

# Datasheet Thermopile Sensor SMD

## Type HCS Cxy Fz



### Features and Benefits

- Surface mountable ceramic leadless chip carrier CLCC, square, width 3.8mm
- Optional thermistor temperature reference with typical 100kOhm at 25°C
- Large variety of available filter types for different application

### Ordering Information

HCS -> Heimann thermopile sensor in a SMD ceramic carrier  
 C -> ceramic carrier square 3.8x3.8 (mm)  
 x -> sensor chip (list)  
 y -> „0” without thermistor , „1” with thermistor 100kOhm  
 Fz -> selectable filter type (list)

<b>Sensor Chip Selection</b>			
<i>Parameter</i>	<i>Sensor chip "1"</i>	<i>Sensor chip "1C"</i>	<i>Sensor chip "2"</i>
Absorbing area	0.61 x 0.61mm <sup>2</sup>	0.76 x 0.76mm <sup>2</sup>	1.2 x 1.2mm <sup>2</sup>
Sensitivity	50 V/W	46 V/W	38 V/W
Voltage response	19 Vmm <sup>2</sup> /W	27 Vmm <sup>2</sup> /W	55 Vmm <sup>2</sup> /W
Resistance	85 kOhm	85 kOhm	85 kOhms
Time constant	5 ms	6 ms	8ms

<b>Filter Selection</b>		
<i>Filter Type</i>	<i>Application</i>	<i>Specification</i>
F4.26-180	CO2 gas detection	NBP CWL 4.26µm HPB 180nm
F4.43-60	CO2 gas detection	NBP CWL 4.43µm HPB 60nm
F4.64-180	CO gas detection	NBP CWL 4.64µm HPB 180nm
F3.30-160	HC gas detection	NBP CWL 3.30µm HPB 160nm
F3.37-190	HC gas detection	NBP CWL 3.375µm HPB 190nm
F3.91-90	gas reference	NBP CWL 3.91µm HPB 90nm
F5.5	temperature detection	LWP Cut On 5.5µm
F8-14	temperature detection	BP HPP 8µm to 14µm

Please contact Heimann customer service for special filter requirements.

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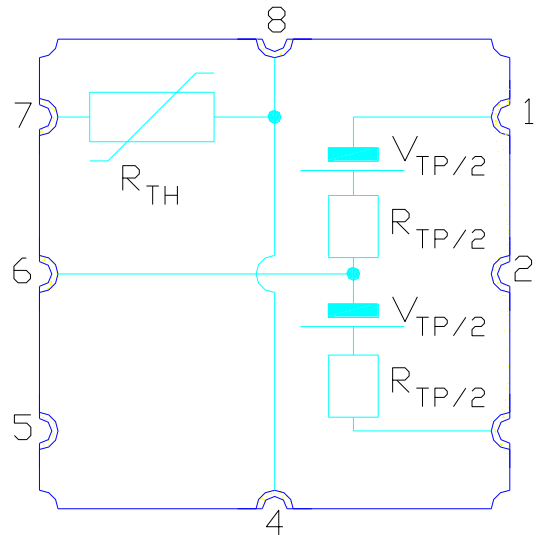


### Operating Conditions

Parameter	min	typ	max	Unit	Condition
Thermopile resistance $R_{TP}$	69	84	112	kOhm	
TC of resistance		0.02		%/K	
Noise voltage		37		nV/ $\sqrt{\text{Hz}}$	r.m.s.
Sensitivity TP1		50		V/W	Without filter
Voltage response TP1		19		Vmm <sup>2</sup> /W	
Sensitivity TP1C		46		V/W	Without filter
Voltage response TP1C		27		Vmm <sup>2</sup> /W	
Sensitivity TP2		38		V/W	Without filter
Voltage response TP2		55		Vmm <sup>2</sup> /W	
Thermistor resistance $R_{TH}$	95	100	105	kOhm	25°C
Thermistor BETA value	3900	3940	3980	K	25°C / 50°C
Field of view		120		degree	
Operating temperature	-40		120	°C	

### Pin Assignment

Pin No.	Sym bol	Description
1	TP-	Thermopile minus
2	N/C	Not connected
3	TP+	Thermopile plus
4 / 8	TH	Thermistor 1 (ground layer)
5	N/C	Not connected
6	TP0	Thermopile central tapping
7	TH	Thermistor 2



