

<h1>AUI</h1>	<b>SPECIFICATION</b>		
	For Thermopile Temperature Sensor		
	TOTAL PAGE	07	<a href="http://www.auimems.com">www.auimems.com</a>
			RoHS

Customer		Model Name	ATS1-46
Customer P/N		Product No.	19****
Date	11 Nov.2017	Issue No.	BS/TEM01.***A
Page	01 of 09	Issue Date	2017.11.11

Approval:

- 1.Descriptions
- 2.Features
- 3.Applications
- 4.Drawing
- 5.Parameter
- 6.Packing
- 7.History change record

Drawn by	Checked by	Approved by	Customer approved

**Audio Unlimited Incorporation CO.,LTD**

No.11 qingyang north road, tianning district, changzhou,JiangSu Province,P.R.China

**Tel:** +86 519 68191786     **Fax:** +86 519 88222551

**E-mail:**[wu@auimems.com](mailto:wu@auimems.com)     **http:**[www.auimems.com](http://www.auimems.com)

## ATS1-46



### 1. Descriptions

The ATS1-46 is a thermopile temperature sensor based on MEMS (Micro-ElectroMechanical Systems) technology. This thermopile detector consists of a thermopile MEMS chip, a F5.5 infrared band pass filter, a NTC thermistor for temperature compensation and a small size TO-46 package.

### 2. Features

- Non-contact surface temperature measuring
- TO housing with an F5.5 infrared filter
- Using NTC thermistor for ambient temperature compensation
- Suitable for human body temperature detecting and Industrial temperature measurement
- Fast response time
- High sensitivity

### 3.Applications

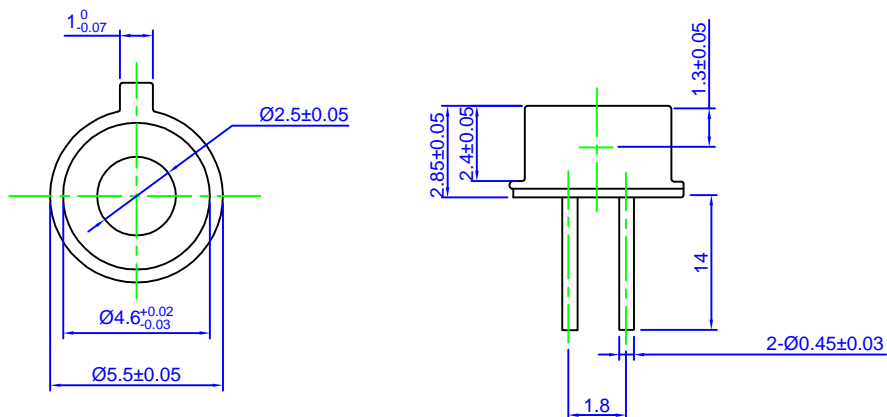
- Non-contact infrared thermometer
- Microwave oven
- Automatic induction equipment
- Heating, Ventilation and Air Conditioning(HVAC) Appliance

This print and information there in are proprietary to Audio Unlimited Incorporation Co., Ltd. and shall not be used in whole or in part without its written content

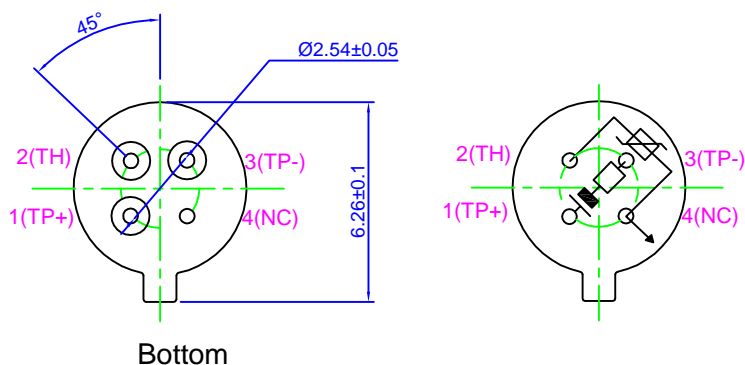
				Date:	2017.11.11	<b>ATS1-46</b>
				Drawn by:	王焕焕	
A	2017.11.11	王焕焕		Checked by:	徐波	<b>Sensor</b>
Rev.	Date	Drawn	Note	Approved by:	徐金国	
AUDIO UNLIMITED INCORPORATION CO.,LTD <a href="http://www.auiMEMS.com">www.auiMEMS.com</a> <a href="mailto:wu@aiMEMS.com">wu@aiMEMS.com</a>						DRG NO: BS/TEM01.***A
						Page:2 of 7

