

HEIMANN Sensor GmbH		Product Specification: Thermopile Sensor HTS A21 F-CAF2
Author(s): M. Schulze	Rev.: R 01 / 27.02.2026	Page 1 of 6

Specification Thermopile Sensor
HTS A21 F-CAF2
Part No. 1xxx

R 01

Author(s):

M.Schulze

Revision History

Version	Date	Remarks
R 01	27.02.2026	Draft of HEIMANN Sensor GmbH

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1. Purpose, Scope

The new thermopile infrared sensor from Heimann Sensor, comprising a new type CMOS compatible sensor chip plus a thermistor reference chip, features good sensitivity, small temperature coefficient of sensitivity as well as high reproducibility and reliability. The sensor meets the requirements of the European Union RoHS (Regulation of Hazardous Substances) Directive.

The sensor will be available in standard transistor outline packages in different sizes, equipped with an IR transmitting filter window (transmission curve as shown below).

2. Absolute Maximum Ratings

<i>Parameter</i>	<i>Symbol</i>	<i>Limits</i>			<i>Units</i>	<i>Conditions</i>
		<i>Min</i>	<i>Typ.</i>	<i>Max</i>		
storage temperature		-40		100	°C	
operating temperature		-20		100	°C	

3. General and Electrical Parameter Thermopile

<i>Parameter</i>	<i>Symbol</i>	<i>Limits</i>			<i>Units</i>	<i>Conditions</i>
		<i>Min</i>	<i>Typ.</i>	<i>Max</i>		
element size			1.2 x 1.2		mm ²	absorbing area
resistance	R _{TS}	69	84	112	kΩ	-40°C to 100°C
TC of resistance			0.02		%/K	25°C
voltage sensitivity	S _V	26	38	50	V/W	w/o filter, 1 Hz
voltage response	V _R		55		Vmm ² /W	w/o filter
time constant	τ		10	13	ms	
noise voltage	V _{RMS}		37		nV/√Hz	r.m.s., 25°C
detectivity	D [*]		1*10 ⁸		cm√Hz/W	w/o filter
Insulation resistance	R _{iso}	5			GΩ	10V, 25°C, 60% r.h

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4. General and Electrical Parameter Thermistor

Type	Thermistor 100kΩ					
Parameter	Symbol	Limits			Units	Conditions
		Min	Typ.	Max		
resistance	R _{TH}	96	100	104	kΩ	at 25°C
BETA-value	β	3928	3940	3952	K	±0.3% at 25°C/50°C

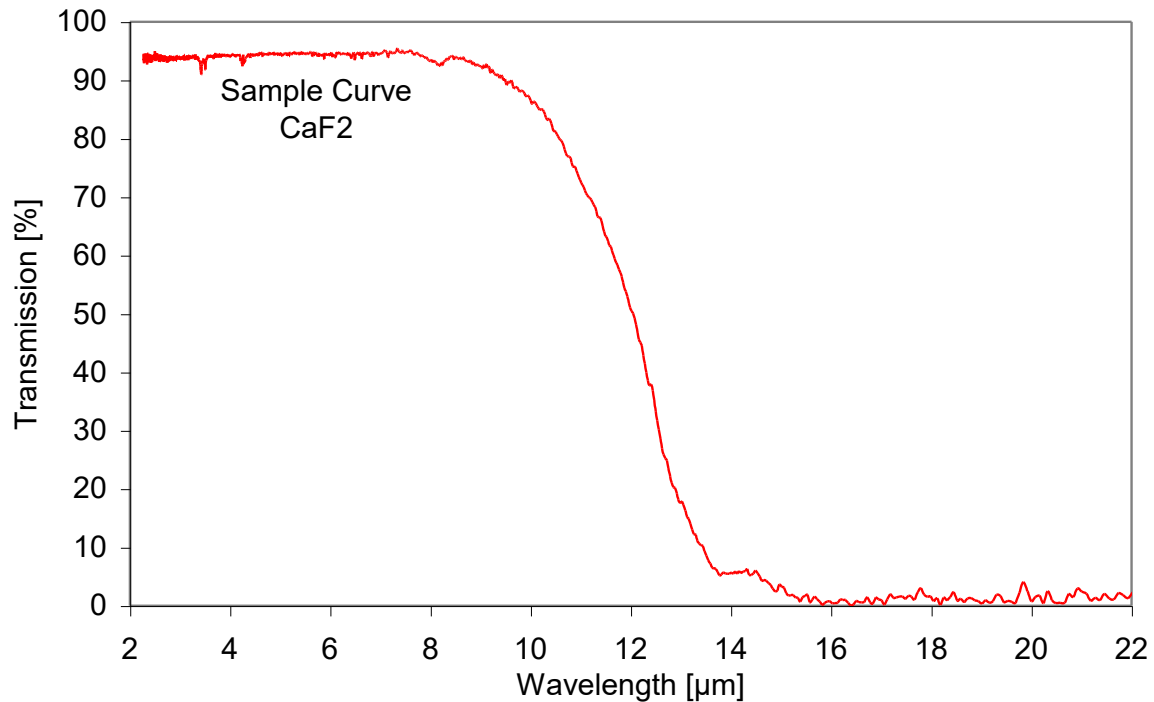
T / °C	Rth_min total tolerance Ohm	Rth_min BETA tolerance Ohm	Rth_nom Ohm	Rth_max BETA tolerance Ohm	Rth_max total tolerance Ohm
-20	894949	932497	938700	945103	982651
-15	677971	706387	710400	714713	743129
-10	517872	539560	542200	545040	566728
-5	398722	415410	417200	418990	435678
0	309285	322221	323400	324579	337515
5	241383	251469	252150	252861	262947
10	189752	197675	198070	198485	206408
15	150213	156480	156690	156910	163177
20	119705	124696	124780	124864	129855
25	96000	100000	100000	100000	104000
30	77346	80571	80620	80679	83904
35	62682	65297	65370	65463	68078
40	51067	53199	53300	53401	55533
45	41829	43576	43680	43794	45541
50	34428	35868	35980	36092	37532
55	28485	29676	29790	29894	31085
60	23685	24676	24780	24884	25875
65	19785	20613	20700	20807	21635
70	16588	17283	17370	17467	18162
75	13968	14554	14640	14726	15312
80	11808	12303	12380	12467	12962
85	10009	10429	10500	10571	10991
90	8513	8871	8934	9000	9358
95	7264	7569	7627	7687	7992
100	6217	6479	6531	6585	6847
105	5339	5563	5610	5659	5883
110	4597	4790	4833	4877	5070
115	3969	4136	4175	4215	4382

