

TSD305 SERIES

Digital Thermopile Sensor

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

OBJECT TEMPERATURE RANGE

Parameter	Symbol	Sensor	Min	Typ	Max	Unit
Object temperature range ¹⁾	T _{OBJ}	TSD305-1C55 TSD305-3C55	0	---	+100	°C
		TSD305-2C55 TSD305-1SL10	0	---	+300	°C

¹⁾ Other temperatures on request

TOLERANCES

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

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

Parameter	Symbol	Sensor Temperature	Sensor	Object Temperature	Max	Unit
Accuracy Standard Temp ¹⁾	ACC _S	+15°C < T _{sen} < +35°C	TSD305-1C55 TSD305-3C55	+40°C < T _{obj} < +80°C	±1	%FS
			TSD305-2C55 TSD305-1SL10	+170°C < T _{obj} < +190°		
Accuracy Extended Temp. 1 ²⁾	ACC _{E1}	Complete range	TSD305-1C55 TSD305-3C55	+40°C < T _{obj} < +80°C	±2	%FS
		+15°C < T _{sen} < +35°C		Complete range		
		Complete range	TSD305-2C55 TSD305-1SL10	+170°C < T _{obj} < +190°		
		+15°C < T _{sen} < +35°C		Complete range		
Accuracy Extended Temp. 2 ²⁾	ACC _{E3}	Complete range	TSD305-1C55 TSD305-2C55 TSD305-3C55 TSD305-1SL10	Complete range	±3	%FS

Other temperature ranges and accuracies are available on request.

¹⁾ Ideal, proved by production

²⁾ Ideal case by design

POWER & RESET

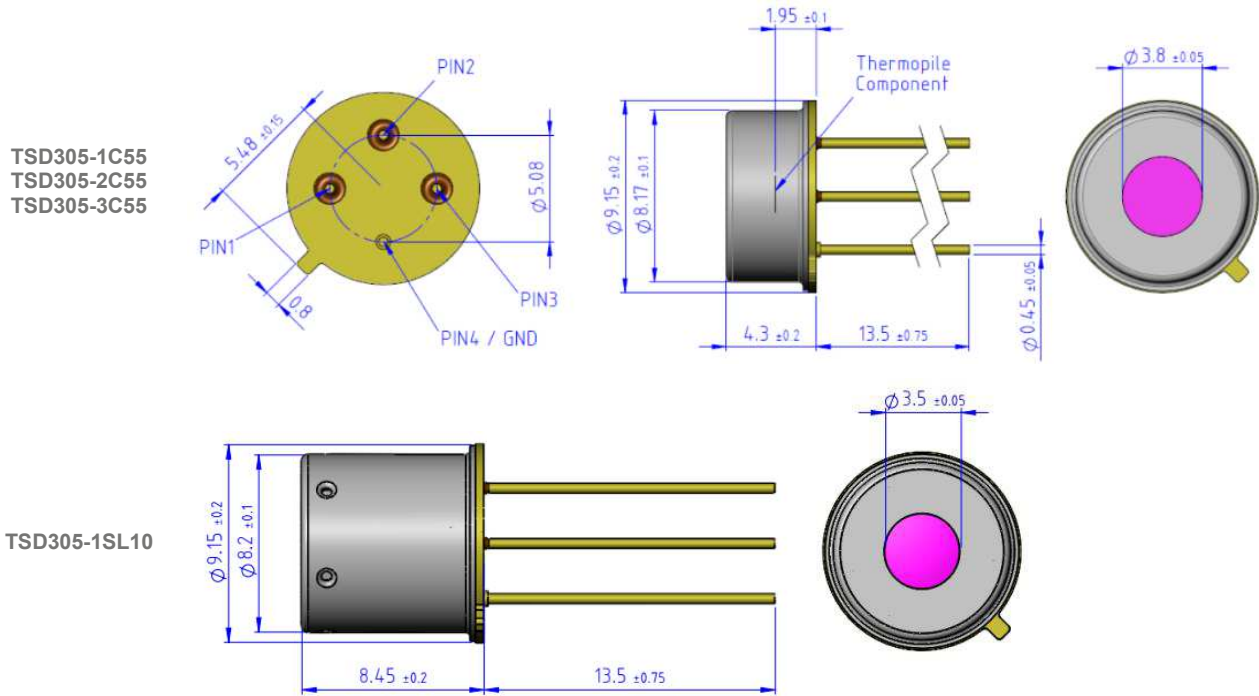
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Start up time	t _{STA1}	V _{DD} ramp up to interface communication	---	---	1	ms
	t _{STA2}	V _{DD} ramp to first ADC measurement	---	---	2.5	ms
Wake up time	t _{WUP1}	Sleep to active state interface communication	---	---	0.5	ms
	t _{WUP2}	Sleep to first ADC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

TSD305 SERIES

Digital Thermopile Sensor

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

Sensor	I ² C Address Hex	I ² C Address Bin
TSD305-1C55 TSD305-2C55 TSD305-1SL10	0x00	0b0000000X
TSD305-2C55	0x1E	0b0011110X

- X = 0: I²C Write
- X = 1: I²C Read