## ATS1-46

### 4.Drawing



Unit: mm



Bottom

Pin No.	Description
1	Thermopile+(TP+)
2	Thermistor(TH)
3	Thermopile-(TP-)
4	GND

#### Pin Function Description

- 1 Thermopile+(TP+) : Thermopile Output DC Voltage+ pin.
- 2 Thermistor(TH): Ambient Temperature Compensation Resistance+ pin.
- 3 Thermopile-(TP-): Thermopile Output DC Voltage- pin.
- 4 GND: Ambient Temperature Compensation Resistance- pin and GND.

Notes  
Tolerance±0.15mm unless otherwise specified.

				Date:	2017.11.11	<b>ATS1-46</b>  <b>Sensor</b>
				Drawn by:	王焕焕	
A	2017.11.11	王焕焕		Checked by:	徐波	
Rev.	Date	Drawn	Note	Approved by:	徐金国	
AUDIO UNLIMITED INCORPORATION CO.,LTD www.auiMEMS.com wu@auiMEMS.com						DRG NO: BS/TEM01.***A
						Page:3 of 7

This print and information there in are proprietary to Audio Unlimited Incorporation Co., Ltd. and shall not be used in whole or in part without its written content

## ATS1-46

### 5. Parameter

#### 5.1 Thermopile parameter

Specification	Condition	Min.	Typ.	Max.	Unit
Chip Size		1.85*1.85			mm <sup>2</sup>
Active Area		0.7X0.7			mm <sup>2</sup>
Responsivity	Black body=500K,1HZ @temp=25°C	63			V/W
Detectivity	Black body=500K,1HZ @temp=25°C	1.21E08			cm·Hz <sup>1/2</sup> /W
NEP	Black body=500K,1HZ @temp=25°C	0.56			nW·Hz <sup>1/2</sup>
Voltage Response	Black body=500K,1HZ @temp=25°C	29			V·mm <sup>2</sup> /W
Thermopile Res	@temp=25°C	65	75	85	kΩ
TC of Thermopile		-0.11			%/°C
Noise Voltage	@temp=25°C	33	35	37	nV/Hz <sup>1/2</sup>
Time Constant		16			ms
Field of View(FOV)	Degree at 50% signal level	83			°
Operating Temp		-40~120			°C
Storage Temp		-40~120			°C
Thermistor Resistance	@temp=25	100 +1.5%			kΩ
TC of Thermistor(B)	Defined at 25/50°C	3950 ±1%			K

