

## HIS-07 Ionization Chamber of Ionization Smoke Detector

Single-source dual-chamber DSCB-type ionization chamber designed according to the best performance of computer analog smoke detector. The ionization chamber, as the main component of the smoke detector, fully complies with the American UL217 standard Standard, European EN-54-7 standard and GB4715-93 national standard. Good product quality consistency, group

The installation of detectors does not need to measure the ionization chamber one by one, which is convenient for automatic production.

### Working principle

When the flow of ionized electrons through the inner and outer ionization chambers is unbalanced, the collector is charged until the ionization flow reaches equilibrium. In the absence of smoke or combustion, the collector is not affected by the statistical fluctuation of the ionization current. In addition, keep the equilibrium potential. When the smoke enters the ionization chamber, it affects the ionization current, and it is easy to enter the smoke. The outer ionization chamber is affected more than the inner ionization chamber, the ionization current drops, and the collector is recharged until New equilibrium potential, this potential change can be used to trigger the alarm circuit.



### Features

- (1) Single-source double-chamber structure; small size, easy to install in small alarms;
- (2) Under the conditions of relative temperature and humidity of 40°C and 95%, the change value of the collector equilibrium potential is within the basic parameter range;
- (3) The structure of the ionization chamber complies with the requirements of UL217 Section 9.5 for insect nets;
- (4) Stainless steel and polyester materials and metal palladium on the surface of the ionization source have high corrosion resistance;
- (5) The balance potential of the collector has good consistency and small dispersion, and can be used for analog smoke detectors; (6) All solder joints are pre-coated with solder, which is convenient for soldering and installation.

### Specifications

Condition: Voltage between cover electrode and source base electrode (operating power supply voltage): 9 V

Ambient temperature: 20±3γ Atmospheric pressure: close to standard atmospheric pressure, clean air

Project	Numerical value
Collector Equilibrium Potential	5.5±0.3V
The collector potential varies with smoke concentration:	
Light reduction rate is 1%/ft. Light	0.6V
reduction rate is 4%/ft. Insulator	2.2V
leakage current (Max) Capacitance (collector	0.5pA 6pF
to cover + to source base)	

### Ionization source characteristics and radiation safety performance

A high-performance low-activity Am-241 ionization source is installed in the ionization chamber.

Ionization source activity 0.5μCi(18kBq)±10%

0.8μCi(30kBq)±10%

Ionization source alpha spectrum peak

4.5MeV±10%

FWHM

γ0.7 MeV

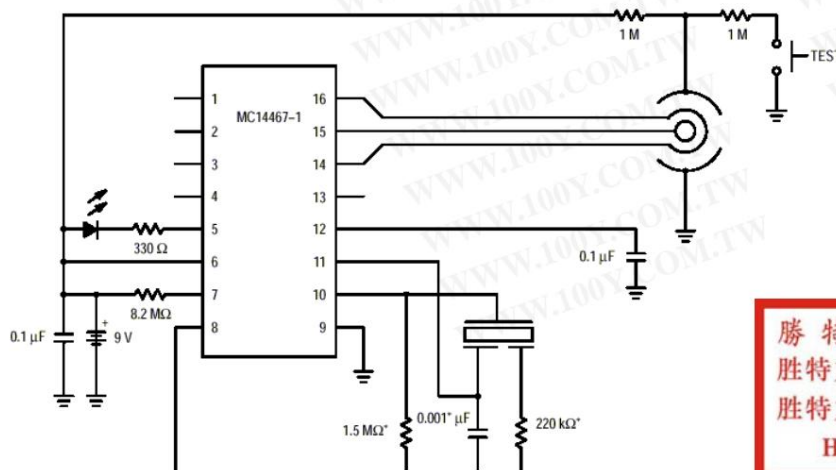
Safety Polarization Standard (GB4075γISO2919) Radiation dose

C64444

rate at 25cm of ionization chamber

0.03mGy/year (1mGy lower than the standard human population dose)

Recommended circuit diagram If the smoke detector adopts MC14467 components, please refer to the following circuit schematic diagram.