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120	3436	3581	3616	3653	3798
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5. Filter Characteristics

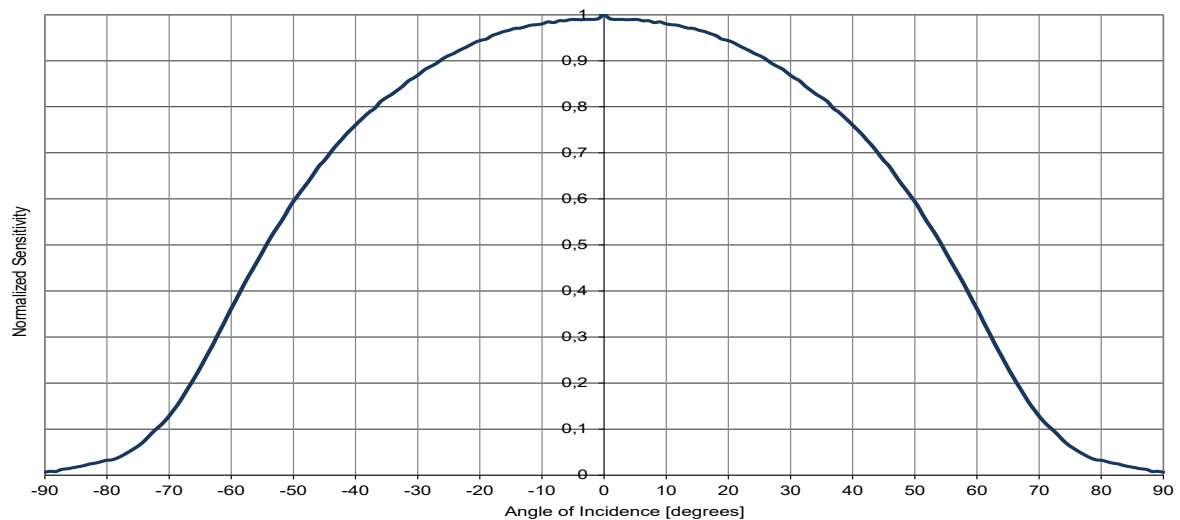
Sample Curve



6. Optical Characteristics

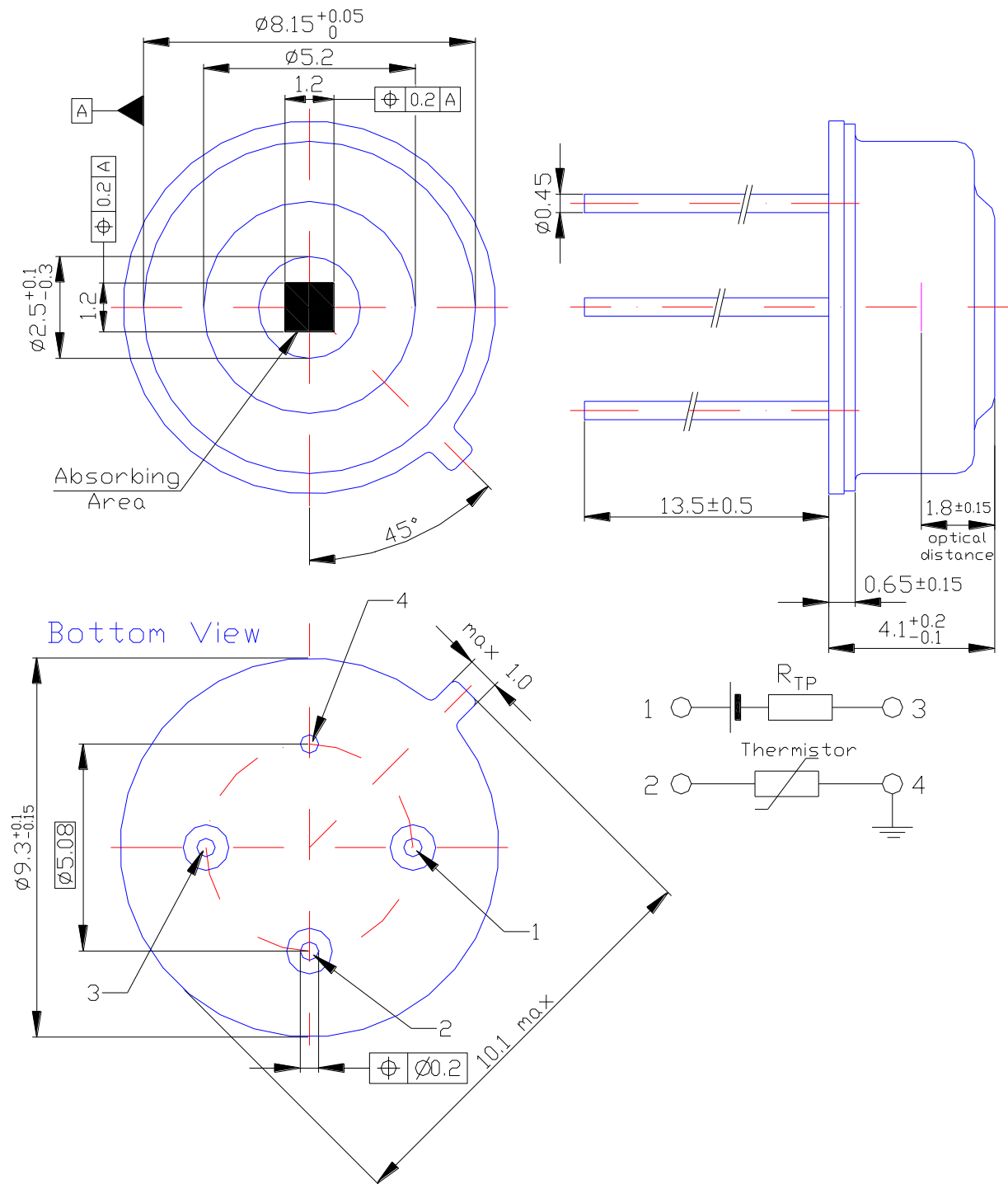
Field of View					
Parameter	Limits			Units	Conditions
	Min	Typ	Max		
field of view		110		degree	At 50% intensity points
Optical axis	-10	0	+10	degree	visual to 5μm

Sample Curve



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7. Drawing and Pin Assignment



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8. General Directions for Further Processing

Stresses above the absolute maximum ratings may cause damages to the device. The sensor can be damaged by electrostatic discharges. Please take appropriate precautions for the handling.

Do not expose the sensors to aggressive detergents. Windows may be cleaned with alcohol and cotton swab.

Wave soldering may be applied by a maximum temperature of 280°C for a dwell time less than 10s. For hand soldering the maximum applicable temperature is 350°C for a dwell time less than 3s. The minimum distance between the housing body and the liquid solder should be for 280°C at least 0.6mm and for 350°C at least 1.5mm. Avoid heat exposure to the top and the window of the detector. Reflow soldering is not recommended.

9. Liability

Important product or process changes require a customer release. Changes or modifications on the product which haven't influence to the performance and/or quality of the device haven't to be announced to the customers in advance.

Customers are requested to consult with Heimann Sensor representatives before the use of Heimann Sensor products in special applications where failure or abnormal operation may directly affect human lives or cause physical injury or property damage. The company or their representatives will not be responsible for damage arising from such use without prior approval.