#### 5.2. NT Temperature VS Resistance Table

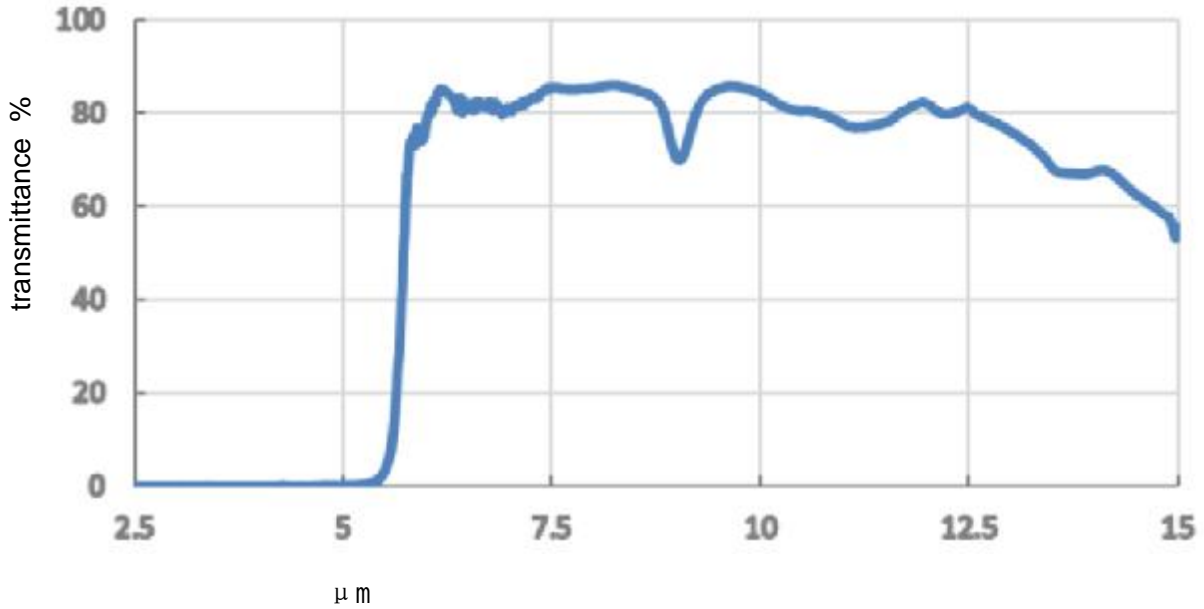
Temp.(°C)	Rmin(kΩ)	Rnor(kΩ)	Rmax(kΩ)
-40	3073.524	3281.143	3499.634
-30	1644.113	1744.117	1848.539
-20	912.905	962.695	1014.286
-10	524.122	549.618	575.836
0	311.198	324.623	338.322
10	191.179	198.447	205.806
20	120.819	124.832	128.863
25	97.000	100.000	103.000
30	77.949	80.534	83.130
40	51.246	53.166	55.108
50	34.450	35.882	37.339
60	23.673	24.749	25.850
70	16.576	17.391	18.229
80	11.812	12.433	13.076
90	8.546	9.024	9.522
100	6.275	6.647	7.034
110	4.671	4.963	5.267
120	3.523	3.753	3.995

				Date:	2017.11.11	<b>ATS1-46</b>  <b>Sensor</b>
				Drawn by:	王焕焕	
A	2017.11.11	王焕焕		Checked by:	徐波	
Rev.	Date	Drawn	Note	Approved by:	徐金国	
AUDIO UNLIMITED INCORPORATION CO.,LTD <a href="http://www.auiemems.com">www.auiemems.com</a> <a href="mailto:wu@uiemems.com">wu@uiemems.com</a>						DRG NO: BS/TEM01.***A Page:4 of 7