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-54151736  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

Sensitivity

characteristics (according to UL217 standard wind speed 0.1M/sec)

smoke concentration (%/foot)	Output voltage (V)	Error (ȳV)
0	5.6±0.4	0
1	5.3±0.5	0.3±0.1
2	5.0±0.5	0.6±0.1
3	4.7±0.5	0.9±0.2
4	4.4±0.5	1.2±0.2
5	4.2±0.5	1.4±0.2

Power supply voltage characteristics (25ȳ.60%RH)

Supply Voltage	Output Voltage (V)
6	3.3±0.3
9	5.6±0.4
12	8.0±0.7
15	10.0±0.85
18	13.0±1.0

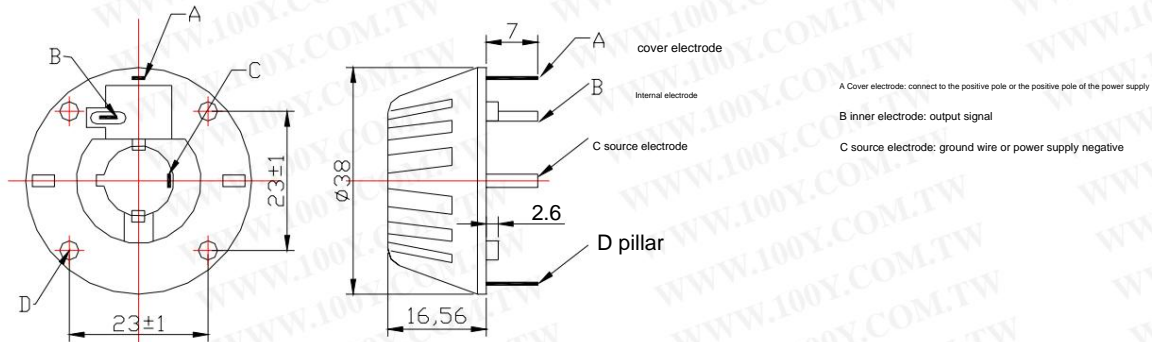
Temperature characteristics: (humidity:

60% temperature (% ȳ)	Output (V)
0	5.15±0.4
25	5.6±0.4
50	5.85±0.4

Humidity Characteristics (Temperature:

25°C Humidity (%)	Output (V)
30	5.75±0.5
60	5.6±0.4
90	5.45±0.4

Appearance and structure

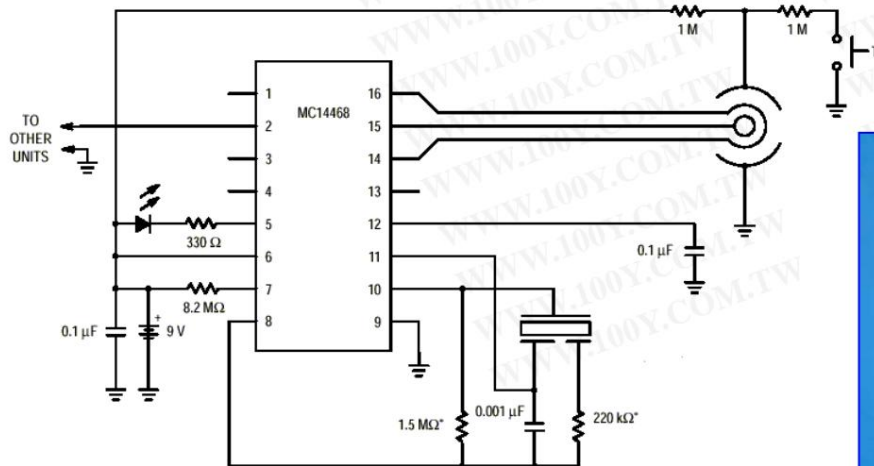


Matters needing

attention 1. To detect the output voltage, an instrument or IC integrated circuit (MC14467/14468) with impedance above 1014NM is required. Ordinary instruments will cause inaccurate test results.

- When assembling the smoke alarm, do not mistake solder and other sundries into the device ion chamber, otherwise it must be cleaned.
- The output leads of the device should be connected in the air (usually, Teflon support leads are used), because ordinary circuit boards will cause tiny leakage flow, making the detection results inaccurate.
- The device leads and the input leads of the FET and IC should be encapsulated with epoxy resin to minimize leakage current caused by humidity.
- Since the output current of the device is very small, the device needs a mask. The input and output parts are most affected by the outside world, and this part must be Line mask processing.

Electrical schematic diagram of smoke detector using MC14468



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