Butane Sensor

### SPECIFICATION

3x3 mm Standard Power CTS04

**Heater Resistance at 21°C**
Typical Value 10.6 ± 1 Ω

**Heater Resistance at 475 ± 20°C**
Typical Value 15 ± 2 Ω

**Baseline Sensor Resistance in clean air**
Typical Value 25 ± 5 kΩ

**Sensor Resistance in 300ppm Butane**
Typical Value 44KΩ

**Sensor Resistance in 1000ppm Butane**
Typical Value 56KΩ

**Sensor Resistance in 10000ppm Butane**
Typical Value 105KΩ

A simple flame arrestor gauze is fitted as standard to the sensor cap. A certified flame proof enclosure is available on request.

**Typical sensor measurement voltage**
Typical Value 0.1V continuous

**Ambient Operating temperature range**
Typical Value -20°C to +60°C

**Typical Power rating**
Typical Value 900mW

**Lifetime**
Long lifetime - based on 30,000 thermal cycles:
23°C - 400°C and accelerated thermal ageing at 480°C for 1 year. See MIL-STD-883D
Typical Value > 8.4 Years.

### KEY FEATURES

- Fast response
- Improved Range & Repeatability
- (Low Cross Sensitivity)
- High resistance to poisoning
- Temperature stabilization inherent in design of heater driver
- Long lifetime - in excess of 10 years

Capteur’s ‘CT’ Series Butane sensor is designed for detecting hydrocarbons in a diverse range of applications. The sensor offers both a lower cost of ownership and a longer life, when compared to electrochemical sensors.

The sensor stabilises in less than 1 minute and zero drift thereafter is less than 1%/year. The humidity response is small, and the sensors can operate in both high and low gas concentrations. Power consumption is typically about 900 mW.

The sensor has a cross sensitivity to other oxidisable molecules such as solvents and organic vapours.

Physically small the sensors are constructed by depositing a thick film layer of gas sensitive material onto an alumina substrate, which incorporates a thick film heater.

The sensors are available in either low cost alarm grade for high volume applications and premium performance continuous monitor grades for high accuracy measurements. The sensors are supplied pre-characterised, the standard range being 0-10000 ppm. Other calibrations ranges and gases are available on request.

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A Pin format is based on standard 8-pin DIL package with four pins in the outer pin positions (0.762 mm or 0.3 ins pitch).

B Base and cap diameter 15mm

D Base and cap height 16mm

E Outboard pin length 7.6mm

For alternative housing options please refer to Capteur’s Sensor Selector.
The baseline and gas response of the sensor are a function of the operating temperature of the device. To ensure stability of the device it is essential to maintain the operating temperature of the sensor to within a fraction of a degree. This is achieved by use of the heater driver circuit shown opposite.

The sensor heater forms part of a Wheatstone bridge. The current through the heater is controlled so as to maintain the sensor heater at constant resistance. The supply voltage needs to be stable and about 1V (typically > 5V or 6V) above that required by the heater to achieve the correct sensor temperature.

This board can be purchased directly from Capteur, pre-matched with the appropriate settings for its associated sensor, for evaluation purposes.

The sensor operates as a gas sensitive resistor. Voltage applied to the sensor to measure its resistance should be such that the current through the sensor does not exceed 5µA.

Capteur can supply a general interface board which contains both the heater control circuit and provides an output voltage proportional to the sensor’s resistance change.

Capteur reserve the right to change the design features or any technical details without any prior notice.