



## TSD305-2C55

### DIGITAL TEMPERATURE SENSOR

#### Product Description

The TSD is a contactless temperature measurement system located in a TO5 package. The TSD includes an infrared sensor (thermopile) and a sensor signal conditioner.

The TSD can be interfaced to any microcontroller by an I<sup>2</sup>C interface. This microcontroller has to calculate the temperature results based on the ADC values and the calibration parameters

#### Features

- 0°C ... +300°C measurement range
- Small size
- I<sup>2</sup>C Interface
- Low current consumption
- Operating Temperature Range: -10°C ... +85°C

#### Applications

- Contactless temperature measurement
- Climate control
- Industrial process control
- Household applications

## ABSOLUTE MAXIMUM RATINGS

Absolute maximum ratings are limiting values of permitted operation and should never be exceeded under the worst possible conditions either initially or consequently. If exceeded by even the smallest amount, instantaneous catastrophic failure can occur. Even if the device continues to operate satisfactorily, its life may be considerably shortened.

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Supply voltage	$V_{DD}$	---	-0.3	---	+3.63	V
Storage temperature	$T_{stor}$	dry	-20	---	+85	°C
Voltage at supply and IO pins	$V_{DD}$ $V_{IO}$	---	-0.5	---	$V_{DD} + 0.5$	V
Current into supply and IO pins	$I_{IN}$	---	-100	---	100	mA
ESD rating	ESD	Human Body Model	-2	---	+2	kV
Humidity	Hum	---	Non condensing			---

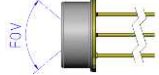
## OPERATING CONDITIONS

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Operating supply voltage	$V_{DD}$	stabilized, 100nF	1.68	---	3.6	V
VDD rise time	$t_{VDD}$	---	---	---	200	μs
Operating temperature	$T_{op}$	---	-20	---	+85	°C
Object temperature range	$T_{OBJ}$	---	0	---	+300	°C
Resolution	RES	---	---	---	0.1	°C
Supply Current	$I_{VDD}$	Active state, average	---	1050	1500	μA
		Sleep state, idle current	---	20	25	nA
Serial data clock I2C	$F_{SCL}$	---	---	---	3.4	MHz
Self heating	SH	1 sample/s, still air, 60s	---	---	+0.2	°C
VDD capacitor	$C_{VDD}$	Place close to the sensor	---	100	---	nF

## THERMOPILE COMPONENT

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Absorber area	A	---	0.8 x 0.8			mm
Field of view	FOV	At 50% of maximum signal 	---	88	---	deg
Filter transmission range	LWP	Long wave pass	>5.5			μm