TeleControlli
Leader in Design & Manufacturing of hybrid circuits

FLW1

Flow Sensor made with Thick Film Hybrid Tecnology

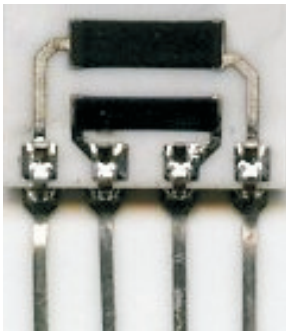


Fig.1

Applications

- Ventilation systems
- Boiler (sanitary)
- Hood cooker or hood in general
- Gas heater
- Pellet stove
- Wood stove
- Fireplace

General description

TeleControlli, leader in thick film technology, has recently realized a hybrid flow sensor which use the calorimetric principle.
The operating principle works as follows:
the hybrid circuit main components are a thermal resistor (R heater) and a thermistor (NTC) made with thick film technology, as shown in the picture Fig.1.

The thermal heater goes on electrically (it must raise to a temperature value higher than the surrounding medium); then the heater (R) is turned off and the sensor is "physically" cooled by the air flow which could be measured in this way (by the electronic control circuit).

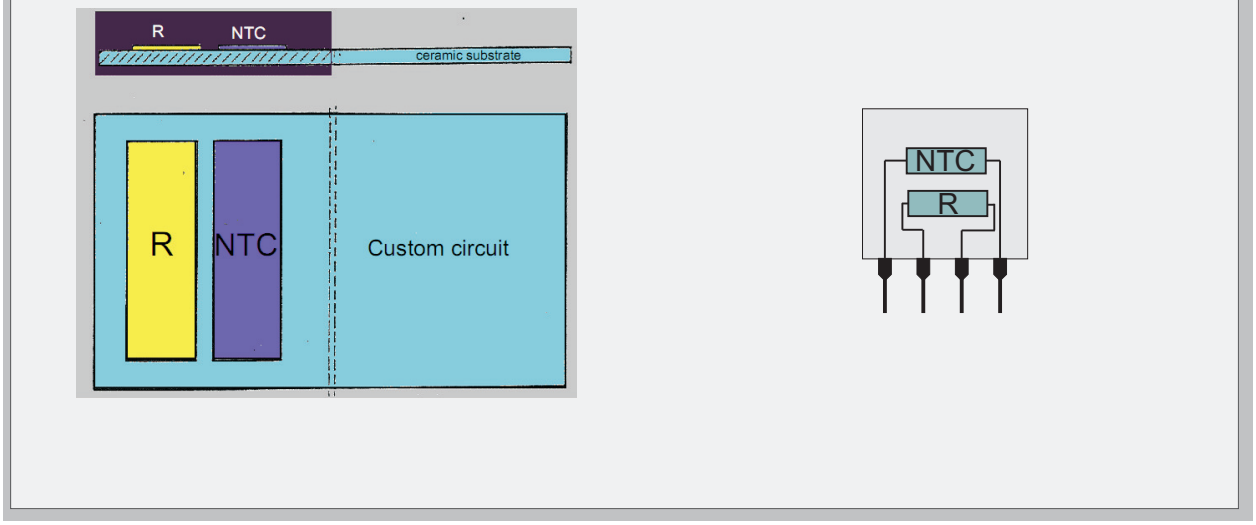
The alteration of the electrical resistance (during the cooling) provides the data to determine the presence or the absence of the air flow and its speed too.

Note that the ceramic substrate (Alumina) serves as a better heat conductor than the air: the resistor subjected to the temperature (NTC) is heated indirectly by a separated heater (R) (which is printed on the Alumina like the NTC) through the ceramic substrate, avoiding in that way the worse heat conduction of the surrounding air.

Thanks to the hybrid technology, this kind of devices (although they are easy to make), gain a high cost-effectiveness and reliability even compared to other technological solutions available today.

In addition, they take advantage of the calorimetric operating principle and work without any moving parts.
You can also integrate other circuital functions (i.e. signal control circuit) on the same substrate.

SCHEMATIC



Electrical Characteristics

	CHARACTERISTICS	MIN	TYP	MAX	UNIT
R	Heater Resistor	40	50	55	OHM (*)
R	Power dissipation		1.5		WATT (*)
NTC	Thermistor Resistance	21	30	39	KOHM (*)
NTC	Thermistor Beta (25° C to 125° C)	-1950		-2050	(*)

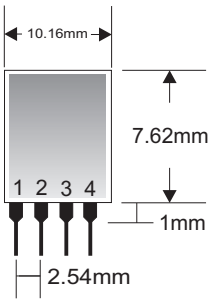
(*) Variable under customer specifications

Pin Description

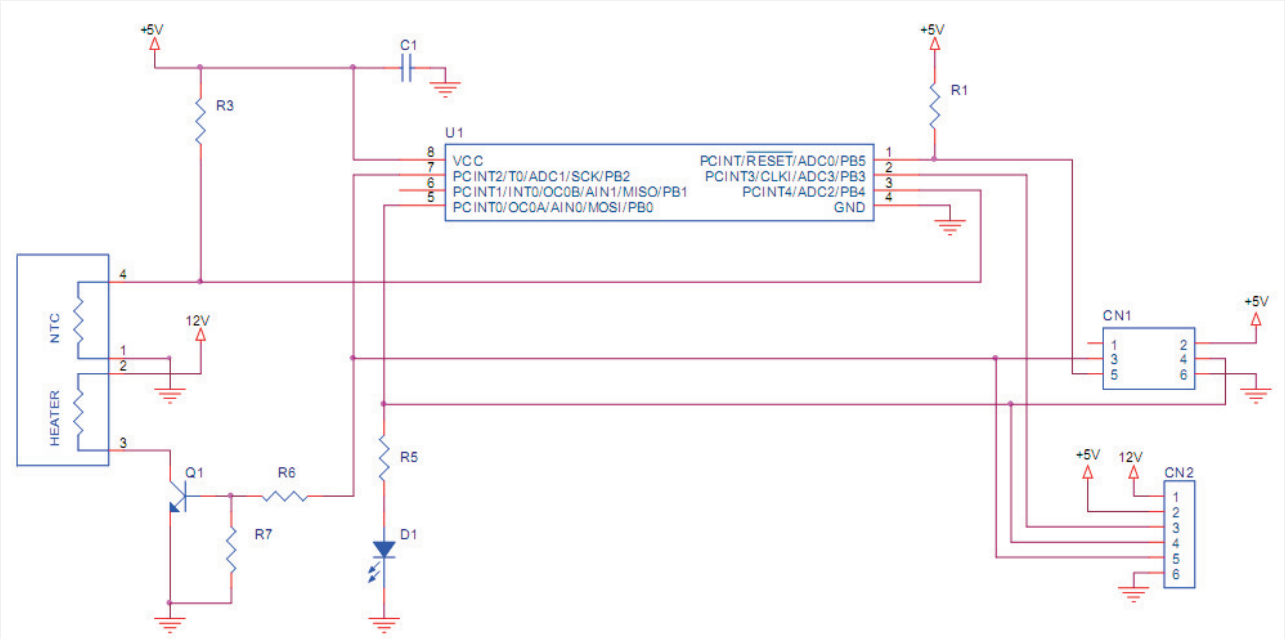
1	NTC1	NTC Terminal
2	R1	Heater Terminal
3	R2	Heater Terminal
4	NTC2	NTC Terminal

(**) Variable under customer specifications

Mechanical Dimensions (**)



TYPICAL APPLICATION



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