



## TS105-10L5.5MM

### Thermopile Sensor

#### SPECIFICATIONS

- **Thermopile IR-Sensor**
- **For Contactless Temperature Measurement**
- **Single Element**
- **For Industrial Pyrometers**
- **Silicon Lens**
- **Accurate Reference Sensor**

Thermopiles are mainly used for contactless temperature measurement in many applications. Their function is to transfer the heat radiation emitted from the objects into a voltage output.

## FEATURES

Small Field of View

Accurate NTC Reference Sensor

## APPLICATIONS

Industrial Pyrometers

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Typical	Max	Unit	Description
Storage Temperature	T <sub>S</sub>	-20	+20	+85	°C	permanent
Storage Temperature	T <sub>S</sub>	-20	+20	+100	°C	non permanent

## PERFORMANCE SPECS

Parameter	Symbol	Value	Unit	Condition
Operating Ambient Temperature	T <sub>Amb</sub>	-20 to +85	°C	permanent
Operating Ambient Temperature	T <sub>Amb</sub>	-20 to +100	°C	non permanent
Package		TO-5		
Absorber Area	A	0.7 × 0.7	mm <sup>2</sup>	
Thermopile Resistance	R <sub>TP</sub>	43 ± 8	kΩ	T <sub>Amb</sub> = +25°C
Temperature Coefficient of Thermopile Resistance	TCR <sub>TP</sub>	-0.06 ± 0.04	%/K	T <sub>Amb</sub> = +25°C to +75°C
Voltage Response	V <sub>TP</sub>	0.9 ± 0.25	mV	T <sub>Amb</sub> = +25°C, T <sub>Obj</sub> = +100°C, DC, totally filled field of view
Temperature Coefficient of Voltage Response	TCV <sub>TP</sub>	-0.45 ± 0.08	%/K	T <sub>Amb</sub> = +25°C to +75°C
Noise Equivalent Voltage	NEV	30	nV/Hz <sup>1/2</sup>	T <sub>Amb</sub> = +25°C
Rise Time	τ <sub>63</sub>	20 ± 5	ms	
Ambient Temperature Sensor		NTC		
Ambient Temperature Sensor Resistance	R <sub>NTC</sub>	100 ± 5	kΩ	T <sub>Amb</sub> = +25°C
Beta Value of NTC	β-Value	3955 ± 0.3%	K	T <sub>Amb</sub> = 0°C to +50°C

**TYPICAL PERFORMANCE CURVES**

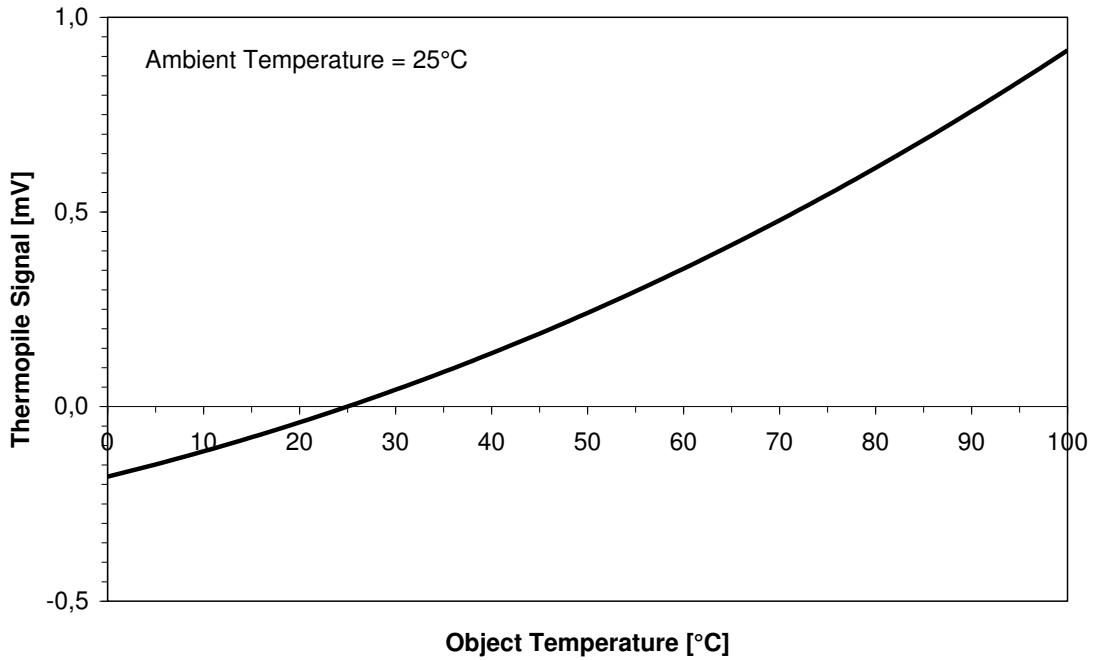


Figure 1: Thermopile signal versus object temperature at 25°C ambient temperature

