TSD305-1C55

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^2C interface. This microcontroller has to calculate the temperature results based on the ADC values and the calibration parameters

Features

- 0°C … +100°C measurement range
- Small size
- Up to ±1°C accuracy
- I^2C 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			---

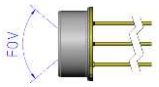
OPERATING CONDITIONS

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	---	+100	°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