

ANALOGUE TO DIGITAL CONVERTER

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Resolution	ADC _{RES}	---	---	16	---	bit
Conversion time	t _{CONV}	---	---	44.8	59.2	ms
Rise time	t ₆₃	Including rise time of sensor element	---	---	44.8	ms
Resolution internal temperature sensor	ITS _{RES}	---	---	0.003	---	K/LSB

TOLERANCES

If not otherwise noted, 3.3V supply voltage is applied.

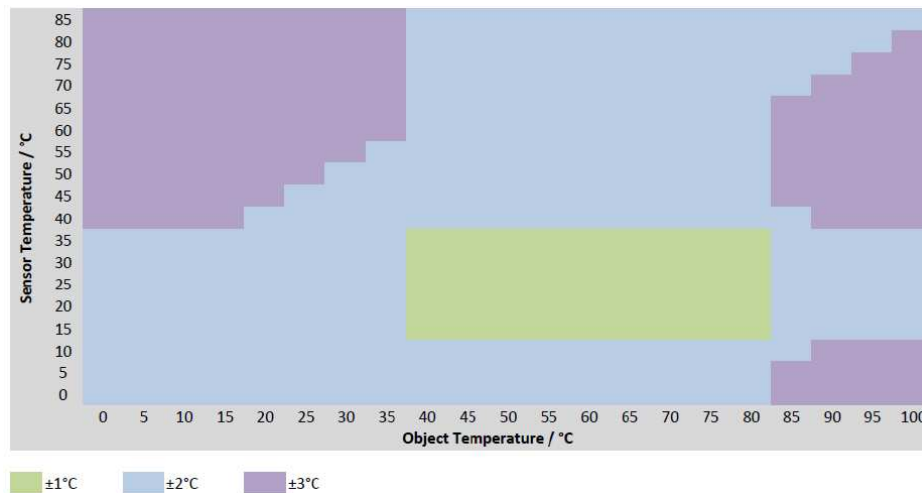
T_{sen} = sensor temperature, T_{obj} = object temperature

Parameter	Symbol	Sensor Tempo	Object Temp	Max	Unit
Accuracy Standard Temp ¹⁾	ACC _S	+15°C < T _{sen} < +35°C	+40°C < T _{obj} < +80°C	±1	°C
Accuracy Extended Temp. 1 ²⁾	ACC _{E1}	Complete range	+40°C < T _{obj} < +80°C	±2	°C
		+15°C < T _{sen} < +35°C	Complete range		
Accuracy Extended Temp. 2 ²⁾	ACC _{E3}	Complete range	Complete range	±3	°C

Other temperature ranges and accuracies are available on request.

¹⁾ Proved while production

²⁾ Proved by design



Typical accuracy performance

TSD305-1C55

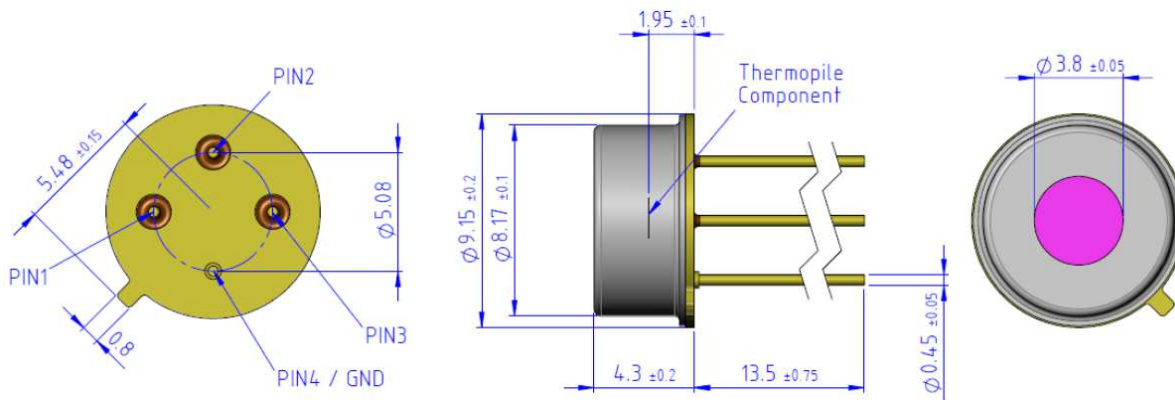
Digital Thermopile Sensor

POWER & RESET

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Start up time	t_{STA1}	V_{DD} ramp up to interface communication	---	---	1	ms
	t_{STA2}	V_{DD} ramp to first ADC measurement	---	---	2.5	ms
Wake up time	t_{WUP1}	Sleep to active state interface communication	---	---	0.5	ms
	t_{WUP2}	Sleep to first ADC measurement	---	---	2	ms
Power down time for reset	t_{RESET}	$V_{DD_{low}}$	3	---	---	μ s
VDD low level	$V_{DD_{low}}$	---	0	---	0.2	V
VDD rising slope	SR_{VDD}	---	10	---	---	V/ms

DIMENSIONS

If not specified, all tolerances according DIN ISO 2768-m.



PIN FUNCTION TABLE

Pin	Name	Type	Function
1	SCL	DI	I ² C Clock
2	SDA	DIO	I ² C Data
3	V_{DD}	P	Supply Voltage
4	V_{SS}	P	Ground

I²C INTERFACE

An I²C communication message starts with a start condition and it is ended by a stop condition.

Most commands consist of two bytes: the address byte and command byte.

I²C ADDRESS

The standard I²C address is 0x00 (0b0000000X).

- X = 0: I²C Write
- X = 1: I²C Read