

General Description

The STP10DF55G1 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 ASIC AFE (Analog Front End) chip is integrated with the thermopile sensor, providing 1000 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 eliminates 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-46
- Operating Temperature Range: -40°C to $+125^{\circ}\text{C}$
- 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

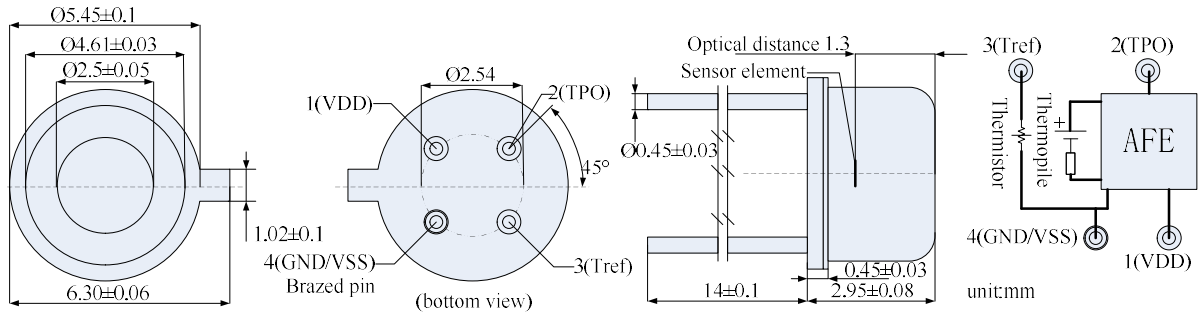
Electrical Characteristics ($T_A = +25^{\circ}\text{C}$, unless otherwise noted.)

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		$\text{nV}/\sqrt{\text{Hz}}$
SR	Slew rate			0.4		$\text{V}/\mu\text{s}$
V_{OH}	Swing to V_{DD} rail	$R_L = 10\text{ k}\Omega$ 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		Long Band Pass 5500-14000 nm			

Thermistor

R_{th}	Thermistor resistance	95	100	105	$\text{K}\Omega$
β	B-value	3930	3950	3970	

Mechanical Drawings



Revision History

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