Data Sheet

STP11DF89G1

Integrated Infrared Thermopile
Sensor for High Temperature Measurement

General Description

The STP11DF89G1 comprising a new type CMOS compatible thermopile sensor chip features good sensitivity, small temperature coefficient of sensitivity as well as high reproducibility and reliability. An 8~14 um band pass filter in front of the sensor makes the device sensitive to high temperature up to 1500° C. An ASIC AFE (Analog Front End) chip is integrated with the thermopile sensor, providing 1000 or 2000 gain for the small voltage output of thermopile sensor. A input offset voltage is also added in the sensor input. The sensor output voltage can be directly converted by ADC, which elimates the precision Zero-Drift amplifier and DC-DC circuit. A high-precision thermistor reference chip is also integrated for ambient temperature compensation.

Features and Benefits

- Integrated ASIC AFE with analog outputs, sensor gain preset to 1000
- Small size, high reliability, 4-pin metal housing TO-5
- Operating Temperature Range: −40℃ to +125℃
- Anti-electromagnetic interference
- 1.212V offset voltage for thermopile sensor
- 100 μA Low Power and 2.5 V to 5.5 V Wide Supply Voltage Range
- Integrated thermistor temperature reference with high-precision

Applications

- High temperature Non-contact measurement
- Pyrometer, Thermometer

Electrical Characteristics(TA = +25℃, unless otherwise noted.)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{DD}	Supply voltage		2.5		5.5	V
V_{SS}	Supply voltage			0		
I_{DD}	Supply current		85	100	115	μA
G	Sensor gain preset			1000		
V_{offset}	Zero input sensor signal		1.20	1.212	1.23	V
V_{noise}	Voltage noise density			25		nV/√Hz
SR	Slew rate			0.4		V/μs
V_{OH}	Swing to V_{DD} rail	R_L = 10 kΩ to GND		V_{DD}-50	V_{DD}-200	mV
V_{OL}	Swing to V_{SS}			V_{SS}+5	V_{SS}+50	
PSRR	Power supply rejection ratio		110	130		dB
	Filter type			Wide Band Pass 8000-14000 nm		
Thermistor						
R_{th}	Thermistor resistance		95	100	105	KΩ
β	B-value		3930	3950	3970	

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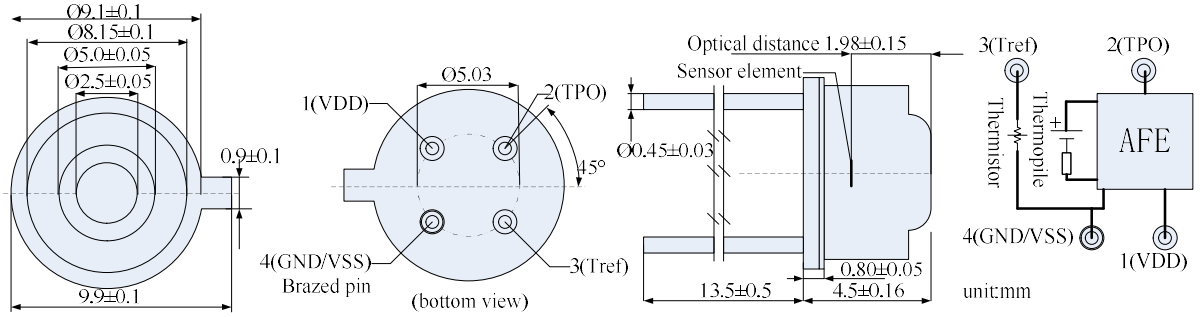
Mechanical Drawings



Revision History

Revision Number	Release Date	Description
Rev1	2021/3/12	Initial Release