

TSic[™] 506F/503F/501F Temperature Sensor IC





For a fully calibrated and very accurate low power temperature measurement





Benefits & Characteristics

- Fully calibrated
- Outstanding accuracy of +/- 0.1 K
- Very low power consumption
- Excellent long-term stability
- Custom calibration and assembly available
- Available with digital, analog and ratiometric output signal
 - Accuracy range of 40 K can be shifted (default: 5 °C to 45 °C)

Illustration



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Technical Data

Operating temperature range:*	-10 °C to +60 °C (+/- 3 °C of measurement limits)
Accuracy:*	+/- 0.1 K in the range of 5 $^\circ C$ to 45 $^\circ C$ (other ranges upon request)
Resolution:*	0.034 K
Sampling rate:*	10 Hz
Supply voltage:	V ⁺ = 3 V to 5.5 V, high precision operation in range V ⁺ = 4.5 V to 5.5 V
Supply current:	typ. 30 μA at 25 °C and V* = 3.3 V for minimal self-heating
Packaging:*	SOP-8 or TO92

* Customer specific alternatives available

Packaging pin assignment: SOP-8	Pin 1 V+, Supply voltage (3 V to 5.5V)	Pin 2 Signal	Pin 3Pin 4Not usedGND
TO92	GND	Signal	V+, Supply voltage (3 V to 5.5 V)
<u>SOP-8:</u> 1	 V+, Supply voltage (3.0-5.5V) Signal GND 3, 5-8 not used 	<u>T092:</u> 10 20 3	1 GND 2 Signal 3 V+, Supply voltage (3.0-5.5V)



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Supply voltage (V ⁺):	-0.3 V	6 V
Voltages to analog I/O – Pins (V_{INA} , V_{OUTA}):	-0.3 V	V _{DDA} +0.3 V
Storage temperature range (T _{STOR}):	-20 °C	80 °C

Operating conditions:	Min	Тур	Max
Supply voltage to GND (V ⁺):	2.97 V	5 V	5.5 V
Supply current (I_{V+}) @ V ⁺ = 3.3 V, RT:	25 μΑ	30 µA	60 µA
Operating temperature range (T _{amb}):	-10 °C		+60 °C
Output load capacitance (C _L):			15 nF
External capacitance between V $^{\scriptscriptstyle +}$ and GND $^{\scriptscriptstyle 1)}$ (C $_{_{\rm V+}}$):	100 nF (recommend	ded)	
Output load Resistance between signal and GND (or V^*):	47 kOhm		

Temperature accuracies: ²⁾	
T1: 5 °C to 45 °C	+/- 0.1 K
T2: -10 °C to 60 °C	+/- 0.2 K

 $^{\mbox{\tiny 1)}}$ Recommended as close to TSic V* and GND-Pins as possible

²⁾ The sensor is calibrated at 5 V. The provided accuracy is applicable for a supply voltage between 4.5 V and 5.5 V. The accuracy is smaller with a supply voltage between 2.97 V and 4.5 V. For applications where the best accuracy at 3 V is requested, ask for a custom specific 3 V calibrated device. Other TSic[™] products with custom specific calibrations are available upon request e.g. other temperature range for high accuracy. Accuracy at delivery; the assembly method can influence the accuracy!

Order Information - SOP-8

Output signal	Analog	Analog ratiometric	Digital, ZACWire protocol
501/503/506	TSic 501F SOP-8	TSic 503F SOP-8	TSic 506F SOP-8
Order code	030.00034	030.00054	030.00007



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CONDUCTIVIT

Order Information - TO92			
Output signal	Analog	Analog ratiometric	Digital, ZACWire protocol
501/503/506	TSic 501F TO92	TSic 503 TO92 5V	TSic 506F TO92
Order code	030.00046	030.00115	030.00045

Additional Electronics

Labkit

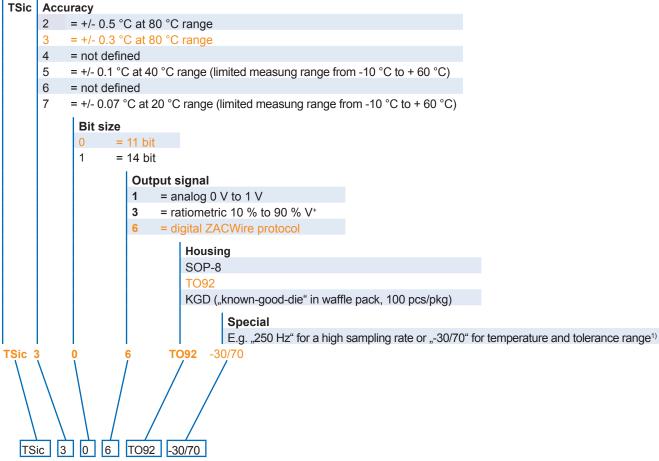
Document name: DTTSicLABkit_E



Order Information Temperature Sensor IC Secondary reference



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1) Standard: no value

DTTSic50x_E2.



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