



TSic™ 506F/503F/501F

Temperature Sensor IC



INNOVATIVE SENSOR TECHNOLOGY

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



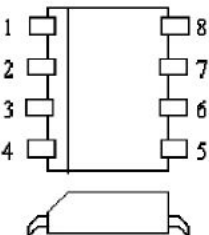
Technical Data

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 μ A 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, 5-8 not used

TO92:



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



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Absolute max. rating:	Min	Max
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	Typ	Max
Supply voltage to GND (V ⁺):	2.97 V	5 V	5.5 V
Supply current (I _{V+}) @ V ⁺ = 3.3 V, RT:	25 µA	30 µA	60 µA
Operating temperature range (T _{amb}):	-10 °C		+60 °C
Output load capacitance (C _L):			15 nF
External capacitance between V ⁺ and GND ¹⁾ (C _{V+}):	100 nF (recommended)		
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

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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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
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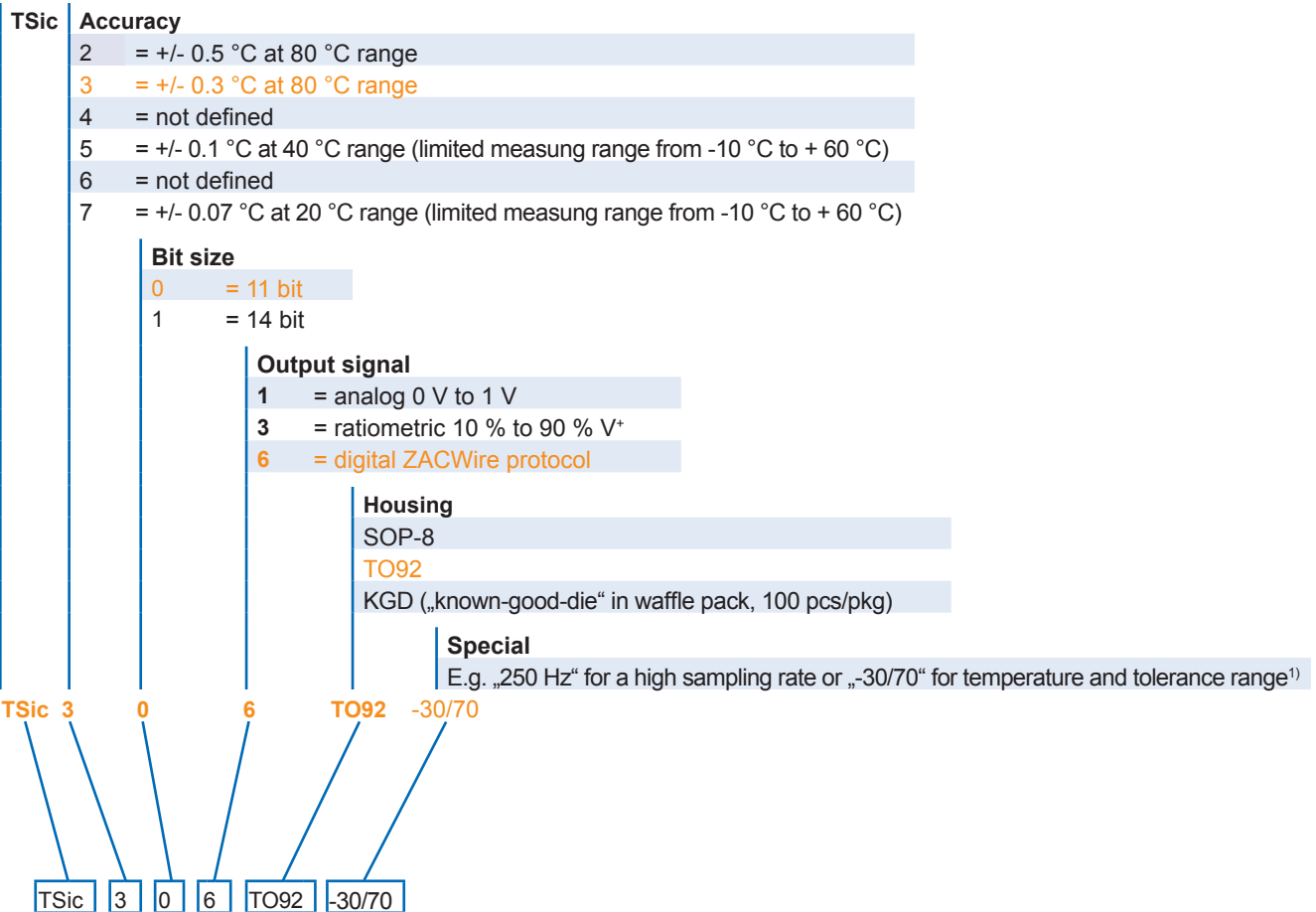
Order Information

Temperature Sensor IC

Secondary reference



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1) Standard: no value

DTTSic50x_E2.1



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All mechanical dimensions are valid at 25 °C ambient temperature, if not differently indicated • All data except the mechanical dimensions only have information purposes and are not to be understood as assured characteristics • Technical changes without previous announcement as well as mistakes reserved • The information on this data sheet was examined carefully and will be accepted as correct; No liability in case of mistakes • Load with extreme values during a longer period can affect the reliability • The material contained herein may not be reproduced, adapted, merged, translated, stored, or used without the prior written consent of the copyright owner • Typing errors and mistakes reserved • Product specifications are subject to change without notice • All rights reserved