

Model TFSC100

Thermal Flow Sensor Chips

Description

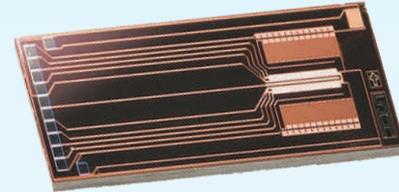
Model TFSC100 thermal flow sensor chips are developed for manufacturing of flow sensors (e.g., TFS2100 flow sensors from BCM SENSOR). As there is no any moving part in the TFSC100 chip, this sensor chip is suitable for measuring low flow rate of air or gases, and can provide stable and reliable signals to flow sensors.

Flow measurement by this sensor chip is realized thanks to a thermal bridge which consists of four thermal resistors to form a full Wheatstone bridge circuit. These thermal resistors are made from platinum film on the chip through MEMS process. Based on dedicated design in the measuring circuit, the characteristics of the two thermal resistors away from the heater is the same as that of the other two near the heater. This enables the flow sensor chip TFSC100 working as a linear sensor chip.

To understand how this sensor chip works, it is recommended to refer to the two schematic diagrams at the section of Working Principle in this datasheet.

Although both gold and aluminum wires can be used for wire bonding, the gold wires are more recommended. This is because the gold wires can provide to this sensor chip with higher stability and higher resistance to corrosion and humidity conditions when this sensor chip measures the flow medium.

In order to have protection to this sensor chip, there is a passivation layer on the top surface of the TFSC100 chip, which provides the chip with resistance to dusts and moisture.



TFSC100 thermal flow sensor chip

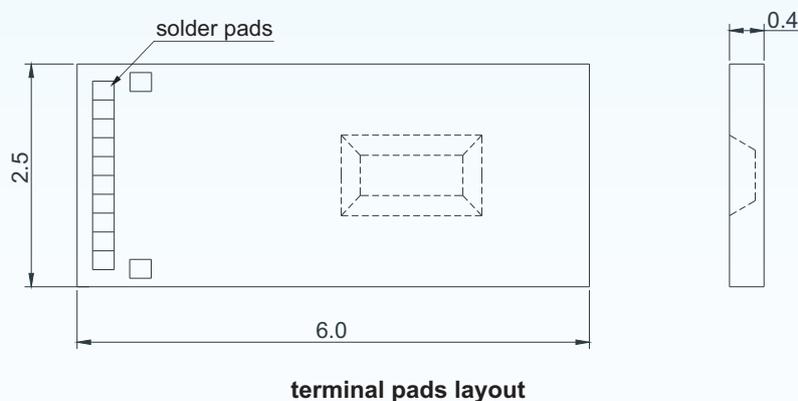
Features

- Low power consumption
- High accuracy
- Response time $\leq 15\text{ms}$
- Good resistance to vibration

Applications

- Air flow sensor manufacturing

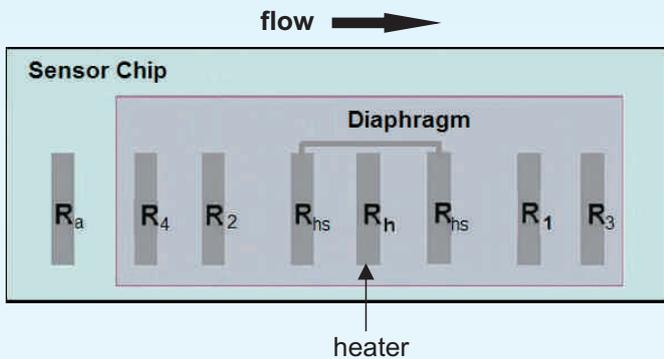
Dimensions



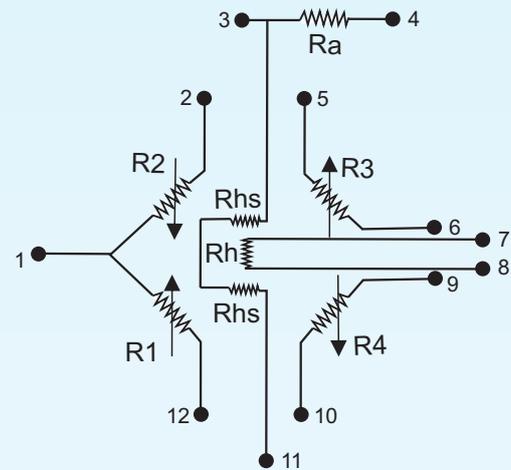
Note: All dimensions are in mm.

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Working Principle



part of chip where thermal resistors located



schematic diagram of thermal bridge circuit only

Technical Data

Parameters	Units	Specifications							Notes
		Ra	R1	R2	Rh	Rhs	R3	R4	
resistor designation		Ra	R1	R2	Rh	Rhs	R3	R4	1
nominal resistance (R) @25°C	Ω	1490	973	973	110	578	1013	1013	
deviation of resistance	%R	±10	±10	±10	±10	±10	±10	±10	
TCR	%R/°C	0.3							2
response time	ms	≤ 15							
excitation voltage	Vdc	≤ 3.3							
storage temperature range	°C	-55 ~ +125							
operating temperature range	°C	-55 ~ +125							

Notes: 1. Resistor designation refers to the designations mentioned in Working Principle above.

2. TCR refers to temperature coefficient of resistance.

Ordering Information

position (pos.) 1: model		
TFSC100		
pos. 2: package		
X = individually packaged die in plastic package Y = diced wafer on tape Z = non-diced wafer		
pos. 3: customized requirements		
“(*)” is necessary only if any customized parameter is required, otherwise it is neglectable.		
pos.1	pos. 2	pos. 3

Example of Ordering Code: TFSC100-X

The listed specifications, dimensions, and ordering information are subject to change without prior notice.

BCM SENSOR TECHNOLOGIES BVBA

