

## General Description

The STP10DF5901K is a digital infrared thermopile sensor that facilitates the non-contact temperature measurement. Housed in a small TO-5 package with digital interface, the sensor integrates thermopile sensor, amplifier, A/D, DSP, MUX and communication protocol.

The STP10DF5901K is factory calibrated in wide temperature ranges:  $-40^{\circ}\text{C}\sim 85^{\circ}\text{C}$  for the ambient temperature and  $-20^{\circ}\text{C}\sim 300^{\circ}\text{C}$  for the object temperature. The measured temperature value is the average temperature of all objects in the Field of View of the sensor.

The STP10DF5901K offers a standard accuracy of  $\pm 2\%$  around room temperatures. The digital platform supports easy integration. Its low power budget makes it ideal for battery powered applications, including household electrical appliances, environmental monitoring, HVAC, smart home/building control and IOT.

## Features and Benefits

- Digital temperature output
- Factory calibrated in wide temperature ranges
- Communication protocol and Easy integration
- Reduced system component
- 2.7V to 5.5V Wide Supply Voltage Range
- Operating Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$

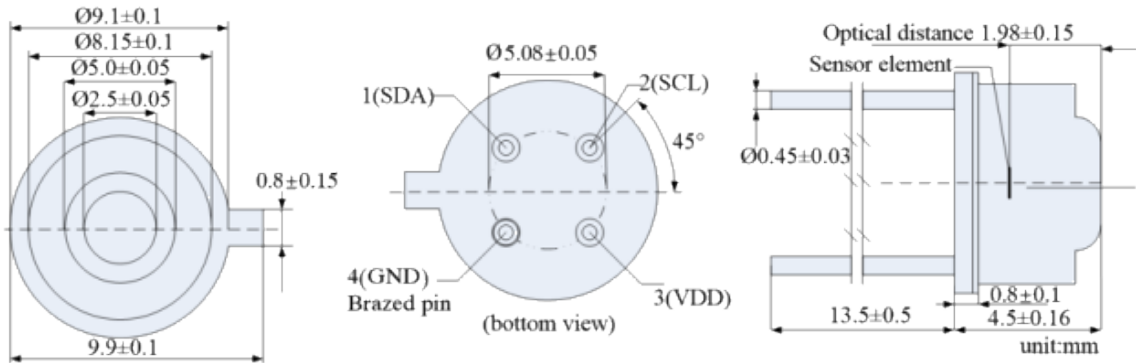
## Applications

- Consumer electronic
- Household electrical appliances
- HVAC
- IOT

## Electrical Characteristics<sub>(TA = +25°C, unless otherwise noted.)</sub>

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V <sub>DD</sub>	Supply voltage		2.7	3.3	5.2	V
I <sub>DD</sub>	Supply current			300		μA
T <sub>obj</sub>	Object temperature range		-20	-	300	°C
T <sub>Res</sub>	Resolution of reading			0.1		°C
I <sup>2</sup> S	Interface speed			50		kHz
SA	Slave address			0x20		
DRR	Data refresh rate			1		Hz
I <sub>leak</sub>	SCL,SDA Leakage			0.1		μA
	SDA Output logic low	IOL=3 mA			VDD*0.2	V
	SDA Output logic high	IOH=-50uA	VDD*0.9			V
	SCL,SDA Input logic low				VDD*0.2	V
	SCL,SDA Input logic high		VDD*0.8			V

## Mechanical Drawings



## Pin Definitions and Descriptions

Pin Name	Pin	Pin Type	Functions description
SDA	1	IO	IIC Serial Data Input/Output
SCL	2	IO	IIC Serial Clock Input/Output
VDD	3	P	Connect to VDD
GND	4	P	Connect to GND

## Revision History

Revision Number	Release Date	Description
Rev1	2021/3/12	Initial Release
Rev2	2022/3/18	Update Format.