Innovative Sensor Technology

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TSic 206/203/201/ 306/303/301

Temperature Sensor IC

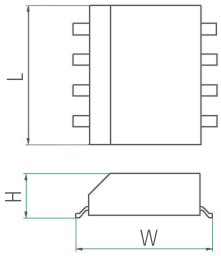
For a fully calibrated and accurate low power temperature measurement

Benefits & Characteristics

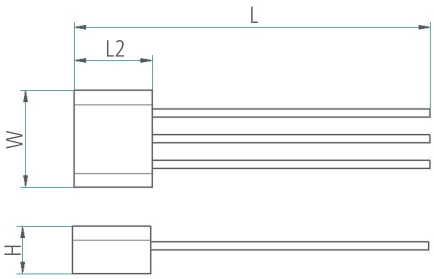
- Fully calibrated
- Custom calibration and assembly available
- Very low power consumption
- Excellent long-term stability
- Accuracy of ±0.3 K (TSic 30x), ±0.5 K (TSic 20x)
- Accuracy range of 80 K can be shifted (default: +10 °C to +90 °C)
- Available with digital, analog and ratiometric output signal

Illustration[1)]

SOP-8



TO92



1) For actual size, see dimensions

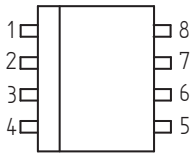
Technical Data

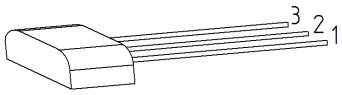
Dimensions (L / L2 x W x H in mm): [2)]	4.93 x 5.99 x 1.63 (SOP-8) 17.30 / 3.81 x 4.57 x 2.3 (TO92)	
Operating temperature range:*	-50 °C to +150 °C (-47 °C to +147 °C guaranteed)	
Accuracy:*	TSic 20x	±0.5 K in the range of +10 °C to +90 °C (other ranges on request)
	TSic 30x	±0.3 K in the range of +10 °C to +90 °C (other ranges on request)
Resolution:*	0.1 K	
Sampling rate:*	10 Hz	
Supply current:	typ. 30 µA at 25 °C and V_{dd} = 3.3 V for minimal self-heating	
Packaging:*	SOP-8 or TO92 (other packaging on request)	
Output signal:	Analog (TSic xx1), ratiometric (TSic xx3), digital (TSic xx6) - see application note ATTSic_E	

* Customer-specific alternatives available

2) For tolerances, see Application Note

Pin Assignment





	Pin 1	Pin 2	Pin 3	Pin 4
SOP-8 (3, 5, 6, 7 and 8 not connected)	V_{dd}, Supply voltage (3 V to 5.5V)	Signal		GND
TO92	GND	Signal	V_{dd}, Supply voltage (3 V to 5.5 V)	

Absolute maximal ratings

	Min	Max
Supply voltage (V_{dd})	-0.3 V	6 V
Voltages to analog I/O – Pins (V_{SIG}, V_{GND})	-0.3 V	V_{dd}+0.3 V
Storage temperature range (T_{STOR})	-20 °C	+80 °C
Non-operating temperature range	-50 °C	+150 °C

Operating conditions

	Min	Typ	Max
Supply voltage to GND (V_{dd})	2.97 V	5 V	5.5 V
Supply current (I_{Vdd}) at V_{dd} = 3.3 V,	25 µA	30 µA	60 µA
Operating temperature range (T_{amb})	-50 °C		+150 °C
Output load capacitance (C_L)			15 nF
External capacitance between V_{dd} and GND[1)]	100 nF (recommended)		
Output load resistance between signal and GND (or V_{dd})	47 kΩ		

[1)] Recommended as close to TSic V_{dd} and GND-Pins as possible

Temperature accuracies[2)]

	TSic 20x	TSic 30x
T1: +10 °C to +90 °C	±0.5 K	±0.3 K
T2: -20 °C to +110 °C	±1 K	±0.6 K
T3: -50 °C to +150 °C	±2 K	±1.2 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
201/203/206	TSic 201 SOP-8	TSic 203 SOP-8	TSic 206 SOP-8
Order code	On request	103499	103482
Former 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	103487	On request	103483
Former 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	On request	103510	103494
Former order code	*030.00056*	*030.00095*	*030.00049*
301/303/306	TSic 301 TO92	TSic 303 TO92	TSic 306 TO92
Order code	103492	103505	103489
Former order code	*030.00047*	*030.00074*	*030.00044*

Additional Electronics

	Document name:
LabKit	DTTSicLabKit_E

Additional Documents

	Document name:
Application Note:	ATTSic_E

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Order Information

Temperature Sensor IC

Secondary reference

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_{dd}
6	=	digital ZACWire

Housing

SOP-8

TO92

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

RoHS

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