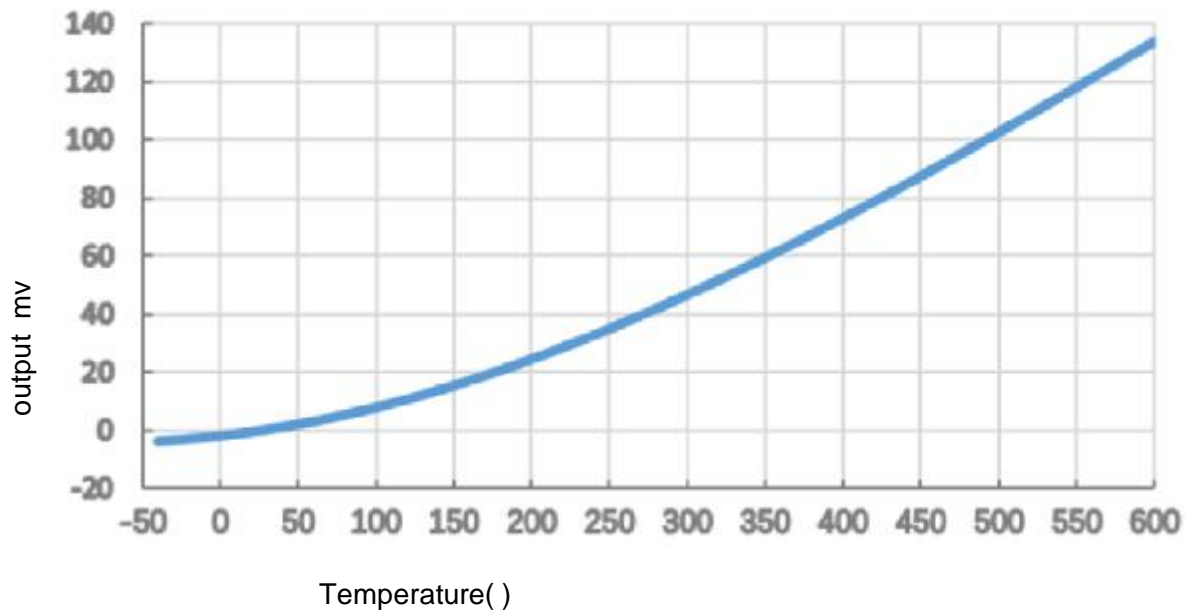
This print and information there in are proprietary to Audio Unlimited Incorporation Co., Ltd. and shall not be used in whole or in part without its written content

## ATS1-46

### 5.3 Filter Transmission Curve



### 5.4 Sensitivity Output Curve



Temperature( )

Object Temperature(°C)@Tamb.=25°C

This print and information there in are proprietary to Audio Unlimited Incorporation Co., Ltd. and shall not be used in whole or in part without its written content

				Date:	2017.11.11	<h2>ATS1-46</h2> <h2>Sensor</h2>
				Drawn by:	王焕焕	
A	2017.11.11	王焕焕		Checked by:	徐波	
Rev.	Date	Drawn	Note	Approved by:	徐金国	
AUDIO UNLIMITED INCORPORATION CO.,LTD <a href="http://www.auiemems.com">www.auiemems.com</a> <a href="mailto:wu@uiemems.com">wu@uiemems.com</a>						DRG NO: BS/TEM01.***A    Page:5 of 7

ATS1-46

6.Packing

TBD

Notes  
All dimensions are in millimeter(mm).

This print and information there in are proprietary to Audio Unlimited Incorporation Co., Ltd. and shall not be used in whole or in part without its written consent

				Date:	2017.11.11	<b>ATS1-46</b>  <b>Sensor</b>
				Drawn by:	王焕焕	
A	2017.11.11	王焕焕		Checked by:	徐波	
Rev.	Date	Drawn	Note	Approved by:	徐金国	
AUDIO UNLIMITED INCORPORATION CO.,LTD <a href="http://www.auiMEMS.com">www.auiMEMS.com</a> <a href="mailto:wu@aiMEMS.com">wu@aiMEMS.com</a>						DRG NO: BS/TEM01.***A Page:6 of 7

## ATS1-46

### 7. History change record

version No.	Change Items		Date	Drawn	Approved
	Before	After			
			2017.11.11	王焕焕	徐金国

This print and information there in are proprietary to Audio Unlimited Incorporation Co., Ltd. and shall not be used in whole or in part without its written consent

				Date:	2017.11.11	<b>ATS1-46</b>  <b>Sensor</b>
				Drawn by:	王焕焕	
A	2017.11.11	王焕焕		Checked by:	徐 波	
Rev.	Date	Drawn	Note	Approved by:	徐金国	
AUDIO UNLIMITED INCORPORATION CO.,LTD <small>www.auimems.com wu@auimems.com</small>						DRG NO: BS/TEM01.**A     Page:7 of 7