TEMPERATURE

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TSic™ 206/203/201/306/303/301

Temperature Sensor IC

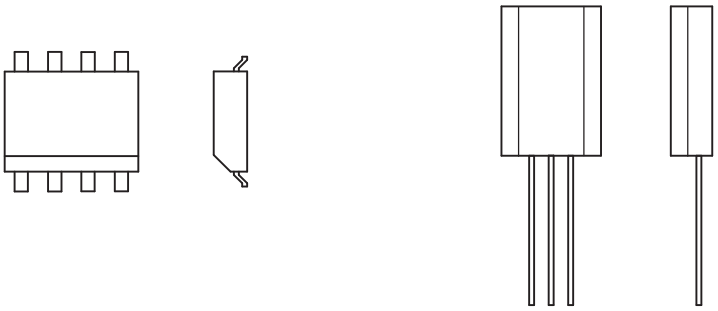
For a fully calibrated and accurate low power temperature measurement

INNOVATIVE SENSOR TECHNOLOGY

Benefits & Characteristics

- Fully calibrated
- Outstanding accuracy of ±0.3 K (TSic™ 30x)
- Very low power consumption
- Excellent long-term stability
- Custom calibration and assembly available
- Accuracy range of 80 K can be shifted (default: +10 °C to +90 °C)
- Available with digital, analog and ratiometric output signal

Illustration[1)]



1) For actual size, see dimensions

Technical Data

Operating temperature range:*	-50 °C to +150 °C (±3 °C of measurement limits)	
Accuracy:*	TSic 20x	±0.5 K in the range of +10 °C to +90 °C (other ranges on request)
	TSic 30x	±0.3 K in the range of +10 °C to +90 °C (other ranges on request)
Resolution:*	0.1 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 (other packaging on request)	

* Customer specific alternatives available

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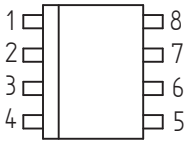
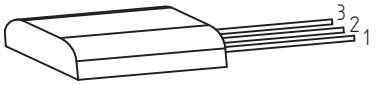
Pin Assignment





	Pin 1	Pin 2	Pin 3	Pin 4
SOP-8 (5, 6, 7 and 8 not used)	V^+, Supply voltage (3 V to 5.5V)	Signal	Not used	GND
TO92	GND	Signal	V^+, Supply voltage (3 V to 5.5 V)	

Absolute maximal ratings

	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 kΩ		

[1)] Recommended as close to TSic V^+ and GND-Pins as possible

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Temperature accuracies[2)]

	TSic 30x	TSic 20x
T1: +10 °C to +90 °C	±0.3 K	±0.3 K
T2: -20 °C to +110 °C	±0.6 K	±1 K
T3: -50 °C to +150 °C	±1.2 K	±2 K

[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
201/203/206	TSic 201 SOP-8	TSic 203 SOP-8	TSic 206 SOP-8
Order code	030.00038	030.00060	030.00005
301/303/306	TSic 301 SOP-8	TSic 303 SOP-8	TSic 306 SOP-8
Order code	030.00036	030.00024	030.00006

Order Information - TO92

201/203/206	TSic 201 TO92	TSic 203 TO92	TSic 206 TO92
Order code	030.00056	030.00095	030.00049
301/303/306	TSic 301 TO92	TSic 303 TO92	TSic 306 TO92
Order code	030.00047	030.00074	030.00044

Additional Electronics

	Document name:
LabKit	DTTSicLabKit_E

Additional Documents

	Document name:
Application note:	ATTSic_E

Order Information
Temperature Sensor IC
Secondary reference

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TSic

Accuracy

2	=	±0.5 °C at +80 °C range
3	=	±0.3 °C at +80 °C range
4	=	not defined
5	=	±0.1 °C at +40 °C range (limited measuring range from -10 °C to +60 °C)
6	=	not defined
7	=	±0.07 °C at +20 °C range (limited measuring range from -10 °C to +60 °C)

Bit size

0	=	11 bit
1	=	14 bit

Output signal

1	=	analog 0 V to 1 V
3	=	ratiometric 10 % to 90 % V^+
6	=	digital ZACWire protocol

Housing

SOP-8
TO92
KGD („known-good-die“ in waffle pack, 100 pcs/pkg)

Special

E.g. „250 Hz“ for a high sampling rate or „-30/70“ for temperature and tolerance range

TSIC 3 0 6 TO92 -30/70

ISO 9001
RoHS

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