in the chamber during push-button test. $A_v \approx 1 + (C1/10)$ where C1 is in pF. CAUTION: The value of the closed-loop gain should not exceed 10,000.
2	C2	A capacitor connected to this pin as shown in Figure 8 determines the gain of the on-chip photo amplifier except during push-button or chamber sensitivity tests. $A_v \approx 1 + (C2/10)$ where C2 is in pF. This gain increases about 10% during the IRED pulse, after two consecutive local smoke detections. Resistor R14 must be installed in series with C2. $R14 \approx [1/(12\sqrt{C2})] - 680$ where R14 is in ohms and C2 is in farads.
3	DETECT	This input to the high-gain pulse amplifier is tied to the cathode of an external photodiode. The photodiode should have low capacitance and low dark leakage current. The diode must be shunted by a load resistor and is operated at zero bias. The Detect input must be AC/DC decoupled from all other signals, V_{DD}, and V_{SS}. Lead length and/or foil traces to this pin must be minimized, also. See Figure 9.

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