**OPTICAL CHARACTERISTICS**

Parameter	Symbol	Value	Unit	Description
Field of View	FOV	10	deg	at 50% of maximum signal

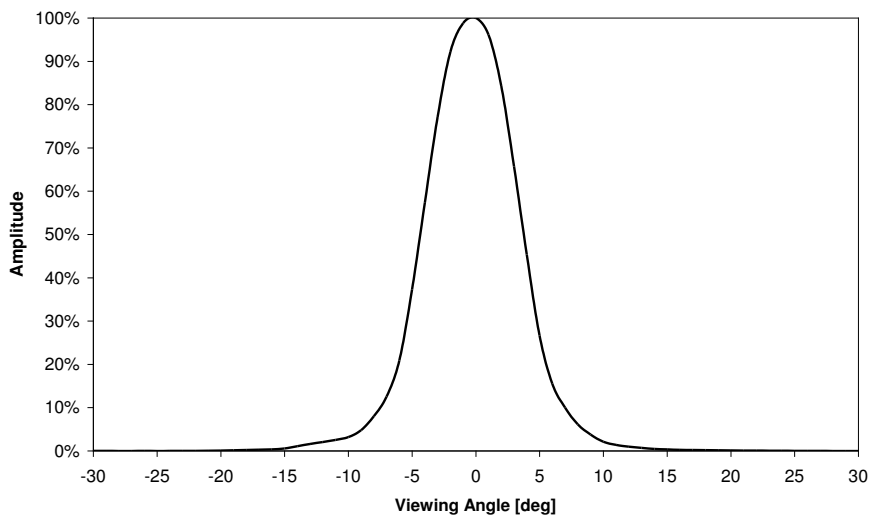


Figure 2: Field of View Curve

**FILTER CHARACTERISTICS**

Parameter	Symbol	Value	Unit	Description
Transmission Range	Si	≥ 1.1	μm	Silicon

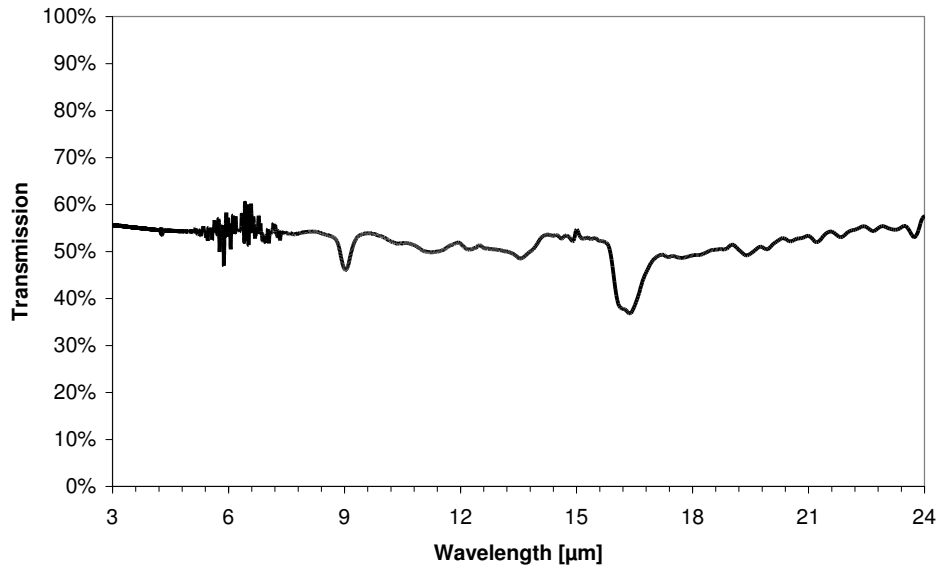


Figure 3: Lens transmission curve

**ELECTRICAL CONNECTIONS**

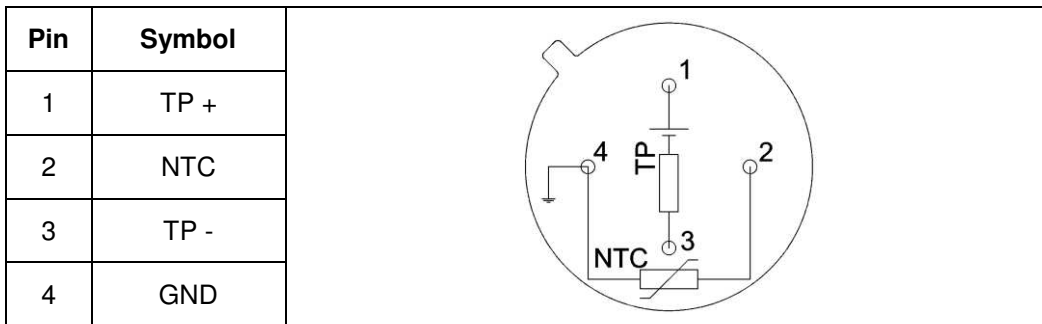


Figure 4: Electrical connections - bottom view of thermopile

**MECHANICAL DIMENSIONS**

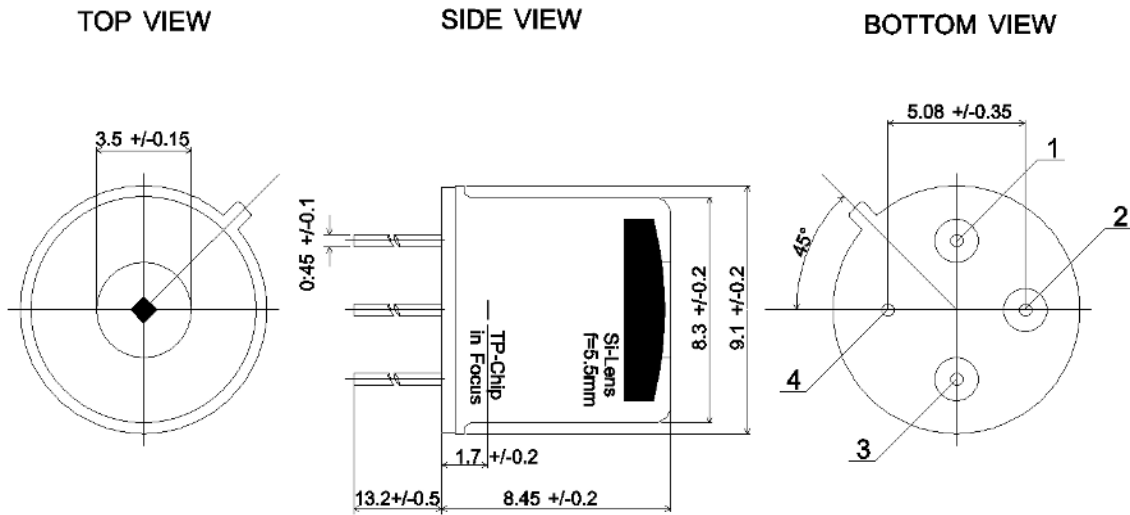


Figure 5: Mechanical dimensions of thermopile

**ORDERING INFORMATION**

<b>Part Description</b>	TS105-10 L5.5 NTC 100K BETA
<b>Part No.</b>	G-TPCO-019

**NORTH AMERICA**

Measurement Specialties, Inc.,  
 a TE Connectivity Company  
 910 Turnpike Road  
 Shrewsbury, MA 01545  
 United States  
 Phone: +1-508-842-0516  
 Fax: +1-508-842-0342  
 Email: temperature.sales.amer@meas-spec.com  
 Web: www.meas-spec.com

**EUROPE**

Measurement Specialties (Europe), Ltd.,  
 a TE Connectivity Company  
 Deutschland GmbH  
 Hauert 13  
 D-44227 Dortmund  
 Germany  
 Phone: +49-(0)231-9740-0  
 Fax: +49-(0)231-9740-20  
 Email: info.de@meas-spec.com  
 Web: www.meas-spec.com

**ASIA**

Measurement Specialties (China), Ltd.,  
 a TE Connectivity Company  
 No. 26 Langshan Road  
 Shenzhen High-Tech Park (North)  
 Nanshan District, Shenzhen 518057  
 China  
 Tel: +86 755 3330 5088  
 Fax: +86 755 3330 5099  
 Email: temperature.sales.asia@meas-spec.com  
 Web: www.meas-spec.com

**TE.com/sensorsolutions**

Measurement Specialties, Inc., a TE Connectivity company.

Measurement Specialties, TE Connectivity, TE Connectivity (logo) and EVERY CONNECTION COUNTS are trademarks. All other logos, products and/or company names referred to herein might be trademarks of their respective owners.

The information given herein, including drawings, illustrations and schematics which are intended for illustration purposes only, is believed to be reliable. However, TE Connectivity makes no warranties as to its accuracy or completeness and disclaims any liability in connection with its use. TE Connectivity's obligations shall only be as set forth in TE Connectivity's Standard Terms and Conditions of Sale for this product and in no case will TE Connectivity be liable for any incidental, indirect or consequential damages arising out of the sale, resale, use or misuse of the product. Users of TE Connectivity products should make their own evaluation to determine the suitability of each such product for the specific application.

© 2015 TE Connectivity Ltd. family of companies All Rights Reserved.