



# TSic™ 506F/503F/501F

## Temperature Sensor IC

### For a fully calibrated and very accurate low power temperature measurement

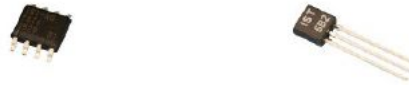


INNOVATIVE SENSOR TECHNOLOGY

### 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



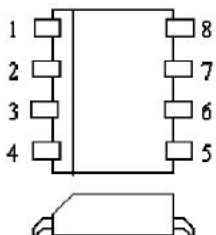
### Technical Data

Operating temperature range:*	-10 °C to +60 °C (+/- 3 °C of measurement limits)
Accuracy:*	+/- 0.1 K in the range of 5 °C to 45 °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:	Pin 1	Pin 2	Pin 3	Pin 4
SOP-8	V+, Supply voltage (3 V to 5.5V)	Signal	Not used	GND
TO92	GND	Signal	V+, Supply voltage (3 V to 5.5 V)	

**SOP-8:**



- 1 V+, Supply voltage (3.0-5.5V)
- 2 Signal
- 4 GND
- 3 3, 5-8 not used

**TO92:**



- 1 GND
- 2 Signal
- 3 V+, Supply voltage (3.0-5.5V)



# TSic™ 506F/503F/501F

## Temperature Sensor IC

### For a fully calibrated and very accurate low power temperature measurement



INNOVATIVE SENSOR TECHNOLOGY

Absolute max. rating:	Min	Max
Supply voltage (V <sup>+</sup> ):	-0.3 V	6 V
Voltages to analog I/O – Pins (V <sub>INA</sub> , V <sub>OUTA</sub> ):	-0.3 V	V <sub>DDA</sub> +0.3 V
Storage temperature range (T <sub>STOR</sub> ):	-20 °C	80 °C

Operating conditions:	Min	Typ	Max
Supply voltage to GND (V <sup>+</sup> ):	2.97 V	5 V	5.5 V
Supply current (I <sub>V+</sub> ) @ V <sup>+</sup> = 3.3 V, RT:	25 µA	30 µA	60 µA
Operating temperature range (T <sub>amb</sub> ):	-10 °C		+60 °C
Output load capacitance (C <sub>L</sub> ):			15 nF
External capacitance between V <sup>+</sup> and GND <sup>1)</sup> (C <sub>V+</sub> ):	100 nF (recommended)		
Output load Resistance between signal and GND (or V <sup>+</sup> ):	47 kOhm		

Temperature accuracies:<sup>2)</sup>

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

<sup>1)</sup>Recommended as close to TSic V<sup>+</sup> and GND-Pins as possible

<sup>2)</sup> 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





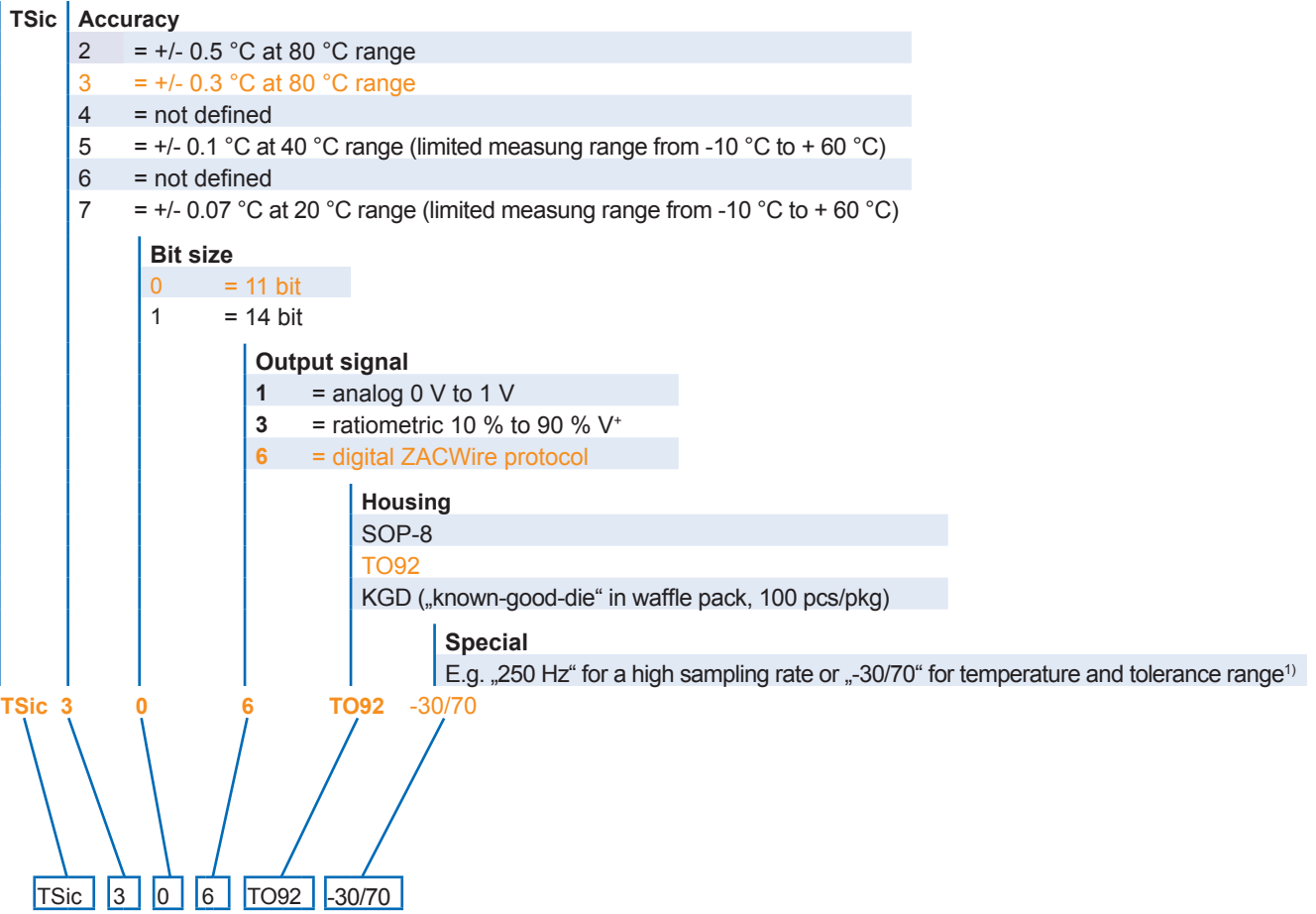
# Order Information

## Temperature Sensor IC

### Secondary reference



INNOVATIVE SENSOR TECHNOLOGY



1) Standard: no value

DTT Sic50x\_E2.1



INNOVATIVE SENSOR TECHNOLOGY

Innovative Sensor Technology IST AG, Stegrütistrasse 14, CH-9642 Ebnet-Kappel, Switzerland,  
 Phone: +41 (0) 71 992 01 00 | Fax: +41 (0) 992 01 99 | E-mail: info@ist-ag.com | Web: www.ist-ag.com

