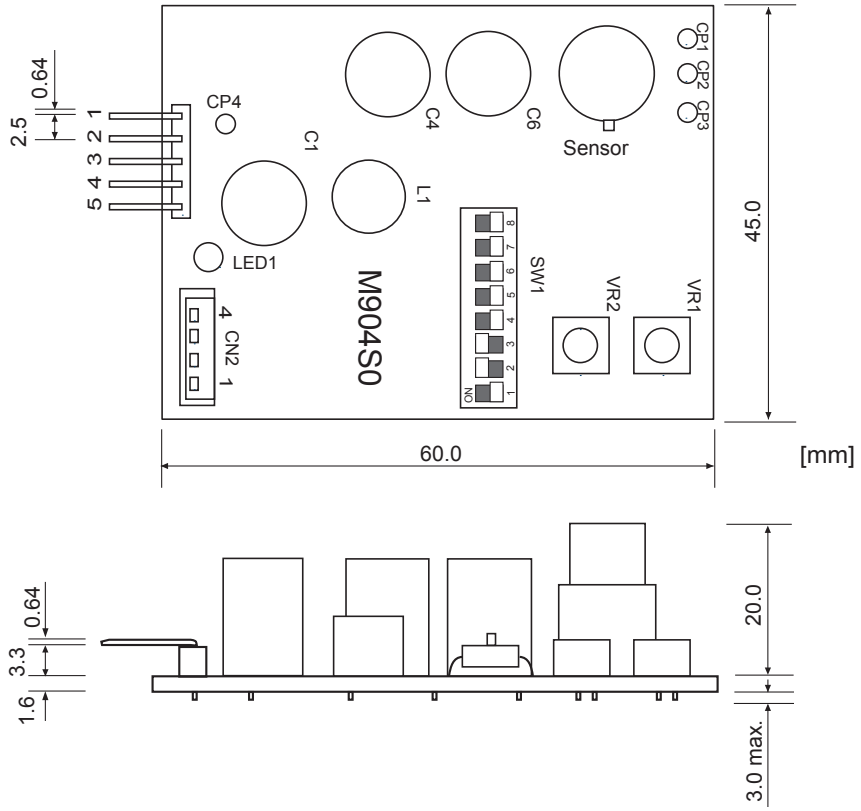
EM3870A - Evaluation Module for TGS3870

In order to simplify testing of the sensor, the output signal can be obtained continuously with this evaluation module. As the driving mode of TGS3870 is cyclic heater control and intermittent detection, the periodically sampled sensor response is converted into continuous output voltage of the same value through the software in the microprocessor.

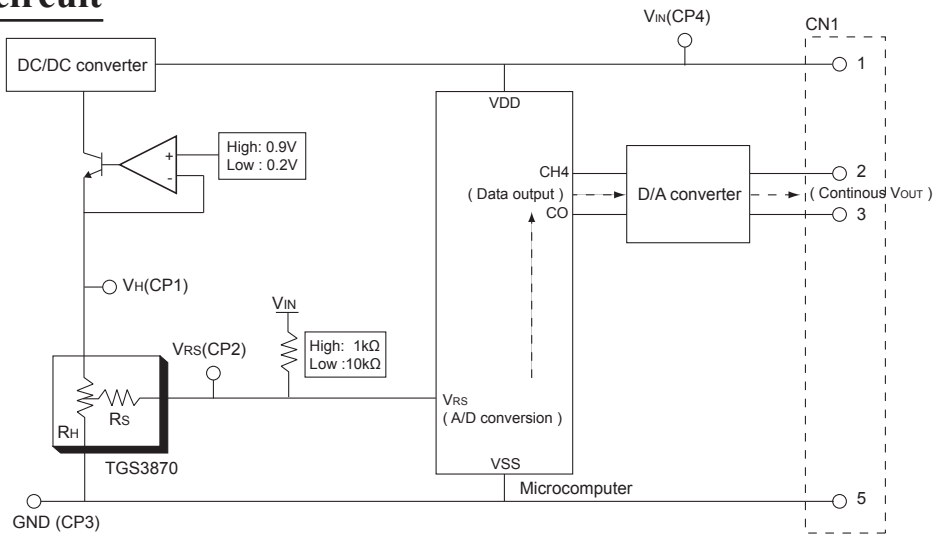
A. Configuration



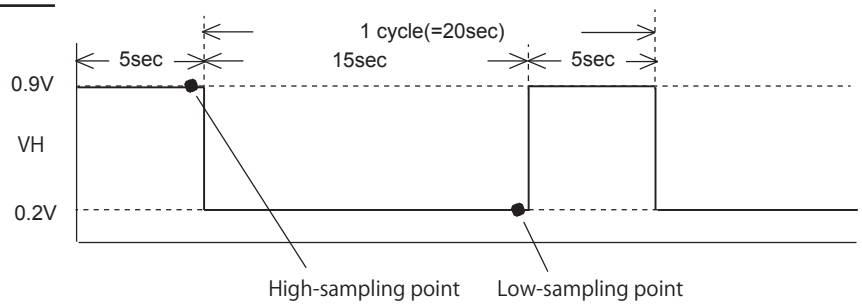
CN1 pin assignment

No.	Name	Description	Specification
1	V_{IN}	Power supply input	DC 4.9 − 5.1V
2	V_{OUT1}	Sensor output for methane detection	
3	V_{OUT2}	Sensor output for carbon monoxide detection	
4	NC	NC	
5	GND	Ground	

B. Basic circuit



C. Timing chart



D. Calculation from measured VOUT to sensor resistance (RS)

$$RS = \frac{VC - V_{OUT}}{V_{OUT}} \times RL$$

Methane detection :

$$RS = \frac{5.0 - V_{OUT1}}{V_{OUT1}} \times 1.00\ [k\Omega]$$

Carbon monoxide detection :

$$RS = \frac{5.0 - V_{OUT2}}{V_{OUT2}} \times 10.0\ [k\Omega]$$

RLCH4	1.00 kΩ
RLCO	10.0 kΩ

Note) The VOUTs can be obtained by measuring the voltage between CN1 #5pin and each pin (see "CN1 pin assignment"). The input impedance of the equipment connected to the CN1 must be more than 1 Mohm in order to make precise data acquisition. The VOUTs value update every 1 cycle (20 seconds).

E. Caution

a) Evaluation use only

Don't use this module except to evaluate TGS3870.

b) Power supply

Please apply correct voltage to #1 pin of the CN1. If much higher or negative voltage is applied, it probably causes malfunction of the module. Because this module doesn't have circuit to protect the ICs and the sensor.

c) VR1, VR2, and SW1

Please do not adjust VR1 or VR2 and do not change the switch. These items have been adjusted so that standard driving conditions are applied to the sensor. If they are changed, the sensor may be damaged.

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