

Specification Thermopile Sensor HMS J11 F5.5

Part No. 1001

R 01

Revision History

Version	Date	Remarks
R 01	10.08.2005	1. Draft of HEIMANN Sensor GmbH

1. Purpose, Scope

The thermopile infrared sensors from Heimann Sensor, comprising a new type CMOS compatible sensor chip plus a thermistor reference chip, featuring good sensitivity, small temperature coefficient of sensitivity as well as high reproducibility and reliability.

The sensors 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

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

3. General and Electrical Parameter Thermopile

Parameter	Symbol	Limits			Units	Conditions
		Min	Typ	Max		
element size			0.6*0.6		mm ²	absorbing area
resistance	R _{TS}	56	86	116	kΩ	-40°C to 100°C
voltage sensitivity	S _V		56		V/W	without filter
voltage sensitivity	S _V (F5.5)	20	35	50	V/W	filter F5.5, 100°C, 1Hz
time constant	τ		5	10	ms	
noise voltage	V _{RMS}		36		nV/√Hz	r.m.s., 25°C
detectivity	D [*]		9.3*10 ⁷		cm√Hz/W	without filter
detectivity	D [*] (F5.5)		5.8*10 ⁷		cm√Hz/W	filter F5.5, 100°C, 1Hz

4. General and Electrical Parameter Thermistor

Type	Thermistor 100kΩ					
Parameter	Symbol	Limits			Units	Conditions
		Min	Typ	Max		
resistance	R _{TH}	95	100	105	kΩ	25°C
BETA-value	β	3900	3940	3980	K	25°C/50°C

T / °C	R _{th_min} / Ohm	R _{th_nom} / Ohm	R _{th_max} / Ohm
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-30	1557900	1655000	1753100
-25	1163320	1234000	1306680
-20	875826	928700	981974
-15	665010	704500	744190
-10	508730	538500	568370
-5	392108	414600	437292
0	304466	321700	338934
5	238072	251400	264728
10	187444	197800	208056
15	148568	156600	164632
20	118404	124800	131096
25	95000	100000	105000
30	76537	80630	84713
35	62032	65380	68738
40	50543	53310	56077
45	41386	43680	45984
50	34070	35980	37890
55	28174	29770	31366
60	23405	24750	26095
65	19536	20670	21804
70	16383	17340	18297
75	13788	14600	15422
80	11653	12350	13047
85	9890	10480	11080
90	8421	8930	9444
95	7197	7635	8076
100	6172	6551	6935

5. Filter Characteristics

Filter F5.5					
Parameter	Limits			Units	Conditions
	Min	Typ	Max		
average transmission	70			%	7.5 μ m to 13.5 μ m
average transmission			1	%	visual to 5 μ m
cut on	5.2	5.5	5.8	μ m	25°C
filter thickness		0.525			
filter material	silicon coated				