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### Thermistor Resistance

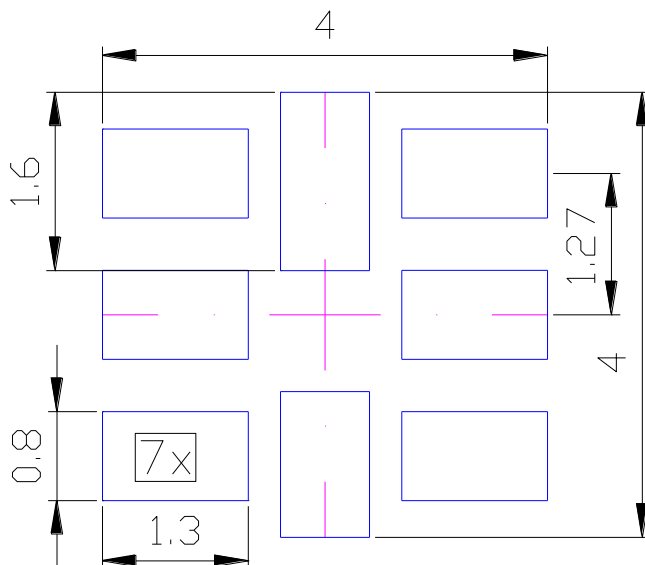
T / ° C	Rth_min / Ohm	Rth_nom / Ohm	Rth_max / Ohm
-30	1557900	1655000	1753100
-25	1163320	1234000	1306680
-20	875826	928700	981974
-15	665010	704500	744190
-10	508730	538500	568370
-5	392108	414600	437292
0	304466	321700	338934
5	238072	251400	264728
10	187444	197800	208056
15	148568	156600	164632
20	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

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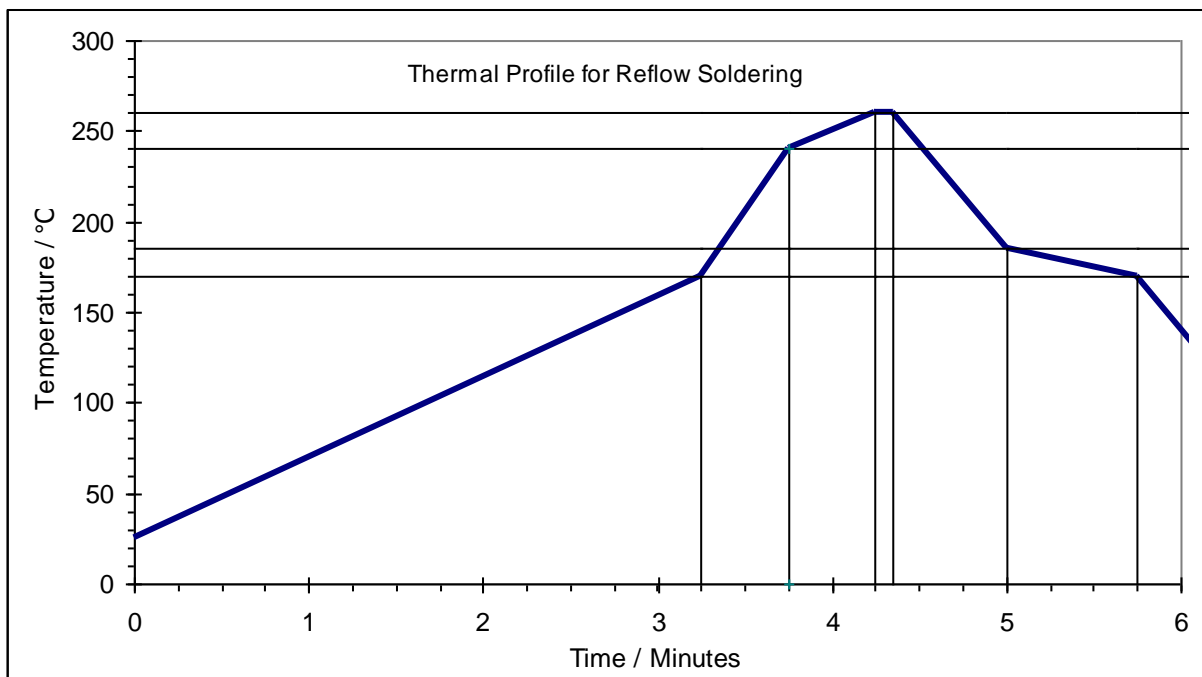
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### PCB Footprint



