



HCM C-Series

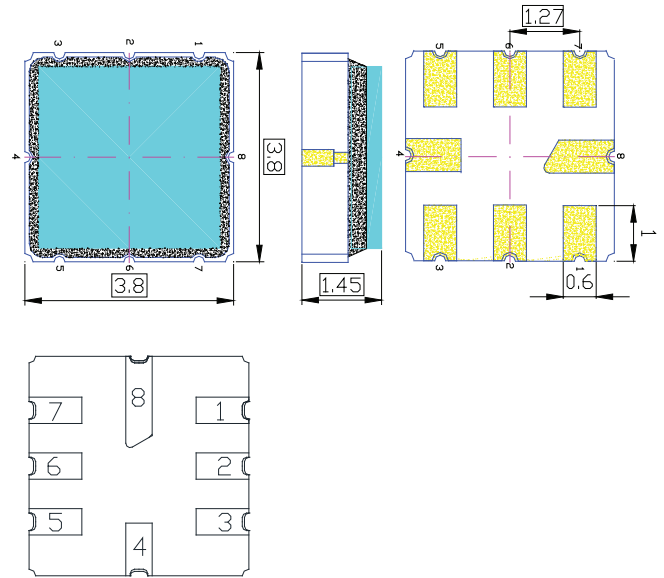
Single SMD Thermopile Module

The HCM C-Series includes a surface mountable thermopile module optimized for gas analysis. It comes in a leadless ceramic package with a small footprint of 3.8x3.8mm² and a low thickness of 1.45mm. The module comes with a thermopile chip and an integrated ASIC for high-accuracy amplification selectable at 4300 or 2150. The conditioned thermopile sensor voltage and an on-chip linear temperature reference voltage are provided at analog output pins.

The sensor can be equipped with a large variety of filters depending on the targeted application.

The module has a wide operating range from 2.7 V to 5 V and -40°C to 120°C.

Dimensions and PIN-Configuration



Characteristics

	HCM C12	HCM C1c2	HCM C22	Unit
Element size	0.61 ²	0.76 ²	1.2 ²	mm ²
Voltage response ^{a)}	22	30	63	Vmm ² / W
Sensitivity ^{a)}	58	52	44	V / W
Resistance R _{TP} ^{b)}	86	75	84	kOhm
T/C of sensitivity ^{b)}	0.02	0.02	0.02	% / K
Noise ^{b)}	38	35	37	nV / Hz ^{1/2}
Detectivity ^{a),b)}	0.9·10 ⁸	1.1·10 ⁸	1.4·10 ⁸	cm Hz ^{1/2} / W
Time constant	5	8	10	ms
Temp. reference voltage ^{b)}		1.4		V
Sensitivity temp. reference		15.5		mV/°C
Sensor gain		4300 or 2150		V/V
Thermopile offset voltage ^{b)}		1.25		V
Field of view		120		°
Operating temperature		-20 ... 120		°C
Storage temperature		-40 ... 120		°C

a) Without filter, T_{obj} = 100°C, DC

b) At T_{amb} = 25°C

Pin No.	Symbol	Description
1	GAIN	Gain factor 4300 (Internal pull up) Gain factor 2150 (VSS/GND on GAIN)
3	VDD	Supply voltage (positive)
4/8	VSS/GND	Ground (0V) / Supply voltage (negative)
6	TPO	Thermopile sensor output voltage
7	TRO	Analog temperature reference output voltage

Filter Types (General List)

Gas	CWL / nm	HPBW / nm	Filter
CH ₄	3300	160	F3.30/160
HC	3375	190	F3.375/190
CO ₂	4260	180	F4.26/180
CO ₂	4300	110	F4.30/110
CO ₂	4430	60	F4.43/60
CO	4640	180	F4.64/180
CO	4640	90	F4.64/90
N ₂ O	4530	85	F4.53/85
NO	5300	180	F5.30/180
(Reference)	3910	90	F3.91/90

Ordering Information

HCM	Heimann Ceramic SMD Module
C	Single channel SMD package
1, 1c, 2	Thermopile chip
2	ASIC analog series
Fx	Application specific filter

E.g.: HCM C1c2 F4.26/180