### Reflow Furnace Profile



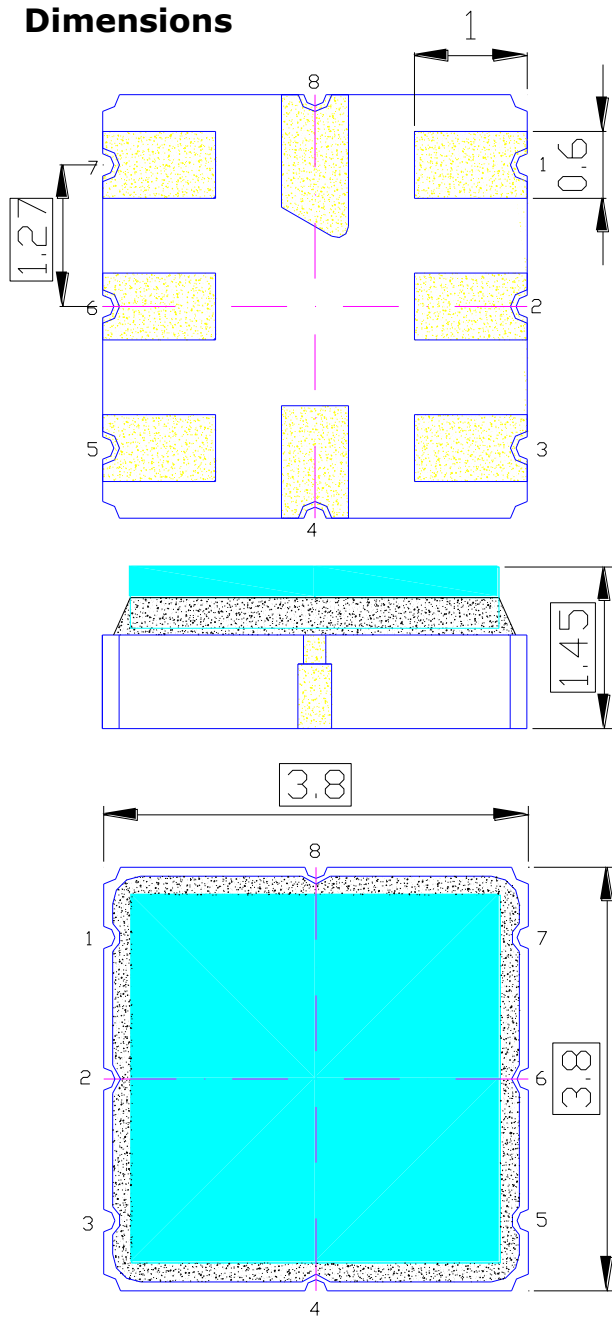
Suitable for lead free soldering.

The shown thermal profile should not be exceeded or component damage may result.

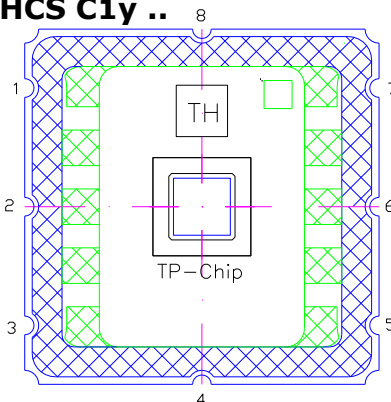
# Datasheet Thermopile Sensor SMD Type HCS Cxy Fz



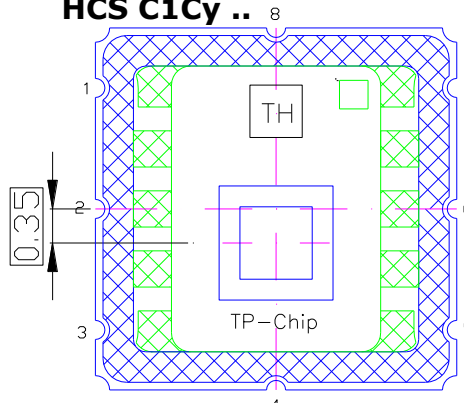
## Dimensions



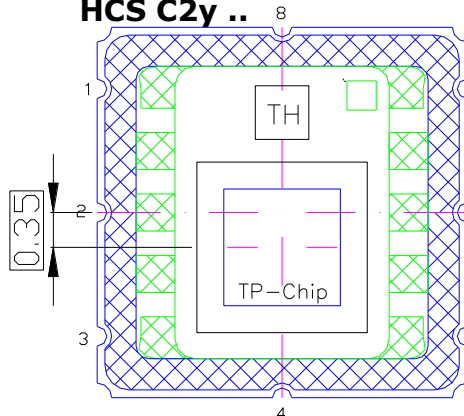
### HCS C1y ..



### HCS C1Cy ..



### HCS C2y ..



## Liability

Changes or modifications at 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.

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